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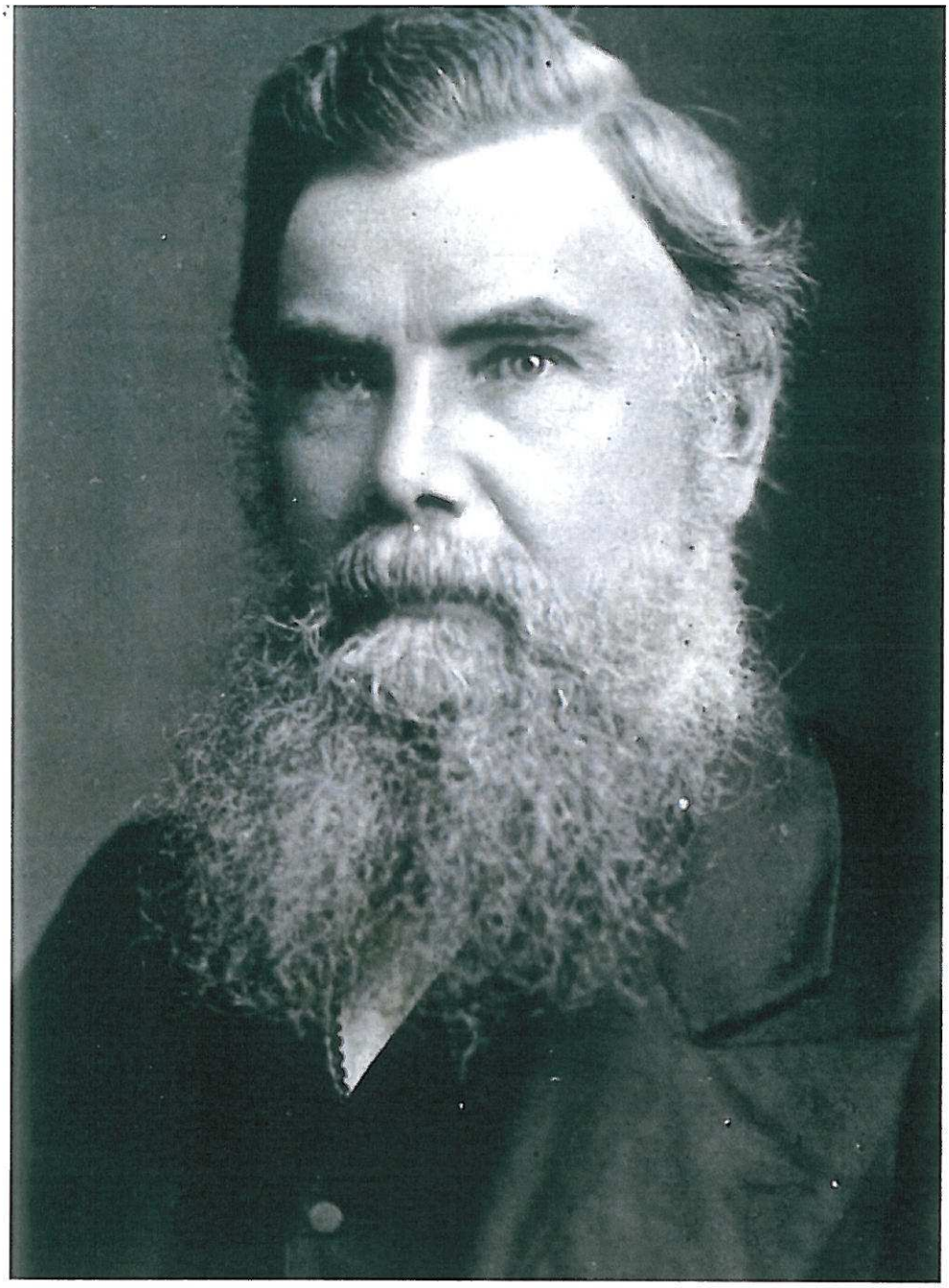
REFLECTING ON ENTOMOLOGICAL HISTORY



"The reputation of the late Mr. G. C. Bignell as an entomologist is too well known to need any comment of mine..."
(Hodgson, 1917)

The Life and Entomological Collections of George Carter Bignell

ARTICLE

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Many museums contain wonderful and scientifically important entomological collections from the nineteenth century. This was a time when the new pastime of collecting animals and plants was at its most vibrant, inspired by the curiosities of the natural world. These early pioneers set the precedence of entomological collections, with their meticulously detailed labels and incredible patience in mounting and organising their finds. The scientific and educational importance of these early collections has been invaluable to our knowledge and understanding of taxonomy and ecological diversity (Forty, 2009). Museums are continually restoring collections to increase access to researchers, students and members of the public (for example, see Scoble and Mendel, 2009; Rotheray, 2009; Mann and Simmons, 2009).

