

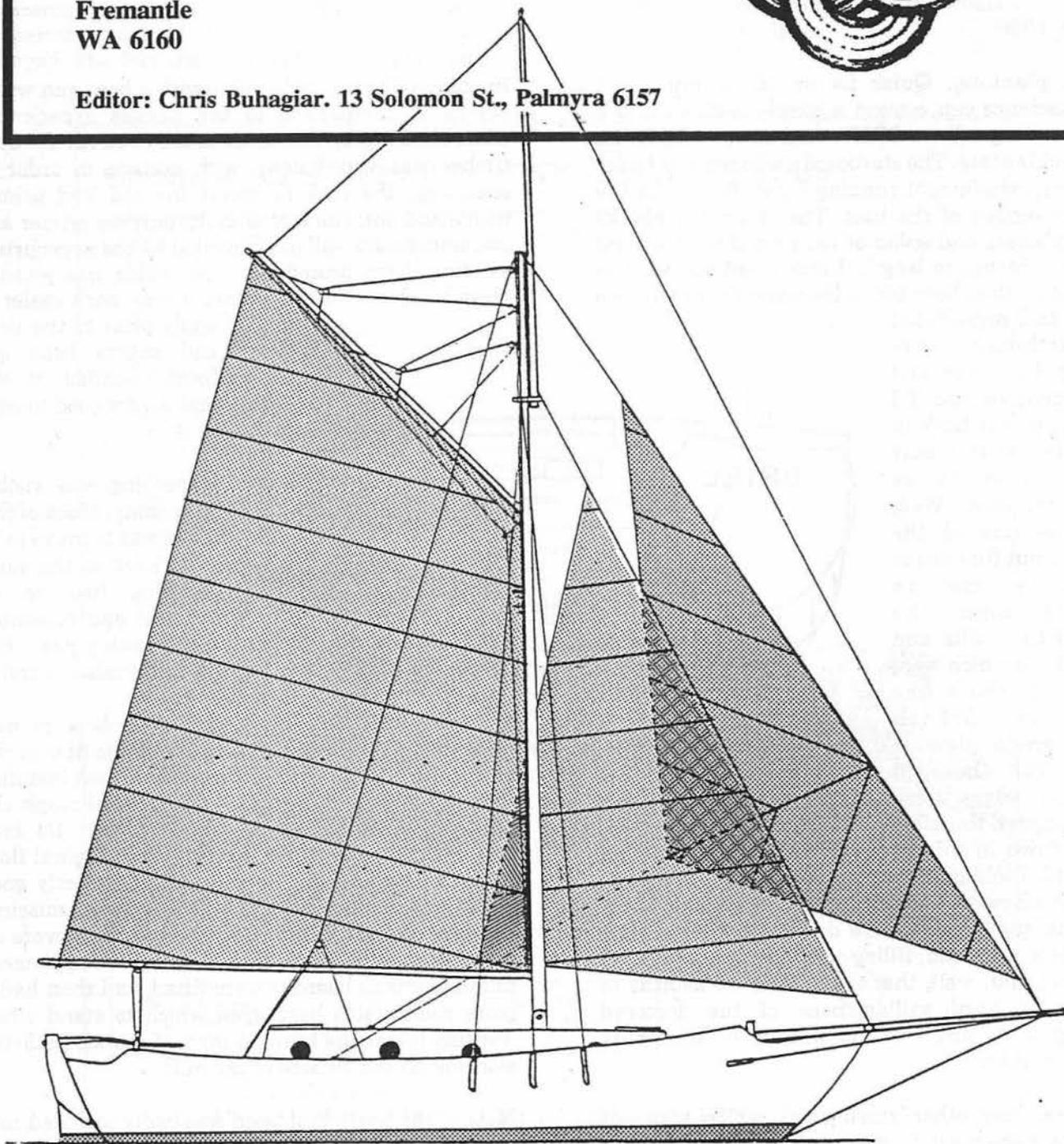
# MARITIME HERITAGE ASSOCIATION NEWSLETTER

Volume 4, No.3. September, 1993

*A quarterly publication of the  
Maritime Heritage Association, Inc.*

c/o PO Box 1100  
Fremantle  
WA 6160

Editor: Chris Buhagiar. 13 Solomon St., Palmyra 6157



The Geraldton-based gaff-rigged cutter PANTHALASSA, a moulded Westsail 33 and a direct descendant of the pilot and rescue boats designed and built by Colin Archer of Tolderodden, Norway, in the latter half of the last century. [See story, page 4.]



# ORIEL: The Restoration Saga of a Born-again Gaffer

(Part Three) by Mike Igglesden

August 1990

Split planking. Quick fix or "do it properly"? Conscience can convert a simple decision into a heart rending affair. ORIEL had six planks in an undesirable state. The starboard garboard was by far the worst, with a split running for six feet along the midship section of the boat. The other five planks with problems had splits of between three feet and just a few inches in length. I took a soft option. The boat had by then been out of the water for nearly two years. I told myself that my birthdays were arriving in closer and closer modules and if I did not get her back in the water soon I may not be around to see that happy day! Well, that was one of the excuses I put forward to persuade me to internal-tingle the worst of the splits and ignore those which were small and above the waterline: 3/16th marine grade plywood strips with bevelled ends and edges were slipped under the ribs, bedded down in thick red lead paint, copper nailed and roved. I told myself that if this remedy proved to be unsatisfactory I would replace the planks next refit. The small splits were dealt with by boring a 3/16th hole each end, filling the holes with caulking compound and, well, that's all. After 12 months of some quite hard sailing none of the doctored planking show any signs of leaking or the splits extending in length.

There was one other small crack which was not suited to subjection to either of these indignities. This was attacked with an angle grinder held at an angle of about 20° to scoop out a shallow half moon section along its length' and the hollow so formed then filled with epoxy. After cleaning up and painting, it is the original invisible mend!

Burning off the outside paint with a heat gun was a breeze in comparison to the hassles experienced when cleaning up the inside of the boat. All the bare timber was wiped down with acetone in order to encourage the teak to accept the red lead primer inside and out; one coat of multi-purpose primer and two undercoats - all accompanied by the appropriate sanding down procedures. The inside was given a gloss finish at this stage since it was much easier to

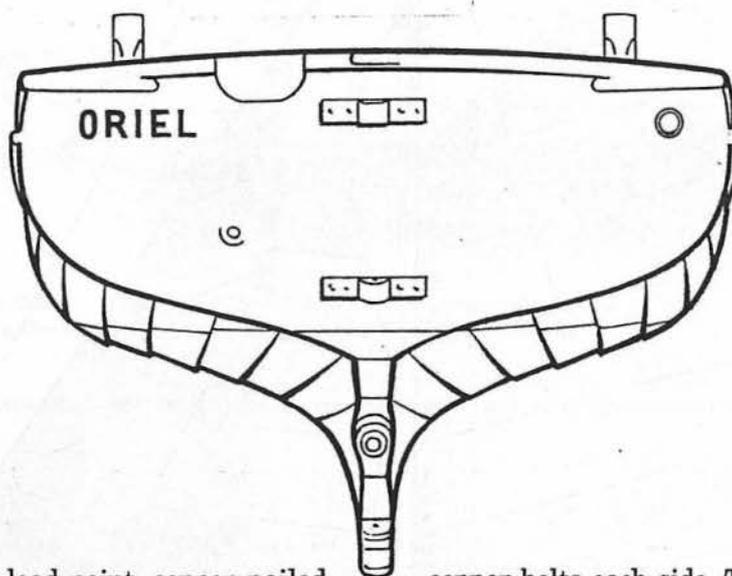
apply prior to the deck and engine beds etc. being installed. It was also a very good morale booster.

Something was visibly happening! Much of this effort was to prove to be to no avail as the outer planking had to be stripped and repainted the following year. But that is another story.

Engine beds were now re-worked to fit over the new ribs, then installed and bolted through the skin with six 1/4 inch

copper bolts each side. The remaining original floor bearers were made of oregon and in perfectly good condition but approximately half of them were missing. This sad state of affairs was remedied. They were all painted, and new teak floor boards - to supplement missing/broken boards - were fitted, so I then had a more comfortable base upon which to stand when working inside the boat. So then, of course, I started working on the outside of the hull.

Most of the brass keel band was badly corroded so a length of 50mm x 3mm 316 stainless steel was screwed in place with monel screws, bedded down in red lead. The upper section of the bronze stemband was in perfect condition, as was the stem fitting, but a short moulded section was missing, so a pattern was made up and a new length cast.





Down the other end of the ship, I was unhappy with the strength of the keel where it formed part of the propeller arch. It looked vulnerable and a candidate for breakage if it encountered any untoward situations. So another pattern was made and a bronze shoe cast to strengthen this area up to battleship proportions and to provide an anchorage point for the lower rudder gudgeon. My paranoid concerns over the strength of this small, but most important area of the boat were thus somewhat allayed. The fact that she had survived perfectly

happily over the last forty or so years without the benefit of such additional support bore no brief with me. Here was a prime example of how some people just can't leave well enough alone but insist on engaging in extra time, trouble and expense in order to buy - real or imagined - peace of mind. But it is all good fun.

I then proceeded to reinvent the wheel or, to be more nautical, the rudder ...

### Schedule: S.T.S. LEEUWIN ADVENTURE VOYAGES

| No.   | Departure                  | Arrival                    | Remarks   |
|-------|----------------------------|----------------------------|---|
| 21/93 | Geraldton<br>14/9/93 Tue.  | Fremantle<br>24/9/93 Fri.  | 10 days visiting Abrothos Islands.                                  |
| 22/93 | Fremantle<br>26/9/93 Sun.  | Fremantle<br>30/9/93 Thu.  | 5 days voyage for the disabled.                                     |
| W2/93 | Fremantle<br>1/10/93 Fri.  | Fremantle<br>3/10/93 Sun.  | Whale watching weekender.   |
| 23/93 | Fremantle<br>4/10/93 Mon.  | Fremantle<br>14/10/93 Thu. | 10 days SCHOOL HOLIDAYS visiting Bussleton. (Minimum age 15 years.) |
| W3/93 | Fremantle<br>22/10/93 Fri. | Fremantle<br>24/10/93 Sun. | Whale watching weekender.   |
| 25/93 | Fremantle<br>26/10/93 Tue. | Fremantle<br>5/11/93 Fri.  | 10 days visiting Bunbury.   |
| 26/93 | Fremantle<br>30/11/93      | Fremantle<br>9/12/93 Fri.  | 10 days UNIVERSITY HOLIDAYS visiting Abrothos Islands.              |
| W4/93 | Fremantle<br>10/12/93 Fri. | Fremantle<br>12/12/93 Sun. | Weekender.  |
| 27/93 | Fremantle<br>14/12/93 Tue. | Fremantle<br>24/12/93 Fri. | 10 days POST T.E.E. voyage visiting Bussleton.                      |

#### DAY SAILS

26th., 27th., 29th., 30th. Dec; 1st. and 2nd. Jan.:  
10.00am - 4.00pm; adults \$70, child \$40. Includes lunch.

|      |                           |                           |  |
|------|---------------------------|---------------------------|--|
| 1/94 | Fremantle<br>11/1/94 Tue. | Albany<br>21/1/94 Fri.    | 10 days SCHOOL HOLIDAYS visiting Augusta.                    |
| 2/94 | Albany<br>25/1/94 Fri.    | Esperance<br>4/2/94       | 10 days UNIVERSITY HOLIDAYS visiting Bremer Bay.             |
| 3/94 | Esperance<br>8/2/94 Tue.  | Esperance<br>18/2/94 Fri. | 10 days visiting Eyre Observatory and Recherche Archipelago. |

