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History and Hardwood Species of HMS Charybdis

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Abstract

HMS Charybdis was a 21-gun steam-auxiliary screw corvette, which was built for the Royal Navy in 1859. It is generally believed to be the last wood-framed major warship built by the British. HMS Charybdis spent her entire service life operating in the Far East and the Pacific. In 1880, HMS Charybdis was offered to Canada as a training ship, Canada's first warship, to help with the creation of a Canadian navy. In 1884, she was sold and broken-up in Halifax, Canada.

Due to the price and availability of naval timber (mainly English oak) in the early eighteenth century, African timber was purchased by the British navy to substitute oak for building warships. The species of the wood framing from HMS Charybdis was identified in this study to be *Autranella spp.*

***Keywords*:** A. HMS Charybdis, B. History, C. Hardwood, D. *Autranella spp.*

Brief History of HMS Charybdis

HMS Charybdis is generally believed to be the last wood-framed major warship built for the Royal Navy by the British. She was a 21-gun steam-auxiliary screw corvette launching in 1859, Figure 1, 2250 tons, 1400 H. P., 200 by 40 by 20 feet in size with a speed of 11 knots (Tolson 1979). The regulation crew was 180. Guns were mounted on the gun deck for broadside firing.

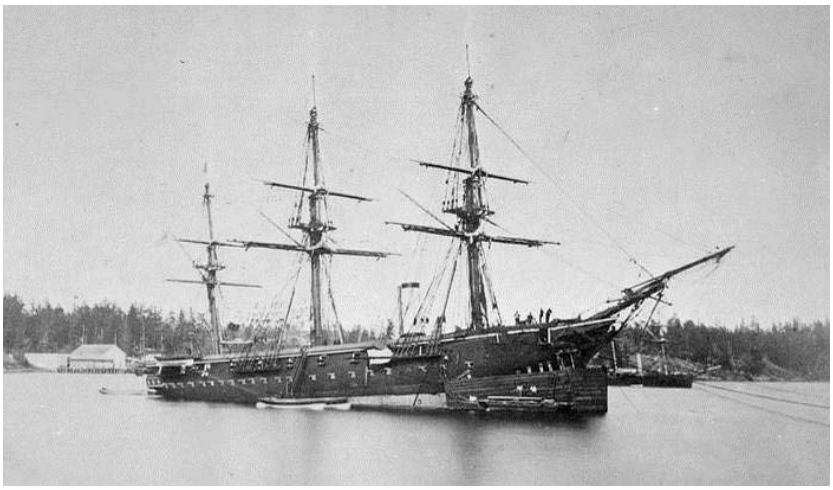

Figure 1. HMS Charybdis.

Upon completion Charybdis was immediately sent to the East Indies Station in 1860, and then soon after (1861) moved to the China Station. The rest of the 1860s were spent in the Pacific, including assignment to the Pacific Station, based in Esquimalt, British Columbia, from 1862 to 1867. In early 1867 Charybdis was transferred to the Australian Station for two years, and then served as part of the Royal Navy's "Flying Squadron" in 1869, visiting ports in South America, Japan and Australia. She returned to Esquimalt and the Pacific Squadron in early 1869. After a refit in England in 1870, Charybdis returned to the Far East, and by 1873 she was serving on the China Station again. In 1873 she was sent south to conduct anti-piracy patrols in the Straits of Malacca, and was involved in the Southern Malayan state disputes in 1874.

By 1880 HMS Charybdis had returned to Britain after two decades of hard foreign service, her machinery – now antiquated – was worn-out and not worth replacing. Charybdis was offered to Canada as a training ship to help with the creation of a Canadian navy. Captain Scott, a retired Royal Navy officer, was sent to England to get Charybdis (Tolson 1979). Stripped of her armament, it took 32 days for Charybdis to arrive in Saint John, New Brunswick, in late 1880 (Tolson 1979). When the war scare finally ended Charybdis was returned to the Imperial government in October 1881. Tolson (1979) wrote "The Charybdis began her antics, refusing to stay at anchor, lunging around the harbour smashing into other vessels." "Two Members of Parliament declared she was nothing but a shire elephant and were all for returning the gift to England."

