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William Hunter's Insect Collection and emerging descriptive taxonomy in the Eighteenth Century

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This is a brief account of the insect cabinets of William Hunter (1718-1783). The collection is contained in 127 original drawers and numbers about 7,600 specimens. It is an example of an eighteenth century collection which is substantially intact with contemporary documentation. It provides a resource of great interest for the history of both science and exploration. Dating from the most active period at the beginning of descriptive taxonomy, it is also of value as a repository of primary types. Possibly over 550 name-bearing specimens can be found, mainly described by Johann Christian Fabricius (1745-1808), the 'entomological Linnaeus'. There are types from other authors also, principally Guillaume-Antoine Olivier (1756-1814) and Dru Drury (1725-1804).

Background

The foundation of the Hunterian Museum, University of Glasgow, is based on the bequest in 1783 of William Hunter's collections to his *alma mater*. The material arrived from London in 1807 and the museum built to house it at the old university city centre location opened that year to become the first public museum in Scotland (Brock, 1980; Markus, 1985). William's younger brother John, the comparative anatomist and surgeon, also made a collection that became the basis of the Hunterian Museum of the Royal College of Surgeons, London. This collection is perhaps less eclectic than William's, whose private museum contained paintings, coins and medals, antiquities and printed books as well as geological and natural history specimens. Both museums have the brothers' respective medical and other material illustrative of their professional interests in anatomy and pathology. In some instances confusion exists amongst authors and commentators as to which brother is responsible for which of the two collections. Perhaps this is not too surprising given their similar interests and medical practices. In the case of entomology the situation is relatively simple. William put together a large collection of dry-pinned insects, incorporating the collections of contemporary naturalists. John had a curiosity for bees and other biologically interesting species and dissected and preserved in line with his studies in comparative anatomy.

William Hunter's collections

William Hunter was not a practising entomologist but one of the *virtuosi* and *litterati* of the period living in London. He built a private museum in 1767 as extension to his property in Great Windmill St, near Piccadilly Circus, where he lived, taught anatomy and entertained like-minded gentlemen.

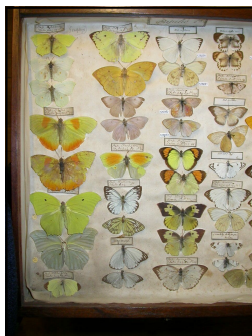
William Hunter had begun to collect seriously from about 1763. He became financially secure from about 1759. In modern parlance he had millionaire status, acquired from his success as an obstetrician and from investing in government bonds and the stock market. Anatomical preparations had already accumulated, being part of his professional development. Between 1770 and 1782 he made considerable expenditure on natural history specimens and built up collections of other items as mentioned above.

One of the earliest dated insects in Hunter's collection, the Goliath beetle bought in 1766, was to become the holotype for *Goliathus goliathus* (Drury, 1770). Much confusion surrounds this beetle, which never belonged to Drury and therefore discussion on its history is occasionally inaccurate (e.g. Staig, 1931). The controversy that arose between Hunter and Drury concerning its ownership and the circumstances of its illustration, has been described in detail by Brock (1977). The species was to remain extremely rare in collections, only a handful being known and scattered mainly in European royal collections, until the locus of native populations was found in the interior of Africa in the mid nineteenth century (Wood, 1883). Hunter's collection contains early material acquired from other sources such as specimens from Fothergill and Yeats (see Appendix 2). His cabinets compare well with others from the period such as Joseph Banks' now in the Natural History Museum, London, which numbers just over 4,000 specimens (Fitton & Shute, 1994).



The Cabinets

The mahogany cabinets appear to date from after the collection came to Glasgow and may have been manufactured in Edinburgh (David Jones, pers. comm.). This might have been necessitated by damage to the original carcasses. Most importantly, however, the drawers are original and the layout of most of the specimens is retained. This is supported by two principal pieces of evidence as well as the drawer construction.



