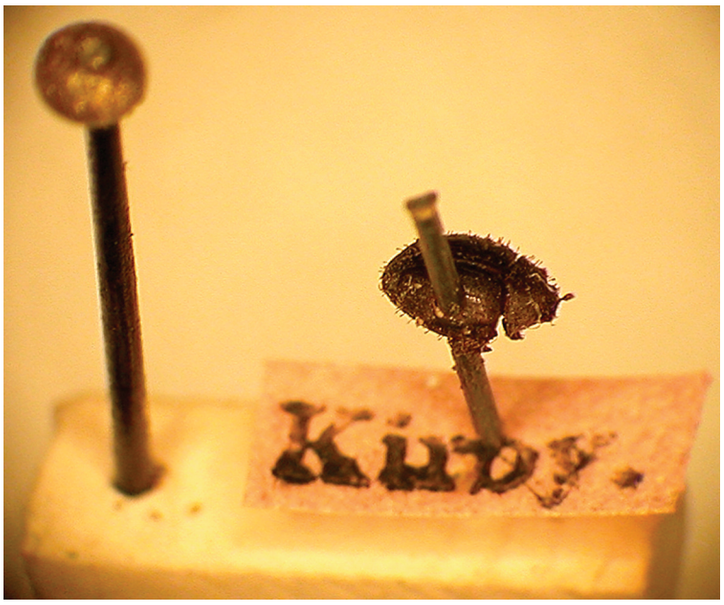

Fig. 1. The lectotype of *Cistela maritima* (Byrrhidae), the species described by T. Marsham in his *Entomologica Brittanica* (1802); the Manchester Museum.

The Manchester Museum's Entomology Collections

ARTICLE

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MM's Entomology Collections online: http://emu.man.ac.uk/mmcustom/EntQuery.php

The Manchester Museum is a large university museum with internationally important natural history collections. The Museum is one of the main attractions of the city, running in average some 200 public events and receiving some 300,000 visits each year. It is one of 32 museums in Britain with designated collections, announced by the Secretary of State on 24th June, 1997. Designation is a category given by the Government to identify non-national British museums with collections of pre-eminent importance.

The Manchester Museum is estimated to house some three million specimens of insects collected from all over the world, which are thought to make up the third or fourth largest depository in the UK, depending on group. The collections of dried insects specimens are housed in over 4,000 drawers and some 1,400 store-boxes, and historically are subdivided in two parts, the British and foreign insects kept separately. The particular strengths of the Manchester Museum's Entomology Department are the worldwide collections of Coleoptera, Dermaptera and Lepidoptera.

The origin of the Manchester's insect collections dates back to the foundation of the Museum by the 'Manchester Society for Promotion of Natural History' in 1821. This museum was acquired by the Owens College, the forerunner of the Victoria University of Manchester, in 1864. The New Museum was formally opened on June 8th, 1888 (see Alberti, 2009, for further details). The oldest insect specimens in the museum are the beetles collected by W. Kirby and described by T. Marsham in his *Entomologica Brittanica* in 1802 (see Johnson, 1996), for instance, the lectotype of *Cistela maritima* (Byrrhidae) (Fig. 1).

The formal birth of the Manchester Museum's Entomology Department was marked by the official appointment of the famous entomologist, John R. Hardy (1844-1921) as a 'Senior Assistant Keeper and Entomology Curator' in January 1908. The entomological collections however continued to be officially considered a sub-section of the Museum's Zoology Department. Hardy assembled and arranged the nucleus of the Museum's entomological collections and also obtained a lot of exotic material for the Museum, of which the C. H. Schill collection of world Lepidoptera was particularly important.