Finally Charybdis was towed to Halifax in August 1882, and lay idle there until 1884 when she was sold and broken-up.

All that now survives of HMS Charybdis are the gateposts of the Scott Manor house in Bedford, Nova Scotia, Canada, Figure 2. Two decorative posts with fat acorns on top carry handing garden gates. The wood was given to retired Fleet Surgeon J. Ternan, R.N., around 1883 (Tolson 1979).

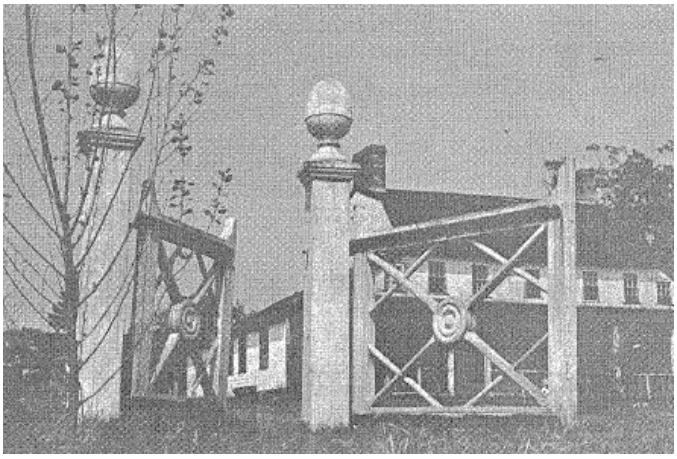

Figure 2. Gates made from HMS Charybdis.

Naval Timber Supply in Early 18th Century in Britain

The English oak (*Quercus robur*) was the favoured native timber tree for ship building due to its numerous qualities such as durability and strength. The sapwood is not suitable for any use as it is prone to decay if exposed to damp, but the heartwood is tough and resilient when dry (Lambert 1991). The presence of tannic acid is largely responsible for the durability of the timber, although it reacts adversely with iron. Oak can be bent using steam or hot sand, and keeps its shape when fully seasoned. Table 1 gives a list of materials estimated in the fabrication of a 74-gun ship of 1,745 tons (Lambert 1991).

Table 1. Materials in the fabrication of a 74-gun ship of 1,745 tons (Lambert 1991).

Material	Item	Load	Weight (tons)
Oak	Timber	739 (at 55 lbs / ft^3)	1,339
	Thickstuff	160 (at 55 lbs / ft^3)	
	Plank	192 (at 55 lbs / ft^3)	
Fir	Timber	74 (at 35 lbs / ft^3)	117
	Deals	76 (at 35 lbs / ft^3)	
Elm	Timber and plank	12 (60 lbs / ft^3)	16
Copper			46
Iron			90
Lead			5
Total			1,613

In addition to ship building and house construction, oak was in increasing demand for barges, machinery and transport facilities of the industrial revolution in the 18th century, when it required more timber than iron. The total quantity of oak timber from the Royal Forests kept decreasing from 1812 to 1824 (Lambert 1991), Figure 3. The supply of naval timber had been a source of concern as early as in 1771 when a Committee of the House of Commons investigated the issue (Lambert 1991). It was then discovered that the problem of timber supply was more closely related to price than availability. Table 2 gives the average price of timber per load in pounds sterling (Lambert 1991). Since a new fleet would use far more timber than one largely reconstructed from existing ships that time, the British Navy was, by 1831, spending more money on African timber than English oak and was prepared to substitute African timber for oak. Since then, tropic African hardwoods were used extensively for framing of the mid-18th century vessels such as the HMS Charybdis, as they were intended for service overseas on tropical or semi-tropical stations.

