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## The Digitisation of Kew's Directors' Correspondence Collection

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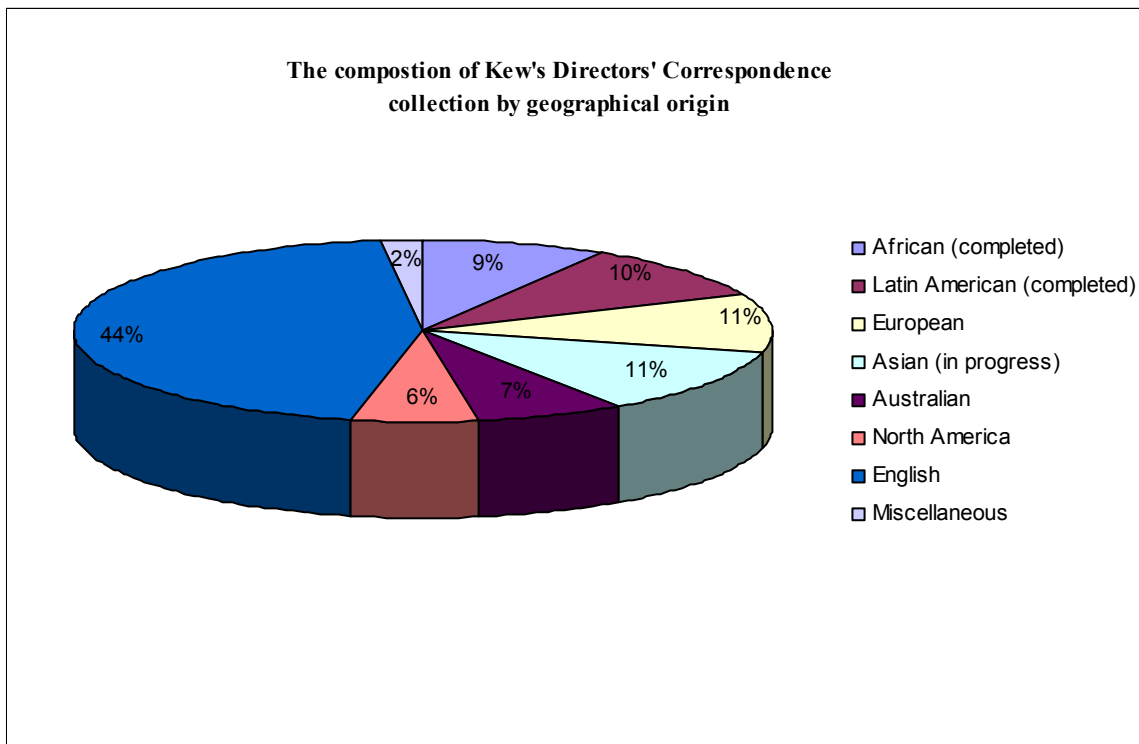
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### Abstract

This article is a brief summary of an ongoing project at The Royal Botanic Gardens, Kew to digitise a large collection of historic correspondence contained within our archive. The project team comprises four full time staff; team leader Helen Hartley and three project digitisers; Charlotte Rowley, Virginia Mills and myself. In this article the scope of the collection will be discussed and the aims for digitisation explained. Our methodology will be presented and some example correspondence highlighted. Some tips for those embarking on a digitisation project will be provided as well as methods for project promotion. Through this project we hope to increase access to a vital source of historic data and bring the exciting stories behind our botanical collections to a larger audience.

