

# OCEAN CRUISING

A.Y.R.S. PUBLICATION

No. 21



## SPRAY

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(Founded June, 1955 to encourage Amateur and Individual Yacht Research)

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## EDITORIAL

October, 1958

Reprinted 1970

The ANNUAL SUBSCRIPTION to the A.Y.R.S. is now due. It has unfortunately had to be raised to £1 and \$3.50 by the American and British Committees to meet the increased costs of the publications and administration. The subscription leaflet contains a questionnaire which will be studied to see how members wish the Society to develop.

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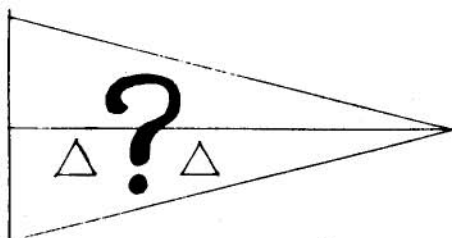
Publications for the coming year will contain two on multihulled craft, **MULTIHULLS IN 1958** and **CRUISING MULTIHULLS**. **YACHT ELECTRICS** will also be examined and the others will be selected from **TRADITIONAL SAIL**, **SEA BEHAVIOUR**, **THE DESIGNERS' ART**, **DEEP SEAMANSHIP**. Walter Bloemhard, the President of the American A.Y.R.S. will edit two publications.

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It is hoped that all members will try to get their friends and acquaintances to join the A.Y.R.S. We are in an intermediate stage of development where we are doing fairly good work in studying the tests and craft of other people. But, with more members and enough financial reserve to buy equipment for taking measurements, we could form ourselves into the academic backbone of yachting. This is surely what we should aim at. The yacht designer and the yachtsman want to know what an extra inch or so of roach, flow in the sail or on the hull will do to speed and sea behaviour. We could answer those questions for him, if we had enough support.

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At least one member has received a misbound copy of a publication. If there have been any others, could I please be told so that they can be replaced? It is possible for a member to fail to get a copy of a publication for several reasons and at least one member who joined at the London Boat Show did not get No. 16. If, therefore, anyone has not had six publications for this last year, will he let me know?



John E. Perryman send these two designs for blazer badge and burgee. He feels that any form of lettering on a flag (unless it spells Bass or something) tends to look confused and cheap at the masthead and would prefer not to have any for the burgee.

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Almost simultaneously with the publication of A.Y.R.S. No. 20, MODERN BOATBUILDING came the publication of the *BELL WOODWORKING COMPANY*'s invention of what I called "Over-developed Plywood" in No. 20. This was quite independent of my own invention of a similar system. The *BELL WOODWORKING COMPANY* have shown that it is perfectly possible to make a conventional Uffa Fox dinghy from sheets of flat plywood. Because this is one of the most difficult shapes to produce, we may hope to see many boats made with these systems in the future and the price of our dream boats coming within our modest means. A technical article relating these systems to the shape of the boat one wishes to produce would be welcome. A leaflet on PAGASUS may be got from the *BELL WOODWORKING COMPANY*, Narborough Road South, Leicester. Let us congratulate this company on what is probably the most notable advance in boatbuilding in our time.

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It is a great pleasure to me to introduce this publication. Just as long as I can remember, I have always dreamt and thought about sailing across the oceans in a little boat. Oddly enough, too, the craft I have always used has been a long narrow canoe or dugout boat so the study of catamarans and outrigger craft has been a great pleasure to me.

In my opinion, the greatest stimulus to Ocean Cruising comes from being brought up in an atmosphere where the talk is often of other peoples and places. When this is combined with a spirit of self reliance and the wish to accomplish by one's natural abilities, the basic qualities

for Ocean Voyaging will be present. It then only needs an introduction to the sport of sailing to make Ocean Cruising a possibility and persistence and luck to make it occur.

The main article in this publication is by Richard Gordon McCloskey of the SLOCUM SOCIETY, Horn Point, Annapolis, Maryland, U.S.A. This Society was founded about the same time as the A.Y.R.S. and is dedicated to gathering every possible fact about every ocean voyage in a small boat with a crew of one or two persons. From the mass of information which Richard McCloskey has gathered, he has most kindly produced this most informative article, giving us, where possible, the opinions of the voyagers themselves on the various aspects of the subject. It is unavoidable in such an article to have to refer to many yachts by name which many readers will not know, unless they are extremely well read. ATLANTIC ADVENTURES by Humphrey Barton is a useful book of reference in this connection but we really need a comprehensive book of the same nature with an annual Yearbook of ocean cruises to keep us up to date. DEEP SEA SAILING by Errol Bruce is another book which gives details of seamanship and may be of interest to readers.

We are also grateful to Charles Satterthwaite for his most delightfully written "Thoughts on Seamanship" and to Ian Miller, Richard Poland, H. G. Hasler, Frits Fenger, James Wharram and Dr. James Morwood for articles and help with this publication.

## THOUGHTS ON SEAMANSHIP

by

CHARLES SATTERTHWAIT

Of all the arts developed by man, none has contributed more to the expansion of trade and the establishment of modern civilisation everywhere than that of the sailor. It is unlikely that any similar profession will ever be able to claim to have exceeded it for sheer usefulness. With the passing of the sailing warship and the merchant sailing ship, the sailor became redundant and the art and craft of seamanship have been in a steady decline ever since. The surviving vestiges of this once widespread and virile occupation are to be found in the "little ships" but the seamanship practised by the amateur will hardly bear comparison with the polished competence of the old time sailorman.

Possibly, the most cogent reason for this is the use of an auxiliary engine in cruising yachts. There is, too, the general lack of time in which to acquire the art and often, it would seem, a deplorable lack of enthusiasm to do more than the bare minimum, anyway.

The sea and the winds, however, have all the time in eternity. They are thoroughly impartial judges of seamanship and great levellers of brash humanity. For the slightest mistake or accident of omission on the part of the sailor, the penalty exacted by the sea can be the most severe. Many have paid with their lives even for failing to think and to act promptly and properly, in a seamanlike manner, in a moment of crisis. Any fool can set sail and venture forth to achieve a brief notoriety in the daily news, but to direct the sailing craft in safety across the waters demands a high standard of technical ability. Because of this demand and because of the impartiality of the sea, no other occupation can offer the same attraction, education and variety of interest as that of the sailor. A lifetime is too short in which to learn it. Indeed, there is no state of complete knowledge possible in seamanship.

Day sailing alone is not sufficient to appreciate the depths of the art. A continuous, purposeful voyage is necessary to this his realisation. Here, the petty anxieties of the shore fade from the mind and a proper recognition of the true essentials becomes apparent. A good job well done ; a sail well set to a steady, friendly wind ; a straight wake showing fair on the sea's face ; a well coiled halyard ; the fresh salt tang of the waters and the nudge of the tiller all belong to seamanship. So also does a deep sleep ; the call of the watch in the early hours ; the wonder of a dawn sky ; an approaching storm ; a well tucked reef ; a good splice and crowding memories. It is a

challenge to get to the desired haven against the winds and the sea, to navigate the hazards in safety and to arrive in good trim, which begets a sense of achievement, a satisfaction and contentment of mind, known in this day and age only to the competent sailorman.

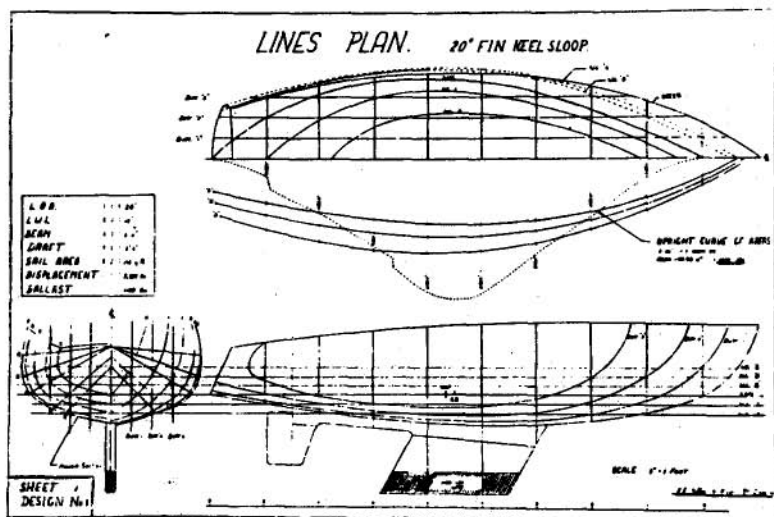
These things are well worth some study and it is to their furtherance that the A.Y.R.S. is generally dedicated.

### 20. FT. FIN KEEL YACHT

L.O.A.	20'	Mainsail	110 sq. ft.
L.W.L.	18'	Jib	63 sq. ft.
Beam	6' 6"	Genoa	90 sq. ft.
Draught	3' 6"		
Displacement	2,800 lbs.		
Ballast	1,100 lbs.		

Designer : I. J. Miller, 7, Russell Street, Gisbourne, New Zealand.

This very nice little cruiser is designed with the idea that she will be amateur built by her owner. The lines are very sweet, and



the centres are rather far back in order to take the weight of the crew in the cockpit where they are relatively heavy as compared with larger boats. She should be fast and weatherly.

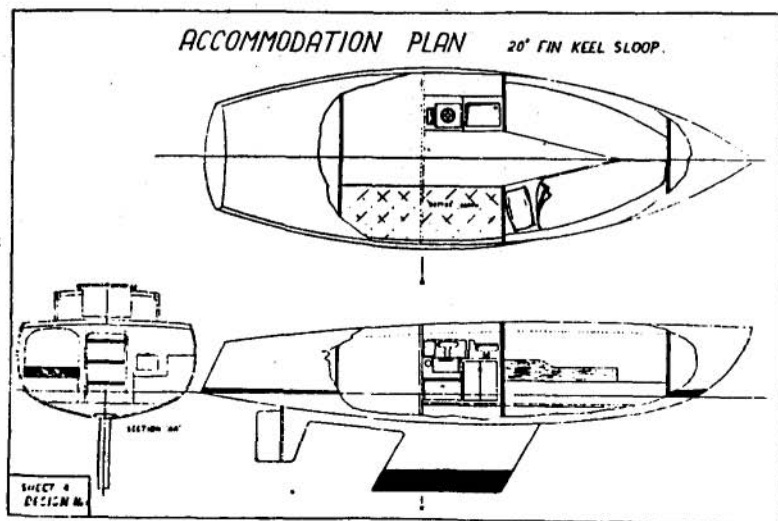
*Designers remarks.* In designing this little ship, my idea was to plan a craft that would be fairly quick to build, relatively cheap, a good sailer and roomy and seaworthy enough for offshore sailing.