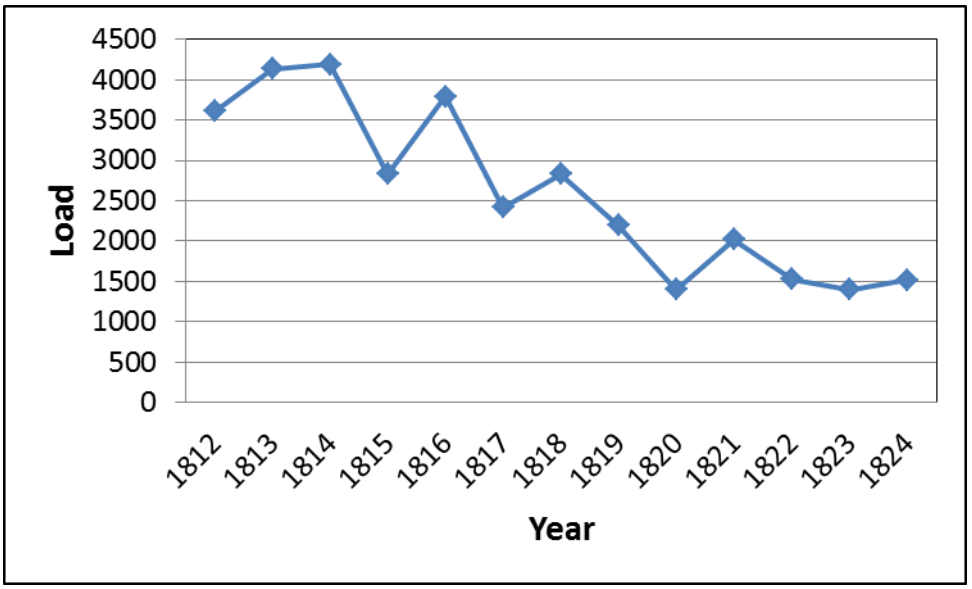

Figure 3 – Supply of oak timber from the Royal Forests

Table 2. Average price (pounds sterling per load) of timber.

Timber		Year	
		1818	1823
English oak	Rough	8.19.6	8.10.6
	Sided	13.8.0	12.14.7
African hardwoods	Sided		8.13.3

Species Identification of the Wood from HMS Charybdis

A wood sample was obtained from the Scott Manor house. The airdry density of the sample was measured at the Wood Science and Technology Centre, the University of New Brunswick, Canada. Micro slides of three standard sections were prepared using a microtome at the Chinese Academy of Forestry, China. Images were accordingly taken under a microscope, Figures 4-6. The major features are described as follows.

Growth ring boundaries distinct to indistinct. Wood (heartwood) brown to red. Texture fine and even grain straight. Airdry density (airdry weight / airdry volume) 0.960 g/cm^3. Vessels diffuse-porous, radial orientation of vessel multiples more or less evident, radial rows of 2-4 vessels or more, perforation plates simple, intervessel pits alternate. Fibres very thick-walled. Longitudinal parenchyma present, apotracheal, diffuse to diffuse-in-aggregates, in narrow bands (up to three cells wide), 6-9 cells per strand. Rays composed of two or more cell types, heterocellular, procumbent ray cells with mostly 2–4 rows of upright and/or square marginal cells, multiseriate, 2–3 cells wide; uniseriate rays composed exclusively of square and/or upright cells. Spiral thickenings absent.