For information on all voyages, contact:

**THE LEEUWIN SAIL TRAINING FOUNDATION**

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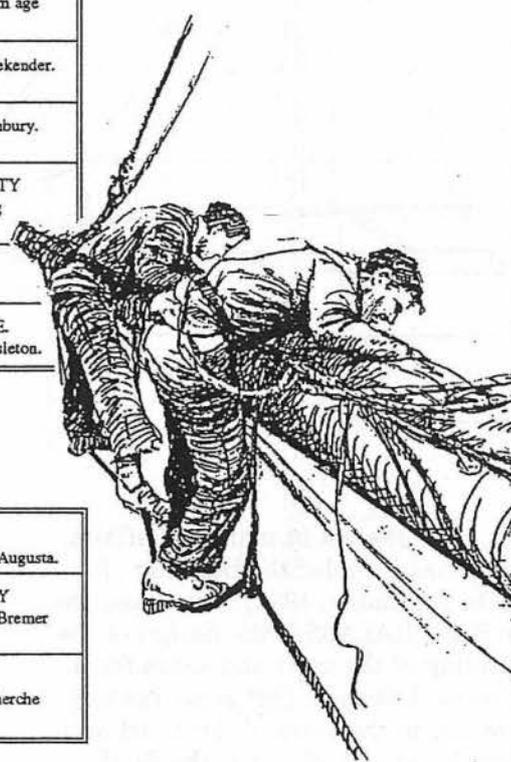
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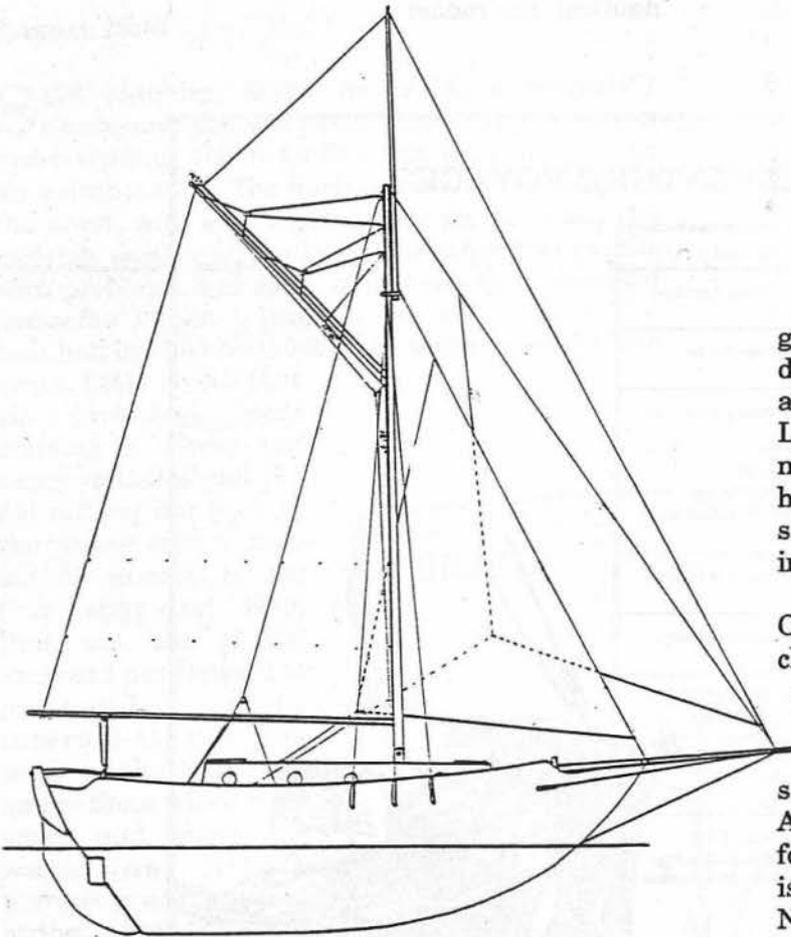




# Designing the Sail Plan for the 33' Gaff Cutter PANTHALASSA

(Part One)

by Peter Worsley



**I** have had a long interest in maritime affairs. This interest has included the building of sailing yachts. In December, 1991, I launched the 33' gaff cutter PANTHALASSA: the design of the rig and the building of the mast and spars for it were my own work. I thought that some readers might be interested in the research involved and the methods employed in arriving at the final result.

To begin with, I bought the moulded hull and deck of a Westsail 33 and, after designing and fitting out down below, I commenced work on the cutter rig. Here I guess is where a little knowledge of the history of the hull design came in handy as it was partly this knowledge that influenced my choice of

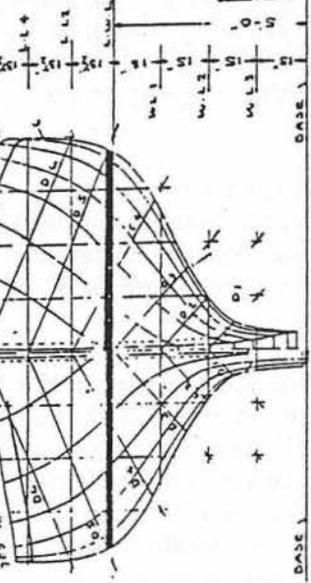
gaff as the sail plan. The Westsail 33 is a direct descendant of the pilot and rescue boats designed and built by Colin Archer, at Tolderodden, in Larvik Fjord, Norway, in the latter half of the nineteenth century. The boats designed by Archer had a far-reaching effect on many aspects of small sailing vessels, and this influence may still be seen in many recent yacht designs.

Colin Archer was the second youngest of the twelve children of William and Julia Archer, who emigrated from Scotland to Norway in 1825. Colin was born in Norway in 1832. Before settling in to the business of designing and building sailing craft, he spent eight years (1853 - 1861) in Australia, working on the sheep stations owned by four of his older brothers, in New South Wales. He is best known for his designs of rescue boats for the Norwegian fishing industry, but his first designs were for yachts and pilot boats in the early 1870s, followed by the first of his famous redningskoites, or rescue boats, in 1893. This boat is still being sailed in Norway.

In 1924, an American naval architect, William Atkin, was asked by William Nutting, then-editor of the prestigious Rudder magazine, to design a yacht based on a reduced Colin Archer 47' rescue boat. This, Atkin did, and the resulting yacht, called the Eric design, became famous and was built in the hundreds. It is interesting to note that the first yacht to sail non-stop around the world (SUHAILI, by Robin Knox-Johnston; June, 1968 - April, 1969) was an Eric design built in 1965. In the early 1970s, another American, William Crealock, adapted the Eric for construction in fibreglass-reinforced plastic. These boats were then built by the Westsail company. The shape of the

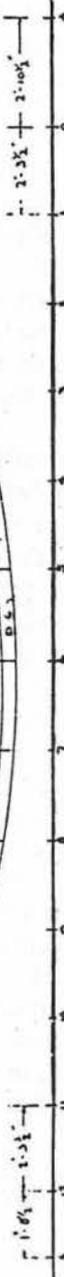
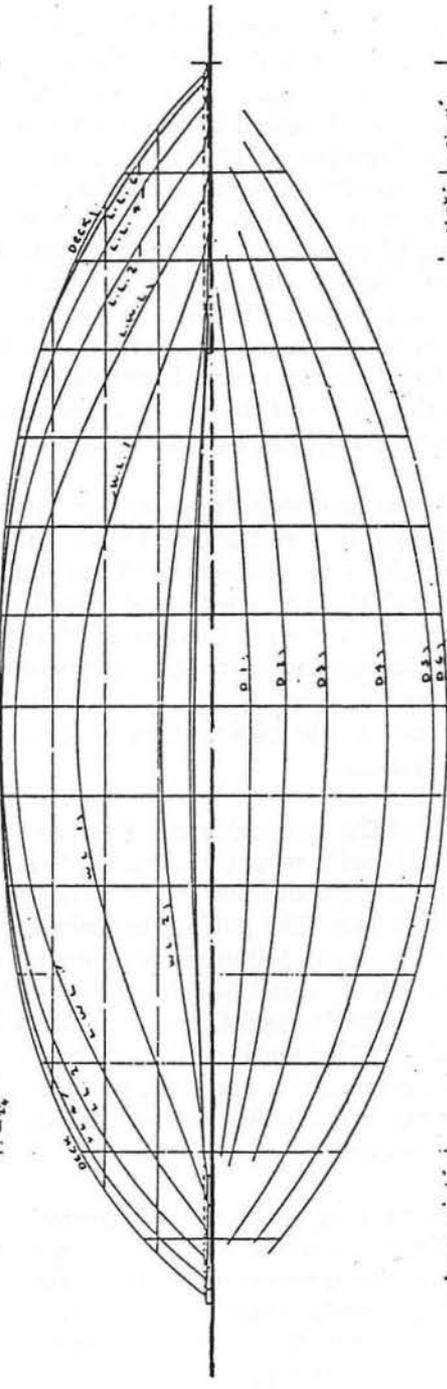
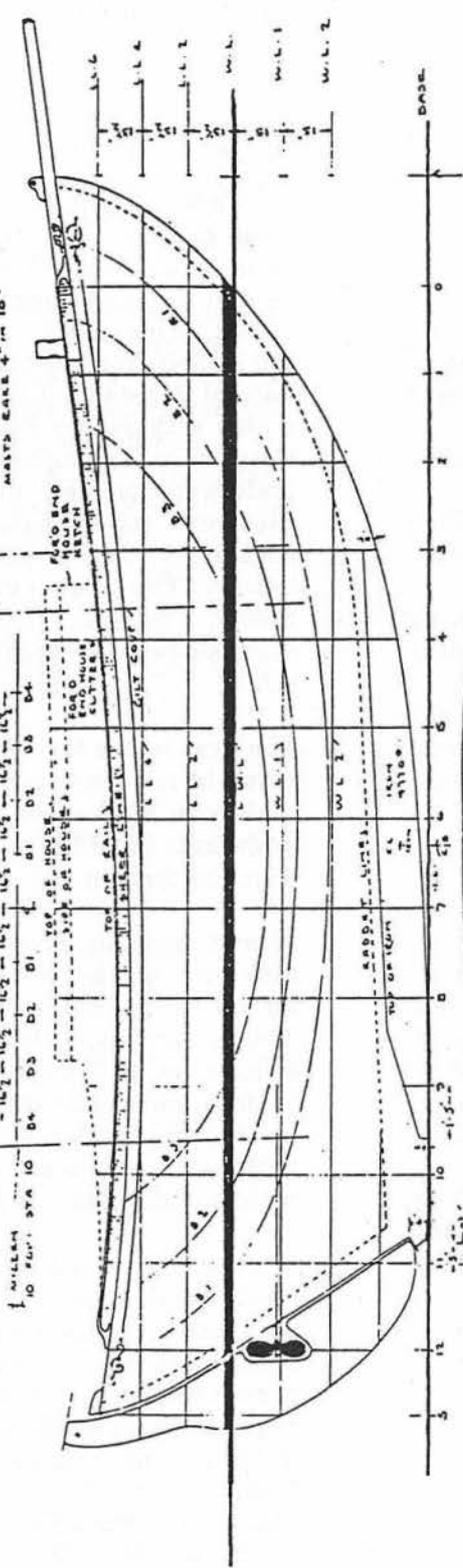
**DIMENSIONS -**

- L.O.A. 32'-11"
- L.W.L. 27'-6"
- BREADTH 11'-0"
- DEPT 3'-0"
- F. COARD BOW 4'-6"
- LEAST STERN 3'-4"
- DISPL. 17,545<sup>2</sup>
- IRON REEL 4,770
- SALLAST INSIDE APP. 1200<sup>0</sup>
- SAIL AREA. CUTTER - 656<sup>0</sup>
- KETCH - 509<sup>0</sup>
- STEM } STERN SIDED 15'
- KEEL " " 12'
- STAB SPALD 2'-3<sup>1</sup>/<sub>2</sub>'
- LINES TO OUTSIDE PLANK -



NO. 144  
 LINES 32'-11" x 11'-0" x 3'-0"  
 AUXILIARY CUTTER  
 OR KETCH  
 AFTER COLM ARCHER  
 (LINES OF G.L. FOOTER)  
 SCALE 1/2" = 1' - JULY, 1924  
 WILLIAM ATHIN  
 NAVAL ARCHITECT  
 HUNTINGTON, N.Y.  
 (4247)

MAIN AGE  
 KETCH ON STA 3  
 MAIN CUTTER  
 5' FWD STA. 4 -  
 MAINS EARL 4" x 10"



The 'Eric design' auxiliary cutter or ketch



hull and the heavy displacement have not materially altered in the one hundred years or so since archer first laid down the lines of the original.