It is my belief that light displacement is the answer to many of the problems associated with boatbuilding. For a start, with the method of construction I intend to use, no time is wasted in steaming and fitting ribs as the frame consists of several bulkheads as well as five longitudinal stringers on each side. Over this, will be laid three skins of thin wood or plywood, giving a total thickness of  $\frac{1}{2}$ ", all skins being fixed with resin glue. It is interesting to compare this method with the usual practice of planking. One A.Y.R.S. member in New Zealand who is at present building a 30 sq. meter yacht using moulded construction similar to mine, tells me that he can cover 60 sq. ft. a day in planking. Even dividing by three to allow for the three skins, we still have 20 sq. ft. a day of complete coverage on the average. Now this is much faster than another member who is building a TAHITI ketch, planking in the normal method. He covers on an average only 10 sq. ft. a day at the most. Also, moulded skins are much stronger as well as lighter and this is important for a light displacement boat. The only disadvantages which I see are the higher cost due to the cost of good quality resin glue and the difficulty of repair should the hull be badly damaged. However, I think the disadvantages are insignificant as compared to the advantages.

Another point in favour of light displacement craft is their speed and it has been proven that if properly designed, they are very seaworthy as well.



The accommodation plans show a conventional layout at present but I am seriously considering having a small sleeping cabin right aft and a central cockpit. With this layout, I can have two bunks aft, one quarter berth and a small galley forward with plenty of stowage space right in the eyes of the ship. With a small light displacement boat having a necessarily broad stern for buoyancy purposes, a lot of valuable space is wasted in the stern if a conventional cockpit and cabin layout is used. Having the crew centrally situated means that their weight is about over the centre of buoyancy and conducive to good trim. Having bunks right in the stern will not upset the trim as they will only be used while in port or at moorings.

The rig is inboard to simplify fitting and handling and the mast will be parallel sided to simplify construction. The "Metacentric Shelf" analysis shows a tendency to more weather helm than necessary, but, by filling out the bow sections while on the mould, I can probably eliminate some of this.

## WORLD CRUISING

by

RICHARD McCLOSKEY

*Editorial : Richard McCloskey has been collecting accounts of Ocean and World Cruises since 1955 (and before) as Secretary of the SLOCUM SOCIETY, Horn Point, Annapolis, Maryland, U.S.A. No one is therefore in a better position to give us the details of these voyages. The SLOCUM SOCIETY restricts its researches into boats with only one and two-man crews to keep its materials within manageable proportions.*

Up to and including 1957, there have been 18 voyages around the world with one and two-man crews and the total number of individuals doing this was 21. Only 4 crews stood the full trip and 3 of these were wives of the voyagers. So far, 10 solo trips have been made, if we count both of Harry Pidgeon's. The list of yachts and crews, with the dates, rig and other details are given in the following tables :

### *E-W via Panama and Good Hope.*

- Armit and Loe. 1954-7. *Marco Polo*, aux. BM. ketch.
- Crowe and wife. 1948-51. *Lang Syne*, aux. BM. schooner.
- Gau 1953-7. *Atom*, aux. BM. ketch. Solo.
- Gerbault, 1923-9. *Firecrest*, gaff and BM cutter. No. aux. Solo.

Hiscock and wife. 1952-5. *Wanderer III*, aux. BM. sloop.  
Pidgeon, twice. 1921-5. 1932-7. *Islander*, gaff yawl. No aux.  
Solo.

Holmdahl and wife. 1952-4. *Viking*, BM. ketch. No. aux.  
Strout, mostly with wife. 1934-7. *Igdrasil*, aux. gaff sloop and  
yawl.

Toumelin—mostly solo. 1949-52. *Kurun*, gaff cutter. No aux.

*E-W via Panama and Red Sea.*

Geraci and others. 1932-5. M.A.S., BM. schooner. No aux.  
Peterson, 1948-52. *Stornaway*, gaff cutter. No. aux. Solo.  
Robinson and others. 1928-31. *Svaap*, aux. BM. ketch.

*E-W via Magellan and Good Hope*

Bernicot. 1936-8. *Anahita*, aux. BM. cutter. Solo.  
Slocum. 1895-8. *Spray*, gaff sloop and yawl. No aux. Solo.

*E-W via Cape Horn and Hood Hope.*

Bardiaux. 1950-7. *Les 4 Vents*, aux. BM. sloop. Solo.

*W-E via Red Sea and Panama.*

Miles 1928-32. *Sturdy I* and *Sturdy II*., aux. BM. schooners.  
Solo.

*W-E via Good Hope and Cape Horn.*

Dumas. 1942-3. *Lehg II*, BM. ketch. No aux. Solo.

NOTE : Neither Voss nor Murnan crossed their outward passage,  
so they technically did not complete a circumnavigation.

*Nationalities* : American 7. Argentine 1. British 5. French 5.  
Italian 1. Swedish 2.

*Size and Rig* : All over 30 feet L.O.A.

Gaff cutter	3
BM. cutter	2
Gaff sloop	3
BM. sloop	2
Gaff yawl	3
BM. ketch	5
BM. schooner	3

(More than 18 boats are listed because several changed rig during the  
voyage).

*Auxiliaries* : 9                      *Sail only* : 8.

<i>Time Taken : (in rounded years)</i>		<i>Period of completion of voyage :</i>	
1 year :	1	Before 1900 :	1
2 years :	2	1900-1930 :	2
3 years :	8	1930-1940 :	6
4 years :	4	1940-1950 :	1
5 years :	1	1950-1957 :	8
6 years :	1		
7 years :	1		

## WORLD CRUISING ROUTES

From the routes above, it will be seen that the classical E-W Trade Wind route via Panama and the Cape of Good Hope is by far the most popular. This is not to be wondered at because it is the route with favourable winds, warm seas and friendly people. 10 out of the 18 voyages used this route and nearly all had relatively comfortable and pleasant passages.

Three voyages (Geraci, Peterson and Robinson) used the same route in the Atlantic, Pacific and Indian Oceans but then swung north to go through the Red Sea and Mediterranean. Only Geraci avoided trouble in the Red Sea, with its strong north winds, calms and corals. Peterson and Robinson (and, I believe, every other small boat sailor) had a bad time both from the winds and the people. Miles went W-E through the Red Sea and Panama and did better than those others as he was going south. He is the only yacht navigator to have crossed the Central Pacific.

Bernicot followed Slocum on the Trade Wind route but both ducked out of the Trades and went through the Straits of Magellan, Slocum from necessity as the Panama canal had not then been cut ; Bernicot from preference.

Only Dumas and Bardiaux have rounded Cape Horn on a circumnavigation, Dumas with the Roaring Forties in the most extraordinary circumnavigation ever made. Bardiaux sailed against the Roaring Forties until he had rounded the Horn ; then he turned east and worked his way westward again to the Pacific through the Beagle Channel.

*Untried Routes.* If a world cruise is going to be made in comfort, only the Trade Wind route will give it. If each leg is made at the right time of the year, one can count on an almost stormless (in the Beaufort sense) voyage. However, some other routes could be explored which would certainly be less comfortable but one would have the satisfaction of being the first to try them out.

Undoubtedly, the greatest trial of any yacht would be made by a route from west to east via the Cape of Good Hope, the Horn and New Zealand, heading the Roaring Forties all the way. This is the only route which has not been tried and if it were to be successfully travelled, one would have established an almost unbeatable record for endurance.

The Iceland, Greenland, Hudson Bay, Newfoundland route is also almost virgin territory. This could be followed by an ascent of the St. Lawrence and then through the Great Lakes and down the Mississippi to the Gulf of Mexico and the West Indies.

Nobody has crossed the Northern Pacific westabout and coasted south via Japan and the Philippines. Siam, Malaya, Burma and India are comparatively unknown cruising grounds. Few yachtsmen have crossed from South Africa to South America and none since Knight in the *Falcon* have explored the Rio de la Plata, the Parana or any of the mighty rivers of Brazil.

The pilot charts and the Admiralty's "Ocean Passages of the World" give specific information about routes which it would be impossible to give here.

*Earning Money en route.* A determining factor for many aspirants in choosing their route is the possibility of paying their way by working en route. This idea should be firmly discarded. Beer money may be picked up by lecturing if the voyager is an expert colour photographer and can illustrate his talk with slides or movie film. In this respect, a well-known "yachtsman" stands a much better chance of picking up odd money than an unknown sailor. The more sensational the voyage, the better the chances are but the more unpleasant it will be. Yachting magazines will buy an infrequent article if it is well-written and teaches something; but they will buy that anyway for a week-end yachting story that meets their requirements. The mere fact of being a solo circumnavigator impresses the landsman more than the yachtsman.

The best guide to the route to take can be got from reading, marking and inwardly digesting the books of Hiscock, Holmdahl, Pidgeon, le Toumelin, Robinson, Bernicot, Slocum, Dumas and other single handers. One may expect to fare as they did in the same places but this need not necessarily occur.

## THE YACHT

"Assume," said Edward Allcard "that one day the boat will be totally submerged by a sea." Slocum and Pidgeon, Bardiaux and Smeeton would agree with this statement and every cruiser should

keep it in mind when planning everything from the shrouds to the chart stowage.

From here on, opinions about world cruising yachts will, and should, differ. Certain basic conceptions of safety and comfort are common to any type of yacht and these will be covered later. To show how opinions have differed, however, let us look briefly at the yachts which have rounded the world.

*Lang Syne* (Crowe) is a traditional Block Island schooner with a modern Bermudian rig. *Atom* (Gau) is a Hanna-designed Carrol ketch with a Bermudian rig. *Wanderer III* (Hiscock) is a Bermudian sloop. *Viking* (Holmdahl) was a Colin Archer type with Bermudian rig. *Islander* (Pidgeon) was a gaff Seagoer yawl. *Igdrasil* (Strout) was based on *Spray*. The *M.A.S.* (Geraci) was a double ended schooner with Bermudian rig. *Kurun* (le Toumelin) was a gaff cutter. *Firecrest* (Gerbault) was almost a "plank-on-ender" and so it goes on for 16 of the 17 small boats that have made a circumnavigation.

*Les 4 Vents*. Only *Les 4 Vents* could be considered truly "modern" in hull form and Allcard turned up his nose at her. In this connection, it is as well to remember that Pidgeon thought poorly of *Firecrest* and Gerbault sneered politely at *Islander*. It apparently is the way of Ocean yacht navigators to think that only their own yacht could do it.

