

Review Paper

The Wood Collections of Industrial Section Indian Museum (ISIM), BSI, Kolkata

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ABSTRACT

The present paper deals with the wood collections of the Industrial Section Indian Museum, BSI, which has vast collections of wood made in exhibit forms. These wood collections can be an essential source of study in wood or timbers collected around in nineteenth century. There are about 566 specimens of wood of various shapes and sizes housed at ISIM. The collection of wood at the botanical gallery for public viewing is displayed based on the mode of use, which helps people understand the versatility of usage patterns. A database has also been prepared with detailed records of each specimen for easy access.

HIGHLIGHTS

- The wood collection of xylarium in ISIM is less known.
- This collection is sourced from different localities of British India, which include collections from Burma, and Bangladesh.
- The wood collection enlightens people and researchers about different timbers sourced from different plants.
- The xylarium of ISIM acts as an authentic source for the identification of timbers.

Keywords: India, Wood, Xylarium. Industrial Section Indian Museum, Economic timber

The collection of certified timber specimens is called xylarium. Traditionally called xylotheque have specimens in the form of books, each made of a particular wood. In modern times it is a xylarium, where the specimen is a block with information engraved on the surface. It has a simpler shape, such as a tablet or tablet. The words xylotheque and xylarium are derived from the Greek word xylon, which means "tree," and theque, which means storage, or the Latin word arium, meaning "separate place." Xylotheques or xylariums, closely associated with research, also have herbarium and microscopic slide collections to provide comparative models of xylotomies and scientific studies on the physical and mechanical properties of wood

(Lamb and Curtis, 2005). The wood collection seems to be primarily of interest to wood anatomists, botanists, and forest managers; at the same time holds immense information on furniture restoration, forensic wood identification, climate change studies, history, ecology, paleobiology, archaeology, and conservation biology. Many universities also hold a small collection of wood to educate students about wood morphology and their characters.

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It is also helpful for those who need to perform morphological visual analysis of wood, especially for the general public. Wood has been a part of human lives since its inception (Radkau, 2012), yet the conception of wood sample collection is still uncommon.

A typical specimen of a xylarium is in the shape of a book ca. 12 cm high, 8 cm deep, and 4 cm wide; these samples were less suited for research as they could not give a clear picture of the trees' diameter. More recently, the whole stem has been selected for the collection; in case the trunk is too large, a block from the center to the bark is selected as a specimen (Wiedenhoeft 2014), which would give a clear picture of the ecology of the specimen. Forest Research Institute, Dehradun established by Dr. Griffith in 1800 housing, has a collection of 15000 specimens of wood from India and abroad. This is perhaps the oldest xylarium in India. Xylarium at Wood Science and Technology Division, Kerala Forest Research Institute, Kerala, has a wood collection center having 612 specimens (136 timbers from Kerala).

Timber collection of Industrial Section Indian Museum

ISIM xylarium started as a part of a collection of economic plant samples, and the earliest collection dates back to 1877, which may be the second oldest xylarium established. The collection of wood samples started off as a part of a collection of timbers of economic importance. Many of it was also collected from trees of the Indian Botanic Garden that had fallen due to the great cyclone of 1887 to 1895. Presently it has a collection of wood belonging to ca. 566 specimens. The xylarium database has detailed records, plant names, places of collection, and collector names. There are about 193 wooden samples of various shapes and sizes displayed along the staircase and extensive collections of timber samples in the botanical gallery for public display. The woods arranged in staircases are of different rectangular sizes. British workers were enthusiastic at that time with the timbers of British India. They were aware of the importance of woods found in India and its vicinity. Therefore, the Reporter of Economic plants to the Government of India dedicated separate sections for displaying the rich timbers of the region and educating the

common public about it. Special care has been in force for curating these valued collections since its establishment.