Plymouth City Museum and Art Gallery (PCMAG) opened in 1910, to provide enlightenment and education to people of Plymouth. Many specimens and objects were acquired and donated before the museum opened, including collections of art, human history objects and natural history specimens. One natural history donor in particular has become one of the museum's most important collectors.

Figure 1 (above). Photograph of a young George Carter Bignell, in his Royal Marine uniform. (image Image reproduced with permission from David Hodge)

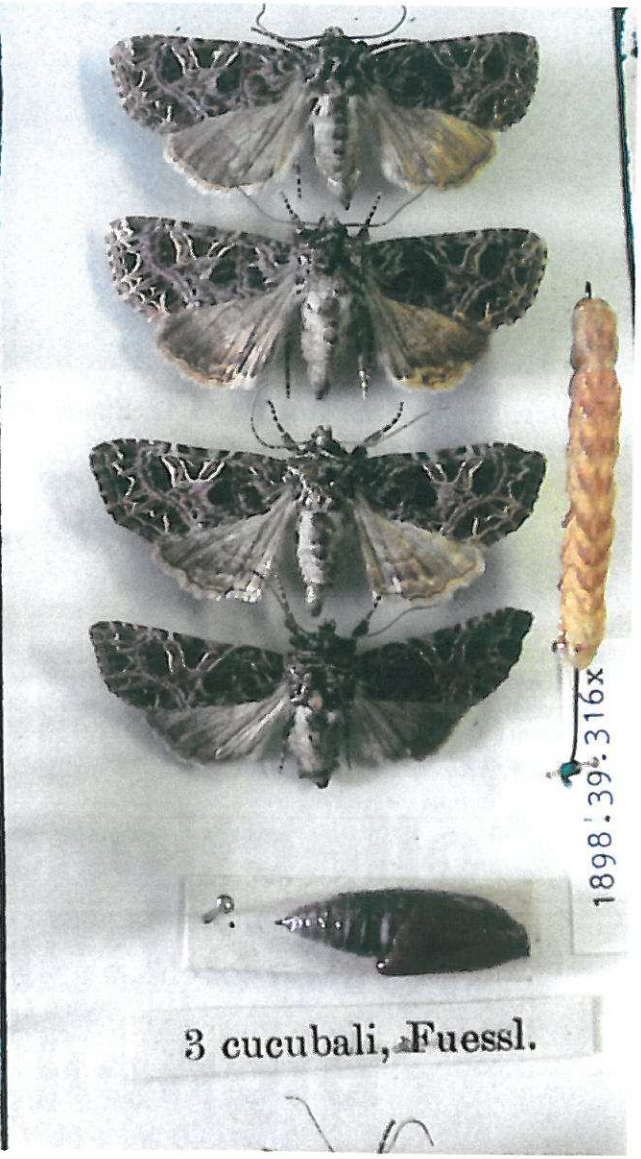
The explorer

George Carter Bignell was born in Exeter on 1st March 1826. Leaving school at the age of twelve, due to the death of his father, he worked in a booking office, where he received parcels and booked passengers on carriages (Baring-Gould, 1909). At the age of sixteen, he enlisted in the Royal Marines at Stonehouse, Plymouth, "longing for glory" and adventure (Figure 1) (Adams, 1958). Bignell served on-board *HMS Superb* which was deployed, in 1847, to assist in the civil war in Spain (Baring-Gould, 1909).

After *HMS Superb* was paid off, Bignell was stationed at the barracks in Plymouth, and was there for the remainder of his employment with the Royal Marines (Baring-Gould, 1910). It was whilst serving in the barracks he found he had time on his hands to investigate and collect insects.