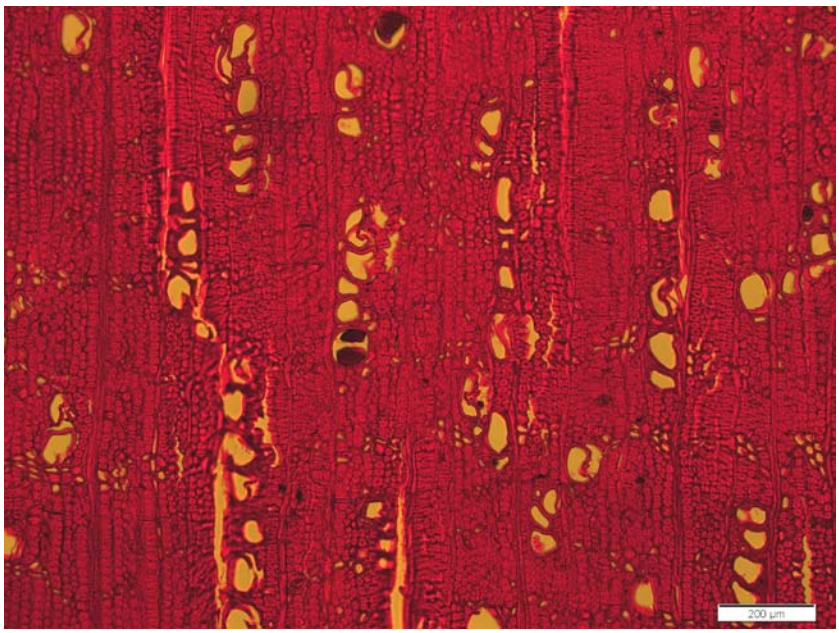

Figure 4. Major features on cross section: diffuse-porous wood with vessels being arranged in radial pattern, very thick-walled fibres, apotracheal longitudinal parenchyma diffuse-in-aggregates forming narrow bands.

Figure 5. Major features on radial section: perforation plates simple, longitudinal parenchyma 6–9 cells per strand, heterocellular rays consisting of procumbent cells with 2–4 rows of upright and/or square marginal cells.

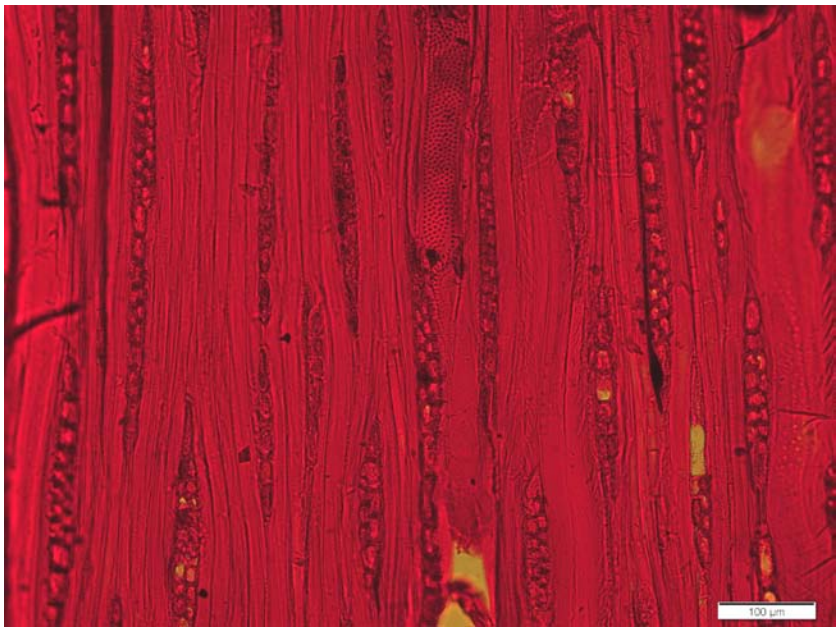

Figure 6. Major features on tangential section: multiseriate rays 1–3 cells wide.

Based on the above features observed, comparison with available micro slides and source of wood sample, it can be concluded that the species of hardwood sample from HMS Charybdis is *Autranella spp*., which belongs to the family Sapotaceae. One of common names could be Mukulungu (Forest Products Laboratory 2012).

This kind of hardwood is distributed in tropic Africa. It is very durable though there may be slight termite attack, resistant to dilute acids and weathering. The wood is widely used for heavy construction, ship and boat building, heavy-duty flooring, bridges, sluice gates and other waterworks, railway sleepers, and poles.

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