The display at the gallery is based on usage patterns and classified as timber for construction, furniture works, agricultural equipments, etc. There are several collections of wooden samples like *Castanopsis indica*, *Acacia nilotica*, *Alnus nitida*, *Bridelia retusa* and others that were collected from different parts of India during 1877-78. *Chukrasia tabularis*, *Lophopetalum littorale*, *Fernandoa adenophylla* are a few samples collected from Burma, along with *Tectona hamiltoniana*, which is endemic to Burma. Red sandalwood was collected from Andaman during 1877-78. *Shorea robusta* was part of the Bengal Economic Museum which may be as old as the erstwhile museum. *Grewia tilifolia* was displayed in the Calcutta International exhibition was held in 1881 in Calcutta. Collections are from the various regions of India, along with Andaman and Rangoon. The oldest collection is of *Haldina cordifolia* (Roxb.) Ridsdale from Gharwal in 1868. Mangrove trees *Rhizophora mucronata*, *Heritiera littoralis* Aiton. (Commonly known as *sundari*) mangrove plants are also present in exhibit form. Xylaria also has cultural implications, especially when it holds a collection of ancient constitutions (Vásquez-Correa, 2017). Just like all other natural history collection, wood collection has to be digitized for easy access to the samples. The samples of ISIM are yet to be digitized. An auspicious innovative method for digitization is by high-resolution 3D scanning, which has been successfully tested on wood (Dagnino and Mariotti, 2021) can be employed.

Industrial Section Indian Museum was once the hub of research around in 1900 in important economic plants of India, including neighboring countries, which have economically important wood collections. The timbers are listed here based on the mode of use and displayed as a part of the economic timbers of India.

LISTS OF TIMBERS WITH SPECIFIC USES

Timbers used for agricultural implements

<i>Acacia nilotica</i> (L.) Delile	1877-78	Berar
<i>Acacia catechu</i> (L.f.) Willd.	1877-78	Rakti forest, Darjeeling, Terai



<i>Acacia leucophaea</i> Willd.	1884	Calcutta international exhibition	<i>Lagerstroemia speciosa</i> (L.) Pierre	s.d.	s.l.
<i>Anogeissus latifolia</i> (Roxb. ex DC.) Wall. ex Guillem. and Perr.	1877-78	Annamalai Hills, Madras	<i>Lagerstroemia hypoleuca</i> Kurz.	1906	Andaman
<i>Bauhinia variegata</i> L.	1904	Punjab, Cachar	<i>Lagerstroemia parviflora</i> Roxb.	1923	Gujrat
<i>Bauhinia purpurea</i> L.	1989	Darjeeling	<i>Litsea glutinosa</i> (Lour.) C.B.Rob.	s.d.	Gonda, Oudh
<i>Buxus sempervirens</i> L.		Deoban, UP	<i>Picea smithiana</i> (Wall.) Boiss.	s.d.	s.l.
<i>Chloroxylon swietenia</i> DC.	1923	North Arcot	<i>Pinus longifolia</i> Roxb.	s.d.	Tuttul forest
<i>Syzygium cumini</i> (L.) Skeels		Madras	<i>Shorea robusta</i> Gaertn.	s.d.	Bengal
<i>Grewia tiliifolia</i> Valh.	1907	Gumaria, Madras; Calcutta international exhibition	<i>Terminalia paniculata</i> Roth.	s.d.	North Kanara
<i>Harwickia binata</i> Roxb.	s.d.	s.l.	<i>Casearia tomentosa</i> Roxb.	1877-78	Gonda, Oudh
<i>Mesua ferrea</i> L.	s.d.	Andaman	<i>Euonymus lucidus</i> D.Don	1989	Glen, Simla
<i>Mimusops elengi</i> L.	s.d.	North Kanara	<i>Gynocardia odorata</i> R.Br.	s.d.	Chittagong
<i>Desmodium oojeinense</i> (Roxb.) H. Ohashi	s.d.	North Kanara	<i>Adenantha pavonina</i> L.	1877-78	Andaman Island
<i>Randia uliginosa</i> D.C.	s.d.	Oudh	<i>Aegle. Marmelos</i> (L.) Correa	s.d.	Goalhara, Assam
<i>Schleichera trijuga</i> Willd.	s.d.	Oudh	<i>Alnus nitida</i> (Spach) Endl.	1877-78	Shimla
<i>Taxus baccata</i> L.	1902	s.l.	<i>Madhuca longifolia</i> var <i>latifolia</i> (Roxb.) A. Chev.	s.d.	Western Ghats
<i>Vitex peduncularis</i> Wall. ex Schauer	s.d.	Karrsataduty, Burma			
<i>Ziziphus jujuba</i> Mill.	s.d.	Ahiri reserve, Central Province			

