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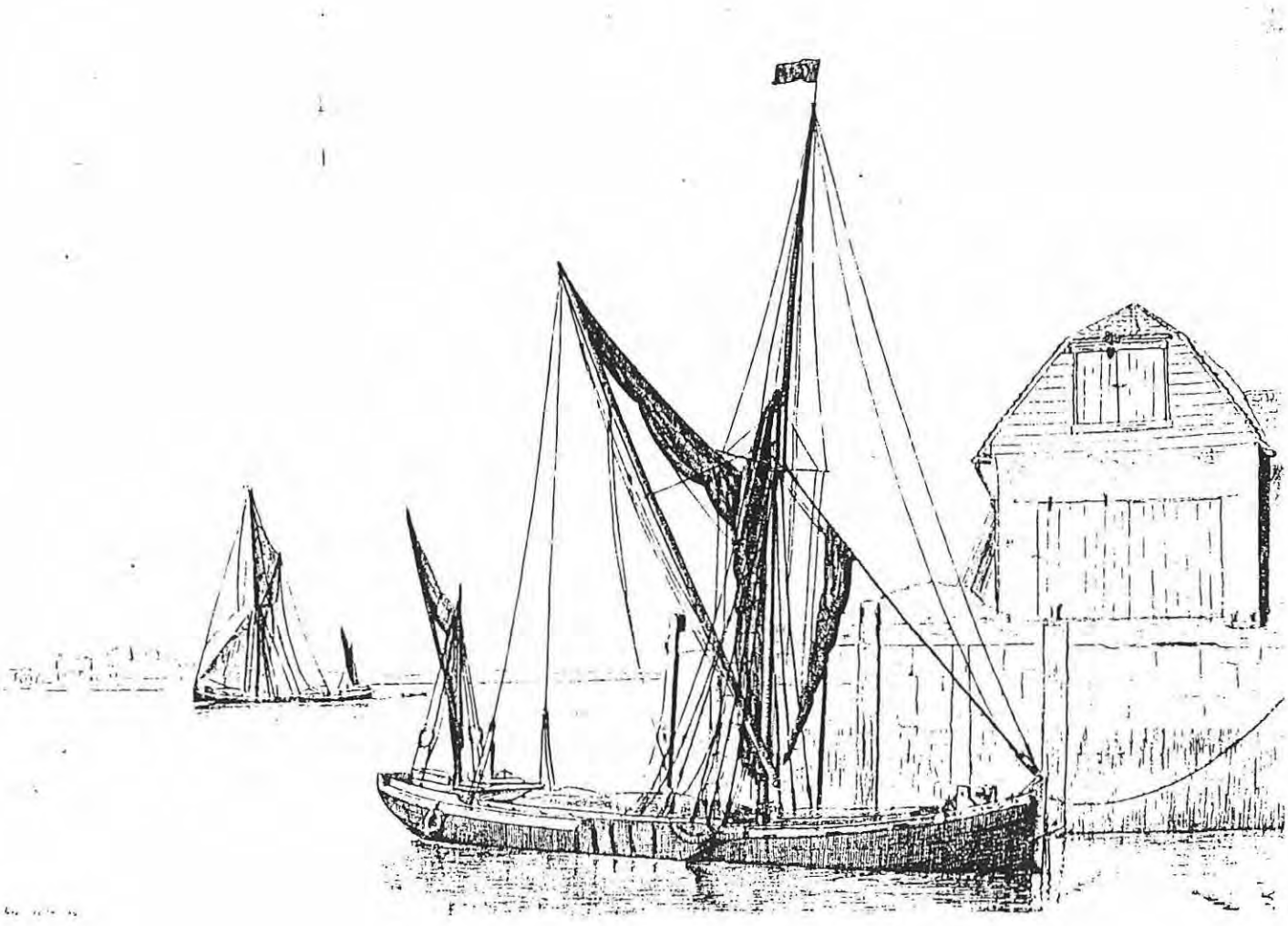

Thames Barge

Note the mainsail brailed into the mast

See article on page 11.

The Maritime Heritage Association Journal is the official newsletter of the Maritime Heritage Association of Western Australia, Incorporated.

All of the Association's incoming journals, newsletters, etc. are now archived at *Wooden Boat Works*, Slip Street, Fremantle Harbour, and are available to members on loan Please note that to access the videos, journals, library books, etc it is necessary to phone ahead on 9335 9477.
(If you have an unwanted collection of magazines of a maritime nature, then perhaps its time to let others enjoy reading it. Contact the Association; we may be interested in archiving the collection.)

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The Editor, 294 Chapman Road, Geraldton, Western Australia, 6530.

EDITORIAL

A big thank you to Bob Johnson for a great effort in resurrecting the MHA computer. I now have a computer that has power and speed and all the necessary programmes in the latest editions. What a change from when I was preparing the last journal, hen both the MHA computer and my own little laptop decided that life wasn't worth living!

While in Fremantle recently I noticed how prominent the New Maritime Museum building is becoming as construction progresses. It will be an imposing structure when it is finished.

There is a possibility that there will be another historical replica built in this State. Discussions are being held in Geraldton regarding the building of a replica of the *Batavia* ship's boat. There are a great many hurdles to overcome (not the least of which is the finances) but if it goes ahead it will be built by the students of the local TAFE. It would be part of a boatbuilding course similar to that held in Albany. I will keep readers informed of the outcome.

When I last heard of the *Duyfken* she was between Djakarta and Galle in Sri Lanka. I presume Nick Burningham is enjoying his voyage and I am looking forward to some interesting and entertaining articles about the trip for this journal when he gets back.

I am once again appealing to readers for contributions to the journal. Articles of any size on any relevant subject would be greatly appreciated.

Last year Rod wrote to a great number of high schools in WA regarding an essay competition. Readers will find the first of these essays, this one by Ben Killey of North Albany High School, on page 4. Future journals will feature other essays. Congratulations to Rod on organising the competition and to those students who submitted entries.

Recently Jill and I attended a reunion of people involved in the discovery and excavation of the wreck of the *Rapid*. It was a most interesting evening and we caught up with a lot of people we hadn't seen for years. A highlight of the proceedings was the launching of Mike Lefroy's book "Shipwreck at Madman's Corner". This children's book is lavishly illustrated with many photographs by Pat Baker together with some drawings by Joe Bond. Published by Omnibus Books I found it a most enjoyable read and Mike is to be congratulated on a great book.

As requested by members I have prepared an index of all articles that have been published in Journals up to the present. Over 1,500 entries are listed in four columns. It has been decided that the most economical way to make the index available is on floppy disk, as there are 36 pages of print-out. To save members the cost of remitting a small amount of money, if you would like an index please send me a book of ten 45c stamps which I can use to send out the next Journals.

PRESIDENTIAL TIDINGS

Tidings: from the Old English tidung *meaning news and information. (Ed.)*

August 2001 already. Time flies when you're having fun, or so the saying goes. That is definitely a truism as during the time that I spend in the libraries and archives researching history and then putting a hopefully readable story together, months disappear without me realising until I have to sign something with a date on it.

Having completed two manuscripts on Maritime History and handed them into the publisher I decided to take a complete break from research for six months or so. Well I managed to last six weeks before the itch got to me and I am back in the archives again chasing up whaling stories.

Our esteemed Nick Burningham managed to get himself shanghaied onto the *Duyfken* for a voyage of a lifetime. Australia to Holland, arriving there next April. Congratulations and have a smooth uneventful voyage.

As mentioned previously four members of the Association travelled north to Carnarvon to investigate and measure an historic vessel, the *Little Dirk*. We spent the better part of a week crawling over and under around and about until every square inch of timber had been studied. As a result of our endeavours at the time, and later Ray Miller's and Ross Shardlow's efforts on preparing the line and scale drawings and report for the Carnarvon Historical Society, we are pleased to announce that the *Little Dirk* will be saved as a museum piece for the people of Carnarvon.

With the success of this project I hope we can go on to other equally successful projects in the future.

Rod Dickson.

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The Significance of the Albany Town Jetty

The following article was submitted by Ben Killey of North Albany Senior High School as an entry into the competition organised by Rod Dickson.

The Albany Town Jetty was for over a century, a gateway into the Western Australian land mass. Situated on the Southern coast of WA, along the trade winds between Capetown and Melbourne, the extensive harbour and sound geographical formation of the settlement was naturally going to attract shipping. The primary reason for the establishment of the Albany/Frederickstown settlement was to assert a colonial presence in the region by English expansionists with an aim to establish a number of coastal trading colonies. Albany quickly became as it was intended to be: a shipping haven for traders between the colonies of the European powers. Shipping activity, particularly by the British merchant fleets and the Empire steam mail saw Albany gradually grow into a frontier port settlement, in tandem with the Swan River settlement.

