CHAPTER 20

Historical perspectives on Western ethnobotanical collections

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INTRODUCTION

Modern ethnobotany has a clear agenda centred on hypothesis-driven, quantitative analysis of plant use, usually applied for the benefit of the source community but often providing wider societal benefits (cf. Martin, 1995; Alexiades, 1996; Ethnobiology Working Group, 2003). The origins of modern ethnobotany lie, however, in more varied approaches, as set out by Wade Davis:

> 'Ethnobotany as an academic discipline has its roots in the numerous observations of explorers, traders, missionaries, naturalists, anthropologists, and botanists concerning the use of plants by the seemingly exotic cultures of the world ... For much of Western intellectual history, botany and what we now know as ethnobotany were synonymous fields of knowledge. Indeed, at its inception, ethnobotany was less an academic discipline than a point of view, one perspective by which European scholars and plant explorers went about classifying the natural world... From the start, then, ethnobotany has been intimately linked to botanical exploration, and its history has run parallel to the evolution of both systematic and economic botany.' (Davis, 1995: 40–41)

In this chapter, we seek to show how collections of ethnobotanical specimens have varied and changed through time in tandem with these wider changes in the discipline. In our view, ethnobotanical collections, whether old or new, are not only a rich source of data for contemporary ethnobotanists but are fundamental to understanding the evolution of ethnobotany (broadly defined) as a discipline.

Ethnobotanical knowledge resides in many forms: in memory, in books, manuscripts and photographs, in botanic gardens and in herbarium specimens. Our focus is on ethnobotanical specimens narrowly defined; that is, plant materials chosen to illustrate their use by humans, either in the form of raw materials (a cotton boll, for example), or in the form of partly or completely processed products and artefacts (a cotton textile, in this case). Such specimens have a long history and are highly effective in conveying knowledge, not only of the plant part used but also of the way in which it is processed.

As the quote above from Davis suggests, the history of ethnobotany is often framed in a Western context. It is clear, however, that the systematic study of useful plants is not restricted to Western cultures; for example, Li Shizhen published his *Compendium of Materia Medica* in China in 1593 (Li, 2003). Nonetheless, the origins of today's museums and natural history collections around the world are widely recognised as being in the cabinets of curiosity of the European Renaissance, mediated by the classifying urge of the Enlightenment and the public and educational emphases of the 19th century. Museums also exist in non-Western traditions, for example in the artefacts and woodcarving displayed in meeting houses in Oceania (Mead, 1983), but these are less well-documented and are not covered in this chapter.

Ethnobotanical specimens occur in many contexts, but in this chapter we concentrate on the history of ethnobotanical collections; that is, the history of separately organised groups of specimens defined by their curators as a collection of useful plants. Thus, for this discussion, we exclude, in general, ethnobotanical specimens held in general or ethnographic museums, except where these are separately classified or displayed. Nonetheless, such museums often include material of significant interest to ethnobotanists and should not be overlooked.

TABLE 1

Location and date of foundation of selected ethnobotanical collections.

An asterisk indicates collections that no longer exist.

Botanic Garden, **Adelaide** (Australia): Museum of Economic Botany (established 1864).

Museum of Anthropology, University of Michigan, **Ann Arbor** (USA): Archaeobiology Laboratories (1929).

Eka Karya Botanic Garden (**Bali**): Ethnobotany Building (1993).

Escola Superior Agrária de **Beja** (Portugal): Botanical Museum (2002).

Botanical Garden, **Berlin** (Germany): Botanical Museum (1878).

Bogor Botanical Gardens, **Bogor** (Indonesia): Ethnobotany Museum (1982). Possibly incorporates collections from the former Museum voor Economische Botanie, Buitenzorg, which was founded before 1900.

*Department of Agriculture, **Brisbane** (Australia): Queensland Museum of Economic Botany (by 1890).

Harvard University Herbaria, **Cambridge, Massachusetts** (USA): Economic Botany Collections, Botanical Museum (1858).

Government Museum, **Chennai** (India): Gallery of Economic Botany (1851).

Field Museum, **Chicago** (USA): Timothy C. Plowman Economic Botany Collection (1893).

Botanical Garden of Córdoba, **Córdoba** (Spain): Ethnobotany Museum (1980).

*Royal Botanic Garden, **Edinburgh** (UK): Botanical Museum (1851).

National Botanic Gardens of Ireland, **Glasnevin** (Ireland): Economic Collection (1852–1853).

Botanischer Garten, Universität Hamburg, **Hamburg** (Germany): Botanische Museum (1885)

Royal Botanic Gardens, **Kew** (UK): Economic Botany Collection (1847).

Indian Museum, **Kolkata** (India): Economic Botany Gallery (1901).

National Herbarium of the Netherlands, **Leiden** (The Netherlands): Economic Botany Collection (1988)

World Museum, **Liverpool** (UK): Economic Botany Gallery (1932).

*Royal Botanic Gardens, **Melbourne** (Australia): Museum of Economic Botany (by 1893).

National Autonomous University of Mexico (UNAM), **Mexico City** (Mexico): Botanic Garden.

Botanical Garden, University 'Federico II' of **Naples** (Italy): Museum of Paleobotany and Ethnobotany (1980s).

New York Botanical Garden, **New York** (USA): Museum of Economic Botany (1891).

National Museum of Natural History, **Paris** (France): Ethnobiology Collection (1912).

*Royal Botanic Gardens, **Peradeniya** (Sri Lanka): Museum of Economic Botany (1880s).

*University of Pennsylvania, **Philadelphia, Pennsylvania** (USA): Museum of Economic Botany (by 1880s).

*Brown University, **Providence, Rhode Island** (USA): Museum of Economic Botany (by 1891).

Botanical Garden, **Rio de Janeiro** (Brazil): Ethnobotanical Collection (2012).

Missouri Botanical Garden, **St. Louis, Missouri**: Museum (1860).

Komarov Botanical Institute of the Russian Academy of Sciences, **St. Petersburg** (Russia): Collection of Economic Botany, c. 1850.

It is a key argument of this chapter that clearly defined ethnobotanical collections can be identified as early as the 17th century, in the form of materia medica collections, and took on a very distinctive form in the mid-19th century, as economic botany collections (Table 1). Collections from the mid-19th century onwards were clearly recognisable to curators and users as a distinctive type of collection, and share a number of characteristics including special attention to botanical classification.