Firstly, Hunter's collections were listed by his executors. These documents survive, completed in the case of the insects in 1785, and herein referred to as the *Trustees' Catalogue*. This manuscript is laid out principally in the order given in Fabricius (1781) and cabinet labels can be seen to relate precisely to the *Trustees' Catalogue* in substantial parts of the collection. The *Trustees' Catalogue* ceases to list specimens part way into the Diptera for reasons that are not presently very clear and many specimens thereafter lack also cabinet labels. This is disappointing

not least because Fabricius' own collection of flies in Copenhagen is described as a 'tragedy' (Zimsen, 1964), having been almost destroyed by insect damage. Of course, after 230 years some interference in arrangement can be detected but there is relatively little, affecting some orders of insects more than others. The *Trustees' Catalogue* does contain errors as the authors were not experts and fairly obvious mistakes in juxtaposition of specimens and labels were diligently recorded or possibly created.

Secondly, it has been found during recent curatorial work that the papers lining the drawers are water-marked, dating them (Shorter, 1957) to between c. 1763-1777. These papers are loose, overlying presumably older paper glued to the cork lining of the drawers. As a result, the insect and cabinet label pins pierce the paper (mainly) in accordance with the layout given by the *Trustees' Catalogue*. Thus it can be seen that the occasional wrongful relationship between cabinet label and specimens predate the compilation of the *Trustees' Catalogue*.

The pins used for the specimens conform with the types used in other contemporary collections such as those in the Linnaean collection (Mikkola, 1983), although there is great variety of length, shape and thickness. An investigation of these and pin manufacturing technology of the period linked to entomological field craft and developing collection management procedures of the eighteenth century would make a worthwhile study. Douglas (2004) touches on the instructions to collectors issued by Drury (see also Noblett, 1985). Drury was at pains to point out that collectors should not insert large pins through small insects but perhaps occasionally there was little alternative for the person in the field. Smeathman complained that his belongings were systematically pilfered while he was in Africa and needed more pins to be sent from London (Douglas, 2004). Given that many specimens in Hunter's cabinets are almost perfect with full complements of legs, wings and antennae, early collectors (such as those listed in Appendix 2) deserve admiration for the standard of their efforts.

A comprehensive description of Hunter's cabinets and drawers was drawn up in manuscript by Jim Flanagan in 1984. These data provide the basis for the lists in the Appendix and most usefully assist in locating individual specimens in each drawer. Earlier listings, apart from the *Trustees' Catalogue*, are found in Kerr (1910), Staig (1931-1940) and a card index was created by a Miss H.E. Glen in 1916.

The status of individual specimens

In accordance with apparently normal practice for the period it is relatively unusual for any labels to be on the specimen's pin. One or two carry quite specific locality information on the cabinet labels such as a lycaenid obtained from T. P. Yeats. Otherwise careful association between species identification, internal evidence (such as pins and pinning style), archives, illustrations and published descriptions is usually necessary to establish provenance. Applying historical knowledge in addition to taxonomic expertise can reveal a great deal more about the status of many of the individual specimens that may not be immediately obvious.



The collection is of a synoptic nature in the sense that it appears to present a contemporary view of the knowledge of insect diversity almost regardless of the rarity of individual species. There are usually two examples representing each name. This is immediately noticeable in the butterflies (see Fig. 2). Often the

two specimens are shown one with the upper side and the other the underside visible. In sexually dimorphic species there may be one or two of each sex although at least in some cases this is due to lack of appreciation that they were the same taxon. An example of this phenomenon is provided by ‘*Papilio*’ (= *Cressida*) *cressida* collected in northeast Australia by Banks during Cook’s first voyage. When the Endeavour had to be repaired following damage on the Barrier Reef, the naturalists had many days in which to collect around what is now called Cooktown. Examples of *cressida* were described by Fabricius in 1775 from males, two examples of which can be seen in Glasgow (Fig. 4) and two in London in the Banks’ Collection, NHM (vide Zimsen, 1964). Two females stand in Hunter’s collection without any specific epithet (fig. 5) as they were not recognised as *cressida* until they had been described as a new species, *harmonia*, by Fabricius in 1793. By this time Hunter’s collection had been catalogued by the Trustees and so the cabinet label does not show the name he bestowed latterly. Again, two examples of each stand in both London and Glasgow. All of these specimens, which could only have originated from one collecting event, most probably have equal status although only the London ones are listed by Zimsen (1964).



