

PRACTICAL

# Boat Owner

JANUARY 1967

NUMBER 1

PRICE 3/6

**FREE inside**

**SKIPPERS'  
SAFETY-CHECK  
CARDS**

**In this issue:**

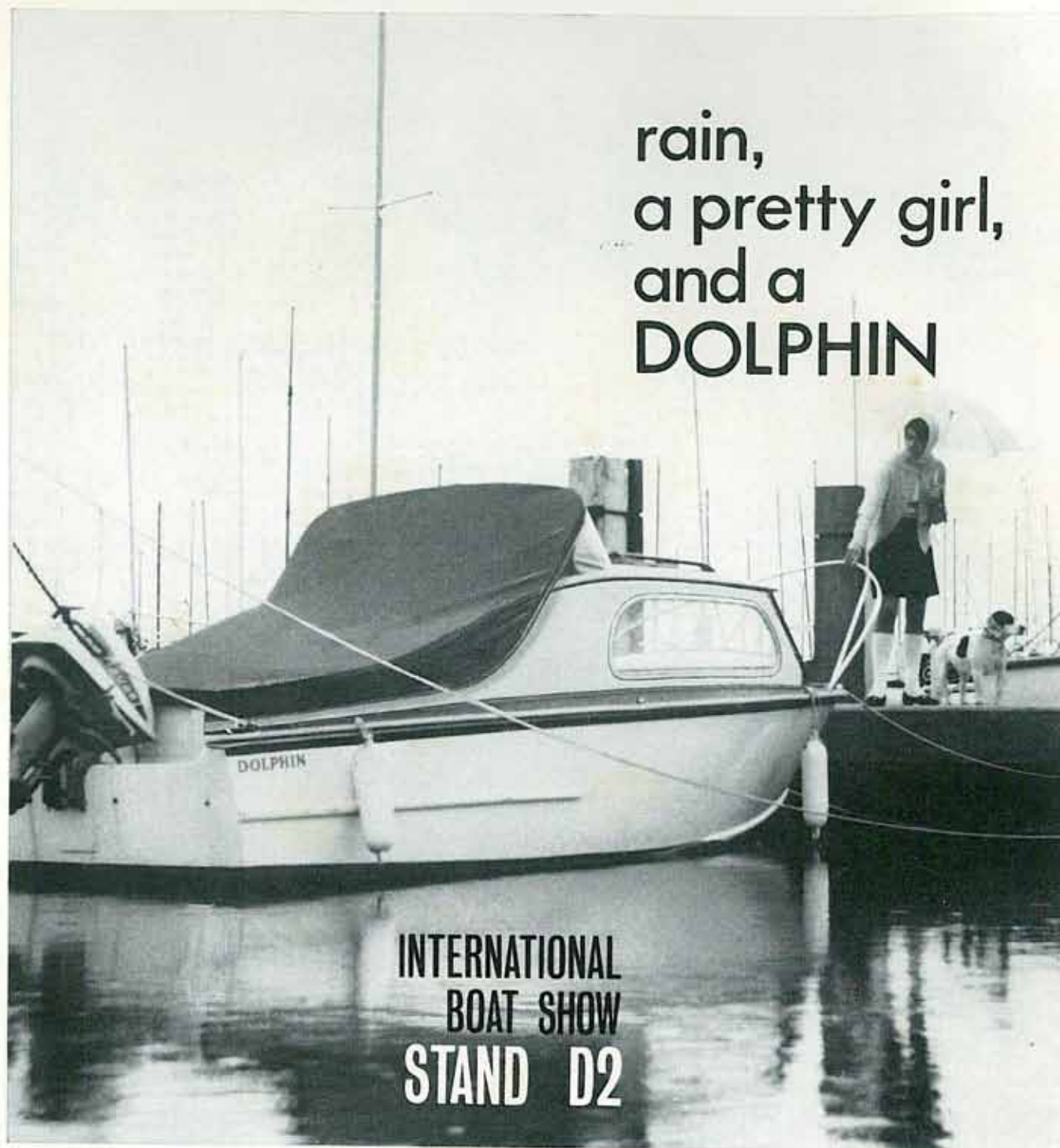
**Buyer's guide to bilge pumps**

**How to install a heating stove**

**Outboard care: step by step guide**





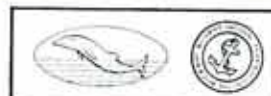


rain,  
a pretty girl,  
and a  
**DOLPHIN**

**INTERNATIONAL  
BOAT SHOW  
STAND D2**

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Visitors to the 1967 International Boat Show are invited to examine the full range of Dolphin cruisers and day boats from 16 to 23 feet LOA  
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The Dolphin 16, in common with all Dolphins, is a boat with just that quality.  
You and your family could take the well designed and comfortable Dolphin to heart.