The original jetty, as explained later, was no more than a short term solution intended to keep the Colonial Clerks satisfied of the health of the coffers. Many at the Swan River settlement didn't understand that the technology used on the original jetty required cargo to be handled three times on its way into town, making the process very expensive. With the mounting demand for major shipping facilities in the settlement harbour, the Colonial Government of WA realised the benefits of greater facilities. The Albany Town Jetty was completed and in use by 1862. This jetty became the very reason the settlement survived so far out on the extreme reaches of the British Empire for the following reasons:

- It provided a haven for shipping through the Southern Ocean between the Eastern Australian colonies and the rest of the British Empire such as India and South Africa.
- It facilitated trade between the Australian continent and Europe by allowing shipping to simply head East from South Africa to the Australian colonies.
- It was a vital entry point to Western Australia for waves of immigrants right up to the 1950s and 60s.
- It was the landing point for the international steam mail.
- The jetty was the principal landing place for imports (such as machinery and mail) and exports (such as gold from inland and raw materials), essential for the survival of European colonisation and for the expansion into the rest of Western Australia.
- It had close ties with the famous whaling industry of the South West, as it provided docking facilities for a number of whalers up until the 1970s.
- The jetty facilitated the huge influx of immigrants from the world during the Western Australian Gold Rushes of the 1890s, which brought about a great economic boom in the settlement and the entire state.
- It was a focal point of social activities in Albany at the beginning of the twentieth century, with its tearooms, sea baths, the Princess Royal Yacht Club boat shed and the Naval Cadet training facilities.
- It became a departure point for Australian and American fleets and re-enforcements to Europe during both World Wars, bolstering the business and profile of the town.
- It has remained popular with locals for recreational fishing, right up until its demolition.

The Albany Town Jetty has continually grown to deal with the increasing business in the Harbour. With numerous additions and refurbishments, the facilities have helped create the town ship around itself by attracting shipping and trade with local businesses. It may also be a fair appraisal of the importance of the opportunities the jetty brought to the Western colonies and particularly Albany by saying that without its construction, Albany and much of the state would have hazarded stagnation and restricted growth. Certainly, the jetty allowed the Gold Rush immigrants to travel to the goldfields and for farmers in the vast regions inland of the township to transport their agricultural produce to the rest of Australia and the World market.

The jetty had a huge effect on the prosperity of the Albany Township, being directly responsible for an over-proportionate existence of hotels and pubs

along Stirling Terrace and the original Esplanade Hotel. A number of times (1873 and 1889) local business owners complained en-masse to the Government for greater loading facilities and upgrades along Spencer Street and Stirling Terrace to maximise custom from passengers from ships docked at the jetty. It is estimated that at the height of the Gold Rushes in the 1890s, Albany received 500 passengers a week and an annual income of £50,000 a year. With this kind of prosperity to attract immigrants, the inland regions were quickly established as farms and the mining communities sprang up all over the flat, resource-rich countryside of the North.

It is fair to say that the Town Jetty was one of the means for Western Australia to Flourish and to be in a position to federate as a State at the end of the 19th century. Western Australia had much growing up to do in the 1800s to put itself on an equal footing with its larger Eastern counterparts. The ability to colonise the land rapidly much as the North Americans had to establish themselves free from colonialism, allowed WA to add its resource might to the new Australian nation. The Albany Town Jetty provided this rapid settlement ability. In essence, the growth of Albany as a town was enabled by the growth of the Town Jetty as a source of revenue.

The Structure of the Jetty and Construction History

Albany's first jetty facilities were built between 1837 and 1838. It was an ill-planned and financially constrained solution to the much needed expansion of berthing capabilities in Princess Royal Harbour. It rapidly became obsolete as it was several hundred metres from the Town centre, did not extend into deep enough water and had a limited heavy cargo handling capacity. Over a period of more than one and a half decades, great pressure was applied upon the Western Australian Government to allocate funding for the construction of a new jetty nearer to York Street and the central business area. Following the end of the Crimean War and the subsequent renewal of the British steam mail contracts in 1856 and increased traffic to the Eastern Australian colonies, new dock facilities became absolutely necessary for the port settlement's survival.

In 1860 the Government made the decision and a site was selected at the end of Spencer Street. Tenders were accepted in the December of that year with two submitted. One from Mr. James Covert was selected, proposing a jetty of 405 feet in length which would extend into 4 feet and 6 inches of water. This calculation was soon proven inaccurate, as depth recordings made by the Clerk of Works showed the jetty would but reach a depth of two and a half feet. The plans were altered for the jetty to be built a further 107 feet at a final cost of £1,100.

Work was delayed for a number of months. Vast supplies of timber had to be cut and transported onto the foreshore of Princess Royal Harbour. It was not until two years after the tender was accepted that Sir Campbell-Burt reported that Covert had the first 25 feet of the jetty completed.

In 1932, Captain James J. Sale wrote a number of letters which describe his recollection of the happening during the construction of the marine facility. Sale said that he remembered that the jetty was built from timber cut from the Kalgan and King Rivers. The piles were 12 inches square, felled and hewn by axe. He recorded difficulties in driving the piles as Covert was counting on encasing the piles in cases to bore them into the seabed. This was very slow because the beds were of a very dense clay. Covert experimented with Yate wood from Little Grove, by using the tough wood as a monkey, or hardened tip, to drive the pile deep into the clay. When the structure was completed it was called "Covert's Jetty".

When completed, the jetty consisted of a straight 'arm' section with two sets of steel cart rails and hand-railing on either side. Lower dock landings were located nearer the end of the jetty and hand-operated cargo trucks ran along the twin set of rails. As the Empire mail became increasingly frequent, kerosene lamps were added to the seaward side of the jetty to guide the Mail launches. The jetty wasn't just used for trade and international stopovers, there was also a considerable amount of official activities facilitated by the new jetty.

In 1873, the 'T' shaped head of the jetty was modified to deal with the berthing problems caused by the prevailing winds and an iron crane was shipped in from Sydney and fitted on the

South-West corner of the jetty head.

In the 1880s, there was a serious concern for the lack of berthing facilities for heavy-displacement shipping. A report by the Albany Mail highlights this issue at the time "....At present there is only room for one vessel at the end where there is deep water. The other day, the steamer *Rob Roy* and the barque *Armistice* were both moored alongside and when the *Otway* approached, she had to lie alongside the barque."

Between 1885 and 1889 the Western Australian Land Company built a railway between Albany and Beverly to connect with the Perth line. The line started at the Albany deep water jetty and ran around the North shore of the harbour before winding its way around Mount Melville and winding its way inland. The railway, by directly linking the jetty to Perth, made the jetty of even greater importance as goods and passengers could come ashore at Albany and move quickly up the West coast or inland.

With the increase in maritime activity associated with the Western Australian gold rush, the jetty was extended in 1893. A curved arm section was constructed facing the south east in front of the Lawley Park shore. The extension was about 35 feet wide and 532 feet long which occupied waters dredged by the dredge *Premier* up until 1895.

A railed footway with electric lighting was constructed along the full length of the jetty at the turn of the twentieth century. This came about after complaints by shipping workers and local citizens about the dangers of the haulage carts and accidents at night time. The previous year, three coaling men had fallen off the jetty and had to be helped from the water.

The Princess Royal Yacht Club was formed in 1909 at a discussion held at the White Star Hotel on Stirling Terrace. The founders declared a fund raising effort to pay for a boat shed and perhaps club rooms on the town jetty. The Public Works Department deemed it viable and agreed to construct a timber boat shed and slip to rest on twenty five piles. The cost was £300 and the shed was finished on the east side of the jetty in December 1911. The building was used up until 1959 when the club relocated to Little Grove.

By 1944 the original part of the jetty was in disrepair, and was receiving little use. In January the General Purposes Committee inspected the Town Baths and found it to be in considerable disrepair.

In July 1944 the Government invited the Town Council to take over the running of the jetty. The Town Council declined, stating that the structure was too valuable to the State for any other organisation but the State Government to administer. The jetty was subsequently repaired. In 1951/52 the base of the jetty was dismantled and replaced by earth land fill. In 1961 more maintenance resulted in the removal of the sea baths and the demolition of the south eastern arm of the structure. Further works in 1972/73 brought about the demolition of the remaining boatsheds on the eastern side of the jetty.

At a later date, the neck of the jetty was demolished and reclaimed for a distance of 221 metres. Also during these operations, a concrete boat ramp was established on the south west side of the seaward end of the reclaimed portion.