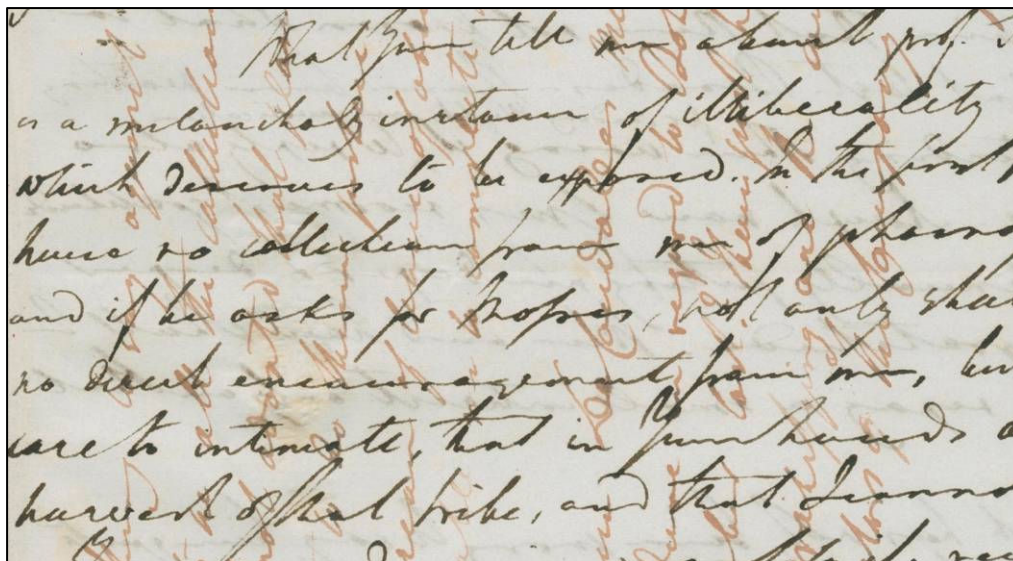
### Scope of the collection

The Royal Botanic Gardens, Kew, contains the World's largest collection of living plants, it also acts as a repository for over seven million herbarium specimens and holds one of the most important botanical reference sources in the world: its library, art and archives, containing more than half a million items. One of the largest and most important archive collections at Kew is the Directors' Correspondence (DC). The DC consists of 218 volumes of correspondence to the Directors and senior staff of Kew dating from the 1840's to the 1930's, as well as correspondence received by Kew's first Director, Sir William Jackson Hooker, prior to 1841 whilst Regius Professor of Botany at Glasgow University. The collection is arranged geographically (fig. 1) and then alphabetically by author.



**Fig. 1.** The geographical origins of the DC collection.

Although primarily a collection of letters the DC also contains postcards, reports, illustrations, photographs, memorandums, press cuttings, maps and even the occasional pressed plant specimen. Letters can range from a single postcard to fifty-page travel accounts. Sometimes the handwriting can be a struggle to read (fig. 2).



**Fig. 2.** Paper scarcity in the early Nineteenth Century often led authors to cross-write letters to maximize space. Detail of a letter from Nathaniel Wallich to Sir William Jackson Hooker (Wallich, 1830). Copyright RBG Kew.

The collection is a unique resource which highlights the important role played by Kew not only in furthering Nineteenth and early Twentieth Century scientific investigation, but also in contributing to the growth and development of the British Empire. It offers a window into the development of botany as a science and into the lives of botanists, natural historians, chemists, artists, politicians, lords and ladies, gardeners, horticulturalists and members of the general public. The subjects discussed and the information contained within each letter vary enormously: from the mundane to the extraordinary (Kellett, 1846) from the scientific to the anecdotal (Fawcett, 1887), from plant taxonomy to encounters with vampire bats (Hostmann, 1841)! The collection also informs our knowledge of the construction of Kew's dried (herbarium) and living plant collections, as well as its collections of books, archive materials and items of economic botany.

Digitisation of the collection was initiated in 2004 as part of the African Plants Initiative (API), a collaboration of over 50 institutions in Africa, Europe and the US, to build a comprehensive online research tool bringing together scholarly resources relating to African plants. On completion of the API (7635 letters digitised), the project continued with the Latin American Plants Initiative which was completed in 2010 (7415 letters digitised). The team is currently digitising the Asian DC as part of the Global Plants Initiative with 26 volumes of letters due to be digitised by Oct 2012. Running alongside the digitisation of the DC is the imaging and databasing of Kew's type specimens, which are made available online (JSTOR, 2011).

### **Aims of digitisation**

The aim of this digitisation project is to allow global access to this exciting resource by unlocking the data it contains. By placing material online, researchers from across the globe can access these resources remotely. Handling of the original documents will be required less frequently, helping to reduce wear and tear. A searchable summary of each letter, limited to 350 words, is produced alongside the digital images. This allows the letters to be searched for specific authors, locations, plants, gardens, people, *et cetera*. Prior to this project the DC was indexed only by author, making it somewhat more impenetrable for research. It is hoped that opening up the collection through digitisation will help to reveal historic networks of botanical collection and exchange, as well as the role of Kew over different geographical areas and timescales. Archive materials like the DC are also important sources of historic plant distribution information and can help to underpin studies of current species occurrence.

**Methodology**

The first step in the digitisation process is the preparation of each volume by Kew's preservation team. The DC was originally bound in leather volumes in which the letters were vulnerable to ink migration and tearing (fig. 3). These volumes are broken down and each fascicule separated, repaired where necessary, and replaced into an acid free fascicule from which it can be reversibly removed and easily consulted with minimal handling (fig. 4).



**Fig. 3.** Clockwise from left: the original leather bound DC volumes; detail of edge wear due to binding; detail of different paper types and inks adjacent to each other whilst bound. Copyright RBG Kew.