After 22 years of service in the Royal Marines, and being awarded the Silver Medal, Bignell was discharged and he was appointed Registrar of Births, Deaths and Marriages for Stonehouse and Poor Law Officer for the Stonehouse Board of Guardians. He had enough spare time to pursue his interest in entomology by joining societies and avidly

Figure 3 (below). Specimens of *Mamestra persicariae* (left) and *Dianthecia cucubali* with pupae and imago stages. (Image copyright PCAMAG.).



collecting (Baring-Gould, 1909). Bignell became a member of the Plymouth Institution, then the scientific centre of Plymouth, and soon became President of the Institution. He became a fellow of the Royal Entomological Society in 1880 (Figure 2). He had numerous scientific contacts around England, and swapped specimens with his friends to enhance his collection. Some of Bignell's specimens, which were swapped between himself and Claude Morley, are held at Ipswich and Colchester Museum.

A plethora of interests

Bignell donated many specimens to PCMAG. His donations were all natural history specimens and, glancing at the list, it is clear that he had a wide wide-ranging interest:

Millipedes (1899)

'Maize, Etal' (1902)

Reptiles in spirit from West Africa (1904)

Land and fresh water shells (1907)

A 'few foreign insects' (1908)

Bignell was an entomologist, botanist and artist, and whereas some collectors have one specialist group they preferred, Bignell had many! During his life, he amassed an enormous collection of Lepidoptera, Hymenoptera (mainly Ichneumonidae), and pressed flowering plants and marine algae. He also invented the 'Bignell beating tray', a piece of equipment still sold and used by entomologists today.

Bignell passed away on the morning of his 84th birthday, in 1910. PCMAG purchased a large proportion of his collection in 1908 for the then small amount of £240, which is equivalent to £22,000 today. A substantial amount of Ichneumonidae were donated to the Natural History Museum, London before he passed away.

Lepidoptera

The collection contains over 9,500 specimens of British Lepidoptera, covering over 70 species of butterfly and 1,040 species of moths. Many species have specimens of the larval, pupal and imago stages, and almost all species have more than one specimens, illustrating variation within species and polymorphisms (Figure 3). The collection includes many migrant, vagrant and exotic species of butterfly and moth. Associated parasitoid wasps are mounted next to the butterfly or moth species they parasitized. The Lepidoptera cover a large range of sizes, from the large Monarch butterfly (*Danaus plexippus*) and Death's-Head Hawk-moth (*Acherontia lachesis*), to over 300 species of moth classified as microlepidoptera.

Hymenoptera

Bignell's hymenoptera collection covers ants, wasps (excluding the Ichneumonidae, which Bignell had stored as part of a separate collection) and bees. The collection contains over 3,000 specimens, representing over 260 species (with a large majority British species). Bignell's hymenoptera collection also includes two type specimens of Ant:

Ponera contracta (Latreille, 1802)

Myrmica ruginodis (Nylander, 1846)

Ichneumonidae

Perhaps Bignell's real interest lies with the parasitic wasps. His parasitic wasp collection contains over 3,000 specimens, including several type specimens. Bignell discovered 51 new species, including 32 new species to Britain (Baring-Gould, 1909). Bignell had three species named after him (Baring-Gould, 1909; Broad, 2009, *pers. comm.*):

Mesoleius bignellii

Apanteles bignellii (now *Cotesia*)

Iphiaulax (now *Atanycolus*) *bignelli*

The Ray Society published nine volumes on Larvae of British Butterflies and Moths (Buckler, 1886; 1887; 1889; 1891; 1893; 1895; 1897; 1899; 1901). Bignell assisted with the publications, by producing a list of parasites that preyed on the different larval species.

Figure 4. One example of Bignell's type specimens held in PCMAG. These are specimens of a species of parasitic wasp, *Apanteles astrarches*. (Image copyright PCMAG.).

His large collection includes numerous types, syntypes, holotypes, paratypes and paralectotypes (see Figure 4):

Types

Apanteles bignellii (Marshall, 1885)

A. rubecula (Marshall, 1885)

A. geryonis (Marshall, 1885)

A. zygaenarum (Marshall, 1885)

A. praetor (Marshall, 1885)
A. caberae (Marshall, 1385)
A. marshalli (Bignell, 1901)
A. butalidis (Marshall, 1888)
Cotesia gonopterygis (Marshall, 1885)

Holotypes

Diolcogaster spreta (Marshall, 1885)
Cotesia brevicornis (Wesmael, 1837)
C. limbatus (Marshall, 1885)

Co-types

Bracon epitriptus (Marshall, 1885)
B. praetermissus (Marshall, 1885)
Chelonus carbonator (Marshall, 1885)
Apanteles pallidipes (Marshall, 1885)
A. melitaearum (Wilkinson, 1937)
A. obscurus (Nees, 1834)