FROM CABINETS OF CURIOSITY TO THE ENLIGHTENMENT

The origins of Western museums can be traced back to the cathedral and court treasuries of the medieval period (Pearce, 1995). The origin of universal collections that include botanical and zoological specimens, however, dates to the slightly later development of cabinets of curiosities between 1500 and 1700 (Impey & MacGregor, 1985). Such cabinets — sometimes literally cupboards, more often rooms — represented a 'desire to bring all knowledge into a single space' (Mauriès, 2002: 9). The creators of such cabinets ranged from the nobility, such as the Hapsburg emperors of central Europe, to scholars and apothecaries, such as Ole Worm. Worm (1588–1654), known also by the Latinised form of his name Olaus Wormius, was a widely educated Danish physician who established his cabinet in Copenhagen; plant-based materia medica are clearly visible in a contemporary illustration (Figure 1).

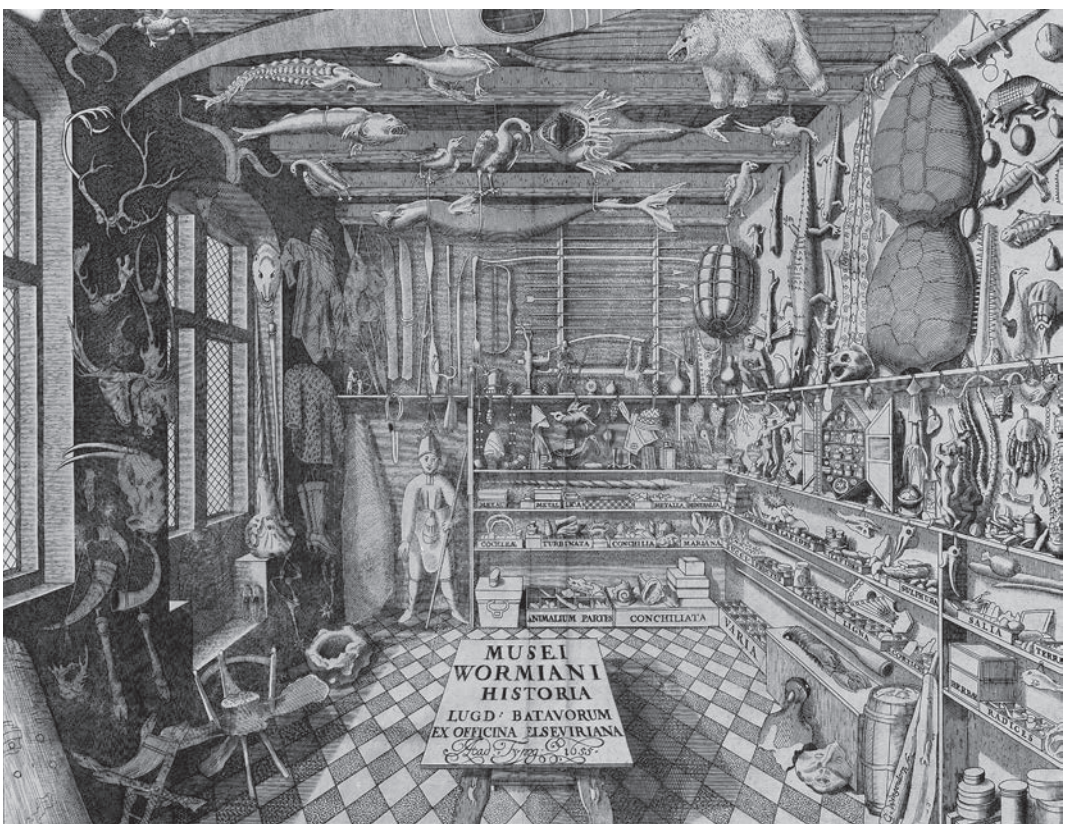

Figure 1. Worm's cabinet of curiosities in Copenhagen, illustrated on the title page of *Museum Wormianum* (Worm, 1655). Note the fruits ('fructus'), seeds ('semina'), wood ('ligna'), barks ('cortices') and roots ('radices') of medicinal plants on the right-hand shelves. © WELLCOME COLLECTION.

The period known as the Enlightenment, spanning the 18th century, saw an intense interest in the discovery and classification of both the natural world and human societies. This was reflected in ambitious universal encyclopaedias and museums, containing artefacts and specimens brought back from voyages of discovery. An example of an ethnobotanical collection made during the Enlightenment is that of Sir Hans Sloane, left to the British Museum at his death in 1753 and now housed at the Natural History Museum in London (Huxley, 2003: 75; Jarvis et al., 2012). It comprises 90 wooden drawers, divided into compartments and containing 12,253 specimens of 'vegetable substances' such as seeds, roots and bark (Figure 2). Many, but not all, of the specimens represent medicinal uses. The specimens are numbered, linking them to a three-volume handwritten catalogue. The highly international nature of the collection is typical of the 18th century, when voyages of exploration brought back new materials to Europe. For example, in Portugal, the Royal Cabinet of Natural History (later the Ajuda Royal Museum) was created in 1768 explicitly to preserve and study natural products from Portuguese voyages and colonies (Delicado, 2010).

The second half of the 18th century is a defining period for biology, especially as regards the development of plant names. Linnaeus developed Latin binomials, comprising a genus and a species epithet, as the framework for plant nomenclature. Through the influence of Linnaeus's books, notably the *Species Plantarum* of 1753, and those of Linnaeus's students, the binomial system was widely used by 1800, replacing the use of cumbersome descriptive phrases. For economic botany, standard nomenclature makes collections easier to use and to cross-reference to literature. A second advance was the development of the 'natural' system of plant classification, in which related genera are grouped within families (Adanson, 1763; Jussieu, 1789); in Linnaeus's more artificial system, genera (not always related) had been grouped strictly according to floral characters. Organisation by natural plant families was to become an important element in the display of many economic botany collections.

Figure 2. Boxes of 'Vegetable Substances' collected by Sir Hans Sloane (1660–1753). © NATURAL HISTORY MUSEUM, LONDON.

THE 19TH CENTURY: ERA OF PUBLIC MUSEUMS AND WORLD'S FAIRS

New museum practices

19th century ethnobotanical collecting was shaped by factors from inside and outside of the discipline. Across North America and Europe, this was the era of the public museum and the World's Fair. These were two elements of the 'exhibitionary complex' that characterised the age:

> 'The institutions ... [were] involved in the transfer of objects and bodies from the enclosed and private domains in which they had previously been displayed ... into progressively more open and public arenas where ... they formed vehicles for inscribing and broadcasting the messages of power.' (Bennett, 1995: 60–61)

The British Museum, which first opened in 1759, was for a considerable time only partially public; the first universally public museums can be dated to the period following the French Revolution of 1789, when the new Republican government devised a museological programme to make collections accessible to the whole population. In this context, the public museum was envisaged as a means of transforming the populus into a useful resource for the state, by producing an educated and unified citizenry (Hooper-Greenhill, 1992: 167). In 1793, the Muséum Nationale d'Histoire Naturelle was established in the former royal botanical gardens in Paris — the Jardin des Plantes — thus beginning an era of state patronage for institutions of scientific research and display. As a new cadre of professional scientists was created, so too new museum practices emerged: provenancing, cataloguing, documenting, storing, assessing (an object's physical condition but also its pedagogic content) and conserving. In times of war and peace, the Muséum Nationale dominated the field of natural history for the first half of the 19th century and was frequently cited as the model of an exemplary museum (Outram, 1996).