With the establishment of the Wharf facilities, the role of the town jetty was considerably lessened. The reclaimed land at the base of the jetty remains in use for pilot boats and tugs, but all of the wooden and iron structure has been dismantled for safety reasons.

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A Short History Of Submarines

This is the third part of Jill Worsley's series on submarines and covers the period just before and during the First World War.

The U.S. Navy Department became worried about advances in European, and particularly French, submarine design during the latter decades of the nineteenth century. They offered a substantial prize for an American design, and our old friend John Philip Holland won the competition. Despite the enthusiasm of both parties in the early years following the acceptance of Holland's design, the relationship between Holland and the U.S. Navy Department became very strained. Money to finance construction was slow to come through, and Holland resented what he considered to be unreasonable bureaucratic demands. Worse, *Plunger* was never very successful and the contract was cancelled. In fact Holland started work on a different design before *Plunger* was even completed.

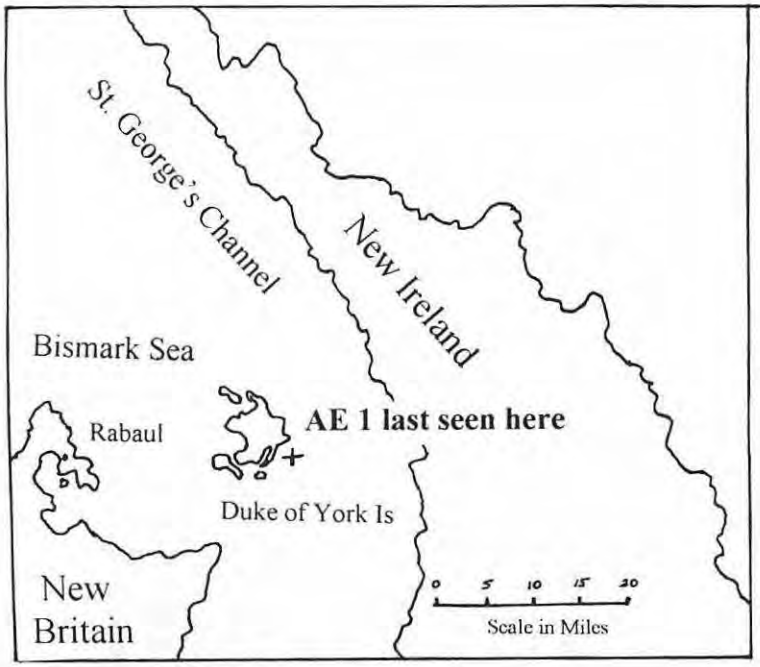
His new design was a private venture and built at the Columbian Iron Works. It was a seven man vessel 16.38 metres long and developed 50 hp from two engines, one an Otto gasoline and the other electric. An important innovation was that the gasoline engine could be fairly easily switched between driving the propeller and charging the electric battery. It had surface and submerged speeds of 8 and 5 knots respectively. The armament included an 18" torpedo in the tube with two spares and an 8" dynamite gun. The U.S. Navy Department reported that the submarine "is a successful and veritable torpedo-boat, capable of making an attack on an enemy unseen and undetectable, and that, therefore, she is an Engine of Warfare of terrible potency which the Government must necessarily adopt in its Service". It bought the boat and ordered a further six.

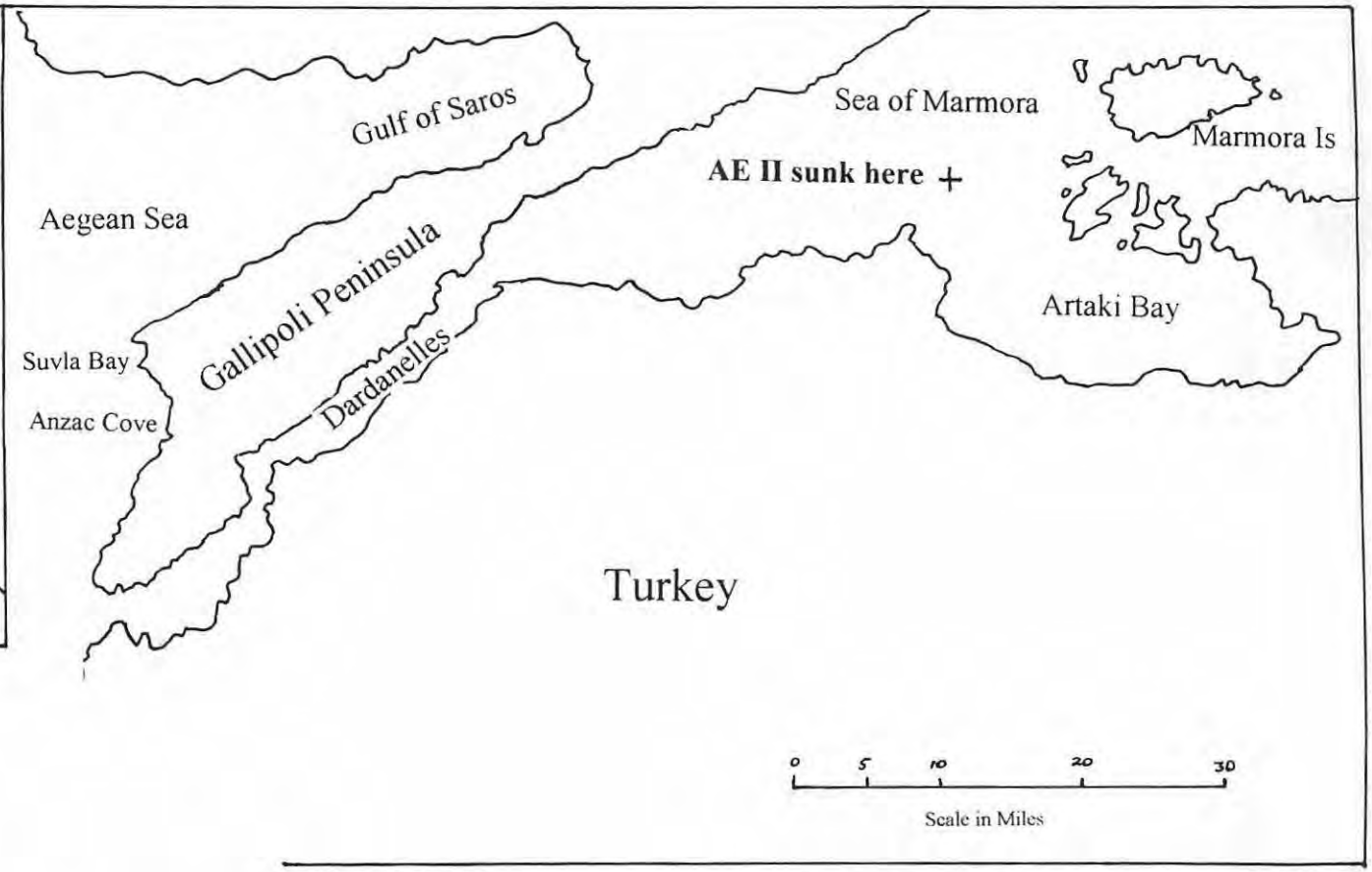
Holland's first modern American submarine later became the prototype for both British and Japanese submarines.

Laubeuf s French submarine Narval had been powered with a gasoline engine. In 1892 the German, Rudolf Diesel, had invented a compression ignition engine which ran on oil fuel. This had a safer flashpoint than petrol, and Laubeuf put the new, safer engine into his new submarine called *Aigrett.*

Britain had been carefully watching developments in both the U.S. and France. A naval attaché reported "These submersible vessels have now reached a practical stage in modem warfare and will have to be reckoned with, and met, in future European wars. One of the most important results of the (French) trials has been to demonstrate that a vessel of this type is capable of crossing and recrossing the English Channel from Cherbourg to Portland unaided. This fact is carefully hid from the public by the authorities, though considered the greatest triumph of this new vessel". By 1900 the British were therefore in the market for submarines. France would not sell, but in December 1900 five submarines of Holland's design were ordered to be built by Vickers under licence at Barrow-in-Furness. Vickers invented a fuel injection system, and within five years British submarines were fitted with diesel injection engines and other improvements followed year by year. Britain also built the AE I and AE2 for the Royal Australian Navy. (The first was subsequently lost in the Pacific Ocean in 1914, possibly as a result of striking an uncharted reef The second took part in the Dardanelles Campaign and was lost in 1915 after being attacked by Turkish warships in the Sea of Marmara.)