Paratypes

Pimpla bridgmani (Bignell, 1894)
Cotesia salebrosa (Marshall, 1885)

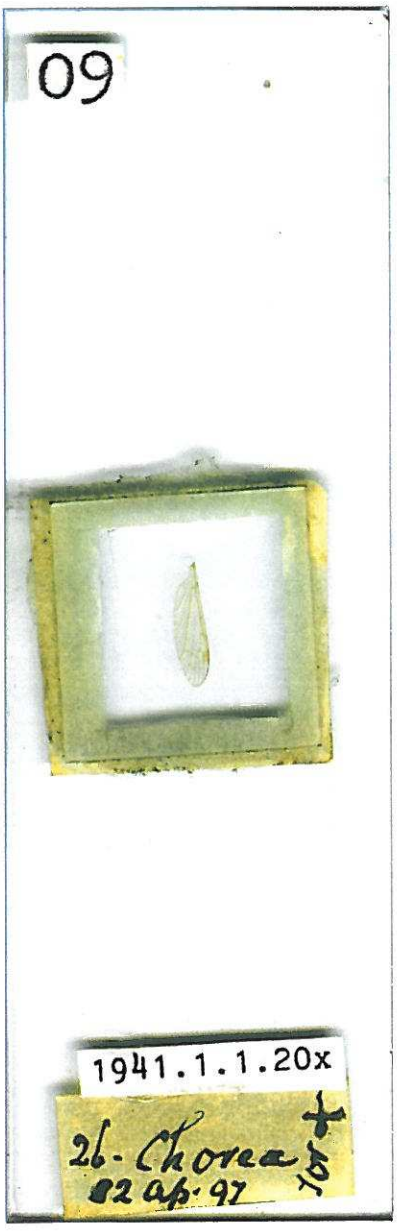
Paralectotypes

Mesochorus formosus (Bridgman, 1882)
M. facialis (Bridgman, 1884)
Glyptapanteles lateralis (Haliday, 1834)
Limneria rufa (Bridgman, 1882) (= *Hyposoter orbator* (Gravenhorst 1829))
L. teucrii (Bridgman, 1889) (= *Hyposoter barrettii* (Bridgman, 1881))

A small number of holotypes and lectotypes from his ichneumonid collection were transferred to the Natural History Museum, London, on long-term loan in 1975:

Holotypes

Nyxeophillus corsicus (Marshall, 1901) (= *Ecthrus reluctator* (Linnaeus, 1758))
Hemiteles distinctus (Bridgman, 1883) (= *Acrolyta rufucincta* (Gravenhorst, 1829))
Limneria brischkei (Bridgeman, 1882) (= *Hyposoter brischkei* (Bridgeman, 1882))
Pimpla bridgmanii (Bignell, 1894) (= *Schizopyga pictifrons* (Thomson, 1887))



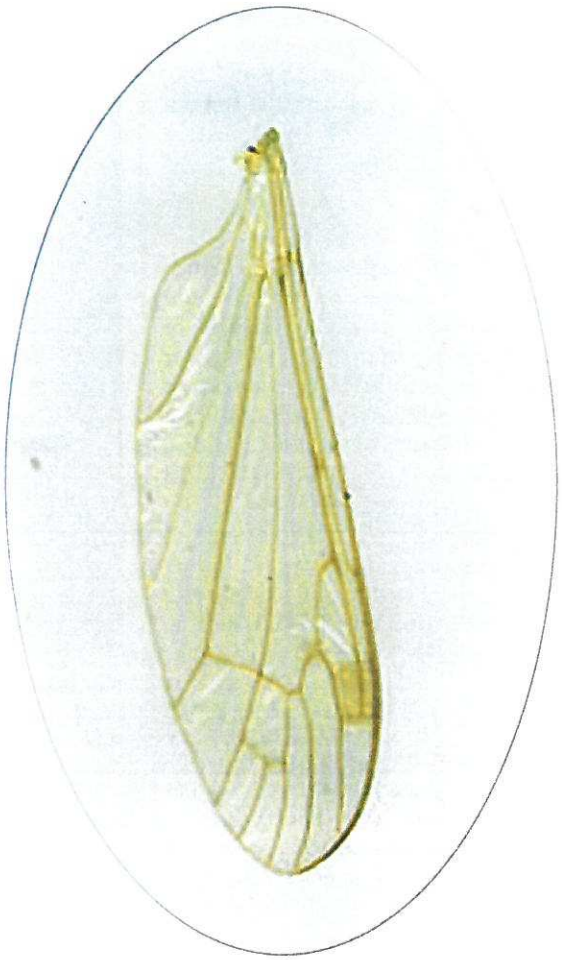


Figure 5. One of G. C. Bignell's microscope slides. The slide holds a wing of *Dicranomyia chorea* (Meigen, 1818).