*Les 4 Vents* carries 3,000 pounds of outside ballast and displaces 9,000 pounds. She carries 24 buoyancy tanks made of 5 gallon jerry cans bolted to the frames. A large rubber raft is spread below decks, ready to be inflated by a compressed air bottle, if trouble hits. The tabernacle-mounted mast has the main halyard led inside it. It stood up when the yacht rolled over twice in Le Maire Straits so it must have been well stayed.

*The Common Design Features*. Any boat, well designed for blue water work, can make a world passage, given the right kind of crew. No attempt will be made here to give my idea of the perfect boat. However, the design features which I feel should be found in all ocean-going yachts are as follows :

1. Strength, not massiveness, is required in the hull, especially in the decks and superstructure.
2. Windward ability.
3. The size should be as large as possible for convenient handling by the crew. It is in my opinion, better to have a large hull under-

sailed than a small hull oversailed. The best state is to have the largest possible hull carrying all the sail possible which can be reduced in the quickest possible time.

## THE RIG.

Twelve boats which have made the circumnavigation with one or two-man crews have had a Bermudian rig ; 9 have been gaff rigged. Five have been cutters ; 5 sloops, 3 yawls, 5 ketches, 3 schooners. Ten, therefore, have been single stickers ; 11 have had two masts.

The choice of rig is a matter of personal opinion. There is no choice in the matter of strength and simplicity. The strongest and simplest rigging must be used with as much standardisation and interchangeability as possible. It is essential in planning the rigging to be ruthless. Anything which cannot be proved necessary must be done away with. The strength of what is left must be doubled.

Novel sail plans and riggings are all very well but they should first be tested in an offshore blow before being used on an ocean crossing. Robin Kilroy was surely unwise to try out his new rig in *Boleh* during a transocean voyage.

## STORMS

Storm drill depends on the type of hull and the competence of the sailor. Objects have been designed which would withstand any storm, like the cigar-shaped *Vraad* which was 18' long, 8' beam and 8' depth. But they are objects and not yachts. Yachts properly handled can withstand anything except the freak wave, like the one which upended *Tzu Hang* in the Roaring Forties, or freak conditions, like that consisting of a 6-knot westerly current acting on the keel ; setting against a 50 knot westerly gale, acting on the canvas and mast, which twice rolled *Les 4 Vents* completely over.

Storm seamanship is, in essence, the placing of the yacht in such a position relative to the weather that she will be as little affected by it as possible. Its first mode of action is to reduce the speed of the yacht according to the weather encountered till finally the yacht is brought to a standstill either beam on to the seas or with a sea anchor or warps trailing astern ; according to the nature of the vessel. This can be described in stages as follows :

1. Speed is reduced by reefing, handling or changing sails.
2. Lying "a-try" by trimming the sails so that the boat continues to make a little headway.

3. "Lying-to" or "Heaving-to" where the sails are trimmed to give a drift at right angles to the wind's direction.
4. All sail is now taken in and the boat is blown to leeward probably towing warps or with a sea anchor out.
5. In the most violent storms, the boat will also be under bare poles and towing warps but the helmsman will be desperately trying to keep her stern to. The alternative to this is lying "ahull," beam on to the seas. Some ocean voyagers prefer this.

Warps over the stern of a boat seem to divert the waves. Smith and Violet in *Nova Espero*, for example, found "that there is a happy tendency, when even a single warp is streamed out, for unstable tops of seas to part and break at right angles away to port or starboard of the boat . . ."

Whatever the hull or sail plan, the ocean voyager must know his boat well enough to realise when she is in trouble and know what to do. There must be an emergency drill for everything ; fire, storms, man overboard. Thomas Fleming Day made a great point of a sailor anticipating trouble. "Presence of mind is simply applied forethought. You do in an emergency without apparent reflection the right thing. People who see the act, exclaim, 'What wonderful presence of mind !' but would be more correct if they exclaimed, 'What perfect presence of plan !'."

## FITTING OUT AND SUPPLIES

"When a boat sails on a passage, nine-tenths of the work is over", say Ellam and Mudie, speaking of *Sopranino*. "For days before she leaves on her voyage, and again before she starts out on each individual passage, every conceivable thing that can by the remotest chance happen must be carefully considered, the equipment prepared to meet it and an agreement come to between the members of the crew as to exactly how it is to be tackled.

"It is not enough to provide one answer or one set of equipment to meet each condition. There must be a second and preferably a third answer prepared and ready, in case some other unforeseen factor intervenes or the first answer fails to work for some reason".

Ellam and Mudie may have been over-methodical but, after the trial runs in *Sopranino*, they spent a clear 3 months on preparation before they left England. They took about 300 days on the voyage from England to Miami. Of those, some 100 were actually spent sailing and 65 were taken off, leaving approximately 135 days spent



on maintenance and preparation. The percentages were : Preparation 45 %, Sailing 33 % and Resting 22 % of the total time.

Ian Nicholson, who made a very neat, tidy and careful trans-Atlantic crossing in *St. Elizabeth*, takes a less strenuous view. "The maiden voyage of *St. Elizabeth* convinces me that ocean cruising is neither difficult, expensive nor uncomfortable, nor are long complicated fit-outs needed. The way to enjoy the game is to plan carefully, simplify ruthlessly, sail down wind, even if it means going a long way around and avoid stormy seas, particularly during the bad months".

**FOOD.** What one eats at sea depends on one's pocketbook, appetite and resistance to seasickness. This last curse seems to hit most sailors in varying degrees for the first couple of days and then disappears to be mentioned no more.

The problem of food is not so much what to get as how to cook it. A small boat rarely stays still on an ocean. During a calm she may roll more than in a storm and in a storm the motion can be quite incredible. A boat can rise or drop 30 feet in an instant and corkscrew at the same time. This simultaneous movement in three directions can play some weird tricks with pans on a stove, even if set on gimbals. Crapo in *New Bedford* used to hold the kerosene stove between his feet, while his wife held the pot on the stove. Some of the stunt voyagers in small boats had to be men of astounding resistance, for cooking a hot meal was impossible a great deal of the time. On the other hand, Wightman and Young in *Wylo* on a six month passage "baked a loaf about once a week, if this is called cooking. Everything else we ate raw. As we carried no meat, this is not as barbaric as it may sound."

Most of the modern transocean voyagers carry vitamin concentrates of one kind or another to supply the needs that neither tinned foods nor dried foods seem to supply. Skin infections of one kind or another are common but almost without exception, the voyagers who have had a normal trip all report that they felt better and were fitter at the end of the trip than on starting.

**SICKNESS.** Most of the voyagers carried a medicine chest and a handy home medical guide. Ian Nicholson of *St. Elizabeth* thought about it this way : "... falling overboard, or even getting knocked into the sea by the boom did not seem the worst hazard. I constantly puzzled over the problem of a broken arm. Whereas, I thought, it should not be too hard to set a broken leg, while suitably dizzy from drugs, a broken arm would be a dreadful handicap. In the end I decided the way to set it was to lay it on a board on the chart table, below which were stowed several pieces of timber that would

serve well as splints. Nearby, too, was the dish drying cloth, handkerchiefs, and other rags that would do for padding and lashing."

Dumas seems to be the only sailor who really suffered seriously. He had a gruesome time with a badly infected arm. Tambs had an infected leg and high fever, but at least he had a wife aboard.

**WATER.** Water is the constant need. About ten days without water bring death, or did until Bombard showed one way of evading it, whereas a man can go a month without food. A gallon a day is ample for all needs and half that is used by many small boat men. Leakage and contamination are the twin dreads so most sailors divide their supply between various tanks, even to the extent of storing it in several hundred small plastic jars or light alloy hot water bottles.

Nicholson thinks this last method the best for ocean cruises. *St. Elizabeth* had 400 one-pound tins of water aboard. He says: "They may be stored low, are easy to put aboard, stand up to rough treatment and even if five or six are damaged, there is still plenty of water aboard, whereas a crack in a tank can be serious, unless you are one of those ocean racing types who, so rumour has it, consider water as a rusting agent and subsist on hard liquor."

There is an endless argument between the "if the natives drink it, it must be good or they'd be dead" school: and the "must boil or sterilise every drop" school. There seems to be no record of the 'straight out of the tap' school suffering any harm, but the 'boil it' boys always seem to have trouble, whether, from cause or prior conviction I do not know.

A modern solution is to chemically convert salt water into fresh. Smith and Violet depended entirely on Permutit kits to supply their water and seemed very pleased with the system. There is a great saving of weight by using converter kits but the cost is still way beyond the average sailor. An emergency supply of kits could be carried.

## SEAMANSHIP

The knowledge necessary to sail a boat is called seamanship. Seamanship is the result of experience and intuition; nothing else.

You can navigate a small boat 1,500 miles across an ocean and pick up a pocket handkerchief island. You can splice, tie 178 knots and manipulate a line. You can rig a boat. You can make and mend a sail. You can bend, set, furl and hand a sail. You can signal, steer, sound and cook, know how to set a broken arm or spar and so on *ad infinitum*. But until you know how to do all these things instinctively and work them into the personality of your boat and impress your personality upon them, you don't know seamanship.

Meiss-Teuffen gives a fine description of some parts of seamanship. "That night, the first after leaving England (in *Speranza*), I got to know my boat intimately . . . To know a vessel thoroughly, it is not sufficient to sit at the helm and watch how closely she can tack. That will give you some idea of her brawn, but not her brain. That intimate knowledge can be gained only by lying below, in your bunk, listening, feeling, sensing. For then it is that you eavesdrop on her conversations with the wind and the waves ; that you can feel her reaction when the breeze embraces her too tightly. By the noises she makes—the crackles, groans, sighs—you judge if she likes to be clasped so passionately. And, if you find she protests, you must come to her aid and play the chaperone's part. But, you must not act too hastily. You must listen very closely, attentively, for there are many sounds and they are all different. If you understand them, they can guide you in your decisions.

"There are the sails, for example. Their vibrating and flapping at night you can only feel, as you lie in your bunk, unless, of course, it is the machine-gun racket of the unhappy mizzen that wants to be close hauled in a hurry. There is the tap-tap-tap of a taut halyard against the mast in a rising wind, and the intimate gurgling of the water she has shipped as it runs out of the scuppers. If the gurgling becomes too persistent, you'd better take the reef in the sails she is asking for. And, on *Speranza*, there was a small hole in the spindle that blew a steady *A Sharp* as long as everything was all right, but as soon as it rose in pitch, I knew it was time to have a look, or better still, at night, a 'feel' with my ears to find out what tricks the wind was up to. Is it increasing, veering or getting gusty? No burgee or feather on a string will give as correct an indication as a pair of sensitive ears caressed by the wind."