Germany had no submarines at the turn of the century but launched their first experimental vessel, the *Forel* from Krupp's yard in Kiel in 1902. The *Forel* had been designed by the young Spaniard d'Equevilley who had previously worked in France. Improvements over the next few years were made by Krupp's designers. By 1910 they were fitting submarines with twin six-cylinder diesel electric motors which provided 1700 hp to drive them at 15 knots on the surface. All this was achieved by German industrial-

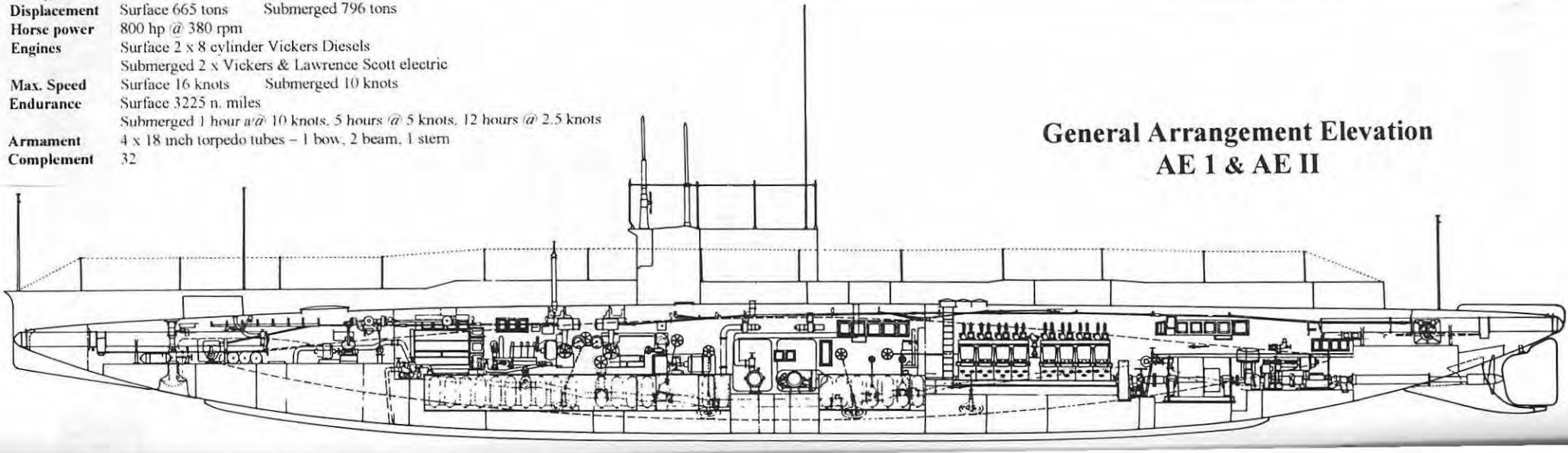




SPECIFICATIONS

Length	178 ft 1 in	54.28 m
Breadth	22 ft	6.7 m
Draught	13 ft	3.9 m
Displacement	Surface 665 tons	Submerged 796 tons
Horse power	800 hp @ 380 rpm	
Engines	Surface 2 x 8 cylinder Vickers Diesels	
	Submerged 2 x Vickers & Lawrence Scott electric	
Max. Speed	Surface 16 knots	Submerged 10 knots
Endurance	Surface 3225 n. miles	
	Submerged 1 hour a/@ 10 knots, 5 hours @ 5 knots, 12 hours @ 2.5 knots	
Armament	4 x 18 inch torpedo tubes – 1 bow, 2 beam, 1 stern	
Complement	32	

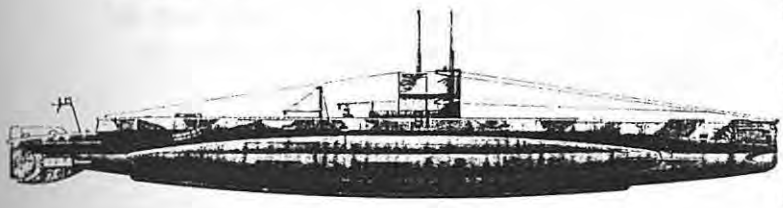
General Arrangement Elevation
AE 1 & AE II



ists within eight years.

Japan, also a late starter, introduced Holland Class submarines in 1904 and quickly made their own technological advances. They became the first nation to successfully use submarine-launched torpedoes in war during the Russo-Japanese War. By the beginning of the First World War there were about 400 submarines in service in sixteen navies.

During the First World War boats built for Britain in the Thomycroft Yard had the standard pair of torpedo tubes omitted to allow the fitting of tubes for laying up to twenty mines. This gave submarines a new capacity as mine-layers. Ocean mine-layers had horizontally inclined tubes while coastal mine-layers were fitted with vertically inclined tubes.



Britain built fifty-five E11 hulls between 1913-1915

Germany needed to import nickel, rubber, tin and copper from the United States. Some of these cargoes crossed the Atlantic in specially built mercantile submarines. The *Deutschland* for example was capable of carrying 900 deadweight tons of cargo. After America came into the war three of these cargo U-boats were refitted to become cruiser-submarines with two 5.9 inch guns each.

Deutschland

Towards the end of the war another new role was found with the development of submarines specifically designed for a hunter/killer role, to seek and destroy enemy submarines. These boats had a very high submerged speed of 14 knots, which was not exceeded until towards the close of World War II.

This is a Short History of the development of machines, not a political or tactical history. It is therefore time to pause and examine what conditions were like on board a typical submarine through the First World War. Technology and safety had improved over the years, but comfort still lagged. So too did respect. Nearly a hundred years after Napoleon had expressed his opinion about the lack of honour involved in submarine warfare, R.N. Admiral Arthur Wilson said that any submariner captured should be "hanged as a pirate". A few years later a young British submarine captain raised the Jolly Roger to celebrate the sinking of an enemy cruiser. The emblem was quickly adopted by other crews and was thereafter displayed with pride.

The Holland-inspired British submarines were generally more successful when making submerged attacks, but the French-influenced U-Boats performed most efficiently on the surface. But conditions below decks were remarkably similar. When submerged, there was a constant anxiety as to whether the crew would run out of oxygen.

Geoffrey Clough recalled later that "After about ten hours submerged a lighted match would soon fizzle out and refuse to bum, there being so little oxygen in the atmosphere". It is on record that several boats stayed down more than twelve hours. Some British petrol driven submarines carried caged mice on board. The collapse of the small mice would indicate to the crew that there had been a build up of odourless carbon monoxide gas before the larger humans would be affected.

Another worry was whether electric batteries would run out of power, forcing an ascent during a hostile situation.

Air pressure could become so high as a result of leakage from compressed air tanks, that when the surface was reached and the hatch opened, "any man standing immediately under the hatch was in danger of being shot out of the conning tower like a human cannonball" !

Conditions were often cold, always damp and extremely cramped. Johannes Spiess on U 21 de-

scribed how the submariners' bunks were so small that men could sleep only on their sides, and only in one direction as a fuse box cover at the aft ends of the bunks was inclined to burst open if bumped by a restless foot, and this sometimes caused a short circuit.

If a problem arose with the stove, cooking could only be done on a deck stove so crew sometimes went for days without hot food or drink. Fresh food quickly deteriorated in the foetid conditions, so dehydrated and tinned food was the norm. Condensation kept clothes and blankets damp and cold. In the Baltic, periscopes froze in their tubes, rendering the submarines "blind" when on the surface. Once under the water the slush quickly thawed, but icy deck clothes remained frozen for hours after the submarine submerged.

Other problems involved the deployment of submarines in what was a largely uncharted environment which was only poorly understood. For example it is thought probable that some Allied submarines operating in the Sea of Marmara during World War I may have been lost not because of enemy action but because they sailed into pockets of fresh water fed by rivers flowing into that sea. The sudden change from dense salt water to less dense fresh water would not have been detectable on board, but would have resulted in a sudden and destabilising plunge and maybe complete loss of control.

Political considerations dictated, at least in theory, the way in which submarines could be deployed. International law dictated that merchant ships must be halted, their papers examined and their crews sent to safety before the vessel was sunk. This was clearly impractical for submarines, with barely enough room for their own crew and always vulnerable when on the surface. New rules were obviously required to cover the new form of warfare, with public opinion playing a part in determining how and where the "new" submarines could be used.

Despite their brief and exhilarating times of success against the enemy, overall the opportunities for both sides to engage in action were relatively rare. "There were thousands [of crewmen] who froze and ached and were sick and tired in boats that never fired a shot in anger throughout the entire war". In these innovative vessels, during the course of the War-to-End-Wars, for many men the greatest problem on sea duty in submarines was soul-destroying boredom.