With a displacement of over eight tons on an overall length of 33', my yacht PANTHALASSA is a comfortable and seaworthy craft but she does need a reasonable amount of sail to push her along. The original boats were designed for gaff rig and a heavy working-type boat of that era does not necessarily sail better with the bermudan or marconi sail plan favoured by most modern yachts. The gaff rig is lower than the bermudan, with the sail plan stretched out over a longer length, usually incorporating a bowsprit. This helps keep the centre of effort of the sails lower and also has the effect of the sails having a more beneficial influence on the ability of the vessel to keep sailing a straight course, and with less effort on the helm.

It is generally acknowledged that the bermudan rig will, when applied to a suitable hull form, enable a yacht to point closer to windward. Off the wind, however, the gaff rig is at least equal to it. The old-fashioned shape of a Westsail hull is not designed for close-wind sailing but more for seaworthiness, comfort and load-carrying ability. It is an ideal cruising boat but a poor racer, where windward ability is everything.

I might add that the bermudan rig, although generally considered a recent innovation, has in fact been around for about 200 years (although not known by that name). The gaff rig has similarly been traced back about 400 years, and was used almost exclusively by small working boats in the UK, America, Australia and Europe - up until the Second World War. It is still used by many working boats around the world, including in Chile, Indonesia, in the West Indies, and in Cornwall, in the United Kingdom.

Besides the suitability of the rig for a particular boat, the gaff rig also tends to put less strain on the rigging, mast and vessel itself. The mast is shorter and the standing rigging is not set up as tautly as in other rigs. The result is a more flexible, less tensioned whole.

Financial considerations were also important in my selecting the rig. I built the mast, boom, gaff, spreaders, topmast and the standing rigging for about the cost of one length of aluminium mast section. The final reason I chose gaff is that, quite simply, I like the look of the rig when fitted to a suitable vessel. It is pretty to look at and, since I

sail for pleasure, this aspect is important to me. (And, having built the rig myself, I can do my own repairs - should anything go wrong - using ordinary tools.)

## Design Principles

Given a yacht, how do you go about designing a sail plan for it? Firstly, you must research the rig - and here the older books are often the most helpful. Because of the current revival in gaff yachts, there are a few publications available on the subject. You must then determine the Centre of Lateral Resistance (CLR) of your hull. If you have a plan with this marked on it, so much the better; if not, then the simplest way is to first draw the underwater profile of the yacht on some stiff paper, then cut it out and balance it cross-wise on the edge of a knife. You should then mark its point of balance. This point is its CLR and is where, in theory, if you could push the full-size hull, it would move sideways without pivoting one way or the other.

The next step is to mark on the position of the mast. In relation to a cutter, the mast is normally a bit more aft than for a sloop. For the cutter, this position is two-fifths the waterline length back from the forward end of the waterline.

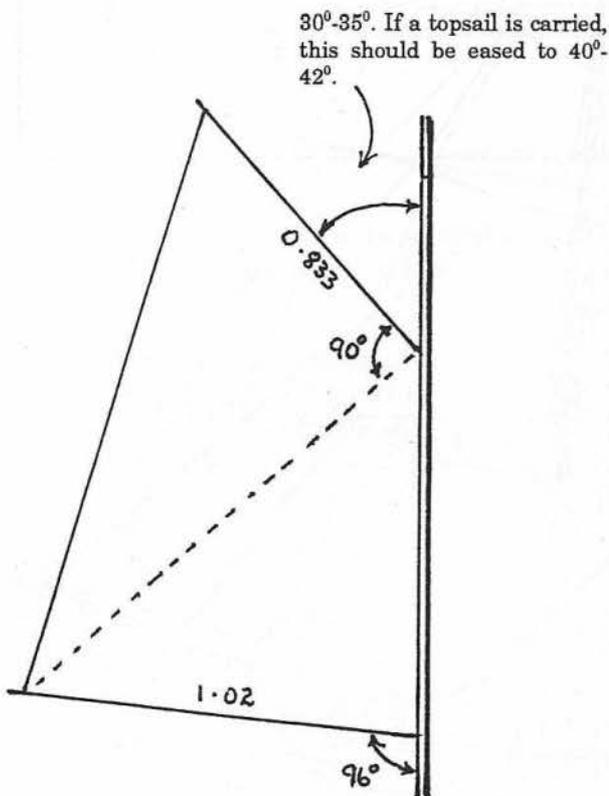
A brief digression here ... Current thought on the difference between a sloop and a cutter is that the former has one headsail while the latter sets two. This is very simplistic, and cutters originally had to have reefing bowsprits (that is, bowsprits that could be pulled inboard in heavy weather) as well as other things. For our discussion we will stick with two headsails and a mast set closer to the middle of the yacht, as for a cutter.

What size mast and what size mainsail do we need? My thoughts for PANTHALASSA were based on, firstly, a maximum size of mainsail of 400 square feet. This is considered manageable by one person when in heavy weather. The mast size required considerable research, in particular using books such as Vanderdecken's *Yachts and Yachting*; Chapelle's *Yacht Designing and Planning*; Worth's *Yacht Cruising*, and Atkin's *Of Yachts and Men*. The book *Gaff Rig*, by John Leather, was of great assistance in both the design of the mast and the sail plan. From these and other sources it was decided that a mast 32' above deck, with a maximum diameter of 7.5", tapering to 6.25" would be suitable (to be built from oregon). This would have a square head six foot long and

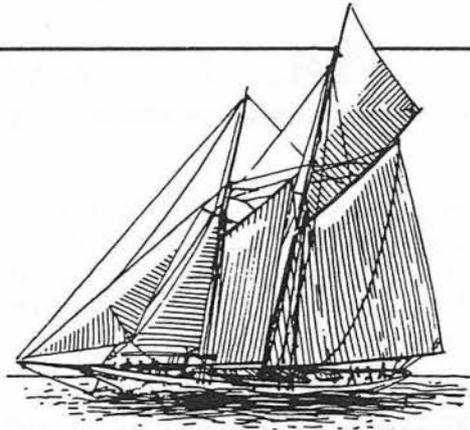


spreaders extending 3'5" each side from the mast centreline. The standing rigging would become part of the mast design with the placement of chainplates dependant on the mast height and where the shrouds would be attached to the mast. The size of wire needed can be calculated using formulae or, more simply, the wires on one side of the yacht should have a combined breaking strain equal to the displacement of the vessel, plus a safety margin.

There are a number of formulae and do's and dont's in the designing of an efficient and good-looking gaff mainsail. There is a best ratio of luff-to-foot-to-head, and a best angle between gaff and mast. The angle the gaff makes with a line between the throat and the clew is also important, and, for good looks, the gaff should be parallel, or nearly so, to the line of the forestay. These ratios and angles are not exact but, to have a well set sail, it should be made to follow these figures fairly closely. In the case of my mainsail, the figures turned out to be: luff 18'6"; foot 18'10", and head, 15'4".



Now how do you work out the area and the centre of effort of a sail that shape? I set about doing some detailed planning, which I will tell you about in the next instalment of this article ...



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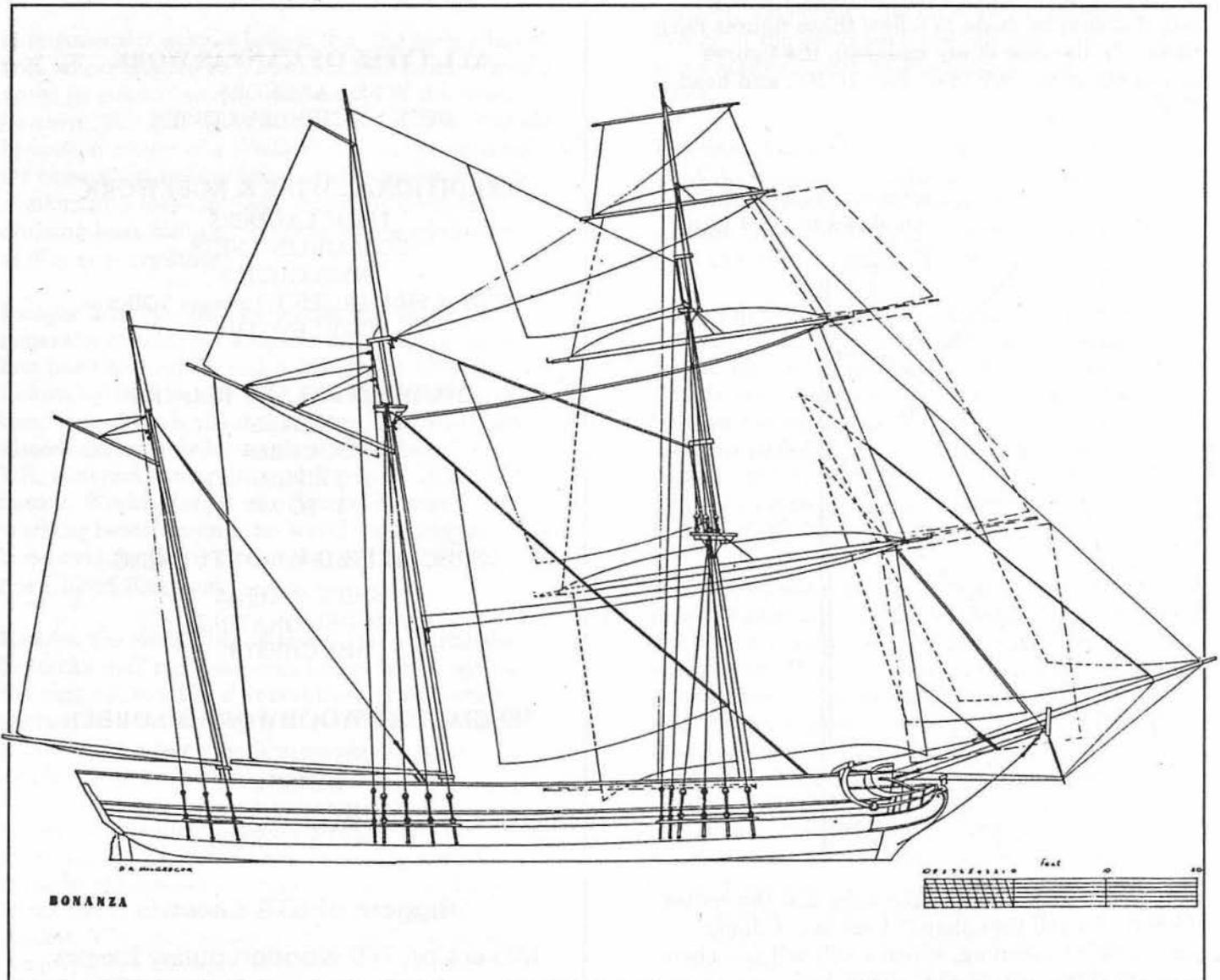
## Was it BONANZA or TRANSIT?