The most competent sailors have never felt that they had as much seamanship as they needed. Slocum, a master mariner with 30 years in sail, and the experience of building and sailing a 35' dory-sampan from Rio to New York, cruised for a season in *Spray* before setting off around the world. Gerbault almost wore out a suit of sails testing *Firecrest* for a year in the Mediterranean. Pidgeon took a shakedown cruise to Hawaii and back from California to test *Islander*.

A final aspect of seamanship is a purely psychological one. "People often ask", says Meiss-Teuffen, "Aren't you afraid, all alone on the ocean in a small boat?" The honest answer must be: "Yes; there were many times when I was afraid. Any sailor who says he does not know fear is either an idiot or a liar. But there are elements which tend to balance this fear. One is the knowledge that

you can never admit fear ; never let the sea sense it in you. Fear makes you clumsy and helpless. And the sea is like a vicious animal ; it senses that you are frightened and it attacks. "

## AN AUXILIARY ENGINE

Auxiliary power seems to depend almost as much on temperamant as on finances. Nine boats had auxiliaries, the rest had not.

Robinson (*SVAAP*) believed that " the judicious use of an auxiliary on a blue water passage " " can be a great economy in reduced consumption of supplies and wear and tear on the ship ". It is " too important to let one be sentimental about having a boat that is ' all sail '. " Gerbault seemingly went out of his way to sail *Firecrest* into and through situations that would have worried a skipper under power and le Toumelin gets downright violent when inveighing against auxiliaries. " *Kurun* is a pure sailer and I would have considered it a sacrilege to have allowed an engine within her beautiful oaken hull ".

The *Driacs* each had an auxiliary engine. That the voyages could have been accomplished without them scarcely needs saying. Macpherson was no ' Hell or Melbourne man ', and when on a passage he never fretted whether the ship made her landfall the next day or the week after. But he had a passion for putting in at places, just to see what they were like. Inhabited or uninhabited, he was fascinated by every cover of the coastline and the extraordinary number of ports he called at (something like 400) could not well have been visited under sail alone in a whole lifetime's voyaging.

## THE WORLD CRUISING YACHTS

Of the yachts which have sailed around the world, 13 out of the 18 were either built by or for their owners.

*The Spray*. It is well known that Joshua Slocum rebuilt the *Spray* from an old fishing vessel, plank by plank, and frame by frame. The *Spray* has been enshrined as the perfect, the ideal and the very queen of ocean cruisers and has also been scoffed at as a tub, a scow and totally unfit to sail upon blue waters. However, one copy (*Igdrasil*) has sailed around the world and another was the first small boat to round the Horn.

From Slocum's point of view, the *Spray* was just right but, as Irving Johnson points out, the old sea captain might equally well have found some other type of old fishing boat lying around that he could have fixed up to serve him. The most exhaustive analyses of the

*Spray* are to be found in the September 1956 and 1957 issues of "The *Spray*", the journal of the Slocum Society.

Roger Strout, who sailed *Igdrasil* (the *Spray* copy) around the world gives it as his opinion that the ocean cruiser must have three qualities, namely, 1. Seaworthiness, 2. Comfort and 3. Carrying Capacity. The first is of course, essential; the second is necessary for living aboard for months but carrying capacity is denied the small yacht almost by definition. Strout feels that the ocean cruiser needs to have a yacht more like a small cargo boat design than the conventional yacht and that this will inevitably lead to the broad, round-nosed, comparatively shallow type that was the ancestor of Slocum's *Spray*. A study of the records shows that the *Spray* was faster on long passages than any of the more modern one or two-man boats. This seems to bear out Strout's thesis.

*Igdrasil*, like *Spray* has great beam (14' on 37' L.O.A.) which yachtsmen often don't like but it makes her sail upright and not on one edge as yachts are wont to do. This makes cooking easier. This beam is carried well into the ends to give the buoyancy to keep the deck dry. Bulwarks give extra safety and peace of mind to those aboard. There is no cockpit with its chance of holding half a ton of unwanted water on deck and the clear deck allows several ordinary canvas deck chairs to be used in ordinary weather. It is also possible to stroll around the deck without any thought of holding on.

*Igdrasil* has done 160 miles a day without benefit of current. Off Cape Hatteras, where the gulf stream is getting weak, her best noon to noon distance was 194 miles and the best 24 hours, slightly over 200.

*Firecrest*. 39' L.O.A. by 8' 6" beam was a very different type which was sailed around the world by Gerbault. She was 31 years old when Gerbault started out and, with her straight stem and long counter, this narrow, deep racing cutter must have been hard to handle at times. Gerbault professed to be happy with her but she nearly killed him several times. I do not remember anyone save Gerbault ever commending her. When he retired her and built himself the "perfect" boat, she bore little resemblance to *Firecrest*, which should carry some kind of a moral.

*The Hard Chine Ocean Cruisers*. Thomas Fleming Day forced the acceptance of the hard chine seagoing yacht by pushing the *Seabird*, *Seagoer* and *Naiad* types and backed his faith in them by sailing a *Seabird* across the Atlantic. At least three of them have been owner built and have made transocean passages and two of them, Pidgeon's

*Islander* and Murnan's *Seven Seas II*, made of stainless steel, have made three circumnavigations between them.

*Islander*. The design was based on the *Seagoer* with borrowings from *Seabird* and *Naiad* with improvisations by Pidgeon himself. She was chosen because he could build her himself and she proved an honest boat in her lines, construction and life. As far as I know, Pidgeon had never a complaint about her and she was thirty years old, and on her third circumnavigation when she was wrecked by a typhoon while at anchor in the New Hebrides.

*Wylø*. This craft was built to the same general specifications as *Islander*. Frank Wightman gives his opinions about her: "*Wylø* was an extreme hull. Her characteristics were buoyancy and speed before the wind. Much was sacrificed in her design to these features and the men she carried faithfully to the end paid in physical discomfort for them for you cannot have great buoyancy without, shall we say, a certain vivacity of motion.

"There is much nonsense talked about 'comfort' in small yachts at sea. Any small yacht is acutely uncomfortable in heavy weather, and in mild weather there is no call for this mythical 'ease of motion'. The type of hull at the opposite extreme to the *Wylø* is the 'plank on edge' 'lead mine' which does not roll, though she will *sway* with a certain languor over the immense inertia of her keel. *Wylø*, on the other hand merely takes the angle of every sea; and jerks.

"The 'lead mine' gives a relative ease of motion, though it is still bad but she makes you pay for it by nearly drowning you on deck; so poor is her buoyancy. *Wylø* has so much buoyancy that she will jerk your teeth out as you sit on deck in bad weather but she rewards you by keeping on top of everything that tries to get on top of her.

"The 'lead mine' is usually a witch to windward in heavy weather, even if she does sail on her ear and you have to wear a diver's suit. *Wylø* is a bitch to windward, even if she sails upright and dry. But you do not make ocean passages by beating to windward.

"The 'lead mine' is relatively slow when running and at speed, pulls the ocean over her tail and steers heavily. *Wylø* is very fast when running, drags nothing and at her planing maximum, you can steer with one finger on her tiller. On the few occasions when we had a regular Trade Wind and no contrary sea, *Wylø* snored along with a slow, easy swinging that was a delight and she kept her decks dry when any other boat I have known would have been flooded.

"Between the 'lead mine' and the *Wylø* type are scores of craft which are comprises, full of minor virtues and vices. A ship can go to sea with too many minor virtues, but the sum of any number

of minor vices is not a few major ones. It usually gives a very minor performance at sea.

"I chose *Wylo* because she was an extreme. I was tired of those compromise hulls that measure vice and virtue in penny weights. The saint and the sinner are personalities. Babbitt is a weariness, whether he inhabits a body of flesh or one of timber. If ever I am allowed to have another ship, it will be *Wylo* again. *Wylo* with her noble virtues and splendid transgressions."

*Kurun*. Le Toumelin had definite ideas when he ordered *Kurun* built. He felt that the boat should be between 30' and 37' long. The beam should be at least one third of her length. There should be an outside ballasted keel which in *Kurun* was 22% of her total displacement. High freeboard was also essential for reserve buoyancy.

Le Toumelin had "a certain affection" for the *Spray*. *Firecrest*, he thought was an unpleasant vessel, very tender and unpleasant to live in. *Anahita* (Bernicot) was too much like a yacht for his liking. *Islander* of Harry Pidgeon was too ugly and too light. The hull form which pleased him most was the Colin Archer type, especially Erling Tarnb's *Teddy* and *Kurun*'s design was obviously founded on this. There was no cockpit because it breaks up "the aesthetic continuity of the deck, decreases its strength and takes up accommodation inside." There were 11½ inch high bulwarks.

*Anahita*. 41' L.O.A. Beam 11' 6" Draught 5' 7". Bernicot made a clean trip in this boat which is a more or less conventional modern cutter and took his passage through the Straits of Magellan.

*Tilikum*. Voss's use of *Tilikum* has made many people damn him as a stunter who was lucky to come out alive. Voss frankly admits that he was hired to get publicity and provide a good story and that he used a canoe to get a record. All of this puts him in the stunter class. It is shortsighted, though, not to look beyond that. The fact that *Tilikum* was essentially an unsuitable type may damn the boat but that she *did* complete the voyage puts Voss at the head of the master mariner class.

*Summary*. 1. *Anything* can be used for world cruising, even an amphibious jeep. 2. There is no best hull or rig. 3. It appears to cost about double the original estimate.

*Finale*. Only 9 people (Pidgeon twice) have made solo world cruises. The records of the *Slocum Society* show that at least 123 people have seriously attempted solo trips so the odds are about 9 to 114 that any person will achieve his dream.



## THE TRANSATLANTIC SOLO RACE

This publication as well as a good deal of the work of the A.Y.R.S. so far is given more point by the Transatlantic Solo Race for single handed yachts, due to be held in 1960. Some indefinite number of yachts with a crew of only one person will race from Cowes, Isle of Wight to City Island, N.Y. When I last heard about it from Richard McCloskey who is doing the actual organisation of the race, there were some 50 entrants and there will be more now.

The idea for the race originally came from H. G. Hasler but it is now being sponsored by the Slocum Society under the able secretaryship of Richard McCloskey.

As A.Y.R.S. Editor, I feel that many single handers will want to build their craft themselves and it is up to us in the Society to see if we can produce designs this year (1958) from which would-be entrants can choose their ideal.

*Objectives of The Race.* The people who enter for this race must have very different motives from those which cause small dinghies to chase each other around a set course at the week ends. These chaps firstly must be a bit of the solitary type or they would not choose to race single handed. Secondly, they must own or intend to build or have a boat built more or less especially for Ocean Cruising. Doubtless, many of us would also enter if we could afford the time and money.