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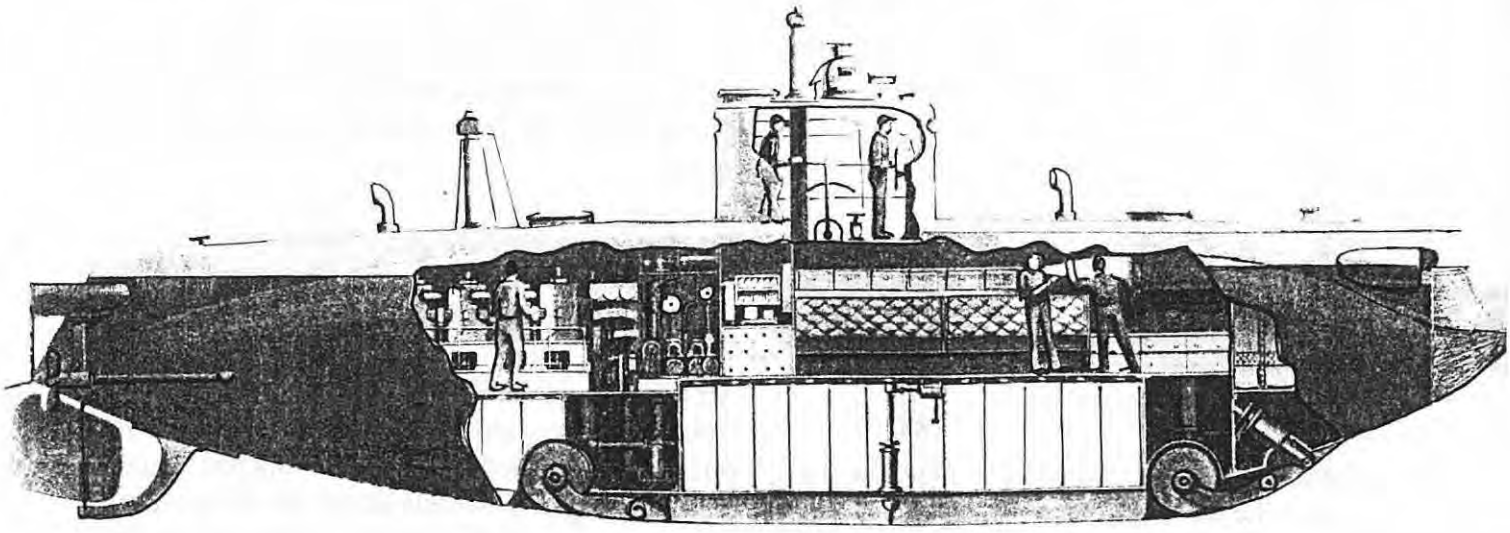
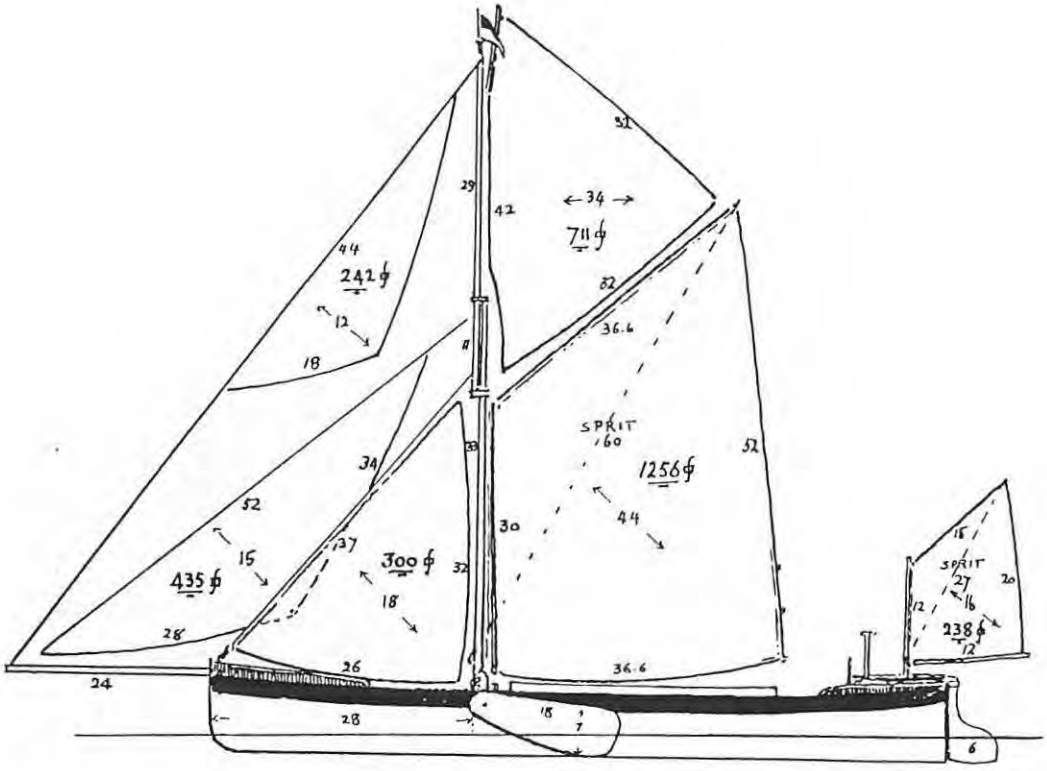


The American submarine Protector *was designed by Simon Lake in 1901 as an alternative to Holland's design. The wheels in the bottom of the hull could be extended to enable the submarine to travel along the seabed. The U.S. Navy considered the boat an oddity despite the fact that it had considerable potential. Failing a U.S. contract, Lake sold the boat to Russia which then ordered another four. These five boats were shipped in sections to Vladivostok where they saw limited service during the Russo-Japanese War of 1904-5.*

THE THAMES BARGE



Sail plan of coasting barge Vigilant.

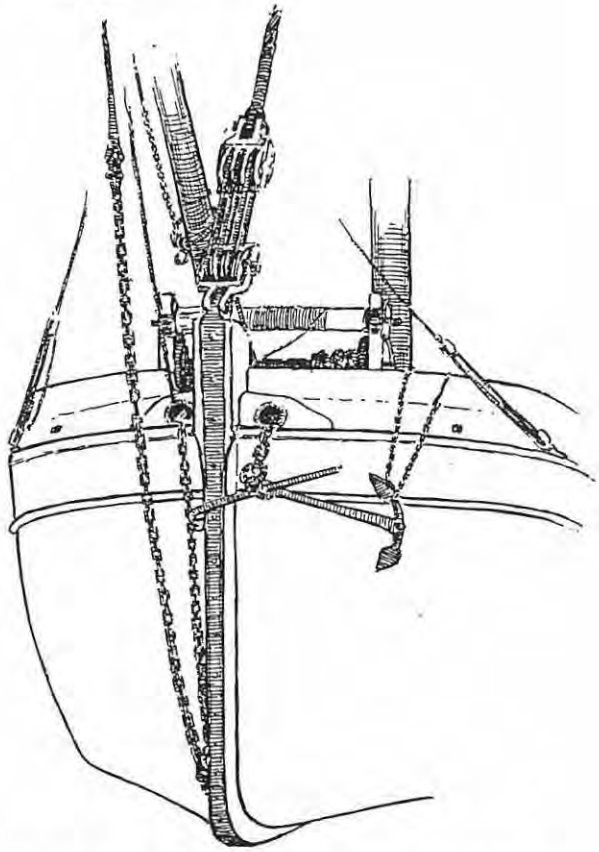
There have been a number of barges used around the coasts and on the rivers of England. The Severn River had 'trows', the Humber River had its ancient 'keels' and the Norfolk Broads had the 'Norfolk wherry' and then there were the 'narrow boats' of the vast canal system that used to cover so much of England and is now being reopened in many places. But the most famous and recognizable barge has always been the uniquely British spritsail or Thames barge of the south east. These have a very ancient lineage going back to the eleventh century when square sailed barges plied the Thames River and its estuary. By 1600 the barge had acquired its trademark spritsail rig. The sprit rig is a Dutch invention and its adoption and then development over the subsequent centuries led to the spritsail barge becoming one of the handiest and most economical vessels. The sprit, a massive diagonal spar across the mainsail, enabled two men to handle that enormous sail with comparative ease. By enabling the sail to remain permanently aloft and be reefed by brails the number of crew required for sailing was kept to a minimum. The mainsail had no boom.

The other Dutch invention adopted by the spritsail barges was the lee board. By substituting for the deeper draft of most other vessels the Thames barge could, without losing windward ability, sail over the numerous shoals and sand banks of the Thames estuary and adjacent coasts and rivers and consequently make the best use of the strong tides that hindered many other ships. The shallow draft and flat bottom also enabled these vessels to load and discharge cargo at places barred to many of the more conventionally shaped craft by reason of depth of water, especially at low tide.