**Fig. 4.** Rehousing of the DC in acid free boxes with supported fascicules. Copyright RBG Kew.

Each volume is indexed and catalogued through a database constructed in *Microsoft Access*. At this stage each letter is given a unique identification number allowing us to track its progress throughout the digitisation process. The letters are imaged using either flat bed scanners (*EPSON 10000XL*) or a digital camera (*Cambo* camera with a 56mp, *Leaf Aptus-II 10 AFD* digital back). Images are edited in *Adobe Photoshop* and include a ruler for scale and a colour chart for colour standardisation (fig. 5). A quality check is carried out on every tenth image to examine the focus and lighting against defined standards. High quality 300 dpi (dots per inch) TIFF images are produced and stored on external hard drives.



**Fig. 5.** A typical digitised letter from James Alexander Gammie to Sir Joseph Dalton Hooker; from Darjeeling, India, 1877 (Gammie, 1877). Copyright RBG Kew.

A metadata summary of each letter is then produced. In the caption for each letter we record: the author, recipient, address, country of origin and date. We read each letter and summarise its contents recording the key points such as people names, plant names, locations, and publications. Aside from consulting our own archive materials, such as Kew's collection of biographical pamphlets, several websites have proved invaluable in producing accurate metadata:

- For scientific plant names the International Plant Names Index (IPNI, 2012) and Tropicos (Tropicos, 2012)
- For localities, the Falling Rain Global Gazetteer (Falling Rain, 1996) and Getty Vocabularies (TGN, 2000)
- The Ships List (The Ships List, 1997) for boat and vessel names
- The Harvard Botanists Database (Harvard University Botanists Database, 2012)
- The Oxford Dictionary of National Biography (ODNB, 2004)

A number of digitised Colonial records have also proved useful as well as digitised newspaper collections.

The images and metadata are finally uploaded to Kew's image storage system and exported to JSTOR for upload to the JSTOR Plant Science website (JSTOR, 2011). The website has a 'viewer' tool allowing users to zoom in to reveal very high levels of detail.

**An example from the Asian DC - Augustine Henry**

Digitisation of the collection has enabled us to link together items from Kew's various collections. An exciting recent example of this is a display mounted in the Library Reading Room at Kew which brought together for the first time correspondence, archive material, illustrations and items of economic botany relating to Augustine Henry (b.1857 – d.1930) (fig. 6). Henry was an amateur botanist whose correspondence with Kew led to the despatch of tens of thousands of plant specimens from China and Taiwan, and to the discovery of 1,338 new species (O'Brien 2011a). In the words of Ernest Henry Wilson Henry "acquainted a sceptical world of the rich floral wealth of interior China" (Wilson, 1925).

In 1882 Henry was assigned to Yichang (then Ichang), China as a customs official (O'Brien, 2011b). He became interested in the plant-derived medicines that passed through his customs house and made early collecting excursions into the Yichang Mountains and along the Yangtze River into Sichuan. As well as medicinal plants Henry was engaged by plants of economic value, including the varnish or Chinese lacquer tree, *Rhus verniciflua* (*Toxicodendron vernicifluum*) whose sap is used as a high quality varnish. Henry sent seeds of the varnish tree with one of his first letters to Kew hoping it would be of interest as an economic product (Henry, 1885). At a later date Henry sent examples of the tools used by local cultivators to harvest the varnish: a knife to make an incision in the trunk and mussel shells, which were inserted into the tree to collect the sap (Henry, 1889). We were able to exhibit these tools alongside other items of economic botany and Henry's letters.



**Fig. 6.** Part of a reading room display related to A. Henry depicting (left) rhizomes in small baskets and roots of *Coptis teeta* in a glass jar with a letter discussing the plants cultivation, and (right) an illustration of *Lilium henryi* from Curtis' Botanical Magazine, 1891. Copyright RBG Kew.

In his early correspondence Henry is self effacing, tentative and eager for advice (Henry, 1885). He could not have imagined the excitement his first collection would cause at Kew. When it was received the Keeper of the herbarium would declare it to be 'one of the most important ever received from the interior of China' (Oliver, c.1885). By 1897 Henry had amassed, in his own words, a: "gigantic [collection], almost unmanageable [in] size. Possibly 1000 species, 10,000 specimens" (Henry, 1897a).

As well as employing local plant collectors, Henry made plant hunting expeditions himself, particularly in the areas around Mengzi in Yunnan Province where he was based from 1896 – 1898 (O'Brien, 2011b). His passion for botany is apparent in his letters and he hints at sadness when witnessing deforestation (Henry 1897a). Henry explored many 'wild and extensive woods' – home to exotic plants as well as bears, boar, deer and leopards (Henry, 1897b). He was also a linguist, fluent in Chinese and quick to learn other languages and converse with the local people wherever he was posted, compiling lists of the Chinese names for plants (Henry, 1887). His letters also display a wider interest in the cultures he encountered, in particular the Yi (then known as the Lolo) people of Western China (Henry, 1896). So far we have digitised over 100 letters from Henry which help to enliven the many herbarium specimens he sent back to England (Kew has over 2260 digitised herbarium specimens presented by Henry, including over 880 types (fig. 7)). Henry is just a single example of the sort of characters we encounter throughout the DC and his varied interests and detailed letters demonstrate the usefulness and breadth of the collection.