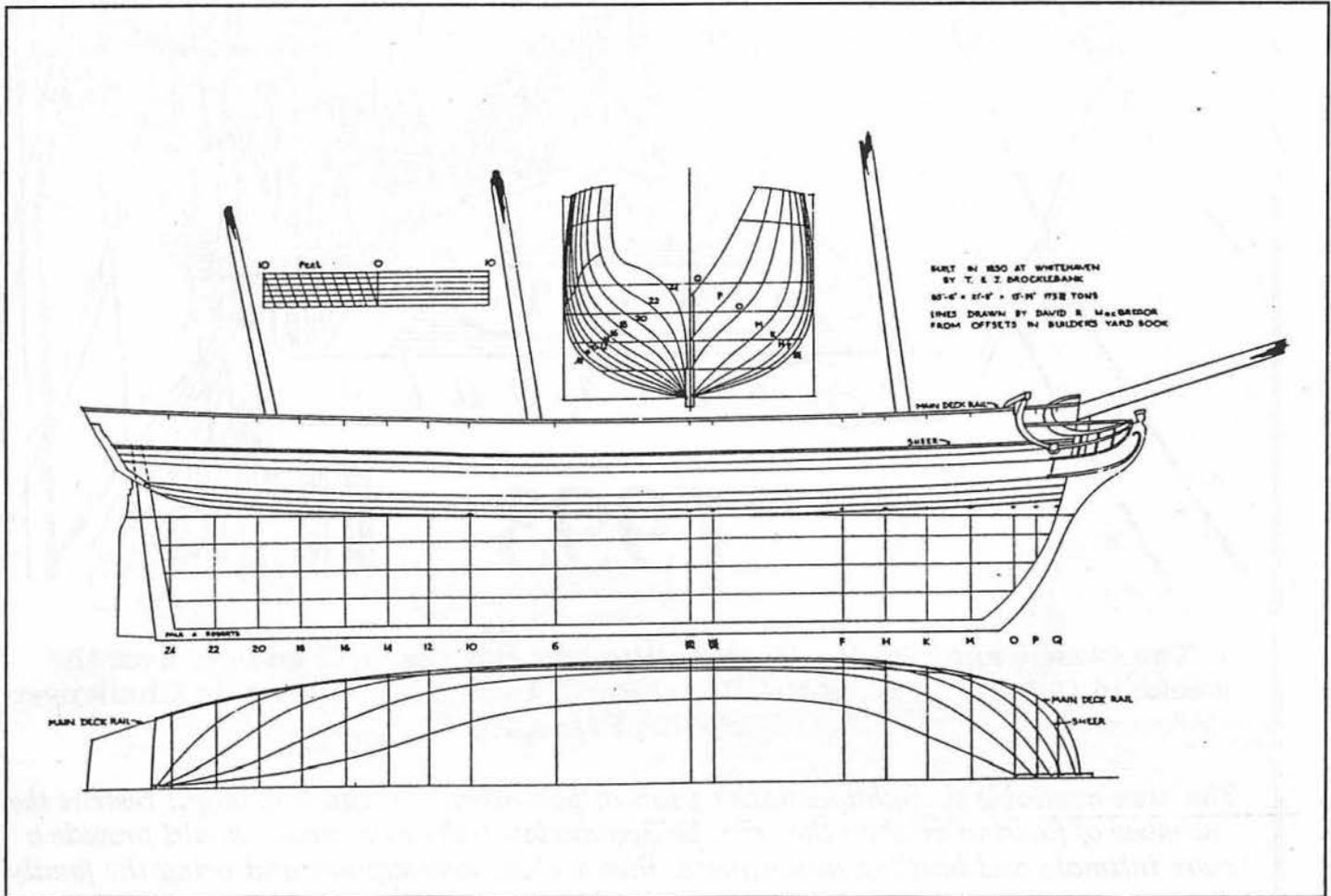
**P**eter Worsley has also supplied further information on the possible origins of the barquentine rig [See Barry Hicks' and Barbara and Ross Shardlow's feature articles in the previous Newsletter.]:

"In the book "Square-rigged Sailing Ships", by David R. Macgregor (Navasa Publications, 1977), the author states: "The earliest barquentine was probably the "Transit", built with five masts in 1800 but reduced to four next year. Although another similar four-master was built in 1809 and a three-master in 1819, no other examples of the rig have been traced before the 1830's". Macgregor

then goes on to mention other barquentines, including the BONANZA of 1830.

Following is the sail plan and lines of the BONANZA ... These are from "Merchant Sailing Ships 1815 - 1850" (Conway Maritime Press, 1984), another of Macgregor's books. Macgregor, a world-renown marine historian, drew the plans from the offsets and spar dimensions given in Thomas Brocklebank's yard book, now in the Merseyside County Museum. The dimensions he gives are: tonnage length of keel and fore rake - 82'7.5"; breadth (extreme) - 21'8"; depth of hold - 13'2.5"; tonnage - 173 79/94.





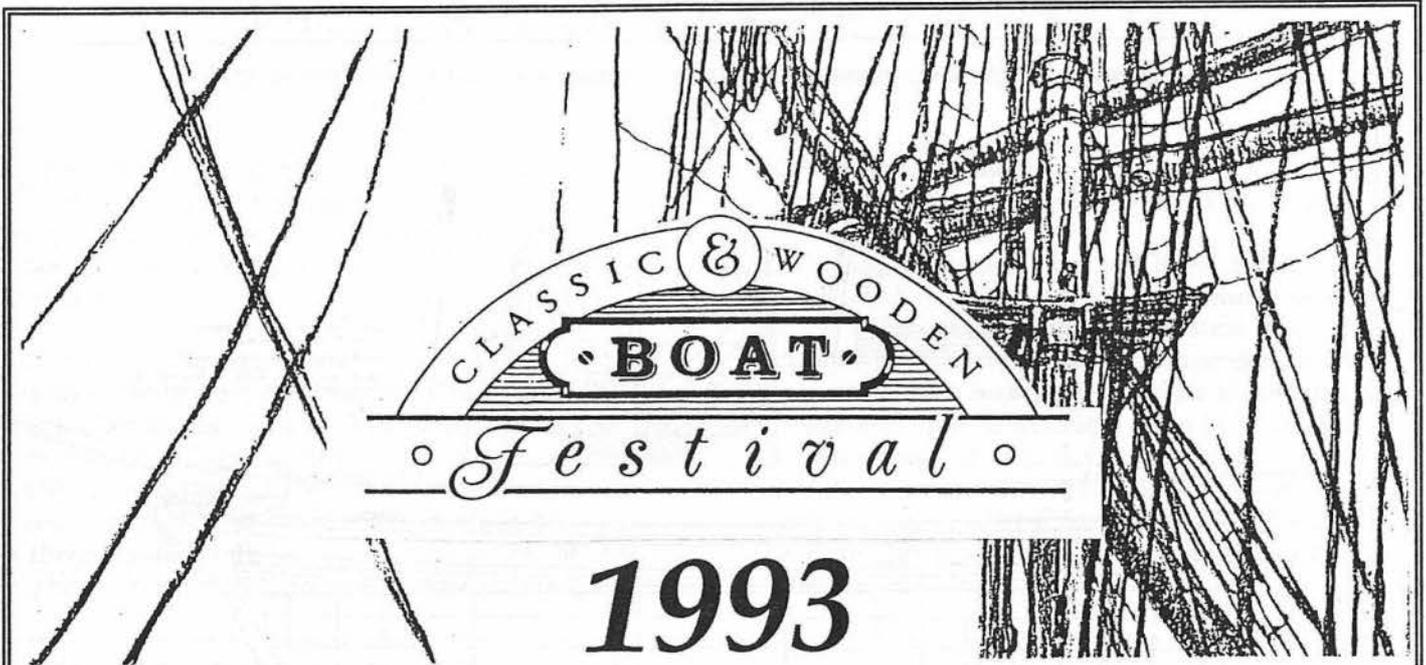
There appear to be a number of barquentines still in existence around the world. Here is a list of those I have information on, with their dates of construction and tonnage (where known):

|                            |  |
|----------------------------|--|
| AMORINA (1934) 538 tons*   | PALINURO (1935) 858 tons               |
| BARBRA NEGRO (1896)        | ESMERELDA (1952) 3222 tons**           |
| DEWARUTJI (1953) 886 tons* | POGORIA (1980)                         |
| ELIZABETH SMIT (1940)      | REGINA MARIS (1908)                    |
| GAZELO PRIMEIRO (1883)     | SPIRIT OF NEW ZEALAND (1986) 227 tons* |
| ISKRA (1982)               | SHABAB OMAN (1971) 486 tons*           |
| KALIAKRA (1984)            | MERCATOR (1932)***                     |
| ONAYGORAH (1919)           | LEEWIN 11 (1986) 236 tons              |
| SVANEN (1922)*             |  |

\* Vessels have visited Australia in recent times.

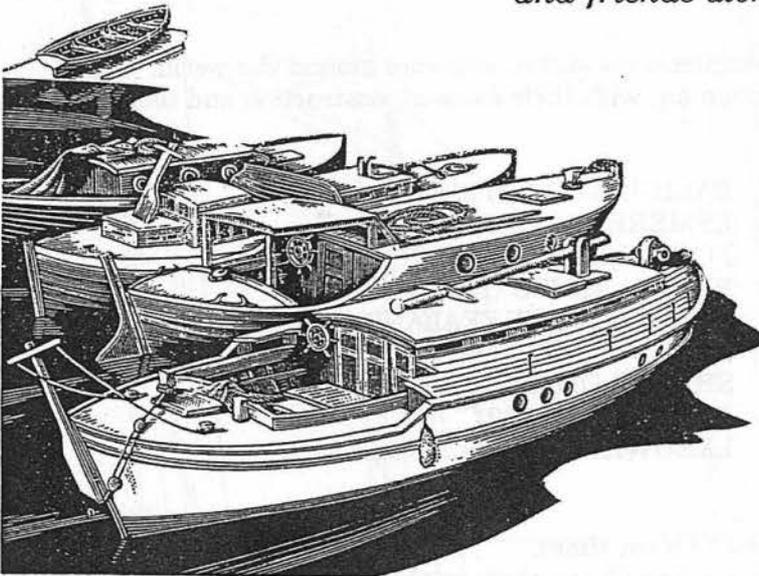
\*\* I have seen this called a schooner but I have photographs that seem to indicate she is a barquentine.

\*\*\* I have heard that the MERCATOR may have been wrecked or burnt out a few years ago ..."