J. Hardy's successors, Harry Britten (1870-1954) and Geoffrey J. Kerrich (1909-2002), retained the title 'Assistant Keeper in Entomology'. H. Britten, who was described by W. D. Hincks as 'the greatest British entomologist since the days of Curtis and Stephens', was primarily responsible for building up the bulk of the extensive museum collection of British insects of almost all orders. He paid particular attention to the so-called 'critical groups in entomology' (parasitic Hymenoptera, Diptera, Thysanura, Phthiraptera, aquatic insects, and some others), which were largely ignored at his time by other entomologists. H. Britten was an active field worker who collected and recorded the fauna of Lancashire and Cheshire. His valuable card-index (in 25 drawers), based on his collecting

from 1920 until his death in 1954, is retained in the Manchester Museum.

Walter Douglas Hincks (1906-1961) was appointed as Assistant Keeper in Entomology in 1947, but in 1957 his title was changed to 'Keeper of Entomology'. W. D. Hincks wanted to make the Museum's Entomology Department the finest reference and study centre in the North and thus his term of the keepership saw a surge in curatorial activity and massive improvements to the collections. He commenced a total re-organisation and cataloguing of the entire insect collection and enlarged the departmental library. As a true scholar and recognized world authority on the earwigs (Dermapera) and fairy-flies (Mymaridae), W.D. Hincks elevated the taxonomic research undertaken in the Manchester Museum to the international level. Unfortunately, Hincks died in 1961 at the peak of his career.

Alan Brindle (1915-2001) was the next to be appointed Keeper of Entomology, who reorganized the museum collections of almost all insects, except for beetles, and also redesigned the new public entomological display. Furthermore, as a successor of Hincks, A. Brindle took over his interest in the Dermaptera and soon became a world authority on them. Thanks to the taxonomic studies on earwigs by Hincks and Brindle, the Manchester Museum possesses the finest collection of Dermaptera in the UK. Yet Brindle significantly augmented the Museum's Diptera collection due to his own collecting during the survey of the Diptera and smaller aquatic orders of the north-west. This survey resulted in the assemblage of a large spirit collection of adults, mainly of the Tipulidae and other Nematoceran families, and of Diptera larvae of all families.

The next Keeper of Entomology was Colin Johnson, a respected authority on Ptiliidae, Cryptophagidae and expert on several other groups of Coleoptera. His major curatorial achievements were a complete revision of all families of British Cucujoidea and intensive curatorial work on other groups of British beetles, which led to a significant extension of the existing collections (180 drawers in 1962 *vs*. 306 at present), major identification work on and reorganization of a substantial part of the foreign Coleoptera, and acquisition, mainly through own fieldwork and taxonomic studies, of a significant amount of material on smaller beetles, which previously were poorly or not represented.

The title 'Keeper of Entomology' existed until 2003, when it was changed to 'Curator of Arthropods' as a result of a complete restructuring of the Museum and its staff: the role of Keepers ceased and new posts of Curator were created. The word 'entomology' disappeared from the title because such arthropod groups as Arachnida, Myriapoda and Crustacea became the Curator's responsibilities as well. From 2004 until the present time, the staff of the Museum's Entomology Department consists of the Curator (Dmitri V. Logunov) and the Assistant Curator (Phillip Rispin), plus the Honorary Curatorial Associate (Graham Proudlove) and a variable number of volunteers.

Fig. 2. The male and female of the extinct earwig *Labidura herculeana* from St. Helena; the Manchester Museum.

Some of Manchester Museum's notable collections include:

Comprehensive collections of British insects consists of over 720,000 specimens belonging to 13,845 species, with an average of 56% species coverage for the British fauna (ranging from 100% in Raphidioptera/Dermaptera, 92% in Coleoptera to 43-48% in Diptera and Hynemoptera, and only 8% in Collembola). The collection currently occupies 1,264 drawers in 102 wooden and steel cabinets. A full account of the Museum's British entomology collections was provided by Logunov (2011), and the collections of British Coleoptera were described in detail by Johnson (2004, 2009).