Ideology and museums

The French *Muséum Nationale d'Histoire Naturelle* may have sprung from 18th century republican fervour, but the dominant ideology underpinning the rise of the public museum in 19th century Europe was undeniably liberalism. This ideology laid particular emphasis on the notion of humankind as capable of change through improved living conditions and education. Interestingly, this influenced both domestic and overseas policy; in Europe, anxieties over urban overcrowding and public order led to state funding of 'rational recreation' initiatives — forms of entertainment that provided alternatives to drinking and gambling. Museums played a prominent role in this strategy. In colonial contexts too, museums were made accessible to local populations on the basis of liberal ideals of bringing 'the backward and barbarous into the light of civilisation and progress' (Hobsbawm, 1975: 67). Linked to this is the notion of the museum as a unifying force, not only in the national museums of new states, where the official narrative was broadcast in the official language, but also in 'world' museums that displayed the objects of colonised peoples and territories.

The second half of the 19th century was also characterised by the rise of the nation-state, including Belgium in 1830, Italy in 1861, and Germany in 1871. Museums and botanical gardens were perceived as potent national statements, and became an essential trait of emergent nations. As new nations built empires, so the need to showcase these led to a contingent increase in sites of display, of which the Royal Museum for Central Africa (1898) in Belgium, and the Berlin Botanical Garden (1897) are examples.

Economy and museums

For nations both old and new, the 19th century was an age of exploration and imperial expansion. Facilitated by technological advances in travel and communication, such as the steamship, the railroad and the electrical telegraph, overseas voyages of exploration routinely included a botanist who would survey and collect the flora and make observations on indigenous uses of plants. Frequently, museum directors would be involved in the appointment of such scientists, as was the case with John Kirk who was recommended for David Livingstone's Zambezi Expedition (1858–64) by William Hooker, the director of the Royal Botanic Gardens, Kew (Dritsas, 2010). The collections accumulated on such trips were sent back to metropolitan science institutions for identification and assessment, and the specimens and artefacts accessioned into the collections of these institutions.

Imperial expansion was driven by the desire for international prestige but also by the demands of industrialised economies. As Richard Drayton relates:

> 'Machines did not merely run on coal, they consumed cotton, wool, dyes, and vegetable oils, and the strength of the peripheral populations which provided these. Wheat, beef, tea, and sugar allowed operatives to meet the brutal pace of work. Shiploads of timber and rubber went to absorb shocks, and indeed electricity, which steel would not have contained. Without plant fibres twined into rope, woven into sacking, and crushed into paper, no administration could take place, and a whole civilization which depended on commodities being moved and recorded would have collapsed.' (Drayton, 2000: 194)

Before the age of synthetic materials, the search for new sources of plants and minerals provided the impetus for much exploration and subsequent colonisation.

From 1848 to 1875, there was a period of economic growth during which, according to Eric Hobsbawm, 'the world became capitalist' (1975: 43). 'Economic liberalism' as the prevailing economic theory was called, was concerned with the removal of barriers of trade, thereby enabling the free movement of goods and services around the globe. Britain benefited disproportionately because of her overseas territories, which provided the cheap materials and labour required to undercut the market. Such territories were also targeted as markets for finished goods produced in Britain, such as textiles. Economic botany, with its emphasis on colonial plant raw materials, processed by colonial human labour, enshrined this system in the museum space.

Networks of acquisition

World's Fairs

The first World's Fair was *The Great Exhibition of the Works of Industry of all Nations* of 1851, held in the 'Crystal Palace' in London's Hyde Park. Its aim was to promote global trade and industry. The products of the colonised territories of European powers, including plant specimens and ethnobotanical objects, featured prominently. The non-botanical classification systems used in the exhibits were frequently adopted by museums.

At the Exhibition's close, the objects were dispersed to public collections such as those at the Royal Botanic Gardens, Kew and the Victoria & Albert Museum, London. The Great Exhibition set the pattern for a series of similar international exhibitions held across the world, which continued into the 20th century (Findling & Pelle, 2008). Museum staff became variously involved: as jurors of objects on display, as organisers of the displays, or as scientific consultants who were often commissioned to write articles for the various catalogues. With greater involvement came opportunities to determine which products were exhibited and acquired, these often corresponding to gaps in existing museum collections.

Trade and industry

Trade or commercial museums, and applied science museums, such as those with economic botany displays, often drew on manufacturing and trading companies as donors of raw materials and goods, especially novel products (Conn, 1998). Examples of such museums include the Industrial Museum, Edinburgh (founded 1862), the Commercial Museum, Philadelphia (founded 1897) and the Technological, Industrial and Sanitary Museum, Sydney (founded 1882).

Government infrastructure

National museums in particular were well-placed to take advantage of diplomatic, naval, governmental and military networks to grow their collections. This could be in the literal sense of using naval vessels to transport objects, or by encouraging members of the forces and other government agencies to collect and donate to national collections. Sometimes, too, this was arranged at the highest levels, as when Sir Harry Smith Parkes, the British Consul in Japan, was instructed by order of the Prime Minister, William Gladstone, to collect Japanese papers and submit them to the Science and Art Department at South Kensington for analysis (Casserley, 2013).

Independent collectors

A relatively high proportion of the collectors documented in Kew's Economic Botany Collection had no formal government role. Some, such as Richard Spruce in the Amazon, and Charles Newcombe in British Columbia, relied on payments from Kew for their income. Many collected from personal enthusiasm; some were approached by Kew, others wrote to offer their services. Jim Endersby (2008) has documented a complex exchange of favours, in the form of plant identifications, books, botanical equipment and chatty letters, that enabled Sir Joseph Hooker, Director of Kew from 1865–1885, to maintain his worldwide network of collectors. The high proportion of amateur collectors sending material to Kew raises interesting questions as to the degree of central control over what was collected, and perhaps explains the diversity of objects found in such collections.

Figure 3. 'Economic Museum. Hortus Kew. Fam: Palmae, *Maximiliana regia* (Demerara) maripa palm'. Note the raw materials in the upper part and manufactured objects in the lower; also the use of photographs to show the living plant. Photograph by the Dutch botanist Johannes Lotsy, visiting from Leiden in 1902. © ROYAL BOTANIC GARDENS, KEW.