The original barges were 'swim head and budget stern' craft. That is, they were a flat box with the bow and stern sloped down but with no pretence of having a sharp entry like most ships. This form of bow and stern can be seen in more recent times in the dumb lighters and in some of the many dumb barges being towed in various south east Asian waters. These gradually gave way to pointed stem and transom stern, although Thames barges always kept the box shaped mid-section which gave them their large carrying capacity. The flow of lines at the stem and stern on the more modern vessels gives them a surprising weatherliness and, especially when empty of cargo, a speed not normally associated with the word barge. In barge races speeds of 12 knots have been attained.

Steering was originally by enormous tiller. By the 1870s wheel steering was gradually taking over. The wheel steering gear was of two types – chain or screw. The screw type consisted of a spindle with worming cut in two directions and an arm on each so that turning the wheel pushed one arm while pulling the other. These in turn were linked to the rudder head. The easier to repair chain gear consisted of a chain and blocks linked to the tiller. One outcome of this change was the shifting of the mizzen mast. Initially this had been on top of the rudder post with the mizzen sheet going to a block on the rudder blade before ending at a cleat on deck. Moving the rudder to go about pulled the sail to windward which helped turn the barge more quickly and aided steering by relieving the helmsman of some of the considerable strain imposed by the big rudder. The shift to a mizzen on the stern deck, possible now because of wheel steering, enabled this sail to be enlarged. It was still sheeted to the rudder blade and was still an aid in steering. Except in 'mulies' the mizzen was also a sprit sail although it usually had a boom.

The heels of both masts were set in tabernacles, called by bargemen mast box or mast case, so that they could be lowered to pass under bridges. Lowering was accomplished by means of the forestay which was secured to the stemhead by means of a powerful tackle the fall of which was taken to the windlass.



Bow showing forestay tackle and steeved bowsprit.

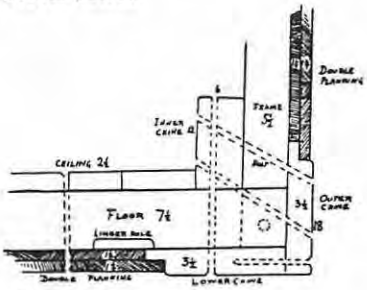
A topmast was fitted to the coastal barges (not river barges) and the topsail attached to this by hoops. The topsail has been described as "the life of a barge". It was of vital importance and was used virtually all the time, often without the mainsail. It was fitted with a yard and could be more than half the size of the mainsail in area. The topsail was always on the starboard side of the mast. The topsail was usually stowed clewed in to the masthead by clewlines and then a crewman would go aloft to tie a gasket around it. It was not brought down on deck. The bowsprit of the coastal barge was capable of being topped up or steeved up so that the barge required less space

alongside a wharf. There were three headsails. From the bowsprit were set a jib and a jib topsail. A foresail was set from the stemhead.

There were a number of types of barges. Some were for use in rivers only and tended to be smaller. These had no bowsprit, topmast or topsail and were called 'stumpies'. Some were used to carry hay for the horses of London and were called 'stackies'. These looked like floating hay stacks when fully loaded as their cargo of hay bales rose to such a height that the skipper could not see to steer and the mate had to stand on the cargo and give directions. In the case of the 'stackies', the need to reef the mainsail so that it would clear this high cargo was one of the very few occasions on which a Thames barge ever reefed. 'Boomies' were those barges that were gaff rigged instead of sprit rigged. 'Mulies' were barges where the mizzen was gaff rigged while the main was sprit rigged. The coasting barges with their spritsail rig, bowsprits, topmast and topsail were called 'spritties'. Although referred to as coasting barges and originally trading around the Thames estuary and the adjacent south-east coast, these aristocrats of the barge world traded across the North sea to Germany, Belgium, France and Holland and there is on record a few voyages across the North Atlantic.

Barges were very strongly constructed as their work often lead to taking the ground deliberately or, at times, accidentally when misjudging the depth over a shallow. They were flat bottomed and square chined. The keel itself was quite small. The keel of the coasting barge *Vigilant* (84 feet waterline length and 21 feet beam, maximum carrying capacity of one hundred and eighty five tons) for example being 15 inches wide but only 4½ inches thick. It projected only 1 inch below the bottom planking. The 7½ inch by 5 inch floors crossed this, the keel being let into the floors. Limber holes were cut in the floors to allow bilge water to flow to the pump. On top of the floors was set the main strength of a barge, the keelson. In the case of the *Vigilant* this was pitch pine 15 inches wide and 19 inches deep. Very strong bolts passed through keelson, floors and keel to tie everything together. The large frames were halved on to the floor timbers.

The chine consisted of an outer chine, 18 inches by 3½ inches, a lower chine, 18 inches by 3½ inches and an inner chine, 12 inches by 6 inches, all through bolted. These provided massive strength in this vulnerable area. These chines were normally of oak although the inner chine was sometimes pitch pine.

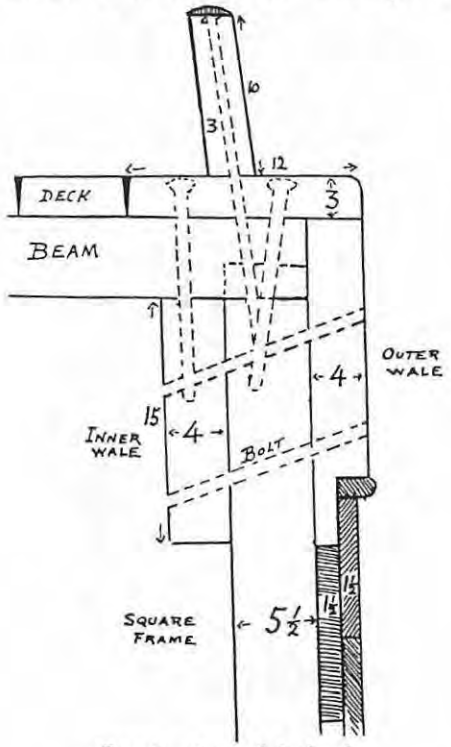


Chine construction.

The deck beams were of oak and varied from 8 or 9 inches square in way of the mast box to 6 inches by 4 inches elsewhere. A 10 inch square stanchion under the mast box took the load of the mast to the keelson.

The one essential of a barge was that she must not leak. Because of her flat bottom even a small amount of water would ruin many of her cargoes such as cement,, grain, sugar, etc. Bottom and side planking were both two layers of pitch pine or oak each 1½ inches thick with rabbeted joints and a layer of tar and cow's hair between the planking layers. To ensure water tightness these planks were pulled tightly together using an arrangement called a bottom screw. The top most plank or outer wale was of oak and was thicker than the other planks, being about 4 inches or more. The inner wale, of the

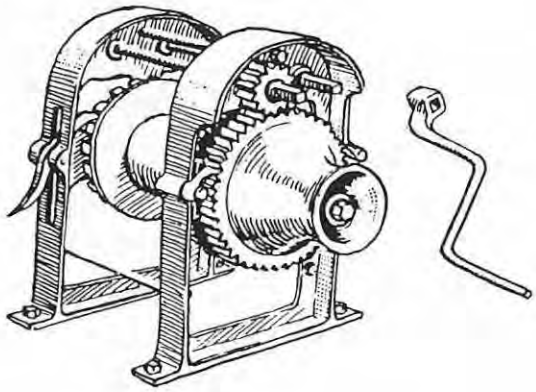
same thickness as the outer wale, was inside the framing and acted as a deck shelf. The inner and outer wale were bolted together through the frames with ¾ inch bolts. Bolted on top of this was the covering board of 3 inch by 12 inch oak. Fastened on this was a 10 inch high by 3 inch thick toe rail.



Construction of deck edge.

There was an inside ceiling which again was pitch pine, 2½ inches thick on the bottom and 1½ inches thick on the sides. This ceiling was through fastened to the bottom planking and was an essential part of the strength and stiffness of the barge. The only caulking was in the 3 inch thick deck. As a fully loaded barge often had a free board measured in inches the water-tightness of her deck was as important as that of the rest of her hull.