**The Classic and Wooden Boat Festival for this year will be held over the weekend October 16/17, at the Royal Perth Yacht Club Annexe, in Challenger Harbour, Fremantle.**

*The area available is slightly smaller than in past years. Though this might restrict the number of floating exhibits that can be accommodated, the new venue should provide a more intimate and bustling atmosphere. Please show your support and bring the family and friends along.*



## **HELP WANTED!**

**MHA members who are free to man our stand in the marquee.**

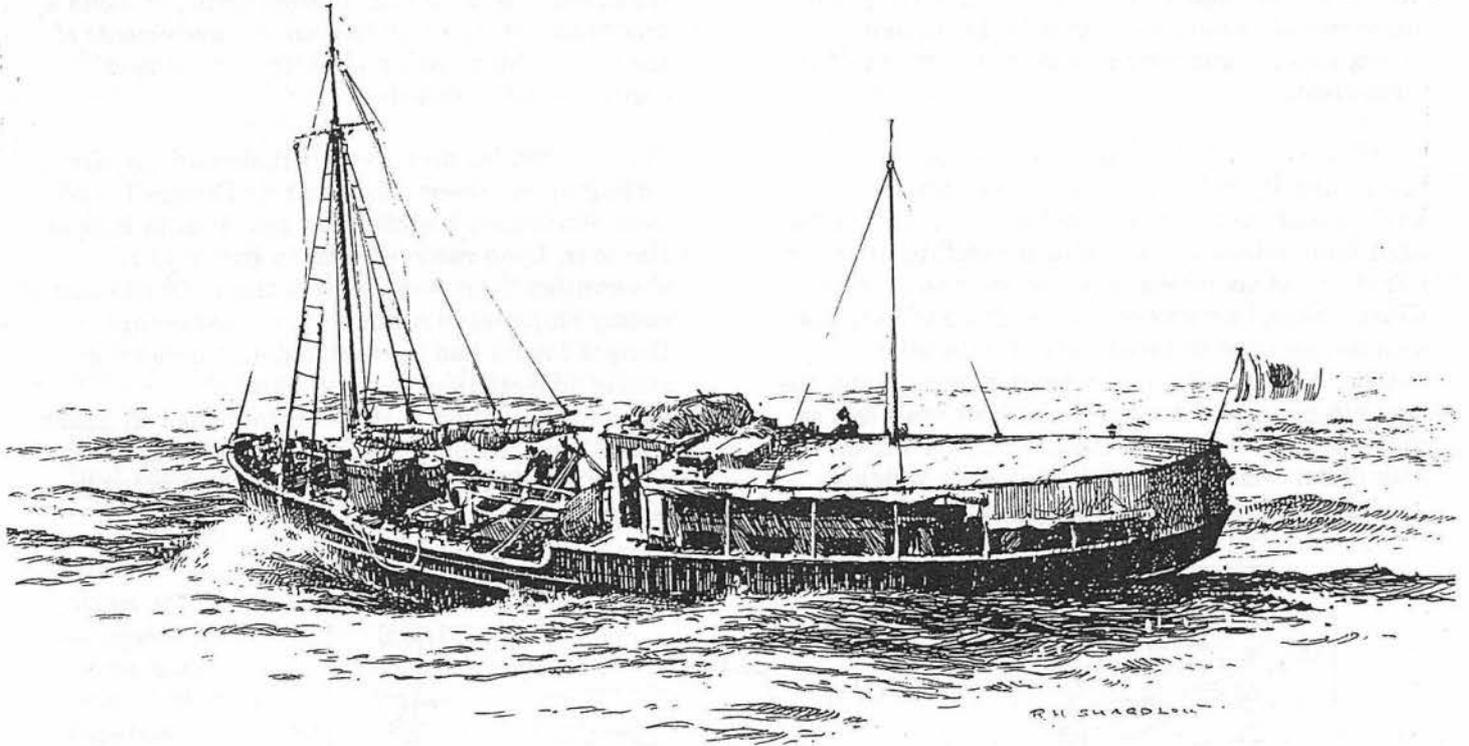
*If you can donate an hour or two on either day, please ring Mike Beilby on 397 6209.*

*Admission is \$2.00 per head; times are 12.00-5.00 Saturday, and 9.00-4.00 the following day.*



# KRAIT: and Operation Jaywick

by Barbara Shardlow



*M.V. KRAIT: trawler - 68 tons gross; 70.4 LOA x 12.5 feet; draught 6 feet; 8.5 knots. Probably built before 1920; Burmese teak; 75bhp Deutz diesel engine, replaced with a Gardner 6L3 diesel engine in 1943.*

**I**n 1942, when Japan entered the war, a small Singapore based, Japanese owned fishing supply vessel named KOFUKU MARU was seized by the Royal Australian Navy in Indonesian waters and put to work rescuing survivors of bombed ships and carrying refugees fleeing Singapore.

One escapee from Singapore was Captain Ivan Lyon of the Gordon Highlanders. While in Bombay he saw the KOFUKU MARU and conceived the idea of using her to infiltrate Singapore to sabotage Japanese shipping. After several unsuccessful attempts to sail her to Australia she was loaded as deck cargo on the P&O steamer BALLARAT and taken to Sydney for repairs. Her name was changed to KRAIT after a venomous Ceylonese snake of the cobra family. At first the Navy did too good a job on her. Her new paint work and

refurbished fittings had to be aged and dirtied so that she would blend unobtrusively with the other fishing vessels plying the waters she would be negotiating to carry out her dangerous mission. A crew of five and nine volunteer operatives were recruited to Z Special Unit to undergo rigorous training in secret on the Hawkesbury River and in Cairns. Not until the mission began, codenamed Operation Jaywick, would the men be told what they had trained for.

## Operation Jaywick

By the 2nd of September 1943 the top secret mission was well underway. KRAIT was sailing as a non-commissioned vessel from Exmouth Gulf, Western Australia, towards enemy held waters and Singapore. If they survived to reach their

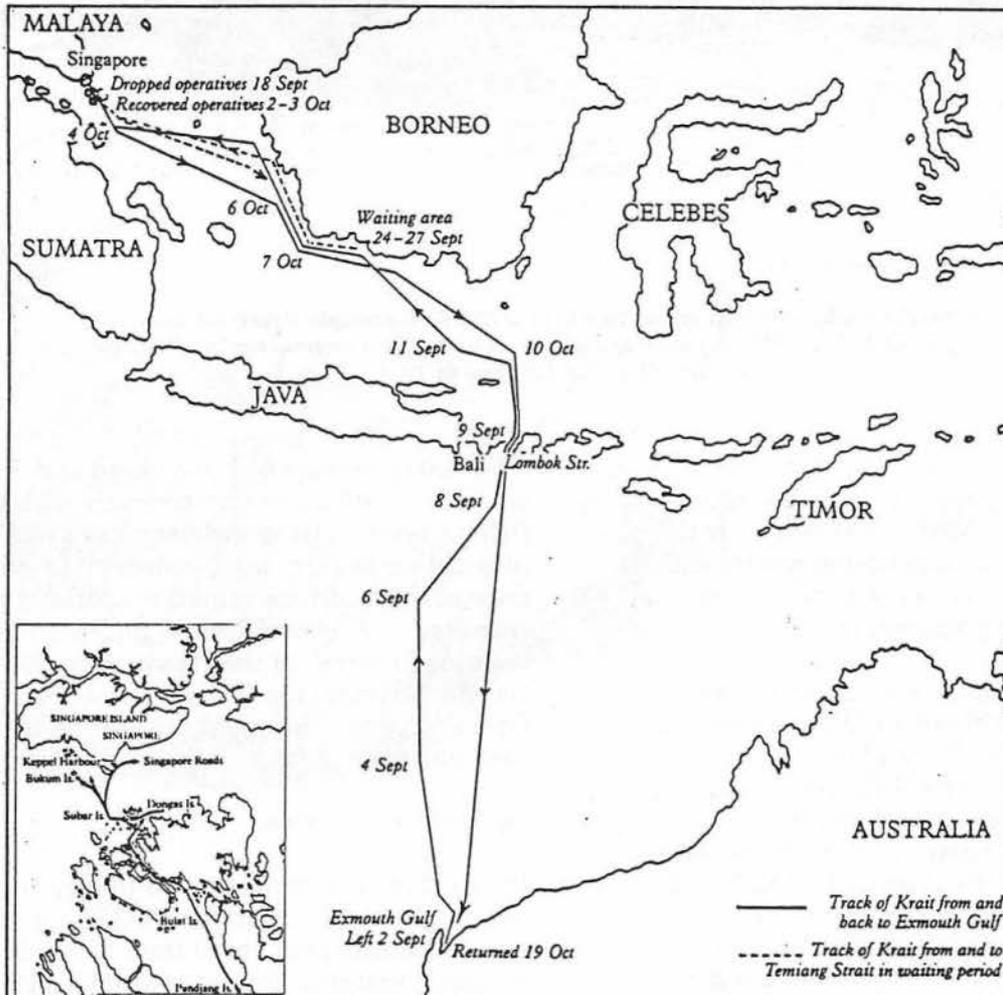


destination, six of the volunteer commandos were to paddle three canoes into Singapore harbours and destroy Japanese shipping with limpet mines. The crew and the other three operatives were responsible for getting the commandos as close to their targets as possible, for picking them up again when their mission was completed, and for getting everyone safely back to Australia, Lyon, now a Major, was in command as well as being one of the commandos.

KRAIT headed for Singapore via the Lombok Strait, heavily laden with equipment for the mission and enough water and food supplies to last until their return to Australia, a carefully planned round trip of six weeks. For just over two weeks KRAIT played a nerve-wracking game of hide and seek as she tried to avoid contact with other vessels. A brief relief in the tension came when the men attempted to blacken their skins with dye so they would look the part if sighted. At 2 am on the 18th of September, after zigzagging for a day looking for a suitable drop-off point, the KRAIT

anchored off Panjang Island, "the lights of Singapore glowing a mere 22 miles away" (Captain's log). The commandos, the now assembled two-man canoes, limpet mines and other equipment were unloaded. For the next two weeks they would be on their own while the KRAIT cruised in the waters off Borneo trying to blend as unobtrusively as possible with the movements of the local fishing craft and avoid the notice of Japanese naval vessels.

The commandos prepared for their mission, firstly setting up an observation post on Dongas Island from which they watched the activities in Keppel Harbour. Lyon recorded that in five days of observation there were no less than 100,000 tons of enemy shipping in harbour at the same time. Dongas Island had to be abandoned because of strong adverse tidal currents, and a second observation post was established on Subar Island overlooking Examination Anchorage. There were about 70,000 tons of Japanese shipping in Keppel Harbour and Singapore Roads.



(Map reproduced from AUSTRALIAN SEA HERITAGE No.7, 1985.)



At 7:00 pm on the 26th of September, 1943, the raiders set off in their laden canvas canoes, their specially designed short paddles dipping soundlessly into the water as they approached the armada of enemy merchant ships. The Japanese were so sure of themselves that there was no black out, and the raiders were miraculously able to avoid detection as they attached mines to seven ships in Keppel Harbour, Singapore Roads and off Bukum Island. Swiftly and silently they paddled back to safety, reaching the mangrove swamps on nearby Dongas Island in time to hear the mighty explosions go off at 5:15 am, as scheduled. 40,000 tons of shipping was devastated, two fully laden cargo ships sunk, five were seriously damaged and fires spread to the wharves and other installations. Elated, the men paddled their separate ways the twenty miles to the rendezvous point with the KRAIT as the shocked Japanese desperately searched for the perpetrators of the disaster.