Classification and display

The second half of the 19th century saw vigorous debate about the nature of museum displays, particularly as to whether the general public, students, or experts were to be the main audience. Public museums required new architectural forms to enable greater circulation of people around the exhibits, and new modes of display in order to render the collections meaningful to new audiences.

Three modes of classification presented themselves for objects of ethno- and economic botany: systematic, that is taxonomic (e.g. by plant family), typological (e.g.

by function), or geographical. Ethnological museums took two opposing approaches to ethnographic display: geographical and typographical. The former approach sought to group objects according to their ethnic and geographical origin, to demonstrate that 'civilization is not something absolute, but that it is relative, and that our ideas and conceptions are true only so far as our civilization goes' (Boas, 1887: 589). The typological display — also known as a 'deductive' display (Boas, 1887), ordered objects by type, in a sequence demonstrating a perceived evolution from 'natural' to more 'complex' designs. In this taxonomy, objects were chosen for their representativeness; they were akin to natural history specimens in a systematic collection. By contrast, economic botany collections often ordered their collections by plant classification (as at Kew, Figure 3) or commercial use (as at the New York Botanical Garden and at Harvard, Figure 4).

Dissemination

Ethnobotanical collections were circulated in the 19th century in a number of ways. Objects acquired from World's Fairs might re-surface at subsequent fairs, or objects might be loaned or donated to fellow museums for temporary exhibitions. Global print capacity expanded rapidly during the 19th century, leading to a proliferation of published titles such as official guide books, annual reports and scientific journals. Institutions such as botanical gardens, universities and museums frequently published in-house, and their publications circulated on an international scale. Kew Gardens' *Bulletin of Miscellaneous Information*, first published in 1887, contained information regarding new acquisitions,

Figure 4. Display of 'gums, resins, kinos' in the Museum of Economic Botany, Harvard University, 1920s.

research results and advice on cultivating economic plants; similarly published were the *Annals of the Missouri Botanical Garden* established in 1914 and the *Journal d'Agriculture Tropicale* established in 1901 in Paris. The meetings and subsequent reports of learned societies such as the British Association for the Advancement of Science (BAAS), and its American equivalent (AAAS) were also widely circulated and had large readerships. The popular press too reported on international exhibitions and museums, and useful plants appear to have had broad appeal, judging from the number of popular articles published on this subject.

Ethnobotany in the 19th century

It was during the 19th century that museums developed discrete teaching and research collections, which could be used for outreach activities and public lectures, extending the museum beyond its walls.

The Museum of Economic Botany at Kew

The term 'ethnobotany' did not enter the language until 1895, but it is pertinent to consider the form(s) in which knowledge of indigenous uses of plants was produced and circulated in the preceding years of the 19th century. As Paul Minnis (2000: 4) articulates, ethnobotany today has two distinct strands: the search for economically useful plants, otherwise known as economic botany, and 'the quest for indigenous ecological knowledge' or ethnobotany. In Europe, economic botany was the dominant strand for the greater part of the 19th century, although some European scholars pioneered ethnobotanical work (Svanberg et al., 2011: 195–197). The first museum dedicated to the subject was the Museum of Economic Botany at Kew (Figure 5), founded in 1847 by Sir William Hooker, the first director of the Royal Botanic Gardens, Kew (Cornish, 2013). Hooker defined economic botany as 'the practical uses and applications of the study of Botany, and the services thus rendered to mankind' and the museum collections were to consist of 'all kinds of useful and curious Vegetable Products, which neither the living plants of the Garden nor the specimens in the Herbarium could exhibit' (Hooker, 1855: 3). The Museum incorporated an innovative display principle: 'the *raw material* (and, to a certain extent, also the *manufactured* or *prepared article*) ... correctly named, and accompanied by some account of its origin, history, native country, etc., either attached to the specimens or recorded in a popular catalogue'. Such displays would be of use:

> '... not only to the scientific botanist, but to the merchant, the manufacturer, the physician, the chemist, the druggist, the dyer, the carpenter and cabinet-maker, and artisans of every description ...' (Hooker, 1855: 3)

In light of this, it is particularly interesting that Hooker adopted a systematic, rather than a commercial, arrangement in the museum. His argument was that the former was superior in that it communicated the *kinds* of plants yielding particular substances or with particular properties. This was important because, armed with a knowledge of plant orders and their properties, 'the intelligent traveller may safely estimate the properties with which a plant, though he [*sic*] has never seen it before, may possess' (1855: 6). In particular, botanists accompanying expeditions and 'voyages of discovery' were thus well-placed to identify sources of food, medicine and so forth in new and unfamiliar environments.

As we know, the concept of 'economic botany' was not originated by Hooker; Carl Linnaeus wrote a book on the subject as early as 1748, and the first publication on the subject in the English language was John Lindley's *Medicinal and Oeconomical Botany* (1849). Linnaeus was concerned only with plants cultivated in Sweden, whereas Lindley, who was Professor of Botany at University College,

Figure 5. The Museum of Economic Botany at the Royal Botanic Gardens, Kew, opened in 1847. Photographed at the time of its closure in 1960. © ROYAL BOTANIC GARDENS, KEW.

London, attempted a comprehensive survey of known plants using the collections of botanical gardens. Hooker's innovation, however, was two-fold: in embracing the notion of manufactured products and in aligning himself with the organs of British exploration and colonial government (the Admiralty, the Colonial Office, the India Office and the Foreign Office), he developed a collection that functioned at the intersection of science and commerce. Economic botany did concern itself with indigenous knowledge systems and practices: local names were given, if known, as were local usages. It was primarily concerned, however, with accruing benefits for the imperial centre. The presence in the Kew Museum of the material culture of colonised peoples signified two interconnected ideas: that the colonies were a virtually limitless source of raw materials for British industry, and that indigenous practices provided the key to tapping such resources. In short, the Museum offered 'a portrait of Providence' (Drayton, 2000: 196).

The 'manufactured or prepared article' cited by Hooker was a term that incorporated a widely heterogeneous array of objects, from ethnobotanical artefacts to bars of Fry's chocolate! Again there were precedents: the India Museum was first established in the offices of the East India Company in London in 1801, since which time it had been collecting 'natural and artificial productions', particularly those plants 'whose produce is an article of commerce'. The original proposal for the Museum in 1799 specified:

> 'Each specimen should be accompanied by a Memorandum of its peculiar qualities, place of growth, etc. The different species of indigo, and other plants used in staining and dyeing, of the sugar cane and tea trees, and of the cotton plants, must not be neglected any more than the numerous tribes of oils, gums, and resins, which are the natural produce of the plants of Asia.' (cited in Desmond, 1982: 8–9)

Hooker's collection extended this concept to the whole world, and he energetically networked with importers and manufacturers to acquire what he termed 'illustrative series' —objects representing the phases of production from raw materials to finished goods (Figure 3).