Besides the distinctive rig the other very obvious mark of a spritsail barge was the enormous leeboards. These also were borrowed from the Dutch. They enabled a flat-bottomed, very shallow drafted vessel to sail to windward. The *Vigilant* drew 2 feet 6 inches empty and 6 feet 10 inches with a cargo of 150 tons of barley aboard. They were fan shaped 18 feet long and 7 feet at their greatest width and made from oak strapped with five iron bands and having large iron plates each side of the head. At the head the oak was 4 inches thick tapering to 3 inches at the tail. They weighed 1¼ to 1½ tons each, linked to and supported by iron rods passing across the deck to the mast case plate. The boards were raised and lowered by means of a block and tackle system (usually chain but sometimes wire rope or a combination of both) operated by the crab winches on the quarters.



Crab winch for raising and lowering leeboards.

The rig is interesting, partly because of the massive size of the spars. The mainmast is of pitch-pine and, despite being about 44 feet in length and 12 inches in diameter just above the squared heel, can be raised and lowered comparatively easily and fairly quickly. This is because the very thick, strong forestay is fastened to the stempost via a powerful block and tackle system, the fall of which is lead to the main windlass when required. The mainsail is attached by being shackled to a jackstay made of ¾ inch iron rod on the aft side of the mast.

The sprit was slung from a 'standing-lift' or 'stanliff' hung from the hounds which took the main weight of the sprit by means of a 'muzzle' or heel band on its lower end. This muzzle also held the heel against the mast. The heel of a sprit was always on the starboard side of the mast. There was a topping lift from the upper end of the sprit to the hounds but this took very little weight. Sur-

prisingly a great deal of the weight of that enormous spar was taken by the sail. The sprit was 60 feet long and of a similar diameter to the mast, tapering towards each end. The mainsail was 1256 square feet in area and reefed by being brailed into the mast and sprit.

Barges have formed part of the coastal scenery of the south east coast of England for a number of centuries. They are the very essence of the English maritime scene. The last full-sized trading barge to be built was the *Blue Mermaid* in 1930 although some altered lighters are now sailing as barges.

At the beginning of the twenty first century there are 58 known barges. A number of these are under restoration and a small handful are abandoned but most sail on. Of these 13 are steel, the rest wood. The dates of building range from 1881 to a 1954 lighter conversion. This is a far cry from their heyday in 1907 when there were 2090 barges plying the coast and rivers of the Thames estuary.

Peter WORSLEY

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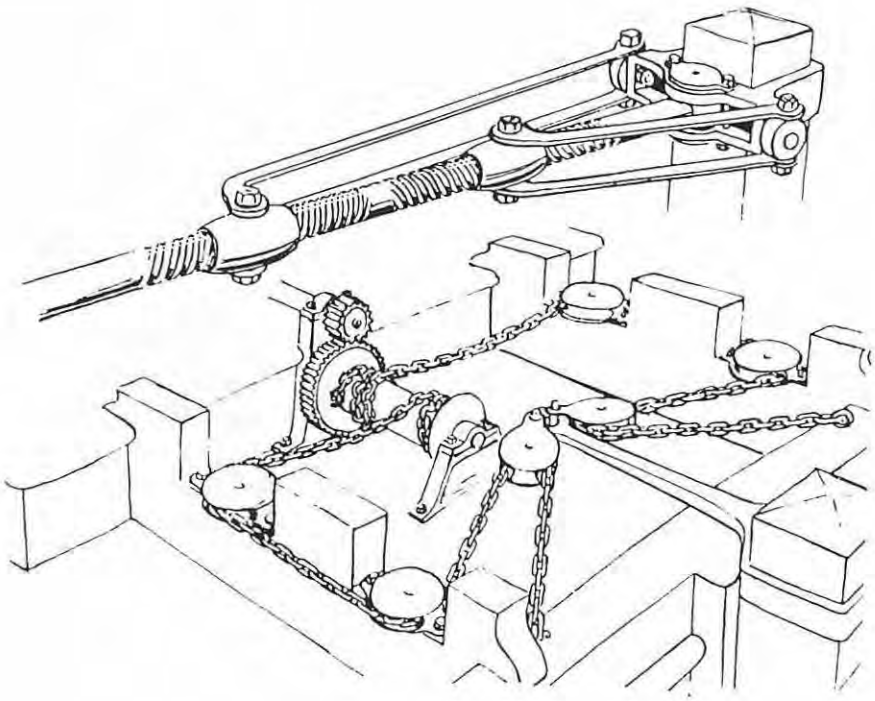


The two types of wheel steering gear used on barges.

The Ditty Bag

An occasional collection of nautical trivia to inform, astound, amuse and inspire.

In 1844 each of the Royal Navy dockyards, except Deptford, employed a 'modeler'. His task was to make ship models and he was paid at the rate of 6/- per day.

During World War II the German submarine offensive sank 2,828 allied merchant ships, totaling 14,687,231 tons. Total losses of allied shipping were 4,786 amounting to 21,194,000 gross tons.

In 1875 the Russians built a perfectly circular battleship named *Admiral Popov.* She was 3,553 tons with a diameter of 101 feet (31 metres). The reason for the design was to diminish or prevent pitching and rolling so that her two 11 inch guns had a stable firing platform. The design proved reasonably successful and another, the *Novgorod,* was built. As well a Royal Yacht, the *Livadia,* was designed and built on the same principle for Czar Nicholas II. She lasted from 1880 until broken up in 1926.

Dunnage. Loose wood or wooden blocks used in ships' holds to keep the cargo from touching the sides to protect it from the sweating and also to wedge and prevent movement of the cargo.

Galligaskins. The wide breeches worn by seamen in the old sailing warship days, also known as petticoat-trousers. Being made of canvas, the wide apron-like front was a protection for the men lying out on the yards when the weather was wet.

The National Maritime Museum at Greenwich, England, was opened by King George VI in April 1937.

The Science Museum in London employed model ship makers to cover gaps in its collection of model vessels. For instance in 1919 there were 20 men working in the museum's large workshop building models.

In the 1790s Captain John Schanck introduced drop keels or centreboards in vessels. A model in the National Maritime Museum, Greenwich, of c1795 shows a vessel with a single centreboard and a retractable rudder as well. The centreboarder that we in Australia are most familiar with is the brig *Lady Nelson* which came out to Australia in 1800 as a survey vessel. She was fitted with three centreboards.

Davits were introduced on to Royal Navy ships during the 1790s. Previous to this ships boats were hoisted in and out using a cumbersome method of tackles hung from the stays and/or yards. Davits were originally of timber but curved iron davits were introduced during the 1820s.

The calls of the blue and fin whales are the loudest attributed to any animal. Using no more energy than radiates from a thirty-watt light bulb, blue whales may emit sounds capable of traveling thousands of miles through deep sound channels in the ocean.

The site of the current Water Police headquarters in North Fremantle was originally the site of The State Shipbuilding Yard. From its inception in late 1942 until its closure in December 1946 the yard built 12 vessels for the Army. Named after WA rivers the vessels measured 125 feet LOA, 24 feet beam and loaded draft of 12 feet 6 inches.

THE LEADSMAN

Here is another informative story by Captain Peter Piggford of his early days as an apprentice.

Many of the more colourful seafaring tasks of the past have disappeared with the advent of modern technology, one of these is that of the leadsman. In bygone days up until the end of WW II, as a ship approached port and the water began to shallow, every well conducted vessel would have a leadsman in the "chains" taking soundings by hand. The "chains" consisted of a wooden platform about a metre square which projected from the main deck usually on the starboard side close forward of the bridge. In those days this was generally about a third of the ship's length from the stem.

The outer corners of the platform were marked by steel stanchions which carried FSWR guard lines and a painted canvas apron to protect the leadsman from the wet sounding line as it was recovered after each cast.

The term "chains" is derived from sailing ship days when the leadsman stood on the projection from the ship's side which gave additional spread to the mast shrouds which were strengthened underneath by heavy chains attacked to fittings on the hull called chain plates.

As the ship moved into "soundings", a line of spot depths was obtained using a specially marked leadline that could be read in darkness by feel alone if necessary.

The performance of the leadsman was always watched critically by other ship's crews, as a smart ship always set great store in obtaining soundings as quickly and accurately as possible and there was often a good deal of showmanship involved. Some ships would even have a leadsman on either side of the bridge, and their chanting could be heard at some distance adding an ambience of their own to the scene. These calls were made in a special dedicated format.

The leadline was calibrated in fathoms 2, 3, 5, 7, 10, 13, 15, 17, & 20 were "Marks", the intervening fathoms called "Deeps" only indicated by codline tags. The marks at 2, 3, 10 & 20 were of leather, 5 & 15 were of white linen rags, 7 & 17 red bunting and 13 of blue serge. The reason for the different types of cloth was that each has a unique feel when wet.