*The use of The Race.* In a race such as this, someone may lose his life. Survivors of many transocean passage's have described one enormous wave which fell on their craft from a great height. Slocum had one. So had Harry Pidgeon. Commander Graham (who hadn't got a self draining cockpit) was badly pooped by a wave which nearly filled his boat. Gales and even hurricanes may be met and a freak condition might break the mast and stave in the side of the boat. Any of these things might take one of the entrants to the bottom, never to be heard of again. However, the risk is not very great, if all the boats are sound and well designed. The rate of risk is certainly much less than in motor car racing and involves no one but the entrants themselves.

In compensation for this risk, small cruisers will be developed in such a way that they may be easily handled by one man and made safe for you and me to sail to any place on earth we want to go.



## ROUTES FOR THE RACE

by

RICHARD POLAND

The Slocum Society's single-handed Atlantic race in 1960 promises to be the most exciting sailing event of the century and we have enough time to design and prove the entries. It would be a great reward to the A.Y.R.S. to have sponsored, or at least to have helped, the ultimate winner.

It is difficult to know where to start collecting one's thoughts but I think the Route must come first as this choice also determines the design and many of the other features.

A. The "Southern Route" is the classic one followed by nearly all the explorers of the New World and used regularly by most square-rigged ships thereafter. It usually involves at least some completely unpredictable calms in the Horse Latitudes. It is the longest route but has fair winds and warm seas. Boats taking this course will want good downwind performance.

B. The "Northern", the shortest route and near the Great Circle should enjoy plenty of wind and I expect it will be taken by the hardier entrants. Fair winds are frequent here because it is the northern sector of the depressions. It used to be well known that sailing ships from Scotland got to America more quickly than those from the South of England for this reason. However, it is a cold route with the risk of fog and ice off Newfoundland. As it lies so much in the main steamer tracks, it calls for a lot of extra watchkeeping which wouldn't suit me.

C. An "Intermediate Route" lying somewhere between these two would be my compromise choice in every sense. The winds may be fluky and mainly ahead but they might at times give a really fast boat a chance to perform.

I hold strong views about the behaviour of ships in really bad weather. A point is sometimes reached when, sea anchor or no, you simply have to give in to wind and sea but a well "corked" low rigged boat will I think survive anything. Nearly all calamities are the result of trying to fight the odds and there is enough evidence to show that unmanned dismasted ships often survive the worst that nature throws. Tank testing for the very worst conditions might help to prove the final design but I wonder if it is possible to simulate a hurricane?

Reducing weight is going to be very important and here Dr. Alain Bombard's findings on survival at sea are going to help. A

reserve of food for an unpredictable period is unnecessary. It is only the gravest tragedy that so many thousands of lives have been needlessly lost and will go on being lost while the practical results (read "The Bombard Story") of his great work are ignored. Even today, few ships seem to have altered their life saving equipment. I only hope that this race will reinforce the findings of the greatest humanitarian since Dr. Flemming.

*Navigational Equipment* can be simple and confined to the following : a few charts ; a sensible boat's compass, not dead beat nor of the fancy aircraft type ; a lightweight sextant as made for the German Navy for the war ; a wristwatch accurate to one minute in the month and 4 or 5 books at most.

I hope that what I have written will start the ball rolling and that the A.Y.R.S. will produce an entry with a fair chance of success.

As a postscript, controversial I expect, here are some of my personal conclusions. Vaguely, I see the boat as a larger edition of *Shearwater III*, about 22' 0" x 10' 0" with proportionately more freeboard and more buoyancy aft, the hulls lead ballasted with watertight compartments filled with ping-pong balls. A lateen rig with bamboo yard and Terylene (Dacron) sails and all Terylene cordage, the short cantilevered mast would take the storm rig. I should want the bunk narrow to wedge the whole body as I'm sure one then gets more rest. I also want substantial guardrails with dodgers made of Terylene. Danforth anchor and nylon warp. I would use Paraffin cooking and lighting as electrics and salt water never seem to make good shipmates. This goes for food in cans but perhaps this might be overcome. I should also like some of those self-heating tinned foods. Water in polythene jars, tall and narrow to reduce free surface.

Finally, many single handers owe their lives to a line trailing astern. I should have one.

## THE HUMAN FACTOR

Assuming that the yachts will all be well made, the design must take into account the fact that there will only be a one man crew. Therefore, the working of the ship must be easy and not involve much physical effort. This means that the man must be far more powerful than the sails, rather than the reverse. The sail area must be just on the small side and as efficient as it is possible to get it, taking into account the winds to be expected on the route chosen. *Self Steering* must be arranged to work on all courses. We have already studied this in publication No. 13 (*Self Steering*). Though it is my personal

opinion that either the Vane or Mill gear is the best for all courses, a further account of "twin spinnakers" is given later in this publication. The crew must be physically fit before starting.

**Boredom.** I am no particular recluse myself and I don't know how I would stand up to a single handed cruise but I would think that the ocean could get very lonely. Even Joshua Slocum seemed to find his own company a bit severe at first and took to talking to himself. Perhaps books of reference to the sea life one might meet on the trip and the histories of the early voyagers, whether Vikings, Spaniards or the English or French Navigators would help in a way not too far away from the job in hand better than books of distraction.

## RIG

The rig used should be that needing the least sail area for the course selected. The Bermudian sloop for windward work, combined with twin spinnakers of the Gill pattern (described later) for running is the modern conventional pattern. Other alternatives, which have much to recommend them are :—

1. The "Lapwing Rig" which is the Ljungstrom rig modified by H. G. Hasler.
2. The Wishbone Rig as developed by Frederick Fenger.
3. A Semi-elliptical squaresail arranged to brace almost fore and aft.

## RADIO

Radio receivers are allowed on the transatlantic solo race but no one is to use a transmitter. This is to stop people from worrying about the competitors and to keep useless and unnecessary searches from being carried out. If one of the yachts is lost, that is too bad. A future race would be impossible if the navy and merchant ships had to go to look for yachts in distress.

Receiving radio is needed, of course, to keep track of ice on the Viking route. The ice patrols give details of icebergs and the yachts would need to know about them. Radio can also keep track of the weather and check the chronometer by the time signals from Washington.

## CURRENT GENERATION

Electricity is very useful, if it can be kept functioning, not only for the radio and the light inside the yacht but also to keep a masthead light of considerable power going when in any shipping. The light should be easily visible for two miles and this needs a lot of current.

The battery might not be able to keep even the radio going for long and to supplement it, some source of current generation should be used. The rotation of the log line, the rocking and pitching movements of the hull, the sun's heat and the water flow past the hull have all been suggested. But I think the best source of power would be a nice little efficiently designed wind turbine, with a hand generator as a standby.

## THE YACHT

The types of sailing craft from which one could choose one's yacht are as follows :

*Orthodox Yacht.* The yacht which has been developed by the C.C.A. or the R.O.R.C. has a nice, comfortable accommodation and is fast to windward. However, 1. The sail area is large. 2. It is relatively slow down wind which is the course of most Ocean Cruising and 3. The draught is large, which is a poor thing for cruising in unfamiliar waters.

*Spray Type Hull.* This type is faster than the orthodox craft downwind though slower to windward. Accommodation in it is good too. It has the fault that the motion can be rather violent and a capsizes may not be impossible. A modern version of this hull is Uffa Fox's *Atalanta*, with a moulded plywood hull with only a few inches draught. This craft is 26' overall, 7' 6" beam and 1' 9" draught and could well be supplied with leeboards instead of the twin centreboards she uses. She would make a very nice Ocean Cruiser but a little on the small side for real comfort at sea.

*Voss Type (Tilikum) Hull.* Voss used an Indian dugout canoe hull for his World Cruise and Joshua Slocum also used a craft of similar shape on a long voyage—the *Liberdade*. This is probably one of the fastest craft possible, if properly designed and would be safe with a fin and bulb keel. It would have a small sail area and small draught and be very easy to handle. However, the headroom would be very small and the accommodation poor. It would often sail at large angles of heel. For a man with a small stature, like Voss or a small capital, like most of us, it might be the vessel of choice.

*The Double Hulled Catamaran.* This would be faster to leeward than any of the previously mentioned yachts and is probably faster to windward also. Accommodation can be very good indeed. It doesn't roll and would be very comfortable. *Waikiki Surf* averaged over 200 miles daily in the Honolulu race in 1956 and was much faster than any other craft of her size. The draught and sail area can be small

and, altogether, the catamaran fulfills most of the criteria of the perfect Ocean Cruiser. However, it *can* be capsized and there is some danger of the hulls breaking apart.

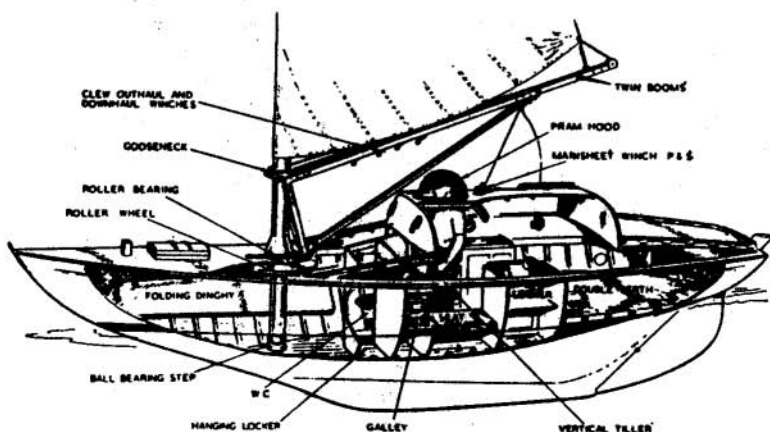
*The Indonesian Outrigger (Trimaran).* With a lesser sail area and less initial cost, greater speed in light winds and less chance of coming to pieces in mid ocean, this is the type I think will ultimately conquer as the Ocean Cruiser of the future. Its only fault is the limited beam in the main hull. Headroom can be full.

These are the five main types of yacht which could be used for Ocean Cruising. Many modern yachts to the C.C.A. rule are almost of the *Spray* type, though with greater draught and we need not follow them. The *Tilikum* (Voss) type yacht, though it could be very useful, would only very seldom be used because of its poor accommodation. Cruising catamarans are now being seen in some waters and we will see many more in future. A later article is a description of *Tangaroa*, built by James Wharram and sailed across the Atlantic. Though making no pretense to speed, it is fully seaworthy.

### JESTER AND THE "LAPWING RIG"

This article is a condensed version of a fuller account in the *Yachting World* of January, 1958. We are grateful to the Editor of that magazine for his permission to use the drawing and photographs.