Museums in the British colonies

On the other side of the world, the Adelaide Museum of Economic Botany opened in 1881 under the directorship of Richard Schomburgk, a German botanist-explorer (Figure 6). With his brother, Robert, Schomburgk had taken part in the Prussian-British expedition to Guyana and Brazil from 1840 to 1844 and had collected for the University Museum of Berlin, simultaneously building up a personal collection of ethnobotanical objects. In 1865, he took up the position of Curator of the Adelaide Botanic Garden and he continued to expand his collection through exchanges with botanists worldwide and through his own expeditions into the Australian interior (Middelmann, 1976). The Museum, now known as the Santos Museum of Economic Botany, is the only surviving economic botany museum with its original displays intact, and has taken on new levels of significance with 21st century concerns over sustainable production and biodiversity, as well as initiatives to preserve 'intangible heritage' (Emmett & Kanellos, 2010).

Imperial museums also collected ethnobotanical material in the 19th century. The Indian Museum in Kolkata (Calcutta) is a case in point; it was formed by the Bengal Asiatic Society in 1814, but only in 1884 did it acquire significant collections of economic plants and ethnological objects, having received extensive donations from the Calcutta Exhibition of 1883–84 (Mackenzie, 2009: 236–239). An Ethnologic Gallery opened to the public in 1892 and an Economic Gallery in 1901,

Figure 6. The Museum of Economic Botany at Adelaide Botanic Garden. Founded in 1864; moved in 1881 to this purpose-built museum; restored in 2008. © GRANT HANCOCK.

but although the two galleries were adjacent, they were nevertheless conceived of as representing separate disciplines (Indian Museum, 1910). Despite the obvious connection with Britain and British imperial interests, it would be a mistake to think that such museums communicated uniquely with the imperial centre. Just some of the Indian Museum points of contact in 1901 were as follows (Annual Report of the Indian Museum, 1902):

- Dr Stuhlmann of the Natural History Museum, Hamburg published an article on his visit to the Indian Museum;
- Professor Rusby of the New York Botanical Garden requested and received a full description of the Economic Gallery 'for private use in connection with his own rising Museum of Economic Botany';
- M. Bréaudat from the Institut Pasteur in Saigon, visited the Museum twice;
- Mr J. C. Willis, Director of the Royal Botanic Gardens, Ceylon paid an official visit.

Economic botany collections were also established on the continent of Europe, in trade centres such as Hamburg (Botanische Museum, founded in1885) and in places of scholarship such as St. Petersburg (founded c. 1850).

Museums in the United States

The collection of economic botany objects and their display in museums extended beyond Britain and her colonies. The Harvard Museum of Vegetable Products (later renamed the Botanical Museum) was established in 1858 with a complete taxonomic set of specimens supplied by William Hooker to botanist Asa Gray. Gray's museum was decidedly pedagogic and the objects were used primarily as teaching aids in lectures. His successor, George Lincoln Goodale, shifted the emphasis to display and public access, extending the collections to include interpretative devices such as a magnificent collection of glass flowers by Leopold and Rudolph Blaschka of Meissen. Under Goodale, too, the Museum took on a greater 'economic' orientation and more ethnobotanical artefacts were accessioned into the collection. A museum soon followed at the Missouri Botanical Garden, opening in 1860 with an interior that is an almost exact copy of the Kew Museum (Figure 7).

What we now term 'ethnobotany' originated in North America with the observations made by early explorers and settlers on the indigenous uses of plants, particularly as medicines. This base knowledge was later expanded by government-sponsored explorers such as John Strong Newberry during the 1850s, and later still in the surveys conducted by the United States' Geological Survey and the Bureau of American Ethnology under the directorship of Major John Wesley Powell. The botanists and geologists sent on these missions added to the growing body of knowledge by identifying and cataloguing the plants they observed in indigenous use (Ford, 1978).

In the 1870s, with this growing interest in native American peoples and a growing knowledge of the North American flora, a new set of practices and concerns formed to found the basis of a new discipline: the collection of botanical specimens for taxonomic, evolutionary, ecological, chemical and agronomic studies, and the collection of data on the cultural significance of plants through observation and inquiry (Bye, 1979: 135). The individual who exemplifies the emergent discipline was Dr Edward Palmer, whose research in the western states led to the publication of *Food Products of the North American Indians* in 1870. Another scientist with comparable research was Stephen Powers whose focus was the indigenous peoples of California. In 1874, Powers coined the term 'aboriginal botany' and this became the accepted designation in North America for the ensuing 25 years. By 1895, when John Harshberger announced the advent of 'ethnobotany', the field had taken an ethnological turn, the theoretical focus switching to one that concerned itself more with the interactions between humans and plants as a means of understanding 'the cognitive foundations of a culture' (Davis, 1995: 43).

Figure 7. The Museum at Missouri Botanical Garden, designed by George I. Barnett and opened in 1860. Note the likeness to the 1847 Museum at Kew (Figure 3), both were built as a long double-height space with long central skylight, gallery and full-height wall cases. © ARCHIVES, MISSOURI BOTANICAL GARDEN.

American museums and government agencies were avid collectors of the materials described by scientists such as Palmer and Powers; indeed Palmer was collecting archaeological and ethnological material for the Peabody Museum of Harvard University on the 1878 expedition to central Mexico that sparked his interest in indigenous plant uses (Bye, 1979: 135). Also crucial to the funding of collecting trips were the World's Fairs. The ethnographic collections at the 1893 World's Columbian Exposition in Chicago were organised by Frederic Ward Putnam, director of the Peabody Museum. Ethnologist Franz Boas was charged with the task of assembling a collection of artefacts of Northwest Coast Indians (including numerous ethnobotanical objects) for the 'live' ethnographic displays at the 'Alaskan Village' erected on the Exposition's Midway. After the closure of the fair, these items were transferred to the Chicago Field Museum of Natural History, along with plant products from many of the 50 nations exhibiting at the fair. The Field Museum, like other museums of ethnology and natural history, continued to grow its collection (now known as the Timothy C. Plowman Economic Botany Collection) through donations from subsequent expositions, including the Paris Expositions of 1901 and 1915, and the Louisiana Purchase Exposition of 1904, held in St. Louis.

20th CENTURY DECLINE

The beginning of the 20th century saw an increasing emphasis on agricultural and colonial products, rather than on ethnographic artefacts, as demonstrated by the changing pattern in acquisitions at Kew. In 1911, the Laboratoire d'Agronomie Coloniale opened at the Natural History Museum in Paris. Under the direction of Auguste Chevalier (Director, 1912–1946), succeeded by Roland Portères, the collection grew to c. 100,000 specimens, dominated by specimens of cultivated plants.