The leadsman's calls were traditional although there were reasons for the often strange formats. Soundings of "Mark" depths were called as "By the mark ---". If it was a "Deep" it would be called "By the deep ---". Fractions of a fathom were always called before the fathoms, for instance six and a half fathoms would be called as "And a half six". The calls of marks and deeps were drawn out and almost sung because it might be difficult for the Master or to hear the leadsman's calls over the other noises of a ship under weigh. When sung loud and clear and in a special form this reduced the possibility of error or misinterpretation. When the pilot heard "By the deep ...." he knew that the figure following could NOT be 2, 3, 5, 7, 10, 13, 15, 17, or 20, as they were all "Marks".

The bottom of the lead was always hollowed out, usually filled with a stiff mixture of white led and tallow and left slightly protuberant so that it could pick up or at least indicate the nature of the bottom.

When such information was available it would be added to the call such as "By the mark five – Sand".

A prudent leadsman would cut off the sample from the foot of the lead with his knife and retain it to show the Master if queried.

There were two standard sizes of leads, 7 pound and 15 pounds. The heavier lead was used when the ship was moving faster and/or the water was deeper than ten fathoms. The lead itself was in the form of a long hexagonal truncated cone. There was a hole at the upper end through which was threaded a wire grommet served with marline

twine, and as mentioned earlier there was a hollow in the bottom. The sounding line was made from best manila hemp, sometimes four stranded. The line was spliced at the lower end in a long soft eye and secured to the lead by passing the eye through the grommet and then slipping it over the body of the lead. This made the business of changing a lead quick and easy.

Before calibrating the line it was always "Wetted and stretched". The length of the lead weight itself was not included in the calibration, thus always giving the ship "The benefit of the lead" as they say.

When taking a sounding, the leadsman would hold a bight of a line clasped in his hand giving the lead about two fathoms of scope. The line was NEVER wound round the hand nor over the thumb: it being highly dangerous to do so. If the ship was moving very slowly, or the leadsman was very inexperienced, it was sometimes sufficient to get the lead swinging fore and aft pendulum fashion and let it go at the right moment on a forward swing, but this was considered to be poor and unseamanlike practice by any seaman worth his salt and would attract only jeers from the crews of any other ships observing the arrival.

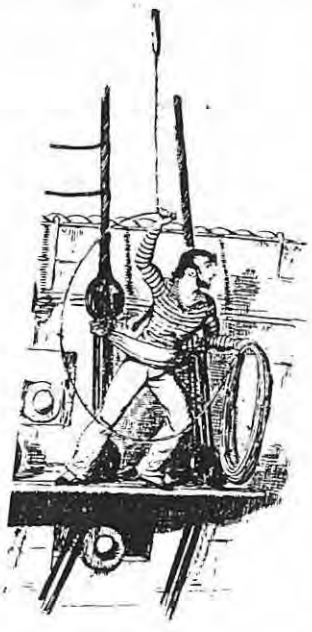
There were some dangers in doing it properly however: if one attempted to swing the lead full circle before working up enough momentum, instead of circling, the lead would fall vertically from somewhere above head level for two or three fathoms and nearly pull your arm out of its socket. Another trap was to get the plane of the circle out of parallel with the fore and aft line of the ship and send the lead towards the cable party on the fo'c'sle head. The people there usually included the Mate who would predictably not be very amused nor understanding.

The trick to getting the lead wound up properly was to start with two or three pendulum-like swings to build up momentum, then when getting into the first 360 degree swing, as the lead was rising in front of you, at the right moment pull the elbow down and back sharply to give the lead sufficient additional impetus to go over the top keeping the line taut; then wind it up for a couple of circles until you have built up enough speed so that when it is released the lead will travel as far forward as possible. The spare 20 fathoms or so of line is coiled carefully and held in the left hand and allowed to run out freely as the lead flies ahead. The further the lead goes the more time you have to gather in the slack and bounce it when the line becomes vertical. Obviously the faster the ship is moving, and the deeper the water, the further ahead the lead has to be cast.

Once when I was a third year apprentice on the new ten thousand cargo liner "Clan Fraser" I was in the starboard chains acting as leadsman as we approached port. I was using the big lead and as the ship was in ballast there was plenty of room and the chains were about 25 feet above the water. There was a very strong and cold wind blowing from the starboard beam as I began taking soundings heaving full circle in the approved expert manner. The ship was still moving comparatively fast and I had to get up a good speed with the lead to make the distance. On the third or fourth cast I sent the lead speeding away taking the slack line from my left hand. The strong beam wind then blew some of this slack back over my head in a half hitch. In desperation I raised my forearm to push what was now a rapidly tightening noose up over my head. It snapped taut as it dislodged my uniform cap and pulled my hair into a peak. I had been within a split second of having my neck broken and my heart missed a couple of beats. I had never thought about the lethal potential which had just been demonstrated.

Instead of losing my cap the wind picked it up and blew it back on board. Nobody had seen my predicament so I retrieved my cap and climbed back into the chains.

"By the mark – seven" I chanted in a somewhat subdued voice. As they say, you live and learn. I was just lucky to have lived that time.



America's Cup Jubilee 2001

By the time this journal reaches you the America's Cup Jubilee 2001 will be over. It was held at Cowes, Isle of Wight, from 18th to 25th August. Celebrating 150 years since the winning of the Hundred Guineas Cup by the yacht *America* the participants included many of the great classic yachts still sailing. As you will know it included *Australia II* which was the first foreign yacht to wrest the cup from America's hold in 1983. There was a total of thirty-seven 12-metre yachts at the celebration.

Some of the classic yachts which attended were *Adix* (ex *Jessica*, ex *Four X*), *Cambria* the 1928 Fife built 112 feet cutter, the American J class *Ranger*, shipped from New Zealand along with the restored J class yachts *Shamrock V* (the first J class built in Britain), *Velsheda* and *Endeavour*. Olin Stephens' legendary 54 feet yacht *Stormy Weather* along with *Tuiga*, *Bloodhound* and *Blue Leopard* and many more. Altogether 208 boats, all over 45 feet in length took part.

WA Maritime Museum

BATAVIA GALLERY LECTURE SERIES

July - November 2001

FRIDAY, 14 SEPTEMBER (6:00pm)

DR IAN GODFREY
Head, Department of Materials Conservation, WA Museum

Frozen In Time - The Home of the Blizzard

The Race to Save Mawson's Hut

FRIDAY, 5 OCTOBER (6:00pm)

WES OLSEN
Naval Historian

Sydney I:
The Devil to Pay

The *Emden* Cornered at Cocos 9 November 1914

FRIDAY, 2 NOVEMBER (6:00pm)

WES OLSEN
Naval Historian

Sydney II:
Cruiser Duel

***Sydney* at Cape Spada 19 July 1940**

Lectures start at 6pm
Cost $6.00 per person (includes GST)
Function Room, Cliff Street, Fremantle

Education Section 9431 8455

QUIZ

Answers to June 2001 quiz

1. Breaming was the method of cleaning a ship's bottom by burning off the weed, barnacles, etc.

2. William Dampier made two voyages to Western Australia.
   1688 in the *Cygnet.*
   1699 in the *Roebuck.*

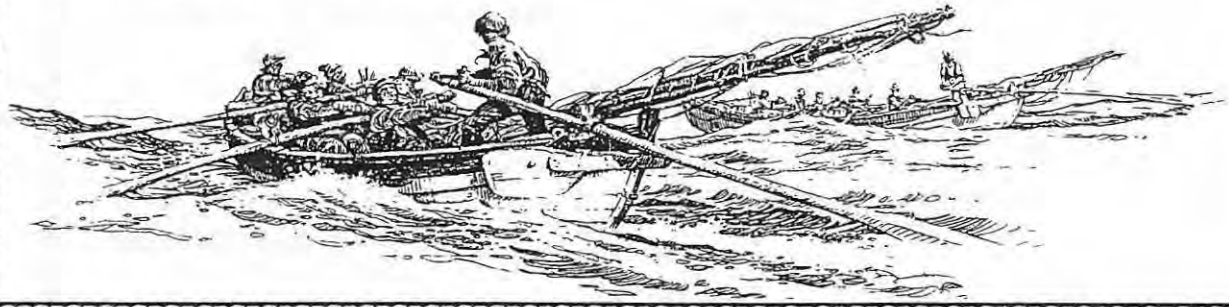
3. Two Peoples Bay was named by Thomas Nicolas Baudin in February 1803 (he named it Port des Deus-Peoples) after a meeting with Captain Pendleton of the American sealer *Union.* It was named to commemorate the friendship between the two anti-British nations of France and America.

Questions

1. When was the American ship *Rapid* wrecked at Point Cloates ?

2. After what and by whom were the Montebello Islands named ?

3. How many metres in a nautical mile ?



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