**Fig. 7.** Type specimen of *Geranium henryi* from A. Henry, Hupeh, 1889, Kew specimen: K000729353. Copyright RBG Kew.

### Lessons learned

From the digitisation of such a large collection of material we have learned a number of valuable lessons, which we hope will be applicable to other institutions regardless of size or resources.

- *Number crunch:* It's very useful to obtain accurate estimates of the number of items in a collection as well as estimates of how long the digitisation process will take. Be sure to account for all the time it takes to digitise an item, including locating and retrieving your specimen. When we introduced a new piece of equipment (a digital camera) we trialled it to generate accurate time estimates for photography, allowing us to set achievable targets.
- *Detailed standards:* Prepare detailed standards for both images and their associated metadata. For example our metadata caption is always standardised to the same format.
- *Quality assurance (QA):* Checking that all of your digitised assets are of a high standard is very important, especially when working on large collections and the time taken for this should be incorporated into estimates from the outset. For example we QA 10% of our images and all metadata. Checks are also in place to ensure the right metadata is attached to right image.
- *Feedback:* One of the difficulties of summarising the DC is the legibility of the handwriting. In some instances author indexes were included in the original bound volumes, but this is not always the case and deciphering signatures can prove tricky, so too can finding obscure place names. In instances where we are uncertain of an exact name or locality we insert '[?]' into the metadata summary. When the digitised letters appear on the JSTOR Plant Science website there is a comments section for each letter so that users can raise a query or correct a question mark for us. This provides invaluable feedback, improving our overall accuracy.
- *Sustainability:* As with all digital projects it is vital to think about the long term sustainability of the digitised output. With this in mind backups are kept of all images. These will be transferred in future to new storage media to avoid technological redundancy and loss of information.

### Promotion

Alongside digitisation of the collection we have been keen to promote the collection and since 2010 have been producing articles for Kew's staff magazine, VISTA. Changes to Kew's website in 2011 enabled us to take part in the Library, Art and Archives blog (Royal Botanic Gardens, Kew, 2009). In blog articles we have been able to highlight recent topics encountered in the correspondence and link to other useful information sources and stories. Some recent blog topics include: the unfortunate story of Richard Oldham (b.1837 – d.1864), a gardener sent out to collect plants by Kew in China and Japan who succumbed to dysentery at the age of just 27; the use of *Cerbera tanghin* (= *C. manghas*) as a poison ordeal for the judgement of crimes or accusations of sorcery in Madagascar; and descriptions by various botanical enthusiasts of Mount Kangchenjunga, in the Himalayas. In June 2012 we created a Twitter account enabling us to share fun quotes from the letters and give real time updates to our followers such as 'on this day' links to digitised material. We have found this a valuable promotional tool as it brings us into direct contact with organisations and people who might be interested in the information we hold. We have also used Twitter (Royal Botanic Gardens, Kew, 2012) to advertise our blog posts and to ask for help from our followers: such as identifying mystery words and signatures. Finally members of the team have presented seminars both within and outside Kew, highlighting some of our favourite topics and characters from the collection. All of this we hope will encourage researchers and other interested parties to delve into the correspondence, making new links within and beyond Kew's collections.

### Possible future research

When I began working with the DC team I considered that the primary sort of data we would be uncovering would be historic data on plant distribution, which would have relevance today in underpinning studies of species occurrence. This is most certainly the case, but I have been amazed by the breadth of information contained within the letters and wish to draw attention to some of the other topics for which the collection would be a valuable source of information:

- *Biographical case studies*: In some instances we have hundreds of letters from single individuals providing very detailed information on their scientific (and non-scientific) exploits across the globe. If you wish to search the JSTOR Plant Science website for letters from or to a particular author (and not all the letters which mention a particular person), carry out an 'advanced search' and insert the name of the author into the 'title' box.
- *Plant and agriculture case studies*: Many letters discuss the introduction, transmission and cultivation across the Empire of crop species grown as sources of rubber, cinchona, cocoa, ramie, opium, indigo, tea, and coffee.
- *Institutional histories*: The DC contains decade's worth of correspondence from different staff working for the same institution; key examples are the Calcutta and Singapore Botanic Gardens.
- *Reception of scientific theories*: e.g. Darwinism.
- *Colonial Governance and the politics of Empire*
- *The relationships between collectors/explorers and native peoples*
- *Family history*

#### Acknowledgements

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