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commitment to the British insect fauna. At the NHM a new programme of work is being developed on the British insect fauna, including the collections, and involving maintaining a taxonomic database. This is partly in response to the UK Biodiversity Action Plan.

**Collections – scope for rationalisation.** The group agreed that there is very little scope for rationalisation (between institutions) of current holdings. Any benefits would be far outweighed by the various costs involved. The real scope for rationalisation between collections lies in future acquisitions.

Anyone wanting to find out more about any of these topics, or make any comments, is encouraged to contact **any** member of the group (listed with contact details in *The Biology Curator* 5:5). The next meetings is to be held in Cardiff in early November, when new topics for discussion will include deposition and curation of survey and voucher material and the collections of deceased amateurs.

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## CULTIVATED VOUCHERS IN HERBARIA

John Edmondson

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North-west England is an area rich in historic gardens which have been a major route for plant introductions since the late 18th century and which continues up to the present day. It is not surprising, therefore, that cultivated vouchers are relatively strongly represented in the Liverpool Museum herbarium (LIV) in that more than 13,000 of our 300,000 specimens appear to be of garden origin. I would like to highlight a few of the problems this poses, and outline some solutions which are being applied here.

### 1. Who is the collector?

It is obvious that cultivated vouchers have two kinds of collectors: the person who pressed the specimen (preparator), and the person who obtained plants or propagules in the wild (field collector). From the point of view of curatorship, determining who was the field collector is sometimes problematical even though their identity is a pointer to the site and date of the introduction from the wild. From a nomenclatural point of view it may be more significant to record the name of the person who prepared the dried specimen, especially if they were also responsible for naming it and for first publishing the name. A further category of collector is the person who amassed the collection (the herbarium or garden proprietor). Museum collection records can confuse these three categories of collector, and when documenting such collections on computer it is necessary to differentiate between them.

### 2. What is the date of collection?

Confusion over dates of collection is widespread; for example, in the J.E. Smith herbarium<sup>1</sup> a date sometimes appears as part of the specimen data, but this refers to the date of preparation rather than of collection in the field. Examination of watermarks has shown that some collections were mounted up in batches, and this helped to confirm that the dates were not those of collection in the wild. In the Joseph Dickinson herbarium<sup>2</sup> the widespread practice of noting the year in which the plant was first introduced to cultivation in Britain is believed to have been followed. Although dates from the 18th century and earlier clearly belong to this category, it is more difficult to deal with recent introductions because not all the dates recorded by Dickinson agree with the conventional published dates of introduction such as those found in *Hortus cantabrigiensis*.

### 3. Where are the specimens filed?

In principle, all our cultivated vouchers are filed in separate folders within the familial and generic sequence of the Extra-European herbarium. Thus the 'cultivated' category is treated as being equivalent to a geographical area of the kind adopted in most large herbaria. However, this presupposes that the specimen is clearly a cultivated one; but many occupy a grey area between obvious cultivated status and definite wild origin. Indeed the folders should more correctly be labelled 'cultivated or unlocalised', since specimens with no obvious provenance are filed here *faut de mieux*. There has also been a tendency, when filing specimens of British origin, to incorporate cultivated vouchers into the main British and Irish herbarium because they arrived as an integral part of a collection acquired from elsewhere. While preparing a database of Red Data Book specimens from the British and Irish herbarium which supposedly contains only wild-gathered plants, I found that 150 of the 4000-odd specimens were either clearly labelled as being of garden origin, or were labelled as coming from sites remote from their known native distribution in the UK. Most of these latter sites were later found to be the places where the 'collectors' lived.

### 4. Why prepare vouchers of cultivated plants?

Although garden plants are generally more accessible than plants gathered in the wild, and certainly the facilities for pressing them should be far better, this does not mean that collections are rich in such material. It is understandable that garden staff are sometimes unenthusiastic at the prospect of seeing their flowering material hacked off and pressed, never again to be seen by their visitors. This is particularly true of the plants most highly prized for showing, such as Orchids. On the other hand, garden plants (especially those of wild origin which are not pre-selected to be easily propagated) have only a 'half-life' in cultivation; they 'decay' at varying rates dependent on factors such as their susceptibility to pests and diseases, their longevity as perennials, or changing fashions in decorative planting. This is an area where further research is needed, especially where *ex-situ* conservation is the aim. 'Press them before you lose them' might therefore be an appropriate policy, in line with the precautionary principle.



Another reason for preparing a voucher might be to make a record of the date on which a new variety had been developed or discovered. The 1995 edition of the International Code of Nomenclature for Cultivated Plants<sup>3</sup> introduced the concept of Standards (equivalent to Types in conventional plant nomenclature); the following British institutions are recognised repositories listed in the Code's Appendix 6: University of Cambridge (CGE), Royal Botanic Gardens at Edinburgh (E) and Kew (K), the Hillier Arboretum, the Liverpool Museum (LIV), University of Reading (RNG) and the Royal Horticultural Society, Wisley (WSY) (see below).