The early 20th century also saw the beginning of the migration of agricultural research from botanical institutes to specialist institutes, such as those which make up the French institute CIRAD (Centre de coopération internationale en recherche agronomique pour le développement), and the Imperial Institute (now the Natural Resources Institute), founded in London in 1893. By the 1950s, research in tropical agriculture had moved entirely to specialist institutes. Edgar Anderson (1952) of the Missouri Botanical Garden could write of the positive disregard for cultivated (and useful) plants shown by taxonomic botanists of his day, an attitude that remained widespread in herbaria until recently. In addition to a growing divide between herbarium collections-based botanists and research into agriculture and useful plants, we believe that the end of European empires was also a major factor, leading to tropical research taking place in country rather than in European capitals of empire, and a consequent decline in interest in tropical products.

Two more factors are implicated in the pronounced decline of ethnobotanical collections from the 1950s onwards. First, many were housed in 19th century buildings with densely filled cabinets. As part of a wider reaction against 19th century architecture and design, many museum displays were reworked in the 1950s and 1960s to simpler formats with much less material on display. Second, the introduction of synthetic, often oil-based materials, including medicines, textiles and plastics, made natural products appear irrelevant and old-fashioned. The Ashby Report on Kew of 1958 touches on several of these issues:

> 'Modern synthetic chemistry and the immense development of the Commonwealth's agricultural services have reduced the value of the Department's [of Economic Botany] consulting work almost to insignificance ... Members of the public do visit the museums and doubtless get pleasure from some of the quaint and curious exhibits ... the museums have been starved of money and choked with worthless bric-a-brac unloaded upon them by State dignitaries, Government officials, and travellers.' (Ashby, 1958: 19, 24)

Between 1958 and 1961, two of the four museum buildings at Kew were closed, and a substantial proportion of the ethnographic collections transferred to the British Museum and other museums. Ultimately, in the mid-1980s, all the remaining buildings were closed and the contents moved into purpose-built storage, the Economic Botany Collection.

Similar closures took place elsewhere, and affected other natural resource collections, such as wood collections. At the Tropenmuseum (Tropical Museum) in Amsterdam, the artefacts have been retained, but the economic botany collections of raw materials and plant products were transferred to the National Herbarium in Leiden in 1989. The collections in Paris and Harvard were moved to attic storage with minimal curatorial resources. Some displays, notably at the Field Museum and in Adelaide remained substantially intact. Perhaps surprisingly, of the 17 19th century collections listed in Table 1, 11 survive today. Others may exist but are subsumed within larger collections and not easily identifiable.

NEW USES AND USERS — AND A REVIVAL?

The existence of the Biocultural Collections Group (Chapter 1) is evidence of a revival of interest in ethnobotanical collections. We suggest this revival is closely linked to the resurgence of interest in ethnobotany, indigenous cultures, conservation and cultural survival in the past two decades, itself closely linked to events such as the Rio Summit of 1992 and the subsequent signing of the Convention on Biological Diversity. More recently, public and commercial interests in renewable and low-carbon materials have led to an increased role for natural products in industry and craft.

In part, this revival is visible in the cataloguing and curating of old collections, sometimes on a large-scale, as at the Archaeobiology Laboratory at the Museum of Anthropology, University of Michigan, which is the subject of a $482,000 grant from the National Science Foundation to rehouse the 35,000 specimens in its ethnobotanical collection. More often, cataloguing and rehousing is undertaken as part-time curatorial work or by volunteers, as at Harvard and Glasnevin. This work is rarely accompanied by new displays, but as collections are better documented and curated, use by researchers and teachers has increased. Nevertheless, ethnobotanical collections are still often viewed as peripheral to institutional missions and remain vulnerable to shifts in priorities that reduce or eliminate staffing.

Alongside enhanced curation and visibility, the most significant change is in the user community. Until the 1950s, it appears that most users were drawn from botany and commerce. Today, the typical visitor is likely to be from an indigenous community, and/or a specialist in material culture and ethnography, in art and design history, in archaeology or in the histories of science, medicine, empire and exploration. Plants play such a central role in life, past and present, that ethnobotanical collections are relevant to a wide range of research interests. Ironically, at Kew, it feels as if taxonomists are an under-represented user group, despite evidence that our Economic Botany Collection is a rich resource for type specimens (George, 2010; Turner, 2012).

The implications for curators are two-fold. The first is that this broader user community cannot be identified unless the collection's history is, at least in broad terms, documented and understood. For a curator, historical research into collections is thus a necessity, not a luxury. Such research might not be done by curators — these collections are a rich field for postgraduate students — but it must be encouraged and coordinated by them. The second is that the curator must move outside the comfort zone of their specialism, for example by attending meetings of other special interest groups and inviting them into the collection. Working with postgraduate students and postdoctoral researchers is an excellent way of widening networks in unexpected ways.

THE ETHNOBOTANY COLLECTION — BOTANICAL GARDEN RESEARCH INSTITUTE OF RIO DE JANEIRO

VIVIANE STERN DA FONSECA-KRUEL

Since 2000, a group of scientists comprising researchers from Botanical Garden Research Institute of Rio de Janeiro (JBRJ) and the Department of Botany of Rio de Janeiro's Federal Rural University have been working in a multidisciplinary effort, with the goal of achieving a comprehensive view of the complex and dynamic relationship between the symbolic and material, different human societies and the plants, especially through objects made with native Brazilian plants.

The Ethnobotany Collection is a recent collection, part of the Herbarium of the Botanical Garden Research Institute of Rio de Janeiro (RB). The priorities of the ethnobotany project range from curating the permanent collection and contributions from all other botanic gardens to conservation of biology and global change. Our collection includes handcrafts, objects and products made from different parts of plants (especially from the Atlantic rainforest and Amazonian communities) and natural products commercialised at the local markets.

Artefacts marketed as being made from *Caesalpinia echinata* (brazilwood tree) from the Ethnobotany Collection of the Rio de Janeiro Botanical Garden Research Institute: household items (wooden spoon, skimmers, fork and knife), crafts in the form of a carved dolphin and a pen in the shape of a toucan. These items were made by craftsmen of the town of Gamboa, municipality of Cabo Frio, State of Rio de Janeiro, Brazil and donated by V. S. da Fonseca-Kruel on 20 August 2003. Also shown are a pair of earrings made from the fruit of *C. echinata* L. by artisans of the town of Jacaré, municipality of Cabo Frio, State of Rio de Janeiro, Brazil and donated by V. S. da Fonseca-Kruel on 3 January 2003.