Male cressida



Female cressida

Fabricius and

the birth

of modern descriptive insect taxonomy

Fabricius described more than twice as many butterfly species than his mentor, Linnaeus. Not only was he able to benefit from a greater number of expeditions and expanding trade by the emerging European colonial powers but also he was entomologically single-minded. He travelled widely and the situation outlined above, whereby very often just two specimens of each species are in the cabinet, indicates a systematic approach to his studies. The situation also lends support to the working practices of Fabricius who got access to the bulk material as it became available to the London-based collectors, whether it was from Smeathman’s labours in Sierra Leone, Masson’s in South Africa, Koenig’s in India amongst others. Armitage (1958) and Hope (1845) give brief summaries of Fabricius’ visits to London, to which he came seven times between 1767 and 1787 in order to consult the various museums including that of Hunter. It is most unlikely that exploring naturalists or mariners on their various voyages would only ever collect just two of everything.

Harish Gaonkar (pers. comm.) in his detailed readings of all of Fabricius’ published work and scattered archives has established that in some instances specimens belonging to a series (now we would refer to these as syntypes) were divided between several collections. This is alluded to by Fitton & Shute (1994) and given slightly more substance by Carter (1987) in which he says ‘ [Fabricius was] at work amongst the Banksian arthropods, both before and after the *Endeavour* voyage, and an agent in distributing duplicate specimens to other collections such as William Hunter’s and Dru Drury’s’. Fabricius would examine the raw material and retain some for himself, return examples to the originator and distribute ‘duplicates’ to the other cabinets (Gaonkar, pers. comm.). It seems that Hunter was intended to receive two of each kind where this was possible. The travelogues (e.g., Fabricius, 1787, from Austria, Germany and Russia) are important sources of information for determining the various collections and collectors that he visited and almost always he was given specimens of new species which were subsequently described. He was presented with examples of the species described by his hosts and these also entered the Fabrician collection in Copenhagen. In many ways this whole methodology, although not explicitly stated, can be recognised as the modern idea by which a taxonomist establishes the right to hold back example (s) for his or her own research when agreeing access with the museum or owner.

The implication of the above is that although Fabricius’ published descriptions name a specific source from which he derived his descriptions, the type series does not always reside there exclusively. A straightfor-

ward example of this is given above with '*Papilio cressida*'. This is evident even more clearly with rare specimens that originate uniquely from one place, such as some restricted island species from the various Cook's voyages, of which examples can be found today in London, Glasgow and Copenhagen. The source of material given in the published descriptions of species from the first voyage is credited by Fabricius to Banks (for obvious reasons as he had collected the specimens and they were first unpacked in his house upon return from sailing around the world). At the present examples of many of these can be found in different museums and are candidates for consideration as part of syntypic series.

This situation would explain, for example, the existence of Drury material described by Fabricius in Copenhagen although von Hayek (1985) felt at the time unable to accept Zimsen's (1964) claim for these being types. A literal acceptance of the original placement of the specimens using a restrictive latter-day application of the modern rules of nomenclature may impede interpretation. The type concept as we recognise it did not then exist and internationally agreed codification of nomenclatural rules was still over a century in the future.

Modern Usage

In tracking types necessary for revisionary work much time can be spent by taxonomists even locating specimens before deciding on their status. One of the problems in the past is that the Hunter's insects in Glasgow have not been utilised perhaps as much as they deserve partly due to geographical isolation (i.e., having become distant from London) and partly on perceptions as to the content. In an interesting account of Fothergill including discussion on Smeathman (Shillito, 1976), there is no reference to Fabricius' role in general as the principal insect taxonomist of the period, developing the work of Linnaeus as one of his keenest pupils. Fabricius described most of the new species sent by Smeathman from Sierra Leone. The existence in the Hunterian Museum, as given in Staig (1931-1940), of many Fabrician types from Africa, Cook's voyages and elsewhere around the world should naturally lead researchers to Glasgow. Neither Fabricius nor Hunter are in the figure ('Heroes Scientiae' in the 18th Century) in which appear the other relevant personalities of the period (Shillito, 1976) even though Fothergill left all or part of his zoological collections to Hunter in his will as clearly stated in Payne (1889).