With great relief, the fourteen men of Z Special Unit were reunited on the night of October 3rd. Now they had to survive the return journey to Australia through a now alert and suspicious enemy's waters. While sailing through the Lombok Strait at night a Japanese destroyer came alongside and paced the KRAIT for five long minutes and then inexplicably turned away without challenging the little vessel flying the Japanese ensign. KRAIT arrived at Exmouth Gulf on the 19th of October, but the success of Operation Jaywick, the longest, most daring and successful sea raid in naval history, was to be kept a secret until 1946. Nine of the men were decorated and the other five were mentioned in dispatches. Only eight of the courageous fourteen had survived the war to tell their remarkable story.

#### **After Operation Jaywick**

KRAIT was transferred to Darwin to act as a supply vessel to Coastwatcher Units on Timor. In 1944 she was commissioned into the RAN as one of the SRD's 'Snake' service vessels, operating out of Darwin on reconnaissance duties in the Molucca and Borneo waters. In 1945 she was ordered to accompany HMAS BUNDABERG to Ambon to attend the formal surrender of the Japanese.

#### **After the War**

KRAIT was paid off in December, 1945, and sold to buyers in Borneo. She was employed smuggling heroin, hashish, guns and war surplus material around the South China Sea until caught by Interpol in Bali. She was eventually bought by a

saw miller to haul logs around the island of North Borneo. In 1962, though now named PENANG, she was recognised by two Australian timber buyers who instigated her purchase by a specially convened board of trustees with funds raised by public appeal. P&O transported her free to Brisbane for cleaning, painting and repair. On Anzac Day, 1964, twenty one years after she had left on Operation Jaywick, she entered Sydney Harbour where she was dedicated as a war memorial and handed over to the Royal Volunteer Coastal Patrol. In the early 1980's she underwent extensive restoration and in 1985 she came under the direct control of the Australian War Memorial. Care of the vessel was entrusted to the Sydney Maritime Museum. In 1988, with the founding of the Australian National Maritime Museum, KRAIT was entrusted on long-term loan to the new Museum's floating collection. She joined the two other naval vessels in the collection, the Bofors-armed Attack Class patrol boat ADVANCE (star of the TV series Patrol Boat), and the Daring Class destroyer VAMPIRE. Today, KRAIT is a floating memorial to the men of Z Special Unit who lost their lives on special operations during the Second World War.

#### **Modelling the KRAIT**

In early 1993, as an MHA project, the Model Steamship Association was commissioned by the Association to build a working scale model of the Krait to commemorate the 50th anniversary of Operation Jaywick. It was envisaged that the model represent the KRAIT as she would have been at the time of Operation Jaywick, not in her present configuration in the National Maritime Museum. With the cooperation of the Fremantle Maritime Museum, the Australian War Memorial and the Australian National Maritime Museum, the MHA was able to purchase plans of the KRAIT. The plans had been drawn up in 1984 by Wayne Masters as a result of being commissioned by the Australian War Memorial Commission to build a model of the KRAIT for part of its Memorial Exhibition. Brian Lemon of the Model Steamship Association (W.A.) took on the project with enthusiasm. The Model Steamship Association was pleased to be modelling a vessel significant to Western Australia's history.

Working from the Masters plans, Brian began construction in May using many materials from the MHA's Alec Upjohn Modelmakers Workshop. By early July he was detailing the model in consultation with Operation Jaywick commando Arthur Jones of Western Australia. Arthur's vivid



memories of the daring sea raid and life on board the KRAIT coupled with Brian's outstanding and innovative modelling skills have produced a stunningly realistic portrayal of the KRAIT as the unobtrusive, utilitarian work boat she was in 1943.

In early August, Brian put KRAIT through her 'sea trials', adjusting ballast and testing the remote control guidance system. She performed perfectly. She was officially launched at an MHA members function on the 19th of September, the day fifty years ago that the six commandos of Z Special Unit rested on Panjang Island having spent the night before unloading their canoes and equipment and farewelling the KRAIT as she left to cruise enemy waters until the pick up date fourteen days away.

The model remains the property of the Model Steamship Association, but will be available at all times to the MHA and the Maritime Museum for display purposes. It will form an important focal point of the MHA display marquee at the Classic & Wooden Boat Festival in October this year. The plans purchased by the MHA will be donated to the

W.A. Maritime Museum collection and will be available to researchers.

This MHA cooperative project has been a great success and it is hoped that the KRAIT model will be the first of many such projects that encourage the study and modelling of Western Australia's shipping history.

#### References:

*Australian Sea Heritage*, no.s 7, 8, 22, 26, 30; GROOM, Barry, *The Mission of Krait*. (ASH no.7, 1985); *Model Shipwright*, no. 58; MASTERS, Wayne, *KRAIT*. (MS no. 58); GILLET, Ross, *Australian and New Zealand Warships, 1914-45*; COULTHARD-CLARK, Chris and Tina, *White Ensign 1939-1945: the Navy goes to War*.

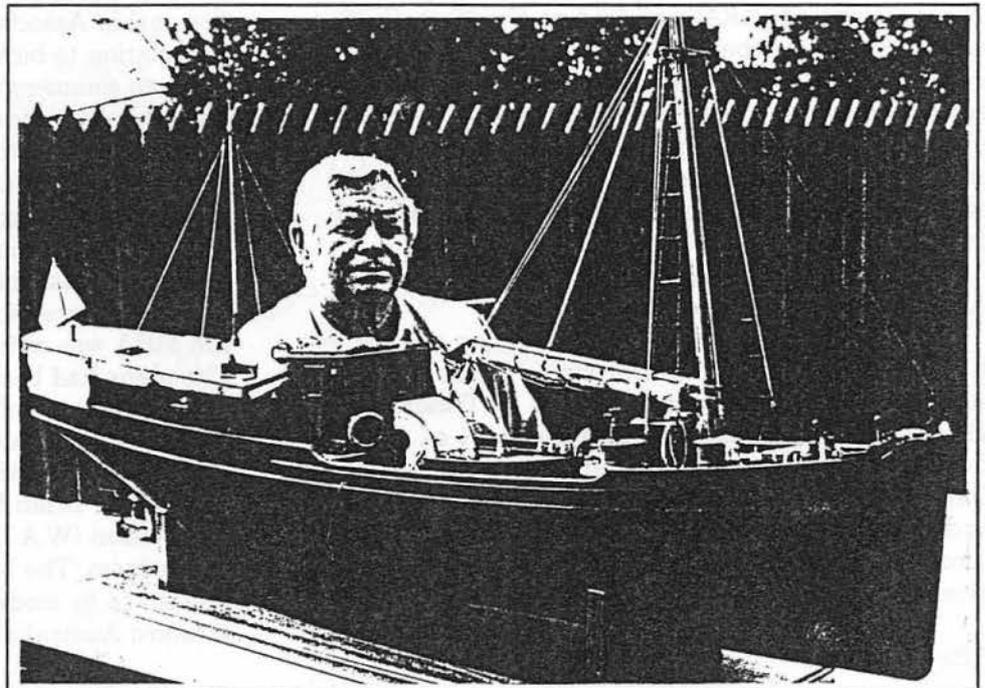
Also information supplied by Brian Lemon, as well as the personal recollections of Arthur Jones himself.

## KRAIT: Building the Model

by Brian Lemon

Though it seemed at the time that it was going to be a joint venture, the idea to build a remotely-controlled model of the KRAIT was conceived by one of my modelling mates, Bill Wright.

We already knew of a model built in 1985 by Wayne Masters under contract to the Canberra War Museum; however, we didn't know where we could obtain the necessary plans to the trawler. Ross Shardlow and the Maritime Heritage Association were then approached for assistance. Eventually these plans came our way. In the meantime, I had somehow become the "bod" to build the model!



The plans were to a scale of 1:16, giving the model an overall length of approximately 53 inches - somewhat larger than any I had yet built. Unfortunately, with the exception of a couple of

details, they had been drawn up by Wayne to represent the KRAIT as she was in 1984. Even before this date, KRAIT had undergone restoration and rebuilding that had altered her appearance



from the six-to-nine week period of Operation Jaywick in 1943.

Let me now digress a moment ...

Back in 1948 I commenced an apprenticeship with a block-making firm in the photographic trade. Not long after this, a young man by the name of Arthur Jones also came to work at this firm. I remembered at the time that he had been involved in some secret commando-type raid during the war. Several years later, people started to hear words like "Krait" and "Jaywick": one way or another I learned that Arthur was one of the operatives of Operation Jaywick itself.

As mentioned, the plans to the KRAIT were very basic and represented her largely as she is today. Once I had commenced the basic construction of the model (which was built on traditional lines; that is, keel, frames, longitudinal stringers, etc.) I was then able to contact Arthur with a view to testing his recollections of his experiences on board some fifty years previously.

Well, what an experience talking to this quiet, unassuming man. There is no doubt that without his help I could not have detailed the model nor recreated the wartime "atmosphere" at the exact time of the Operation. He was also a great help in building one of the canvas folboats (to the same scale as the KRAIT) that he and his five commandos had used to paddle into Singapore Harbour. You must appreciate that certain details about the KRAIT were set up specifically for the Operation, both above and below deck. You should also understand that Arthur had to try and remember certain details that he had not had a lot to do with, as he and the other Jaywick men were in reality only passengers. I will now try and describe some of these items...

As well as three special, large fuel tanks that were fitted below decks - about where number four hatch and the wheelhouse are - she also carried several forty-four gallon drums of diesel fuel: these were emptied quite early in the piece into the main tanks, then thrown overboard for gunnery practice. On examining the model, you will notice a series of four gallon drums on the forward deck of the model: these were filled with normal petrol and kerosene for the small "micky-mouse" petrol-driven generator and also for the primus stoves used by "Pancake", the cook. Also on board were a number of porcelain containers of distilled water for use in the batteries. The small eight-foot bondwood dinghy was used for ferrying the necessary supplies

and canoes from the KRAIT to Panjang Island; the large black tank by the mast was one of three used for fresh water. The other two are aft, by the cook's "domain". These were riveted steel tanks. The curved canvas cover over number four hatch gave "open" shelter to Horrie Young, the wireless operator directly below decks. As the whole of the front deck - with mast - has to lift off for ballasting the model when sailing, all the deck detail had to be permanently glued and pinned to this deck. All this detail was completed and fixed to the planked, natural wood deck.

Shortly after, I happened to be reading the book "Heroes" that Arthur had lent me, when I came on the passage stating that the commanding officer, Lieutenant Carse, had decided to paint the forward deck a flat grey - to minimise reflection, etc. from the air. (He actually went up in an aircraft to observe his handywork: from 3000 feet the whole boat blended into the colour and motion of the sea, and was almost invisible.) I now had to paint the complete deck flat grey - an extremely difficult task as the deck detail was already permanently affixed.

An interesting feature was that everything on the "real" KRAIT was painted black and natural, dull colours, with quite a lot of "ageing" everywhere. This was done purposefully so as not to draw any attention to the boat while in enemy waters. The black metal cylinder strapped to the canopy roof aft of the wheelhouse was used to cover the engine exhaust when sailing at night. This completely silenced the familiar marine diesel noise. None of the local (Malay-Singapore) fishing boats sailed at night, so the KRAIT could not afford to be heard during darkness, as sound travels quite a long way over water.

Another interesting feature was the removal before leaving Exmouth of all names, labels etc. They couldn't afford to have any food tin labels or cigarette butts and paper floating around the ocean waiting for the enemy to pick up. Grilley, the cook, therefore had all food tins numbered so he could tell which tins contained what food. With the exception of a couple of the crew and Carse, who slept mainly in the wheelhouse, the remainder slept on the engine casing - apart from Jones and two others who had hammocks slung under the canopy roof. On the model I have also slung hammocks in this position.