More often, vouchers are simply a way of preparing a sample which can be sent elsewhere for identification; living material often does not travel well. There is thus an argument for developing links between gardens rich in horticultural rarities and museums able to curate the vouchers and administer loans. Ness Botanic Garden<sup>4</sup>, for example, adopted a policy between 1967 and 1976 of recording the location of each species and variety in the garden and of preparing a dried voucher specimen for the herbarium. These vouchers are frequently consulted by visitors to the Liverpool herbarium and on loan, which enhances the information on the plants in cultivation and thus contributes to the objectives of the Botanic Garden.

### 5. Why are older specimens important?

It is sometimes thought that freshly gathered material is inherently more suitable for research than previously preserved material. It is odd, to say the least, that the huge investment in past exploration and collection should be dismissed in this way. I suspect that it is partly due to the attitude of bodies funding research towards the 'ownership' of the collections in which they do not hold a direct stake. This view also comes from a realisation that the gradual increase in the size of collections often brings with it an increase in space requirements and running costs which increasingly limits the discretion of research budget holders to retain such material in the longer term.

Different arguments apply to historic specimens, however, because they are often irreplaceable in the sense that the communities from which they were gathered have often been destroyed. In the case of garden plants, this is very often the case, in that there is a constant flux of improvement, selection and reintroduction which displaces early plant varieties from cultivation. Unless vouchers are prepared, along with illustrations prepared by specialist artists, horticulturists may lose all trace of earlier varieties apart from the often vague published descriptions. This is particularly true in the North of England, where florists' societies in the 18th and 19th centuries were the focus of a vigorously competitive hobby by growers of *Auricula Primulas*. Some of these earlier varieties are now only known from single paintings such as those of James Bolton (1735-1799)<sup>5</sup>, a Yorkshire artist and naturalist who specialised in making drawings of cultivated plants from the living collections of his patrons. We do not know whether Bolton ever made pressed vouchers of these *Auriculas*, as some historic herbaria from his home town of Halifax which may once have contained such vouchers were destroyed

following a long period of neglect. Policies for the preservation of orphaned and neglected collections are vital if further losses are not to occur.

Even relatively modern research material can be valuable when preserved as vouchers. New techniques for extracting DNA have enhanced the importance of such material, as these now allow older specimens to be exploited, and if the quality of scientific research is to be validated by being repeatable, reference to the original research materials may be essential. But a major hurdle, for many researchers, is access to accurately named voucher material; 'original' names, not checked by specialists, are not reliable enough, nor can early garden catalogues be interpreted in the absence of voucher material. This is a further argument for ensuring that herbarium collections are kept in institutions where they are actively curated and made available on loan.

### 6. How can cultivated vouchers be used in multi-disciplinary research?

Curators and preparators may not anticipate, at the time the specimens are prepared, what future purposes might be served by preserved material of living collections. For example, cultivated plant specimens often retain evidence of fungal attack, and research into a particular host - parasite relationship of a new pest may depend in part on establishing a time frame for the spread of the infection. Seeds introduced from the wild are often treated to remove potentially harmful fungi, yet this routine treatment may remove associated fungi which contribute, through a mycorrhizal association, to the fitness of the living plant. There is thus an argument for encouraging seed collectors in the wild (and perhaps even in gardens) to take not only a sample of the plant, but also its associated soil. To the best of my knowledge no British herbarium currently stores soil samples along with their plant and seed collections, yet future *ex situ* conservation projects may depend on access to such material.

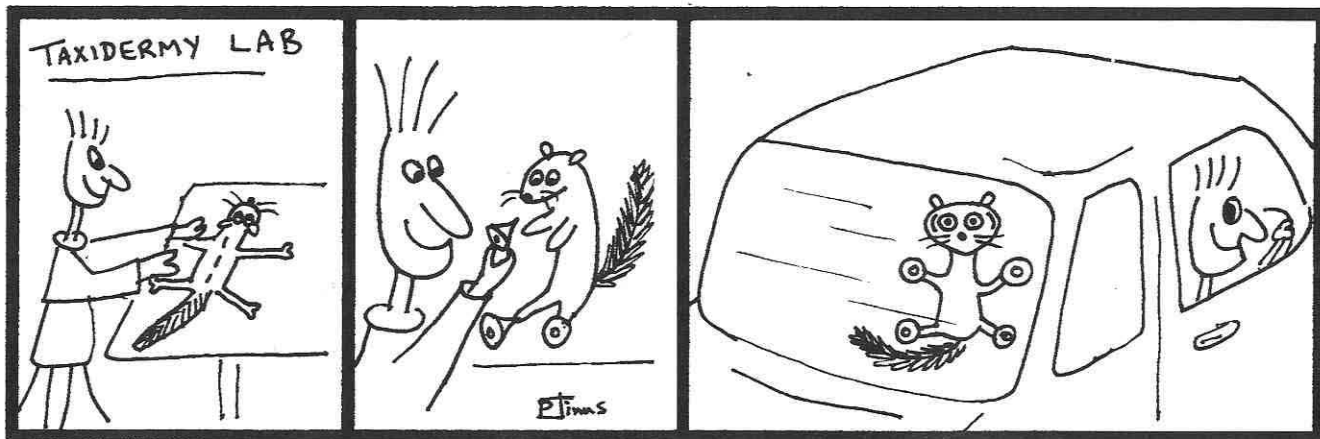
In a different context, I was recently asked by members of the Guild of Pressed Flower Artists to tell them which garden plants best retain their natural colour on drying. Some familiar examples are repeatedly used in decorative pressed flower arrangements, yet other species which are equally suitable are not used. This may seem a trivial example, yet it serves to illustrate what a wide spectrum of possible uses are embraced by cultivated voucher specimens.

