

MARITIME ARCHIVES & LIBRARY**INFORMATION SHEET 1****THE AGE OF SAIL**

Sailing ship design and construction underwent considerable changes during the course of the 19th century. Until the 1830s ship design was influenced by the Tonnage Acts. The way in which the tonnage of a ship was calculated for the purposes of port dues, etc., favoured deep, narrow vessels. From the 1830s ordinary merchant sailing ships tended to become somewhat shallower, broader in beam and sharper in hull shape fore and aft.

The Transatlantic packet ships were amongst the most renowned of the pre-1850 sailing ships. A packet service was introduced between Liverpool and New York by 1818 by the Black Ball Line.* Such vessels sailed to a regular timetable and carried first-class passengers and valuable cargoes, including gold and mail. The Transatlantic packet ships were amongst the first deep-sea sailing vessels to be affected by competition from steam-powered vessels. With the loss of their traditional market the packet ships concentrated on the emigrant traffic.

The years from 1850 to 1865 are regarded as the great age of the clipper ships. Clippers were square-rigged vessels with narrow, streamlined hulls which enabled them to travel at considerable speed. Fast ships were needed for premium freights, such as tea from China, because of the way such commodity markets operated. However, only about two per cent of the sailing ship tonnage were fast clippers. Many of the Transatlantic packets, however, were not built on extreme clipper lines as the sharp bows of clippers tended to result in the shipping of water in the stormy Atlantic.

In 1860 the registered U.K. sailing ship tonnage was 4.2 million net tons and the corresponding figure for steamships was 450,000 net tons. By 1865 steam-powered merchant vessels had been developed to a point where they could start to compete with sailing ships. Under the stimulus of competition, ocean-going sailing ships developed and had changed beyond all recognition by the 1880s and 1890s. Iron, and eventually steel hulls, had been developed, rigging had been simplified and some ships had steam 'donkey' engines for hoisting sails, raising anchors and working pumps. Iron hulls permitted larger ships than wooden hulls, which had a structural limit of about 300 feet. The standard British sailing vessel of the 1880s was a three-masted barque or square-rigger which was able to carry three times the cargo of the ordinary wooden sailing vessel of the 1860s.

* This should not be confused with the Australian Black Ball Line.

These square-riggers had increased cargo space in proportion to registered tonnage (as an iron ship weighed a quarter less than a similar wooden one) and were manned by a smaller crew in relation to tonnage. Up to the 1880s the sailing ship was still an economic carrier of bulk cargoes, eg exports of iron and coal, and imports of Australian wool, Chilean nitrate and Californian wheat. The efficiency of sailing ships was also increased by Maury's work on currents and winds which led to the establishment of recommended routes and a reduction in journey times.

In the British coastal trade and short-sea trades the brig and the brigantine had given way after 1870 to the economical, three-masted, top-sail schooner which was cheaper to build, needed fewer men to sail and was less expensive to maintain.

During the 1880s the development of steel boiler plates and tubes, and the introduction of triple expansion steam engines permitted increased boiler pressures and more efficient engines. This increased the competitive position of steamships and was the death knell for ocean-going sailing ships. Certainty of performance meant that steamships could make more round trips per year than sailing vessels. By the late 1890s steam was more economical than sail for most deep-sea trading routes.

By the second decade of the 20th century, most of the great sailing vessels were concentrated in the hands of a few shipowners based in the Åland Islands off the coast of Finland. The greatest of these, Gustaf Erikson, 1872-1947, died two years before his ships finished their last voyage.

To many, the days of sail are the days of real seamanship, when men learned to work with the elements. Many of the great liner captains were trained in sail. Many of the world's large sailing vessels survive as training ships. Their story is surrounded by an aura of heroism and romance which the harsh realities of life before the mast and the miseries of the emigrant 'coffin' ships can never dim.

The Merseyside Maritime Museum is fortunate in holding the Brocklebank Archive, which covers both sail and steam, in addition to extensive holdings of individual ships' logs, photographs, plans, paintings and models.

Booklist

The literature on the subject is immense. It ranges from the poetry of John Masefield to company histories, biographies of captains and histories of individual ships.

ADAMS, B., *Ships and Memories*, Teredo Press, 1975

ALBION, R., *Square Riggers on Schedule*

CHAPELLE, H.I., *The Search for Speed Under Sail*, Conway Maritime Press, 1983

FAIRBURN, W.A., *Merchant Sail* (6 Vols.), Fairburn Foundation, Center Lovell, Maine, 1945-1955

GREENHILL, B., *The Merchant Schooners*, N.M.M.

GREENHILL, B., *The Ship*, Vol. 7 - The Life and Death of the Merchant Sailing Ship, 1815-1965, H.M.S.O., 1980

LUBBOCK, B., *The Colonial Clippers*, 1924

LUBBOCK, B., *The China Clippers*, 1929

MacGREGOR, D., *Clipper Ships*, 1979

STAMMERS, M.K., *The Passage Makers*, Black Ball Line, Australia, Teredo Press, 1978

STAMMERS, M.K. and J. Kearon, *The Jhelum*, Alan Sutton / National Museums Liverpool, 1992

WHIPPLE, A.B.C., *The Clipper Ships*, Time-Life Books, 1980

A comprehensive work explaining the various types of sailing vessels:

DUDZUS, A. and E. Henriot, *Dictionary of Ship Types*, Conway Maritime Press, 1986