The increasing interest in ethnobotanical collections has led to an exciting development, the creation of new collections, for example at UNAM, Mexico City, and at the Botanic Gardens in Naples and Rio de Janeiro (see Box). The purpose of these new collections is typically the preservation of and communication about traditional cultures, in line with the purposes of modern ethnobotany.

A few of the older collections are still actively collecting; for example, Kew adds about 2,000 specimens a year to its Economic Botany Collection. All active collections work within the letter and

spirit of the Convention on Biological Diversity, with specimens being collected with prior informed consent (Chapters 1 and 11) for agreed-upon research and purposes (often non-commercial). Some active collections are used for bioprospecting projects, in which case property rights and benefit-sharing are particularly important elements of collaborative agreements (Chapters 1 and 16).

Alongside research and applied ethnobotany, historic collections are also compelling materials for public engagement (Chapter 24). This can be in the context of formal education, such as in postgraduate teaching, in museum displays, or in public interpretation such as heritage events and open days (Figure 8).

Figure 8. Public engagement: the re-opening of Kew's original Museum of Economic Botany for Open House London weekend, September 2011. A wide range of ethnobotanical artefacts, reinstalled into the museum for the first time since it closed in 1960, were seen by 1,200 visitors. © ROYAL BOTANIC GARDENS, KEW.

Figure 9. Working with source communities: conservator Luba Dovgan Nurse (far left) discusses a 19th century Maori cloak made from tikumu (*Celmisia*) with visitors from New Zealand. Left to right: Cathy and Jim Schuster, Rosanna Raymond, Esther Jessop, Maia Nuku. © DEAN SULLY, UNIVERSITY COLLEGE LONDON.

SOURCE COMMUNITIES AND MUSEUMS

Research into the history of museum collections enables curators and source communities to understand from where and whom collections came, how they were obtained, and how an object took on different meanings at different points in its history (Moser, 2006; Gosden et al., 2007; Chapters 17–19). The relationship between museums and source communities is complex and often framed within the context of injustices past and present. Plant products such as sugar and rubber are inextricably linked to slavery; indentured labour was widespread following the abolition of slavery, and plant exploration often took place in the context of appropriation of land.

At the same time, research into the Economic Botany Collection at Kew indicates that many collectors in the mid- to late- 19th century were sympathetic to indigenous cultures. For example, William Colenso (1811–1899) learned to speak Maori and published some of the earliest ethnobotanical records for Maori culture. Another collector in New Zealand, Walter Mantell (1820–1895), became a fervent campaigner for Maori rights. Collectors either paid for specimens or, less often, as in the case of an engraved bottle gourd received by Colenso, received items as gifts from indigenous peoples. Charles Newcombe (1851–1924), a prolific collector of artefacts for Kew and other museums, spent significant sums of money on purchases in British Columbia, blaming large purchases by the British Museum for pushing up prices for items purchased direct from the indigenous peoples (Cornish, 2012). Overall, Kew's archives point to subtle and complex relationships between collectors and members of source communities, sometimes based on friendship. Newcombe, for example, worked

in collaboration for many years with the son of a Haida chief, Henry Moody, as his Haida consultant. Objects and knowledge were recorded for utilitarian ends, to meet imperial and commercial agenda, but were sometimes collected with the explicit aim of preserving vanishing traditions. The role of indigenous consultants and the wider subject of how indigenous peoples and collectors interacted are subjects for future research (c.f. Cole, 1985; O'Hanlon & Welsch, 2004).

We believe that an open sharing of object histories is an essential component in building trust between curators and source communities. It is vital that biocultural collections make use of the experience gained by ethnographic museums in building partnerships with source communities. Examples of this are the work of the Pitt Rivers Museum; of the Museum of Anthropology in Vancouver, with First Nations peoples of Canada; of the Museum of New Zealand, Te Papa Tongarewa with the Maori of New Zealand; or of the National Museum of the American Indian, Washington, with native peoples of the Americas. Such partnerships should be grounded in the ethics codes of ethnobotany (Chapter 1), and bring many benefits. Because artefacts in historic collections may well have disappeared from everyday use, in their materials and making they may preserve indigenous knowledge that is threatened or has been lost. Careful 'reading' of construction techniques by traditional craftworkers can lead to the retrieval of knowledge, this time not for the benefit of empire, but in the spirit of modern ethnobotany, to strengthen and preserve cultural traditions (Figure 9).

RESEARCHING HISTORIES

It will be evident from this chapter that ethnobotany and economic botany collections are neither random accumulations of specimens nor the result of centrally directed and uniform collecting policies. Instead, they result from varied engagements among political and economic climates, institutions, museum staff, field collectors and indigenous peoples. Differences in aims, opportunity and method have led to great variation in the means by which specimens were obtained, the type of material collected and the amount of documentation.

These variations are of significance to users. Whether assessing the quality of a botanical identification prior to sampling for DNA analyses, researching the history of a collector or institution, or working in partnership with a source community, it is essential to find out the context of the specimens concerned. The date and location of the point of collection are particularly important for the identification of source communities.

Resources for researching provenance fall into three types:

1. Archives such as field notes, diaries and letters can give very direct insights into the circumstances of collection. Museum archives tend to be large and only catalogued in outline, so expert assistance may be required in locating material. Bear in mind that archival materials (especially letters) are often scattered and may well be housed in disparate institutions, or with family members. Union catalogues and botanical digitisation projects are increasingly useful, and some are listed at the end of this chapter.

2. Printed materials such as books and periodicals, and increasingly e-libraries, allow full-text searches (Chapter 13). Searching by collector names can lead to rich results. Selected resources are listed at the end of this chapter.

3. A broader body of ethnographic material and knowledge resides with both academic researchers, museum curators and source communities. Ethnographic expertise is a starting point for putting objects into their cultural context, while working with source communities also fosters partnerships for the care and interpretation of specimens (Chapters 17–19).

CONCLUSIONS

The history of ethnobotanical collections falls in four parts. In the 16th and 17th centuries we see the first materia medica cabinets. This is a time when botany is almost exclusively a medical pursuit, because of the central role of plants in providing medicines. Materia medica collections continued to be central to the teaching and practice of medicine until the 1930s, and often survive as collections within departments of pharmacy today. These specialist collections lie outside the scope of this article, but can be an important resource for the ethnobotanist.

In the age of the Enlightenment, the 18th century, exploration gave Western scientists access to well-documented natural history and ethnographic material from around the world. Major developments in classification, including Linnaeus's development of binomial plant classification, led to the creation of large and well-ordered collections, often in private hands such as those of Sir Hans Sloane.

The mid-19th century saw the rise of the public museum (including botanic gardens) as a major venue for collections research and public dissemination. At the same time, the expansion in global trade and of empire led to strong commercial and government interest in natural products. It is therefore no surprise that well-curated and extensively displayed economic botany collections were formed, often within botanic gardens, natural history museums and the now-vanished genre known as the commercial museum. It would be wrong, however, to see these collections as entirely European imperial enterprises, as demonstrated by the energetic formation of collections of 'aboriginal botany' within the USA.