Some guns, grenades and ammunition were kept in boxes on the engine casing. All the tins and containers of food - which were mainly Army



rations and dehydrated food - were stored in the cook's area. Apart from tea and coffee, the men were each issued with one Army canteen of fresh drinking water every three days. Most of Grilley's cooking was done using sea water.

The side awnings on the aft canopy just forward of the two water tanks were always kept down, but on the model I have modelled these in various positions to show some of the aft detail about the stove and cupboard areas. The two nameboards which are positioned on the wheelhouse roof area were removed prior to the Operation. On the model these boards can be removed and placed on the wooden stand.

Although the blue ensign was flown for a few days out of Exmouth - and then for the last couple of weeks out of Exmouth on the return trip - the Japanese flag was used for the greater part of the journey. This flag was quite new and fresh when given to the crew prior to leaving Exmouth: to make it look like all the other flags around the Borneo/Singapore area, it was deliberately dirtied with oil, etc. prior to hoisting.

One other item of interest that came to light was the single-blade paddles used by the three canoe crews. Although the seventeen foot folboats would have been easier to paddle with twin-blade paddles, these would have been too noisy entering and exiting the water; they would also have had a higher profile above the canoes when paddling. Consequently, the shorter single-bladed paddles were the safest alternative. (Incidentally, the blades of these paddles were shaved to a knife-edge

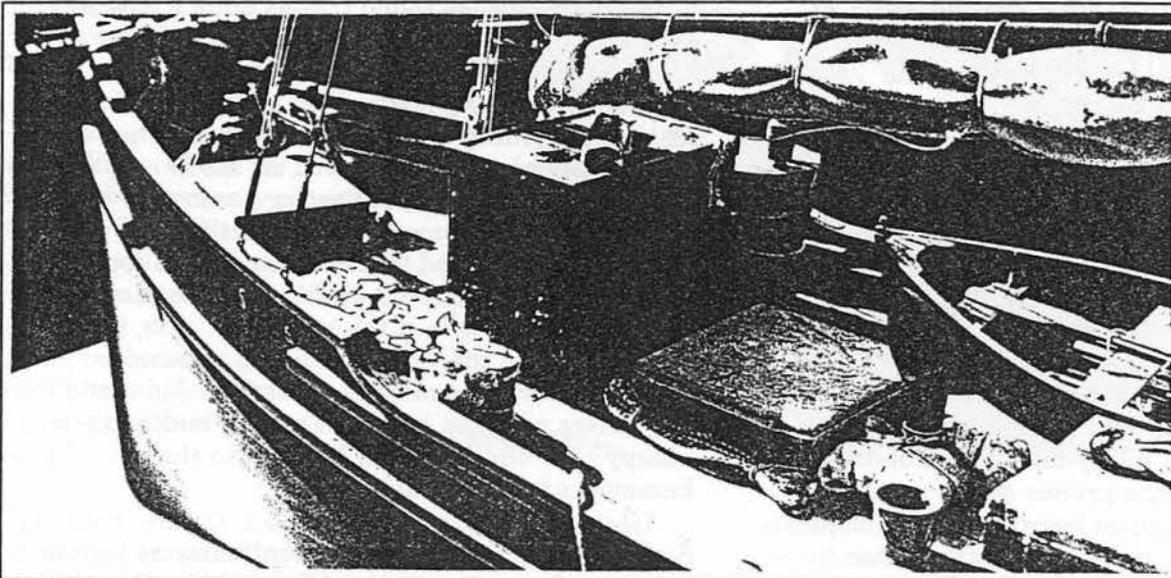
to further minimise noise when entering the water.) It was estimated that each canoe, with its crew of two, plus limpet mines, guns, ammunition, four gallons of water plus other supplies to last about two weeks until the pickup, weighed about six hundredweight.

To all intents, one thinks of these canoes as canvas covered but, in fact, they appear to have been of a rubberised canvas material that was extremely tough. These canoes folded up into three main sections, and fitted neatly into special carrying bags.

Some idea of the detail differences between the plans and the actual boat in 1943, came to light when constructing the engine casing on the model. I had completed this area and was showing the model (at this stage of construction) to Arthur Jones, when he pointed out that the companionway to the engineroom was not as shown on the plans. This area too had then to be reconstructed. A number of lesser incidents like this arose during building, and I can only state again how fortunate I was to have had the services of Arthur.

The model took just on ten weeks of very intensive work to construct.

Before closing, I must make special mention of my appreciation of the assistance provided by Ross Shardlow and the Maritime Heritage Association; to the Maritime Museum for their help in obtaining the necessary plans, and to Robin Hicks for the beautiful piece of jarrah (and the routing and shaping of same) that I used for the stand.

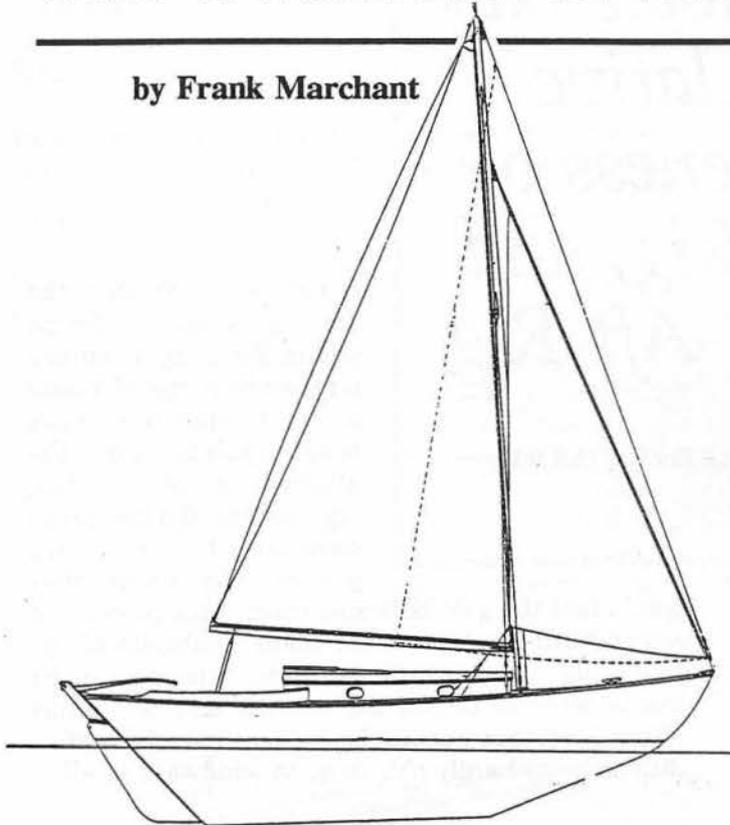


*KRAIT model: detail of forward deck when completed.*



# The Swan River H-28s

by Frank Marchant



**D**uring December, 1942, L. Francis Herreshoff designed a 28-foot yacht, the H-28. This design was aimed at the average family man, was not expensive to build, comfortable, good in a seaway and had a reasonable turn of speed.

Plans for the H-28 were originally published in 'Rudder' magazine the following year, and some hundreds of such boats were subsequently built throughout America after the war finished. Yachtsmen in other countries quickly saw the possibilities and hence the design showed up in many parts of the sailing world.

South of Perth Yacht Club has a fleet of 22 H-28s competing on Wednesdays and Saturdays - perhaps the most active fleet in the Club. The original rig was a ketch; however, locals found the fractional sloop rig enhanced performance and was easier to handle. Now, only one of the fleet still sails as a ketch. During a visit to America, one owner called on H. Herreshoff himself: he was pleased to hear of the fleet and suggested that it was probably the largest fleet, so far as he knew, sailing outside the USA.

Competition within the fleet is brisk. The yachts are subject to a prescribed sail area and hull measurement - the result is true class sailing as, in theory and in fact, all the craft have equal performance. Success lies in the hands of the skippers and crews - in their awareness of the yachts' capabilities, in forecasting wind shifts, in local knowledge and in efficient sail handling.

## The South of Perth Yacht Club H-28 Fleet

| Reg.No. | Sail No. | Boat Name        | Skipper       |
|---------|----------|------------------|---------------|
| 1       | SP7      | CARINA           | R Colquhoun   |
| 3       | SP19     | NOVA             | A Meaton      |
| 4       | SP22     | ALMA             | R Williams    |
| 5       | SP23     | SORAYA           | G Frean       |
| 6       | SP24     | KAROLEEYA        | E Little      |
| 7       | C97      | KOOLENA          | P Scott       |
| 8       | SP27     | JINDARRA         | P Lammonby    |
| 9       | SP47     | CORELLA          | B O'Shannassy |
| 10      | SP51     | SUZANNA          | R Vance       |
| 11      | SP57     | NADIA            | R Cecil       |
| 12      | SP99     | GEORGINA         | A Coddington  |
| 13      | SP104    | WYNELLA          | D Bourne      |
| 14      | SP112    | SUNDOWNA         | C Youngs      |
| 16      | SP132    | NERRIMA          | G Sneesby     |
| 17      | SP144    | NAPEA OF CARRICK | W Solomon     |
| 18      | SP150    | CIMBA            | J Leach       |
| 19      | SP157    | SOLO             | V Court       |
| 20      | SP207    | PAR-DE-TWA       | N Wiltshire   |
| 22      | SP331    | ANNA             | J Wright      |



## Some Notes on the Relative Effectiveness of Square Rig, and Fore-and-Aft Rig

by Nick Burningham

The barquentine rig was an attractive and efficient rig that combined the power of square rig with the economy of fore-and-aft rig. It is sometimes thought that square rig was not effective when beating to windward and that barquentines (and topsail schooners) would beat to windward, setting only their fore and aft sails. But that is not the case.

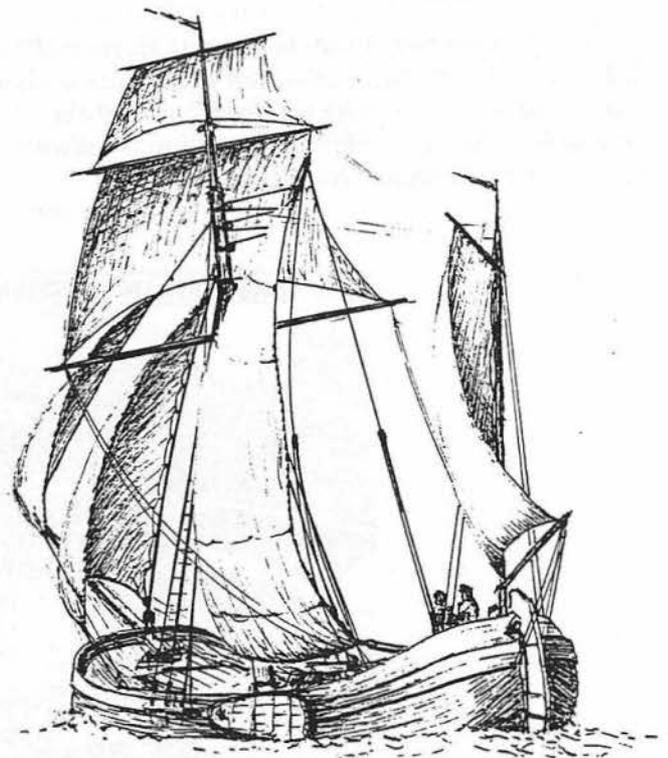
Well designed and well cut square sails enabled traditional sailing craft to sail as close to the wind as their hull form allowed, and they sailed just as close to the wind as nearly all traditional fore-and-afters.