*Jester* is H. G. Hasler's version of the ideal Ocean Cruiser. She measures up to the requirements which we have set out earlier in this publication so closely that every detail about her is worthy of the most intense study.



*Drawing by courtesy of Yachting World*

The hull is a Scandinavian *Folkboat* 25' L.O.A., 20' L.W.L., 7' 3" in beam with 4' draught and 2½ tons displacement. It is divided into three parts 1. The fore part which only contains the Prout folding dinghy. 2. The after part which contains a bunk the full width of the hull on which three people can sleep, if necessary and 3. The "working position", with the galley, toilet and lockers and the sail manipulation gear all to hand. Hatches at the side of this part can be removed for ventilation.

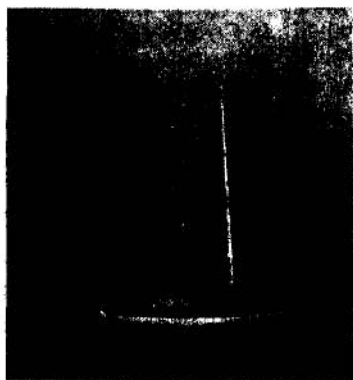
*The Working Position.* *Jester* is steered by a whipstaff or vertical tiller linked to the rudder with quadrants and wires. In rough weather, the helmsman stands or sits on a stool with his head through a circular hatch over which there is a canvas hood so he has no need of oilskins. From inside, he can cook and steer at the same time; and can reef or stow the sails, though he must reach out of the hatch for that.

*The Rig.* The "*Lapwing*" rig which is used is derived from the Ljungstrom rig and has the twin sails lying in contact with each other but there are booms which have no up or down movement and so act as kicking straps and prevent the sails from twisting both on and off the wind. The sails have two sheets to the booms, one an outhaul and the other a downhaul, which controls the twist. Both of these pass through blocks to winches which the helmsman can reach from the working position. The booms have sheets to just aft of the helmsman's hatch and are so arranged that the sheet to the lee boom only is used when close hauled, thus keeping the booms together.

The mast, which is 35' long and 7½" diameter at the deck, weighs 153 lbs. and is unstayed. It rotates in bearings in the hull and an endless rope on a large grooved wheel just below the deck leads to near the working position.

The sails of Terylene (Dacron) are kept permanently on the mast and have 18 spring steel corset stiffeners covered with plastic as battens. They are set by winching them out by the outhauls, while allowing the mast wheel to revolve to the right amount. When the sails are not fully set, they can be thought of as reefed.

When close hauled, the two sails lie together but in light winds and with a following wind, they may be opened out to give double the sail area. The mast is then best kept on the windward side to give a smooth lee surface. Heaving-to is satisfactory. With the wind aft, self steering may be achieved by connecting the booms to the tiller. If, however, they are allowed to go forward to produce some dihedral, linkage to the tiller is not needed in light winds and smooth water.



*Photo : Beken*

*Sail Furled*



*Photo : Beken*

*Sail Reefed*



*Photo : Beken*

*Sails Opened out*



*Photo : Beken*

*Close hauled*

On each tack, the mast should be given half a turn to take the luff groove to leeward to allow the lee side to be free of mast eddies. This makes little difference in light airs but is important in a breeze. Speed can easily be controlled by reefing and, when running, the sail may be allowed to "weathercock" forwards of the beam to stop and pick up the mooring. As there are no stays, there is no chafe. But the mast tends to wave about in a sea and a nylon backstay may be used to prevent this as in the original Ljungstrom version.

*Efficiency.* This rig is designed to be handy which it certainly is. However, I should be very surprised if it were not more efficient than the normal sloop rig by quite a considerable amount. The

sail has the theoretically best aspect ratio, has a slightly convex luff, little or no twist and a clean lee surface. With the booms sheeted out to about 13° from the centreline, she should be as fast to windward as the same hull with much larger sail area. In light winds, when sail area is what counts, the opened up sails will give speed when it is wanted and may even be slightly reefed in that position as the wind gets stronger. The original Ljungstrom rig was only just inferior to the normal sloop. The "Lapwing Rig" may prove faster for racing craft.

*Deep Sea Version.* 1. The size is just a little on the small side for deep sea work. No craft of under 30 feet in length has managed to sail around the world so one must accept that length as the *Minimum* tolerable size of yacht for the Oceans.

2. Guard lines should be rigged all around the craft and boarding steps fitted on the transom.

3. It rather spoils the point of having a yacht which can be worked from inside at all normal times, if one has to go on deck in a rising storm to put out trailing lines. However, ropes could be attached permanently to the transom and be led forward into a box behind the hatch. They could then be put overboard from the hatch in a gale.

4. There is a large expanse of deck which might be smashed or strained by a large wave falling on it in a gale. A turtle deck would be better at that time.

5. There seems to be no arrangement for self steering other than when running before the wind. The Ljungstrom sail will not self steer like the sloop when close hauled. Either a Vane or Mill gear would suit and I believe that either would hold the stern up to the seas when the ropes were out in a gale. The forward placed mast would aid in keeping the stern up to windward.

## THE GILL TWINS

Undoubtedly the greatest contribution to Ocean Cruising is the development of the twin rigs for running down the Trade winds. Invented by Captain Otway Waller, improved by Frederick A. Fenger and perfected by George Gill, they remove what Sidney Howard, who cruised from the Thames to Tahiti, called "The Tyranny of the Tiller". This rig has converted Ocean Cruising from hard work to pleasure.

Appraisal and study of the various twin rigs is within the scope of the A.Y.R.S. but it is thought better for this publication just to rely on the judgement of Frits Fenger and describe the Gill twins, as the ones to recommend for any would-be Ocean Cruiser. It is pointed



out that Frits has studied twins in all their forms both in models and full scale, has done smoke flow tests and other tests as well and must have put in more hours of thought on them than any other person. The reason Frits prefers the Gill twins is because they are simple, safe and they work.

*The Gear.* This consists of 1. Two deck eyebolts. 2. Two tack pendants. 3. Halyards. 4. Spinnaker plates on the mast. 5. Two poles. 6. Guys and 7. The sails. The only attachments to the yacht are the two eyebolts and the plates on the mast. No jackstays or lifts are used.

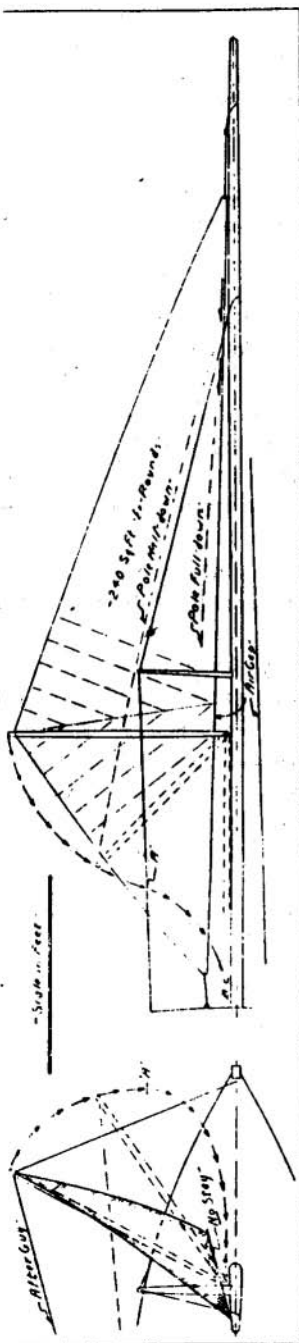
*The Main Features.* The Gill twins are set flying from the deck eyebolts to the halyards. Their clews are held out by spinnaker poles and are cut high so that the poles come down clear of the rail and deck, bringing the clews with them, when the sail is lowered. By spacing the deck eyebolts a little from each other and setting the sails forward by  $23^{\circ}$ , as shown by Frits Fenger, the after guys need not be attached to the tiller, and the ship runs smoothly.

*The Sail.* This is a triangular sail cut to have a circular arch. The distance from the clew to the luff is 30% of the length of the luff and the clew should be the same distance above the tack. The maximum area for one man to work should not be more than 240 square feet.

*The Eyebolts.* Each tack eyebolt is placed away from the midline of the yacht by 3% to 4% of the height of the halyard block to the deck and it is about the same distance forward of the mast. The distance between the two eyebolts must not be less than 1' 6". This position gives a gap between the luffs of the sails which clears the "Dead air" from behind them and gives a steadier airflow and increases the self steering qualities so that the after guys need not be attached to the tiller. Being forward of the mast gives some lift which is about 10% of the sail force but the main reason for this is to allow the poles to come down clear when the sail is lowered and to keep the sails away from them near the mast.

*The Mast Plates.* The mast plates and spinnaker poles may be of the usual pattern or they may be as in the accompanying drawing by Frederick Fenger. The mast plates should be placed on the forward quadrant of the mast so that the thrust force does not produce a wringing strain on the mast. The slatted tangs of the poles can easily be slipped over the  $\frac{1}{2}$ " pins in the toggles and they will not come out with ordinary use. The angle  $15^{\circ}$  of the slot will also keep the





scope so that the pole can hang into the mast. The halliard is then attached to the peak and the sail hoisted. As the sail goes up, the pole goes forward and rises up in an arc to its proper position. When the running snatch block of the halyard comes to hand, the manila tail is cast under a snatch block on the mast about two feet above the deck, back into the running block on the halyard and one now has a three part purchase for setting up.

When the sail is up, the after guy is trimmed so that the spinnaker boom is  $23^{\circ}$  forward of athwartships, which is the angle found to give the best directional stability. It is most important to have a tight luff and the spinnaker pole of such a length that the clew is well pulled out. Also both fore and aft guys must be set up tight so as to anchor the clew firmly in position. A swaying sail produces a rolling boat and twins with well anchored corners steady the vessel.

**Lowering The Sail.** Neither guy is touched. The halyard is firstly eased away and the sail comes down, the spinnaker pole swinging forwards and down in an arc as shown in the diagram. It swings down over the rail and should come in sweetly just above the deck. It brings the clew with it and the sail should then be easy to manage with one hand while the rest of the sail is lowered.

**References.** Other articles on "Twins" by Frits Fenger are "The Weather Twin—A steering Sail" "Yachting" December, 1953

and " *Twin Spinnakers Versus Twin Staysails* " " *The Rudder* " July, 1956. We are grateful to the Editors of these two magazines for permission to use the two drawings reproduced here.

## SAFETY ON THE OCEANS

This is indeed the question of the greatest importance to would-be Ocean Cruisers. It resolves itself into a very few basic principles which I will attempt to set out below.