Timbers used for Construction

<i>Haldina cordifolia</i> (Roxb.) Ridsdale	1868-1878	Gharwal; Gunpur, Madras; Ahiri reserve, Central Province
<i>Albizia odoratissima</i> (L.f.) Benth.	1877-78	Burma
<i>Albizia procera</i> Benth.	s.d.	Assam
<i>Artocarpus lacucha</i> Buch.-Ham.	s.d.	South Kanara
<i>Artocarpus chaplasi</i>	s.d.	s.l.
<i>Bischofia javanica</i> Blume	s.d.	s.l.
<i>Bridelia retusa</i> (L.) A. Juss.	1877-78	Bamunpokhri, Darjeeling
<i>Calophyllum tacamahaca</i> Willd.	1877-78	Andaman
<i>Calophyllum tomentosum</i> Wight	1889	South Kanara
<i>Dillenia pentagyna</i> Roxb.	1889	Prome, Burma
<i>Dipterocarpus tuberculatus</i> Roxb.	1902	Burma
<i>Kingiodendron pinnatum</i> (DC.) Harms	1902	Salem; Travancore

Timbers used for Furniture and Cabinet

<i>Albizia lebbeck</i> L. Benth.	1893	Mandalay, Burma
<i>Albizia lucida</i> Benth.	1908	Rangoon
<i>Aglais spectabilis</i> (Miq.) S.S. Jain and S. Bennet	1989	Dispur, Assam
<i>Berrya ammonilla</i>	1897	Moulmein, Burma
<i>Boswellia serrata</i>	s.d.	s.l.
<i>Toona ciliata</i> M. Roem.	1902	Kurseong, Garhwal
<i>Cedrela serrata</i> Royle	s.d.	s.l.
<i>Chukrasia tubularis</i> A-Juss	1896	Katha div.
<i>Dalbergia latifolia</i> Roxb.	1902	Malabar
<i>Dalbergia sisso</i>	1900	s.l.
<i>Gmelina arborea</i> Roxb.	1907	Singbhum, Chaibasa
<i>Phoebe paniculata</i> Nees	s.d.	s.l.
<i>Podocarpus neriifolia</i>	s.d.	s.l.
<i>Soymida febrifuga</i> (Roxb.) A. Juss.	s.d.	s.l.
<i>Stereospermum suaveolens</i> DC.	s.d.	s.l.
<i>Stereospermum xylocarpum</i>	s.d.	s.l.
<i>Tectona grandis</i> L. f.	s.d.	Raj Dowewalooof forest
<i>Terminalia tomentosa</i> Wight and Arn.	s.d.	s.l.
<i>Ulmus walliciana</i> Planch.	s.d.	s.l.

Timber used for Boat and Ship Building

<i>Medhuca longifolia var latifolia</i> (Roxb.) A. Chev.	s.d.	Western Ghats
<i>Cordia myxa</i> L.	1900	Paris exhibition sample
<i>Dalbergia cultrata</i> Gaertn.	1902	Burma
<i>Dipterocarpus turbinatus</i> Gaertn.	s.d.	s.l.
<i>Dillenia indica</i> L.	1904	Chittagong
<i>Dolichandrone falcata</i>	s.d.	s.l.
<i>Dysoxylum binectariferum</i>	s.d.	s.l.
<i>Eriolaena candeliei</i>	s.d.	s.l.

CONCLUSION

Wood collection is a source of different chemical compounds that plays a crucial role in determining their usage. The use of infrared spectroscopy to separate woods based on their chemical signatures (Pastore *et al.* 2011; Wiedenhoeft, 2014) would require reference spectra, and xylarium serves the purpose. This also helps in determining the authenticity of valued wooden artifacts. Woods also serves as a source of stable isotopes which would help in understanding authenticity and local climate (Ward *et al.* 2005; Wiedenhoeft, 2014). Xylarium is less susceptible to biological attack due to the presence of various natural compounds (Sundararaj *et al.* 2015), even though to avoid the risk of attack by mould or insects, wood specimens must be kept reasonably stable environments. In earlier days, the aim of a xylarium was limited to industrial or economic use (Beekman, 2003), as a result of which the number of timber plants was much reduced, and much of the timber resources remained unexplored. A detailed account of the mode of use of different timbers would help us to stop the misuse of valuable timber resources and lead us towards sustainable use of forest products.

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