The mid-20th century saw a decline in interest in natural products both among professional botanists and the wider world, and many ethno- and economic botany collections were placed in storage or dispersed. Recently, however, renewed interest has been driven by ethnobotanists and, increasingly, indigenous peoples, who are interested both in old collections as repositories of indigenous knowledge and history and in forming new collections deliberately aiming at preservation and communication. It seems unlikely that ethnobotanical collections will ever be formed or displayed on the same scale as in the 19th century, but their role within modern ethnobotany appears increasingly secure.

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Digital resources for researching object histories

Manuscripts

National Archives (UK). www.nationalarchives.gov.uk

Typical of many national archives in hosting a wide range of catalogues, not only of material held in the central body. This website includes the National Register of Archives, and Access to Archives (A2A) cataloguing archives throughout England and Wales.

Smithsonian Institution Archives. http://siarchives.si.edu

Natural History Museum (London). www.nhm.ac.uk/research-curation/library/archives

Harvard University Herbaria. www.huh.harvard.edu/libraries/archives.htm

JSTOR Plant Science. http://plants.jstor.org Includes more than 25,000 letters from Directors' Correspondence at the Royal Botanic Gardens, Kew

Missouri Botanical Garden, Tropicos. www.tropicos.org/ReferenceSearch.aspx

Printed materials

Google Books. http://books.google.com Full-text searching of many books, but inconsistent access to original text.

Open Library. http://openlibrary.org/search/inside Interface with the Internet Text Archive, which allows full-text searching of many books, with good reading and download options.

Biodiversity Heritage Library. www.biodiversitylibrary.org Historic botanical literature; currently no full-text text. Botanicus (www.botanicus.org) based at Missouri Botanical Garden is a major contributor.

JSTOR. http://jstor.org Full-text searching of long runs of academic journals from the 17th century to present. Access must be via a university account for full downloads of articles.

Ethnobotanical collection databases

Museum of Anthropology, University of Michigan, Ann Arbor: Southwest Traditional Ethnic Group Plant Use Database. www.lsa.umich.edu/umma/collections/archaeologycollections/archaeobiologylaboratories

Timothy C. Plowman Economic Botany Collection, Field Museum, Chicago. http://emuweb.fieldmuseum.org/botany/search_eb.php

Economic Botany Collection, Royal Botanic Gardens, Kew. http://apps.kew.org/ecbot/

Edward Palmer Collections. http://botany.si.edu/colls/palmer/

Richard Spruce. www.kew.org/collections/ecbot/collections/region/amazonia

Missouri Botanical Garden Ethnobotany and Biocultural Collections.
www.tropicos.org/EthnobotanySearch.aspx

Ethnographic collection databases

Many ethnographic collections are online; this is a selection of some of the largest:

Tropen Museum, Amsterdam. http://collectie.tropenmuseum.nl

Peabody Museum of Archaeology and Ethnology, Harvard. www.peabody.harvard.edu/node/37

British Museum, London. www.britishmuseum.org/research/search_the_collection_database.aspx

Museum of New Zealand/Te Papa Tongarewa, Wellington. http://collections.tepapa.govt.nz

Pitt Rivers Museum, Oxford. www.prm.ox.ac.uk/databases.html

Quai Branly, Paris. www.quaibranly.fr/fr/documentation/le-catalogue-des-objets.html

Anthropology Collections, Smithsonian Institution, Washington DC. http://collections.nmnh.si.edu/anthroDBintro.html

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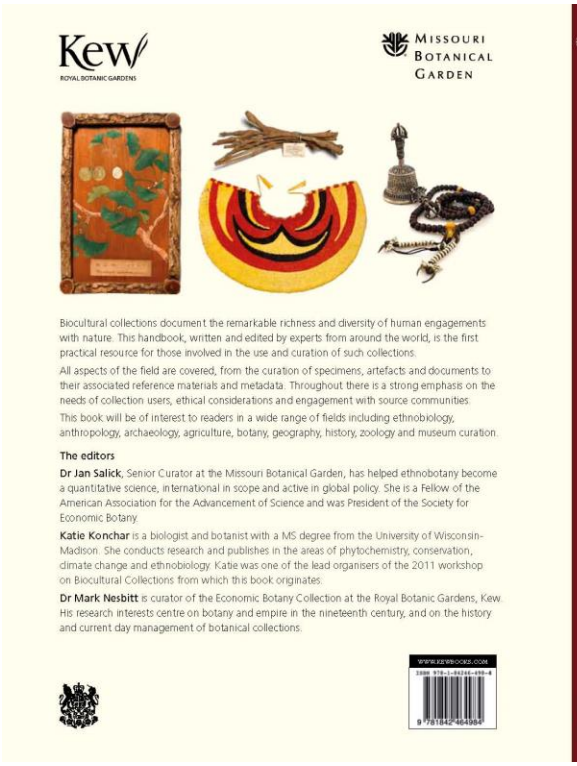

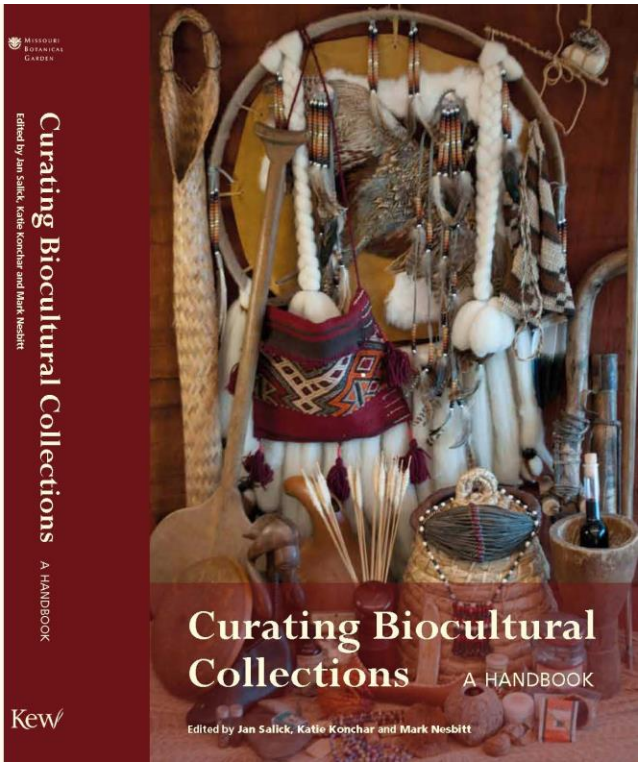

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