In conclusion, multi-disciplinary research into garden herbarium vouchers will bring together workers in garden history, horticulture and plant taxonomy, and will require access to a wide range of library and archive materials. Within Britain, there is no single pre-eminent collection of cultivated herbarium vouchers, but there is a strong case for developing such a research centre at Wisley, which is also the home of the National Council for the Preservation of Plants and Gardens. The Royal Horticultural Society, which is already an International Registration Authority for many groups of garden plants, is to be commended for advancing plans for such a facility.

### Footnotes

1 The Liverpool Botanic Garden herbarium, founded by William Roscoe in 1799, contains a set of 2,700 specimens





supplied by Sir J.E. Smith which are largely duplicates of specimens now kept in herb. LINN-Smith.

2 Joseph Dickinson (c. 1805-1865) was a lecturer and physician at Liverpool School of Medicine and Liverpool Royal Infirmary. He became Secretary of Liverpool Botanic Garden, from whose living collections he prepared vouchers.

3 International Code of Nomenclature for Cultivated Plants (1995), edited by P. Treharne et al., is published by Quaterjack Publishing, Wimborne as vol. 133 of the series *Regnum Vegetabile*.

4 The University of Liverpool's cultivated herbarium (part of LIVU), which is now incorporated into the Liverpool Museum's herbarium (LIV), was previously kept at the University's Botanic Garden at Ness which had been founded in 1897 as the private botanic garden of Arthur Kilpin Bulley (1861-1942). Bulley, a socialist and philanthropist whose wealth was derived from cotton trading, sponsored many field expeditions by noted collectors such as George Forrest.

5 A biographical memoir of James Bolton of Halifax was published by the National Museums & Galleries on Merseyside in 1995.

## PLANT COLLECTIONS FOR NON-BOTANISTS WORKSHOP PART 1

It is stating the obvious to say that not all museums blessed with having a natural history collection have a full set of specialist curators and that the most common absentees from the equation are botanists. This workshop, held at Liverpool Museum on 26th February 1996, set out, therefore, to fill an equally obvious gap by providing practical guidance for non-botanical curators with plant collections in their care. It must be said, however, that of the 57 people who attended many had come for supplementary purposes while others just wanted to see what other curators got up to. This was fine as the largely practical nature of the day allowed people to get what they wanted out of it.

The day started with two introductory presentations looking at herbarium practice, then and now. This was followed by two practical sessions. The first covered aspects

of vascular plant curation and care comprising:- 1. The Preparation of Material in the Field; 2,3 & 4. Mounting Techniques à la The Royal Botanic Garden, Edinburgh, The Natural History Museum and The National Museums and Galleries of Wales; 5. Conserving Old Collections; and 6. Collections Arrangement. The second practical session focused on non-flowering plants and economic botany collections and included:- 1. Fungi; 2. Lichens; 3. Bryophytes; 4. Large Algae; 5. Diatoms; and 6. Economic Botany and Timbers. Many of the write-ups for these are based on information sheets used for the sessions while others are retrospective compositions. Neither, unfortunately, capture the impromptu question and answer nature of the demonstrations, however, all demonstrators included here will be happy to talk to you further should you have any specific queries. The afternoon was taken up with tours led by members of Liverpool Museum's Botany Department looking at the Natural History Centre; the James Bolton Exhibition; the Plant Room and use of living plants in NMGM. The day concluded with a well earned cup of coffee and a lively 'Curators Question Time.'

Mike Palmer  
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## Herbarium Practice, Then and Now

### THEN: Herbarium Collections

Dr Angus Gunn, National Museums and Galleries on Merseyside.

The tradition of collection and pressing plants for study dates back to the latter half of the 16th century with the establishment of herbaria at the Universities of Bologna (1570), Basel (1588) and Oxford (1621). The oldest surviving collections are probably in the Naturkundemuseum in Kassel (c.1569) and one of similar age in the Vatican collections.

These early collections consisted of specimens pasted into bound volumes and were used in very much the same way as a book of illustrations.

By the 18th century, herbaria began to be kept on loose sheets. This had a number of advantages. Specimens could