The C.H. Wallace Pugh (1889-1973) Diptera collection (dried specimens), made principally in Shropshire and North Wales; received in two batches: the first part in 1972 as a donation, with the remainder and his archive in 1973 as a bequest after Pugh's death. His complete collection contained about 20,000 specimens of well over 2,000 species, and at that time it was the finest collection of its kind existing in private ownership. The C.H.W. Pugh collection formed the basis of the present Museum's collection of British Diptera (for its full account, see Logunov, 2010).

The worldwide collection of Dermaptera (3 cabinets and 60 drawers), being probably one of the most comprehensive earwig collection in the world, with over 11,000 specimens of 975 species, of which over 276 species names are represented by primary types, plus an unknown number of undetermined species. The original collection of the late W.D. Hincks was purchased by the Museum in 1961 and formed the nucleus of the Museum's earwig collection. Then it was significantly extended by A. Brindle during the course of his extensive taxonomic

research on the earwigs. A species of special importance in this collection are two specimens of the extinct giant earwig *Labidura herculeana* from St. Helena, the largest earwig species in the world (Fig. 2).

The C.H. Schill collection of world Lepidoptera (1027 drawers and store-boxes), containing over some 40,000 specimens of over 8,000 species. The collection is worldwide in scope and includes all families of butterflies, larger moths and also 40 drawers of Pyralidae with other micro-Lepidoptera. Two smaller collections of foreign Lepidoptera by C.O. Trechmann and A.L. Darrah were incorporated in the C.H. Schill collection in the mid-sixties. The collection of larger moths has been re-curated and re-housed in 39 new Hill cabinets.

The D. Longsdon (-1937) collection of world Papilionidae *sensu lato*, with the inclusion of *Parnassius* (including some 15 types by A. Bang-Haas). This collection was received by bequest of David Longsdon in 1937-38 and still remains in 12 original cabinets of 288 drawers, containing yet unknown number of specimens. The collection is well set and labelled (dated from 1890 to 1936), and arranged according to zoogeographic regions. It contains many currently red-listed or threatened species, for instance, a series of 6 specimens of the Corsican Swallowtail (*Papilio hospiton*), one of Europe's most seriously endangered butterflies (Fig. 3).

The historically important Lepidoptera collection of Joseph Sidebotham (1823-1885), consisting of two 40- and 32-drawer cabinets according to macro- and micro-Lepidoptera, and was received in 1919 from his son. It is a good example of the Victorian private entomological collections (Fig. 4). All specimens are in perfect condition, reliably identified, but only a few of them are labelled. It is known however that the majority of them was collected in Britain in the late 19th century, and some might have originated from France.

The collection of micro-Lepidoptera by Lord T.G. Walsingham (1843-1919), a total of 2,289 specimens (locality labels are poor). This collection was received in several instalments over a period of 20 years (from 1907 to 1927) through the British Museum of Natural History, as an exchange for one of the two

Fig. 3. The Corsican Swallowtail (*Papilio hospiton*) from the D. Longsdon collection of Papilionidae; the Manchester Museum.

Fig. 4. A unit-tray of various colour morphs of the Garden Tiger Moth (*Arctia caja*) from the J. Sidebotham Lepidoptera collection; the Manchester Museum.

specimens of the famous Manchester Moth, *Euclemensia woodiella* (see Logunov, 2011, for further details).

The worldwide collection of Cassidinae of the late Franz Spaeth (1863-1946), one of the best collection of the group in Europe; purchased by the Museum in 1950, thanks to the generous financial assistance by Robert W. Lloyd (1868-1958). The collection contains over 20,000 specimens of yet unknown number of species, with over 3,000 types (see Hincks, 1950). However, the collection needs a critical assessment on the actual status of types (partly done by L. Borowiec, who nowadays is the main world authority on the Cassidinae).