Lectotype

Pezomachus hieracii (Bridgman, 1883) (= *Gelis papaveris* (Förster, 1856))

Tipulids

Bignell had a fascination with tipulid (crane-fly) wings, collecting and preparing 128 microscope slides (Figure 5). His slides of wings are accompanied by small handmade photographic glass plate negatives of the wings on these microscope slides. The wings cover British species, and were most likely used as a key to identify between different species of Tipulidae.

Friends reunited?

It is very possible that Bignell personally knew another of PCMAG's great collectors; James Higman Keys (1855-1941). Keys lived in Plymouth and, whilst working full time in his father's book printing business, amassed a large and important collection of British Coleoptera. The two contemparies contemporaries were experts on different Orders of insects, lived in Plymouth, and were fellows of the Royal Entomological Society during 1900 and 1910. Both Keys and Bignell have bookplates which were designed by 'J. M. Lauchton' (Figures 6 and 7). A recent discovery of a letter in the history files at PCMAG, confirmed that Keys definitely printed Bignell's bookplates; on the 13th June 1956, Mr Adams, the Keeper of Natural History at PCMAG, wrote a letter to J. H. Keys' daughter:

"The bookplates are most interesting because they are rather like the plates which your father produced for Mr Bignell's books."

Acknowledgements

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Figure 6. George Carter Bignell's bookplate, printed by James Higman Keys. Note the image of Bignell at the bottom right using his beating tray.

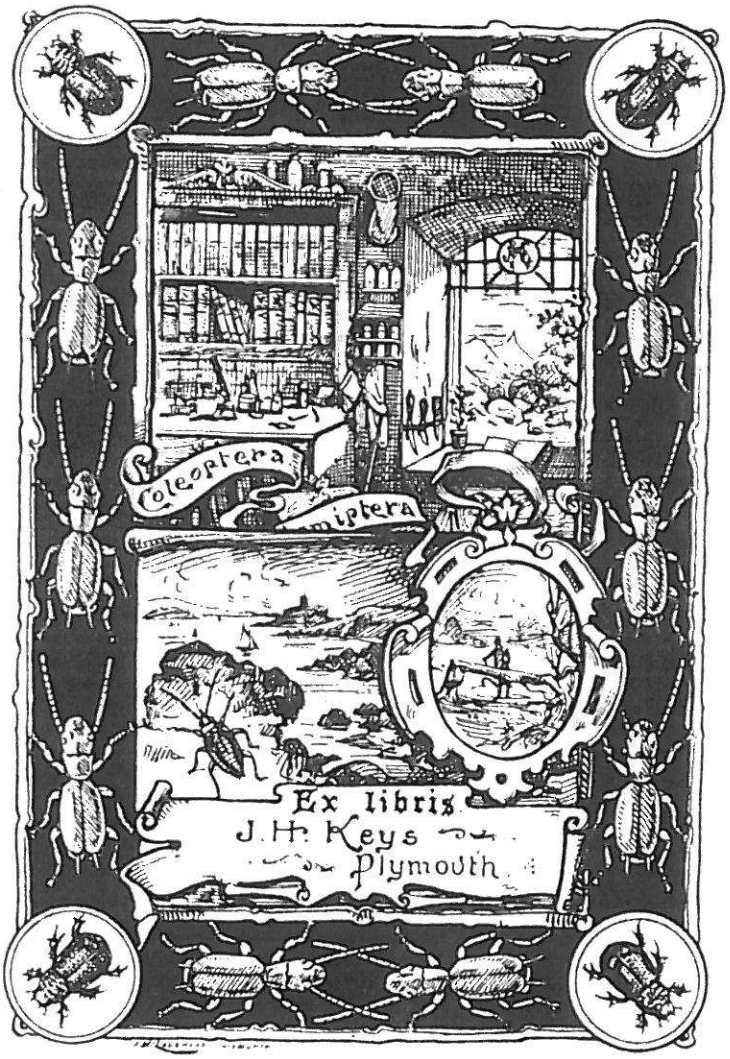

Figure 7. James Higman Keys' bookplate, similar in design to Bignell's. (Image copyright PCMAG.).

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