The square rig has a number of advantages: when running before the wind, square sails can deliver considerably more power than fore-and-aft sails because they can be fully spread and sheeted flat at any angle to the wind; whereas gaff sails and staysails tend to belly, twist and distort when they are sheeted out to run before the wind - and this considerably reduces the effective sail area that is pulling in the right direction. Furthermore, square sails are centered over the centreline of the hull, and deliver more power there; while most fore-and-aft sails set entirely to leeward of the centreline of the hull and deliver their power off-centre, which tends to make a vessel want to turn to windward - so energy is wasted keeping the vessel on course, either with the rudder or by sheeting flat the headsails.

However, there are considerable difficulties and dangers in handling square sails, but they do not have to be gybed. It is said that the big steel barquentines MOZART and BEETHOVEN had to lower all their gaff sails before they could wear round to change tack in heavy weather - their huge gaff sails were too dangerous to gybe. Square rig allows tall masts to be better stayed: a square-rigged mast is supported by numerous shrouds, backstays and

forestays which stay the mast at several different points. For comparison, the fore- and-aft rigged masts of a barquentine have fewer points for the attachment of standing rigging, and the backstays cannot be set up permanently where they

would foul the gaff sails and spars. This problem of staying tall masts was the main limitation of the really big multi-masted American schooners: their masts were as tall as the staying and technology allowed, yet they were under-canvassed and therefore dull sailers - hardly able to go to windward at all.



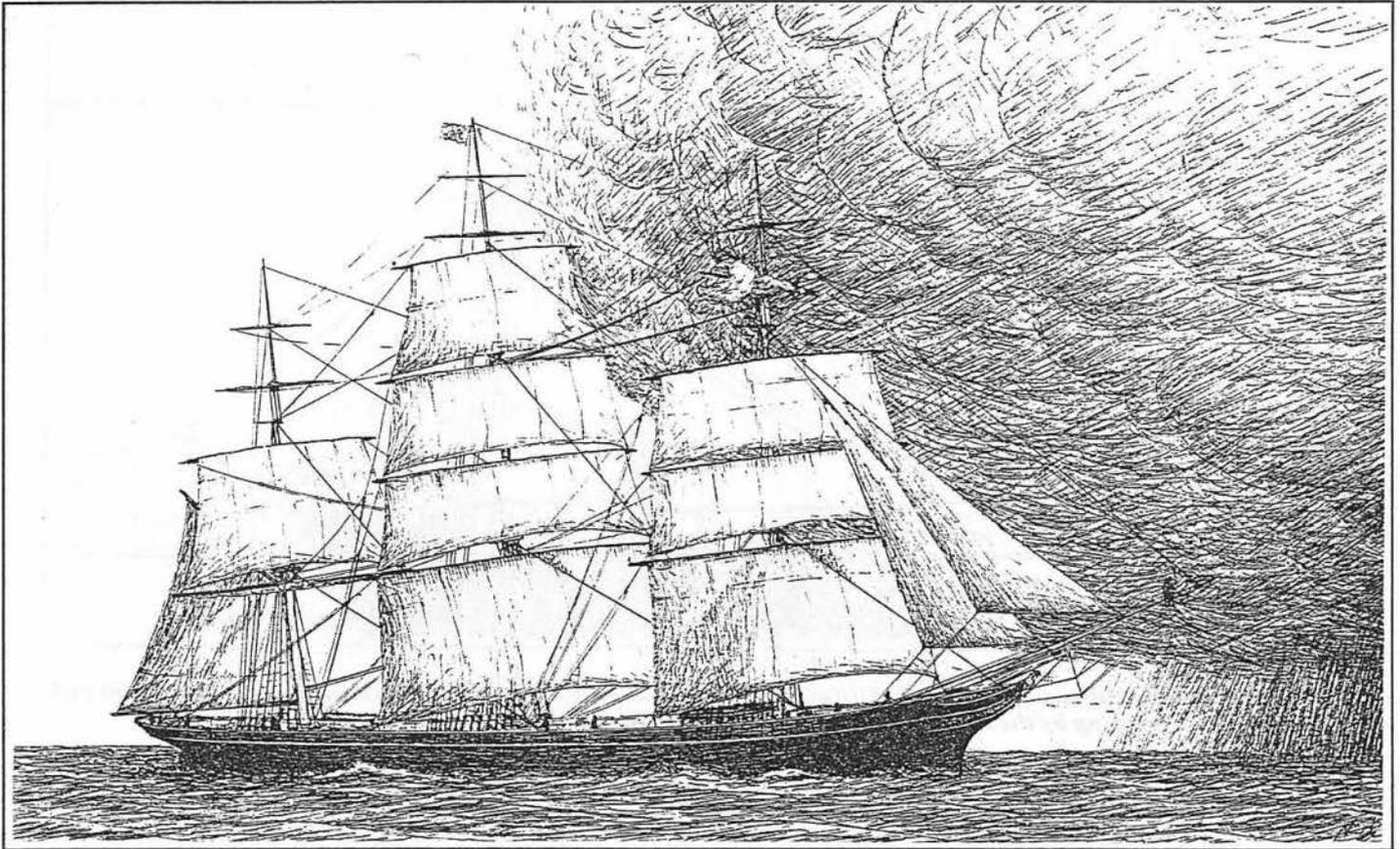
*A nineteenth century Dutch trading smack running before the wind. All her fore-and-aft sails are pulling in more or less the wrong direction. (Drawing by the author: after Pieter le Comte.)*



There is a particularly good first-hand account of the American barque HARVARD (a square rigger) tacking in towards Boston in company with a fleet of big three and four-masted schooners - none of which could sail as close to the wind, nor as fast as HARVARD.

In 'China Clippers', Basil Lubbock records that the sharp and weatherly tea clippers would actually furl

on to the new tack - even if she loses way. The fore staysail of a fore-and-after can be backed to do the same job, but it has less power to push the head around, and effective backing of a forestaysail can only be achieved on relatively small craft. Of course, square rig does have a number of disadvantages also, mostly related to cost. It requires far more gear: rope, blocks, fairleads, slings, parrels, etc. Setting, reefing and furling square sails involves a lot more



*The square-rigged tea clippers were designed to beat all the way down the China Sea against the stormy southwest monsoon. (Drawing by the author.)*

all their staysails when beating to windward: without the staysails backwinding their beautifully cut square sails, they could sail nearly half a point closer to the wind. Backwinding is a problem that more seriously impairs the windward performance of fore-and-aft rigged vessels with two or more masts, because the clew of each gaff sail lies so much closer to the tack of the next gaff sail than is the case with square sails.

Barquentines and topsail schooners were popular in coastal trade because the square sails on their foremasts made them more reliable in stays (going about). As a square-rigger turns into the wind to go about, the squaresails on the foremast are automatically backed and they push her bow around

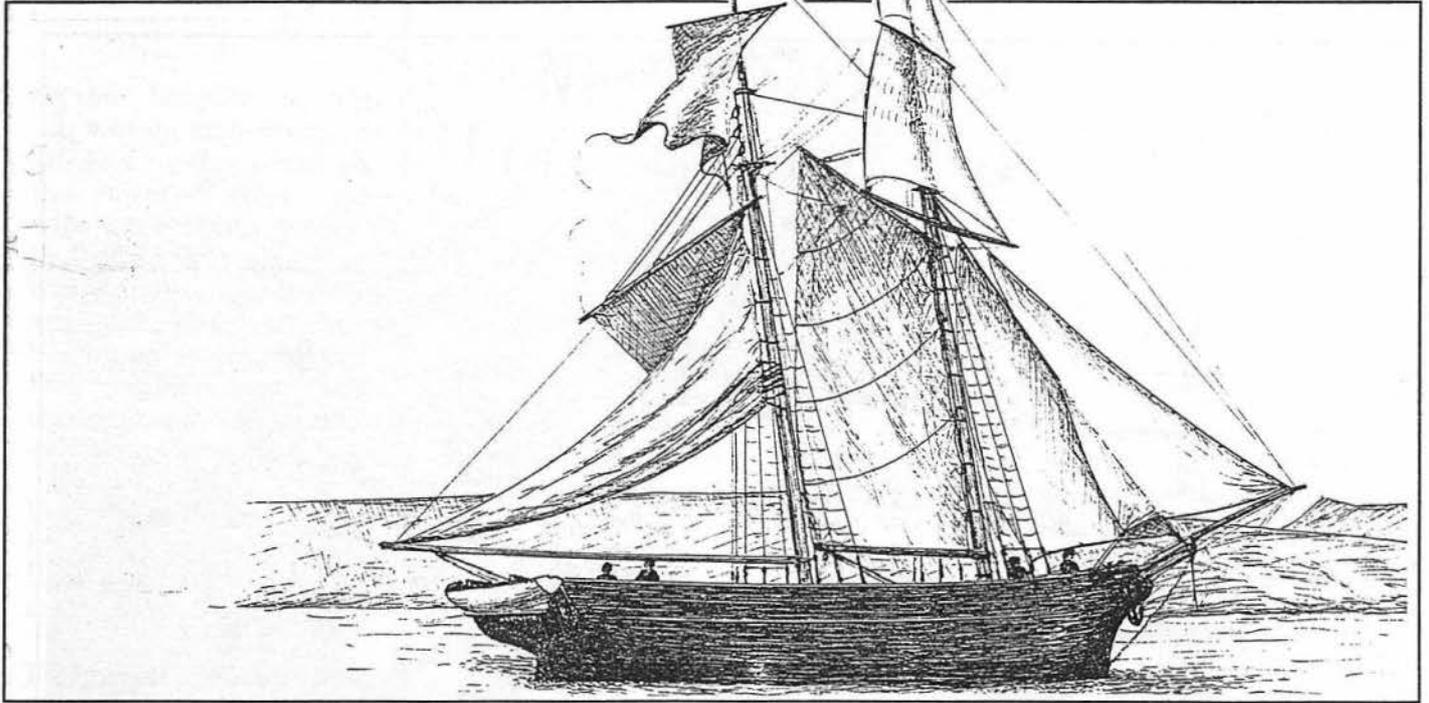
dangerous work aloft, and the greater the number of square-rigged masts on a vessel, the greater the number of crew necessary to handle her. During the nineteenth century, there was an inevitable gradual shift away from square, to fore-and-aft rig. At the beginning of the current century, full-rigged ship and brig were probably the most common deep-seagoing rigs. In the pursuit of economy, ships became barques, and brigs gave way to brigantines, barquentines, topsail schooners and, finally, prosaic ketches.

Well designed square riggers were reliable in stays, but changing tacks was a slow business. Even small square-riggers would take more than a minute from putting the helm down, to sailing with sails trimmed



properly on the new tack, and they would frequently get sternway while going about. Sometimes square-riggers didn't bother to go about: the little collier brigs from the north of England (descendants of Cook's ENDEAVOUR) would simply back all their square sails to make tack going astern ("making a sternboard") if they had insufficient room to go about when tacking up the Thames to London. In general,

although square rig was the most effective means of propelling large and medium-sized cargo carriers whose windward efficiency was limited by hull form, the rig did have its limitations. Smaller craft with really weatherly hull form, such as pilot schooners, could sail closer to the wind and tack more quickly with a purely fore-and-aft rig.



*The North Australian Expedition schooner TOM TOUGH, with her square topsails backed to reverse round on to starboard tack, to get off a sandbank. (Drawing by the author: after a watercolour by Thomas Baines.)*



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