The worldwide collection of Staphylinidae of H.R. Last, containing well over 40,000 specimens of yet

unknown number of species, of which 392 species are represented by type specimens. Last donated his specialist Staphylinidae collection to the Museum in 1992 and his British collection to his close friend Jon Cooter. Lack of space and having personally assembled a very good collection of British Coleoptera himself, Cooter donated the British material to the museum in 1993. Last's collection also contains a few specimens from other Orders and an archive of 273 items, including Last's notebooks. These notebooks are important, as most of the specimens in this collection have a letter and a number written on the back of the card mount which cross-reference with notebook entries invariably containing greater detail than is present on the mounting card. Originally the collection of Staphylinidae was acquired in a home-made 75-drawer cabinet, and is currently undergoing a complete re-organization and re-curation: over 17,000 specimens have already been re-pinned and re-housed in 60 new drawers. It is generally held that Last's world-wide collection of rove-beetles, built up over 60+ years and containing specimens from all contemporary Staphylinidae authorities, was the finest and one of the largest collections in private hands.

The Manchester Museum's holding of type specimens, primarily in the collection of foreign insects, is over 12,000 specimens representing some 2,300 species (see Johnson, 1996). However, this figure is beyond doubt an underestimate, and the current number of types is much higher and remains to be counted. There are types from authors such as A. Brindle, G.H. Carpenter, W.D. Hincks, C. Johnson, G.V. Nikolaev, R. Petrovitz, E. Reitter, F. Spaeth, B. Wagener, and many others. A production of a complete catalogue of Manchester Museum's entomological types is seen as a priority for the curator for the foreseeable future.

The Manchester Museum also has a substantial amount of undetermined material: viz., 287 store boxes of over 50,000 mounted and labelled beetles from all families and from all over the world; plus 126 boxes with numerous papered specimens of Indian Orthoptera, Neotropical Lepidoptera (particularly, Geometridae), Finnish beetles, and other groups.

Nowadays, the work of the departmental staff is quite diverse and focuses on the following aspects:

(1) Documenting of all insect and arachnid collections (slowly, group by group) and of corresponding archives in order to make them better accessible and used. Manchester Museum's online database already contains over 80,000 records incorporated during the last five years, and this information is readily accessible online via the Museum home page <http://www.museum.manchester.ac.uk/> (the tab 'Our Collections'), or via a direct online access <http://emu.man.ac.uk/ mmcustom /Ent Query. php>.

(2) Ongoing re-housing and re-curating of the departmental collections. For instance, the collection of British Coleoptera has been recently re-housed in 23 new steel 15-drawer cabinets, and the H.R. Last collection of rove-beetles is currently being re-housed. Two years ago, the collection of Mantodea was thoroughly re-curated and (re)identified, including all the available papered and newly acquired material. It now contains 198 species (some 1,000 specimens) housed in 26 new drawers (Fig. 5). A good start has been done with re-curating of the Museum's collections of Phasmida, cockroaches, spiders, Myriapoda and some other groups.

(3) Teaching in several courses and modules for the University of Manchester, for instance, in the Urban Biodiversity and Conservation course.

(4) Proactively contributing to the extensive educational and outreach programmes run by the Manchester Museum. Although many museum public events include bug-related activities and/or entomological material, in order to further promote the entomology and taxonomy, special events are also planned and run. For instance, the '*Phasmid Days*' (run three times) and the '*Bug Days*' (two times, usually linked with the corresponding National Insect Week). These events include

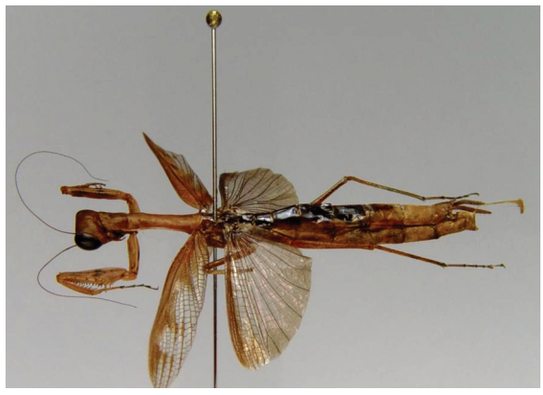

Fig. 5. The female holotype of *Dysaulophthalma nathani*, a newly described taxon from the re-curated Indian collection of Mantodea; the Manchester Museum.