1. *Scantlings.* These should be just a little greater than with inshore racing craft but not so great that the yacht becomes heavy and sluggish in the water. Stays should be doubled in number rather than in strength.

2. *Self Righting.* The yacht should be self righting by the use of fixed ballast. Catamarans need not be self righting, if heavy, because with enough beam, the rig should be such that it would be blown out before a capsizing would occur. Catamarans, apparently, take waves even of the largest size comfortably.

3. *Small Draught.* When sailing in unfamiliar waters, small draught is a safety factor because it lets one see the surface disturbance of the water before one is aground.

4. *Windward Ability.* It may always be necessary to beat off a lee shore in gale conditions in a lumpy sea, if one's landfall has not been quite perfect. Most Ocean Cruisers have had this experience.

5. *Small Size.* This is also a safety factor. It will be remembered that Erling Tamb's *Teddy* was carried onto rocks by the current in New Zealand and lost. If the yacht had been smaller, it could have been held off the rocks or rowed away. However, 30 feet seems to be the minimum L.O.A.

6. *Speed.* Speed also makes for safety because the shorter time spent at sea, the fewer storms will be met.

7. *Crew Protection.* Good guard lines must be rigged all around the yacht. Bernicot slipped *between* the lines overboard and an extra line low down could be considered. The whole craft must be capable of being worked from *inside* the hull so that it is not necessary to go outside in storms. Boarding steps should be rigged at the transom or stern. However, alternative steering places must be arranged at the bow and stern, the former for pieces of tricky navigation.

8. *No Cockpit.* Joshua Slocum never considered a cockpit. Robinson roofed his during his voyage. Commander Graham was in great trouble through his cockpit filling at sea. Even a self draining

cockpit takes time to drain and the drains can get blocked. When this happens, the load of water carried can be dangerous.

9. *Storm Drill.* This must be simple and adequate. Towing ropes over the stern seems to be the best method and, in my opinion, they should be on drums to be always easy to put out. In fact, I would lead them out through hawse holes in the transom and have them working in a few seconds by simply revolving the drums, from inside the hull. If the two ropes are joined by a chain outside the hull, they will not weather and the weight of the chain will pull out the ropes when required.

10. *The Rig.* The fore and aft rig may fail to put about in storm conditions and would then break something in a gybe. Tamb's *Teddy* was a case in point off the Dutch coast at the beginning of her voyage. Twin spinnakers cannot be taken in quickly enough to turn back to save a man overboard. For these reasons, there is much to be said for H. G. Hasler's "*Lapwing*" rig. However, a Bermudian sloop with twin spinnakers would work very well.

11. *A Well Planned Voyage.* This should avoid storms, calms and, if possible, dangerous coasts.

12. *Miscellaneous.* Radar reflectors, Radio, Electricity and good navigation are all safety factors. Adequate protection against Toredos in wooden yachts by copper sheathing or fibreglass is, of course, essential. Most of the great Navigators have had Toredos trouble, which should not occur nowadays. Antifouling paint will reduce fouling and increase speed.

## THE COST OF WORLD CRUISING

To most people, the cost of a world cruise is the vital point. Not only must one forego any gainful employment for the time taken but one must also consider things like the chance of getting work on one's return and the difficulty of settling down to the modern routine of life. Then, there is the cost of feeding oneself and crew for the duration of the voyage and the maintenance of the yacht.

We will assume that the person who is prepared to make the yacht with his own hands is the man who is most likely to make a successful world cruise. I believe that the independence of spirit in a man which will make him build his own boat rather than buy one is the vital quality for a world cruiser. However, successful World Cruises have been made in bought boats by Gerbault and others but, if I may say so, they seem to have been less confidently done than in those in home made yachts.

The expenses recorded by various World Cruisers varies enormously as one would expect. Sidney Howard spent £300 in 1932 on a cruise from Dover to Tahiti in a 38 foot yacht lasting 13 months. James Wharram in his cruise described later in this publication only spent £3 per week for three persons in 1954-6, which surely must be about the minimum possible. Large yachts will absorb much more money than small ones and the person who is prepared to do all the work himself will also save cash.

Cruising income can occur which would help to pay for the costs. After crossing one ocean, articles will be accepted for newspapers and yachting magazines from which a very modest income can be derived. However, this cannot be relied on to any great extent and the income is very small. Joshua Slocum was hardly an elegant writer but his simple direct method of telling of his cruises will always appeal to readers. Nowadays, there are many ocean cruises and magazines are more choosy in the articles they accept. Other income may be got from trade between one place and another or simply carrying goods, if the size of yacht will allow. This must also be a very minor source of income.

### TANGAROA

L.O.A.	23' 6"	Displacement	$\frac{1}{4}$ ton.
L.W.L.	20' 0"	Displacement loaded for Ocean Cruising	$2\frac{1}{2}$ ton.
Beam	11' 0"	Draught	9"
Hull beam	2' 9"	Draught with C.B.	4' 0"
		Headroom	3' 10"

Designer, builder and owner : James Wharram.

*Tangaroa* was designed to produce a cruising craft in which the owner and his two companions could live indefinitely in comfort and be safe in harbour or on the Oceans. This object has been achieved by an ocean cruise lasting for two years in which some 5,000 miles was sailed. All this was to be done at the smallest possible cost. *Tangaroa* only cost about £200 to build and the cruise and living expenses only amounted to £1 per week per person. This craft will therefore mostly interest those who want to cruise *now*, though their means are limited, rather than wait for the possible chance of a larger boat. The small draught is another economy factor as it enables the smaller ports to be visited, where things are not so expensive.



*Tangoroa*

*Tangaroa* was launched in August 1954 at Burnham on Crouch. Her skipper and crew then moved into their home and have lived in her till they reached the West Indies. They spent the first winter at Wivenhoe on the Colne and the next year (1955) went over to Holland and up the Rhine to Dusseldorf. From there, they came down the Rhine again and along the Belgian and French coasts back to England and down Channel to Falmouth. Leaving Falmouth, they crossed the Bay of Biscay to Spain and Portugal, the total cruise adding up to some 2,000 miles to that point.

The following August, they got a lift aboard a steamer to Las Palmas in the Canaries from where they sailed across the Atlantic to Trinidad at the end of 1956.

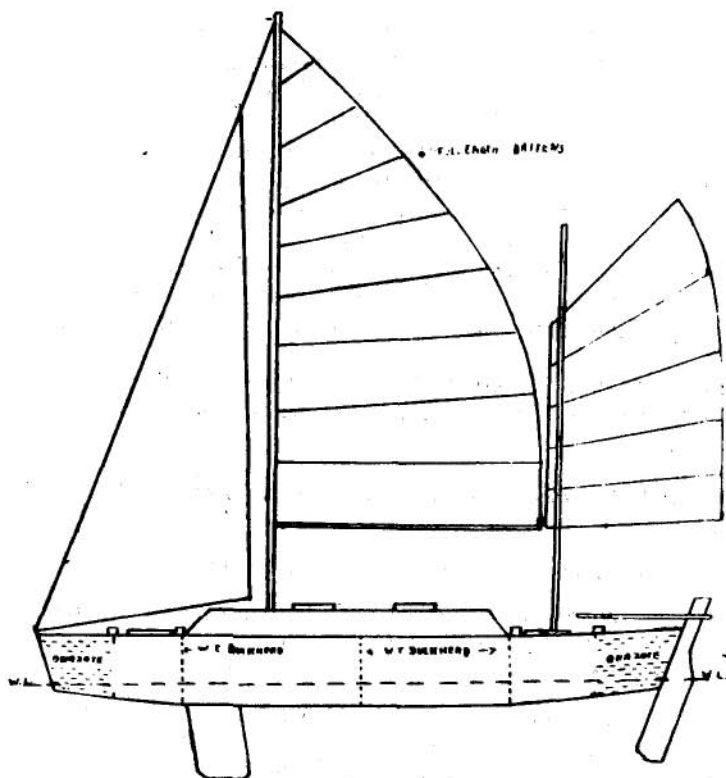
James Wharram gives his opinion on the nature of the Ideal World Cruise as follows :

“ Speed is a fine thing to have but the ease of rig handling and the comfort of the boat must not be affected. No matter how much speed you have, you cannot escape bad weather.

“ I doubt if you can get bored by the sea but harbours can wear one down. One of the worst quarrels we had occurred in Oporto,







*Tangaroa's Sail plan*

**The Design.** Each of *Tangaroa's* hulls consists of a long parallel sided part with a flat bottom. Forward and aft of this, the side planking is brought together to the stem and stern and the bottom is rockered up a bit. This design was the result of much study of the Polynesian craft, chiefly from Hornell's *Canoes of Oceania*, the parallel sides and blunt ends being a feature of many Polynesian boats. The blunt ends are necessary to prevent pitchpoling. However, the parallel sides were wrong on the *Tangaroa* with a length to beam ratio of 8 to 1 for, at speeds of 4 to 5 knots, there is a distinct wave pulled up from the shoulder. The Polynesian craft with parallel sides had a length to beam ratio of 20 to 1. In profile, there is more rocker up at the stern than the bow. This is not only to allow the water to rise up after being pressed down but also to assist manoeuvrability. The

vertical sides and the flat bottom made this hull very easy to build and to make water tight. James Wharram used galvanised nails and  $\frac{5}{8}$  inch planking on 2" by 1" frames, all touching faces of wood being glued with *Aerolite*. He says that without this glue, the boat would have fallen apart. In plan, there is the marked lack of flare in the topsides because it was feared that with a flare, she would be too lively. However, in a future design, James feels that flare would be better. He would also increase the beam of each hull amidships or lengthen the bows by 18" to give an easier waterline. Two long rudders were used to provide lateral resistance and to prevent them losing grip of the water, when dropping over the crest of a wave.

*Accommodation.* There is a large deck, a separate galley and chart room, a double bunk on one side and a single bunk on the other ; all one needs.