Recently, a search for a beetle was directed to the Hunterian and specimens were easily located in Hunter's cabinet. Julio Ferrer, research associate of the Swedish National Museum of Natural History, had been seeking these 'missing' types for a considerable period but had been misled by Fabricius' statement that they were from Drury's collection. The species, '*Tenebrio*' (*Tauroceras*) *cornutus*, had been sought unsuccessfully in London, Paris, Copenhagen and other known repositories of Fabrician types until finally they were located in Glasgow. The specific process by which these particular specimens were acquired by Hunter is not known. One of the problems with Drury's main collection is that it was split at auction after his death. However, earlier movements of material by exchange, gift or purchase between eighteenth century London-based collectors made during their joint life times, are difficult to establish from contemporary documentation. Von Hayek (1985) maintains that, because independent corroboration cannot be traced concerning such transactions, no credence can be given to any claims that they did. However, in the case of the specimens of *T. cornutus* in Glasgow clearly they made the transfer - the actual pinned insects are their own evidence. It is misleading and over-simplistic to suggest that because Drury died after Hunter the latter could not have any specimens from the former. As contemporaries, sharing friends and common interests, added to the fact that Drury was sometimes impecunious and Hunter was a rich man, it is not at all surprising to find Drury specimens in Glasgow, even without the involvement of Fabricius. Specimens of species described by Fabricius from other collections but offered as part of Drury's sale are listed, their existence accepted without comment by von Hayek (1985), so it was clearly a regular two-way traffic. There are several other examples of Drury specimens in Glasgow, candidates for type status, and undoubtedly more will be revealed with time. The revision of *Tauroceras* and some other tenebrionids can now take place (Ferrer, et al., 2004).

It should be noted that after Hunter's death in 1783, his museum remained in London, managed by his nephew, Matthew Baillie, who had inherited it for his own use until it reached Glasgow in 1807. During this intervening period the insects were still available for consultation and were seen again by Fabricius. Indeed others, such as Olivier only came to London during this period and got access to the collection - his handwriting appears on a number of labels and he acknowledges the access provided by Hunter's nephew (Olivier, 1789-1808). This provides an example of the influence of the English capital on cultural life as once the collection moved north it became metaphorically 'moth-balled'. Thereafter, for the entire nineteenth century few if any records of visiting entomologists consulting it or being concerned for its existence

can be traced. Only in the early part of the twentieth century was any attention given to it (Kerr, 1910). Published catalogues of types (Staig, 1931-1940) were started but cover only slightly more than half the Coleoptera.

Future work

As curation has become more pro-active within the last few years more attention is being paid to Hunter's insect collection by contact with experts in particular groups. In order to encourage them to visit Glasgow financial assistance is sometimes possible. The specimen level database, a publicly accessible version available through <<http://www.hunterian.gla.ac.uk>>, has the capacity to incorporate digital images. The resulting catalogue will be enhanced also by deeper historical and systematic research. This increased awareness of the value of the collection as a primary resource will broaden the user base. An example of this is provided by Douglas (2004) as well as more traditional taxonomic revisionary work (e.g. Staines, 2002).

Decision-making on type status is complex and a great deal of work will be necessary with primary sources such as 'Jones's *Icones*'. William Jones, of Chelsea (died 1818), produced a set of watercolours drawn from specimens in the cabinets of the London-based collectors. They were never published but the originals are in Oxford (Hope Dept of Entomology). These paintings, as with the published illustrations in Olivier (1789-1808), were based on specimens some of which may yet exist in Glasgow. In several cases Olivier's figures are based on specimens in Glasgow and his handwriting can be seen in the drawers.

A number of other initiatives are being pursued. Seeking external funding for assistance with cataloguing is high on the agenda. To this end a research plan has been drawn up. The cabinets and drawers would benefit from attention and small amounts of restoration by a furniture conservation specialist. A metallurgical analysis and historical research into early insect pins might be revealing. A more ambitious aim might be to place the period during which Fabricius was active into a wider entomological context such as Farber (1982) has achieved for ornithology.

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