Fig. 6. Handling a female of the Australian phasmid, *Eurycnema goliath*, during the Phasmid Day; the Manchester Museum.

Fig. 7. A drawer of *Parnassius* species used in the temporary exhibition 'Darwin Extravaganza' at the Manchester Museum (2009-2010).

numerous temporary displays of live insects/spiders and of Museum's insect collections, handling activities for visitors (Fig. 6), talks and behind-the-scene tours to the Entomology store. Enthusiasts from local/national nature history societies (e.g., colleagues from the Phasmid Study Group, the British Tarantula Society, the Manchester Invertebrate and Spider Club, the British Freshwater Association, and others) willingly participate in our events, helping to make them quite a success. Thousands of museum visitors of all ages enjoy their discoveries of creepy-crawlers and their importance and learn about the value of museum natural history collections. More specialized events, such as the Coleopterist Meetings (three have been organized to date), are intended to gather all those who are involved in studying beetles, both professionals and amateur experts from the North-West.

(5) Contributing to re-display of old and/or organization of new public galleries and exhibitions. In 2005-2009, the Manchester Museum has had 29 temporary exhibitions of varying sizes and duration, and almost each of them contained several or many displays with insects and other arthropods (Fig. 7).

In the last five years we have:

Loaned: 15,350 specimens, of which 530 were types.

Received: 1,900 new specimens by donation, exchange and staff research.

Received: over 70 new types by donation and research based on museum's specimens.

Received: over 345 research visits to the collections.

Run: 91 behind-the-scene tours (over 550 visitors altogether).

Run: 57 various public events (talks, outreach programmes, handling tables, etc.).

Answered: over 1,100 enquiries.

Published: 49 papers by the Curator and Honorary Curatorial Associate.

Apart from usual shortage of staff and under-funding as in other museums, the main challenges with the Manchester Museum's entomological collections are the out-of-date nomenclature of many foreign groups and even of some British insects (e.g., Diptera), the large D. Hincks & J. Dibb's world collections of Chrysomelidae and Curculionidae being still in old store-boxes and cartons and needing urgent re-housing, and a large amount of papered and/or mounted but undetermined material. The departmental staff, honorary curatorial associate and volunteers do their best trying not only to improve the storage facilities and documentation, but also to increase the use of the collections under their care and to promote museum-based taxonomy and entomology. Recently, we started a new museum blog '*Entomology Manchester*' (online at: http://entomologymanchester.wordpress.com/).

Although the Manchester Museum's entomology collections constitute an important international working resource, they unfortunately remain under-publicized and under-used. It is my hope that this article will encourage fellow-entomologists, especially those from the north-west, to use the Museum's insect collections more intensively. The collections are fully accessible for anybody wanting to study them. Lists of species for individual insect groups can be obtained from the curator. Enquiries about the borrowing of specimens, access to the collections, and associated library/archives or volunteering in the Department should be addressed to the curator, Dr Dmitri Logunov <dmitri.v.logunov@manchester.ac.uk>.

Acknowledgements

I wish to cordially thank the departmental Honorary Associate and all volunteers who have been giving us their invaluable help in (re)curating, documenting and maintaining of the Museum's entomology collections, especially: Yvonne Golding for the re-curating of Phasmida collection and for the continuous help in the organization of Phasmid and Bug Days; Martin Stiewe for the complete re-curation and (re)identification of the entire Mantodea collection; Graham Proudlove for the re-curating of the Myriapoda collection; Hovhannes Takukyan for the help in re-curating of spider collections; Janette Talbot, Eleanor Beasly and Amelia Forde for re-arranging and documenting of the entomology archives.

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