*Unusual Features.* The two unusual features of *Tangaroa's* design are :

1. All the accommodation is in the hulls themselves.
2. The torsion strains between the hulls are taken by crossed chains which actually run *beneath* the waterline. On both these points, James Wharram writes. :

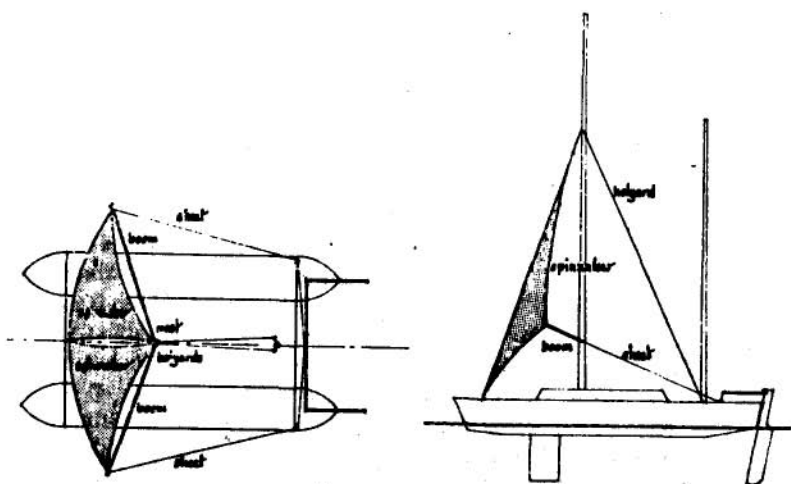
" I am against the large solid deckhouse type of catamaran for open ocean work. If ever a wave roars onto us, there is very little to hold it. It will just disappear through the slotted deck and I believe that the water pouring through will hold us steady. The deckhouse type can hold tons of water on that structure and the bridge deck. Also, the Centre of Gravity is much higher which will make the chance of a capsize greater. However, I now believe that a small steering shelter is most essential, even on a boat as small as *Tangaroa*.

" I also believe that a flexible hull is cheaper and safer for the heavier voyaging " Pahees " (Polynesian canoes), owing to the wringing strains between the two hulls. By fastening the hulls so that there is a certain amount of play between them, wringing strains are reduced. I also think a flexible linkage takes the jerk out of the motion. A light racing catamaran never has a very great weight but, once one begins a voyage, it is quite a different story. At the moment (in the Canaries) *Tangaroa* is loaded 2" out of true. If she were built rigid, there would be a built-in strain before the waves began to roar up. However, my chains could be better placed as they give a good deal of drag from their underwater position. When I arrive at the other

side, I shall experiment with them placed above water but, at the moment, I know they give maximum strength so we leave them there. The central centreboard also causes water resistance and a dagger board in each hull would have been better.

*Seaworthiness.* *Tangaroa* sailed closer to the wind than expected, about 4 points, but she pounded. This caused me worry, but since talking to experienced sailing skippers, I find that very few sailing boats sail comfortably or efficiently close to the wind on a deep sea voyage. However, we ran in great comfort. For a small boat on a long ocean voyage, that is most important. In general, her behaviour was splendid. We have never had a solid wave on deck, but all too frequently on the Atlantic crossing, we took breaking crests which, due to the slatted platform, disappeared before reaching the cabin top proper. These crests were 2' to 4' high and seemed to burst from within, as distinct from curling over on the beach or the tops being blown off, as one would expect. They have burst underneath the boat, shooting straight through the deck soaking people amidships but leaving me perfectly dry at the stern, 8 feet away. Definitely on the Atlantic voyage, we had squalls of windstrength 8 and more. On the whole, *Tangaroa's* behaviour at sea is perfect. We have stocks of books resting on shelves, the oil lamp on the table and the Taylor paraffin stove is just on a ledged shelf. None of them has fallen but our alarmclock once fell on its face in the Atlantic. There is no other boat of her size which has the same comfort and stability. The newspaper account that she stood nearly on end at times which was quoted in publication No. 14 is not true.

*The Atlantic Crossing.* Twin spinnakers were used but with *Anhedral* and set to the forward main cross beam, instead of with 23° of *Dihedral* and set just forward of the mast as recommended elsewhere in this publication. In fact, the system was very similar to that used by Marin-Marie but the sails had wire luff ropes. The head of the sail was fastened by two half hitches so as to be easily undone and the halliard was led through an extra large block (to prevent nip in the rope), back aft to the foot of the mizzen mast. The spinnaker booms were the oars with a gooseneck hammered into the loom, the gooseneck fitting being 3 feet off the platform. There were two nicks on the oar blade. The clew of the sail was lashed to one nick and the sheet to the other one about two inches further in. The sheets passed outside the rigging to quarter blocks and then athwartships to about the middle of the tiller bar. The whole system worked perfectly. A catamaran has no roll, so there is no need for downhauls



*Tangaroa's "Twins"*

and various other guys. One rope to hoist and one sheet to the tiller and she steered perfectly in winds up to force 7.

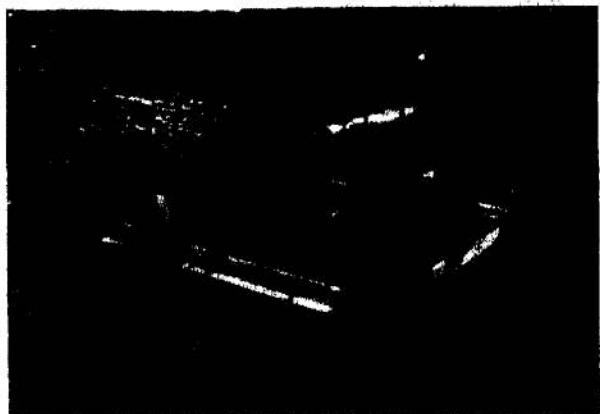
The rudder rods were of mild steel and slightly loose in the pintals. The slight play caused them to crystallise due to the excessive movement caused through the strong winds. This crystallisation caused the rudders to break twelve times on the crossing. The first time this happened, *Tangaroa* broached-to (which probably would not have happened if the twins had had *Dihedral*) and the waves began to sweep over her but she took this without difficulty, though it was uncomfortable. James Wharram's note here is to have the rudder fastenings twice as strong as necessary and hand forged by a competent blacksmith.

Toredo worm caused a bad leak about half way across which gave some anxiety. This was due to the flat bottom which allowed the anti-fouling to be worn off. One should have good bilge strips and the bottom should be fibre glassed for preference.

**Summary.** The Atlantic can be crossed in a catamaran 23' long but one 30' long would give that extra stowage which every cruising yachtsman wants and there would also be extra freeboard to get above the breaking crests. Cooking and breadmaking were possible at all times and only on two nights was there a wet bunk. Surely, this proves the seaworthiness of the cruising catamaran to the hilt.

## POSTSCRIPT

When *Tangaroa* was in Coruna, she was visited by Jose Jover Jover of Barcelona, the home of the "Patines a Vela"—a little rudderless racing catamaran. He was so pleased with her that he and some friends have built the six meter version shown in the photograph which



*Sgr Jover's 6-meter Catamaran*

they are sailing with great pleasure in the Mediterranean. This certainly looks like a fine ship. As compared with *Tanagoa*, her prototype, both hulls are rigidly attached together with no provision for flexibility.

## HEALTH ON A WORLD CRUISE

by

DR. JAMES B. MORWOOD

I started my journey around the world at the age of five from India where I was born. There were no protective inoculations in those days and apart from a bathe in the Holy Ganges River to be sure of at least the Indian Heaven in case of accidents, no health measures were taken on my behalf.

We set sail from Bombay in the *Nippon Maru*, headed South into the Indian Ocean and then East to Singapore, Hong-Kong and Yokohama. Two or three days out from Japan the weather went

bad. They had deck lines out, but even so, two of the crew were washed overboard. Most of the passengers were sick. And so I come to an important item for the yacht's medicine chest—seasick tablets. These are of two main kinds : those based on Hyoscine Hydrobromide and those based on the anti-histamine group of drugs. If you are susceptible to sea sickness find out the particular drug which is most effective in your case.

The next event I remember was having two Thursdays in succession. This was a new one on me, but I was told that you could not help it when you crossed the International Date Line.

We called at the Hawaiian Islands, the high spot of the voyage for everybody. I can still remember their beauty and in addition I was introduced to strawberries and ice cream for the first time. No wonder the sound of a guitar always brings back nostalgic memories to me.

The next port and the end of the voyage was San Francisco. I have been back to San Francisco twice since then and the only health hazard I know there is the strong wind that can blow up when you are out in the Bay in an eighteen footer. I managed to survive this, but nearly came to grief at Trader Vick's. The good trader's firewater, known to initiates as Big Stinkers and his Polynesian atmosphere are sometimes a little overpowering !

I finally reached England in 1919 and for many years it seemed to me that I should never complete my tour of the world. However, Hitler and His Majesty's Government between them decided that I should and in 1945 I was posted to India and later Singapore. Gone were the days of *laissez faire* with regard to health. Many of the following precautions were obligatory and most of them still are, or are highly desirable for anyone setting out on a world cruise.

*Smallpox.* You must be vaccinated or re-vaccinated if this has not been done within the past three years. Your doctor will sign an International Vaccination Certificate and this must be countersigned by the Medical Officer of Health.

*Typhoid and Paratyphoid Fever.* You should get your doctor to inoculate you against these diseases. Typhoid is still quite common except in the Northern European countries and the U.S.A.

*Dysentery.* This is one of the commonest diseases throughout the world today and there is no prophylactic injection available against

it. A high standard of hygiene is necessary to prevent it and this standard is not always maintained in many countries. Never buy exposed food in a bazaar or sliced fruit. Tea, if made with boiling water and fruit with its peel on is safe anywhere. I recommend an anti-dysentery drug for your medicine chest in any case. Chloramphenicol is probably the most effective.

*Yellow Fever.* Inoculation against yellow fever is compulsory if you are visiting certain parts of Africa and is desirable in South America.

*Malaria.* This is still the commonest disease in the tropics and preventive action is well worth taking. One of the anti-malarial drugs such as Paludrin should be taken daily, commencing ten days before entering the tropics and continuing for one month after leaving.

*Poliomyelitis.* You should certainly get immunised against this serious disease which is as common in the Far East as at home. In fact, the most severe outbreak I have seen was in Singapore.

*Cholera and Plague.* Inoculation against these diseases is also advisable.

In addition to the above, general health precautions should be taken.

It is essential to keep up your vitamin intake during a long cruise. Vitamin C can conveniently be bought in the form of tablets and the vitamin B complex can be provided by a yeast extract such as Marmite. Vitamins A and D are present in cod liver oil, or, if preferred, halibut liver oil.

In really hot weather it is essential to drink plenty of water and increase your salt intake in order to replace salt and water lost in sweat. If you are subject to fibrositis of the neck a sweat rag around the neck to prevent too rapid evaporation of sweat with local chilling is most effective. Aspirin is also of value.

Fortunately, the smells of the Orient, though often pungent, are harmless. As I write this I keep thinking of Lavender Street, Singapore, where the odours occasionally are very different from those suggested by its name !

It is at least as important to keep yourself in good trim as your yacht on a world cruise and observance of the points I have mentioned will go a long way to achieve this.









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