## PRACTICAL Boat Owner

No 1 January 1967

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Editor Denny Desoutter

Assistant Editor George Taylor

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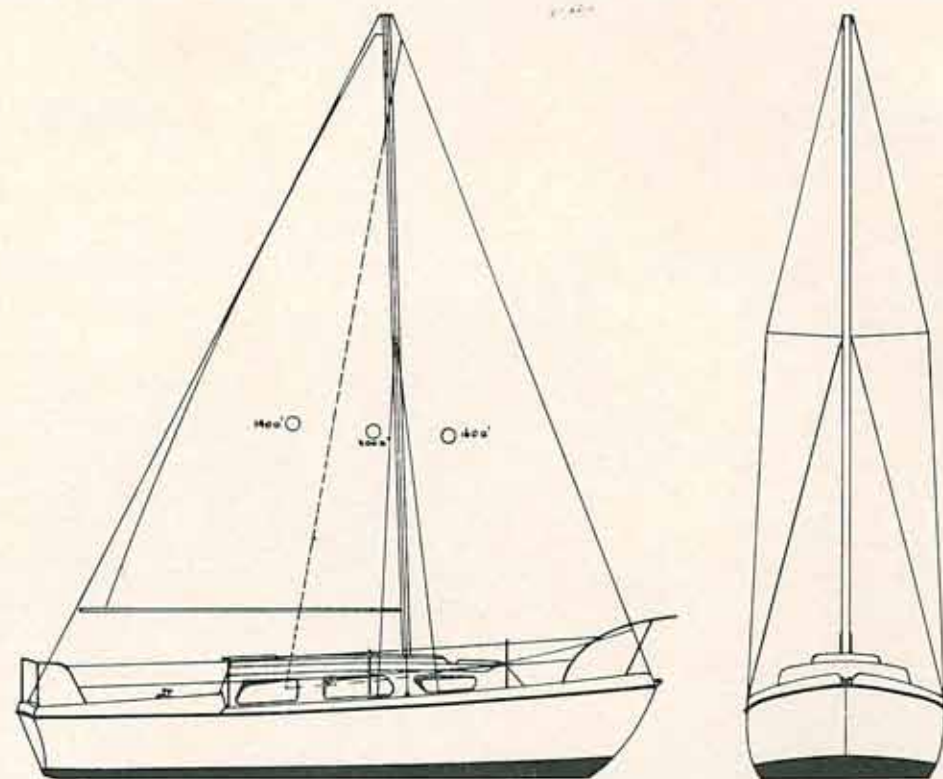
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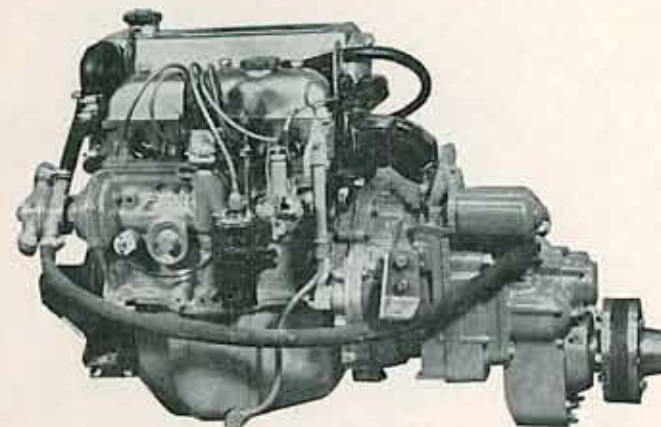
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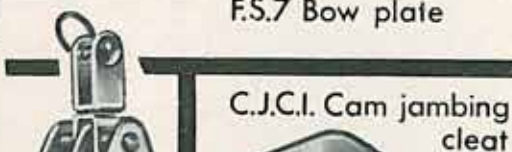
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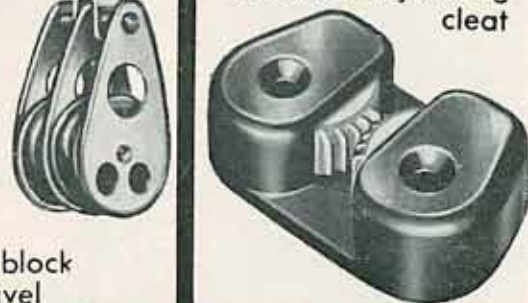
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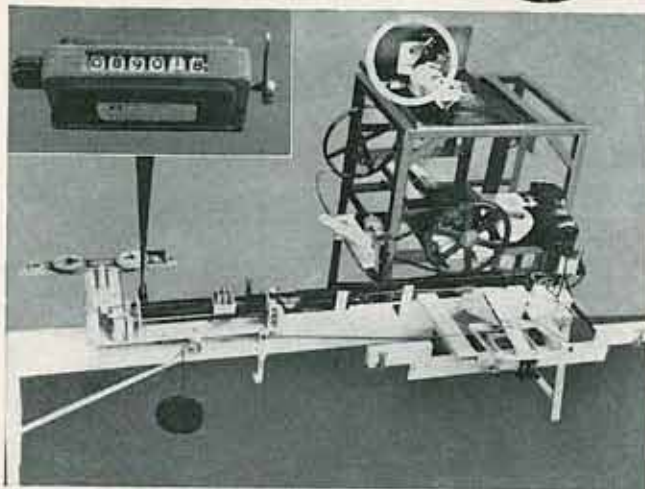
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No 1 JANUARY 1967



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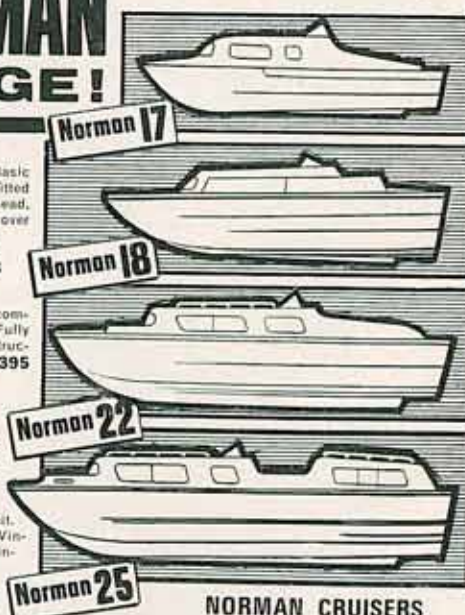
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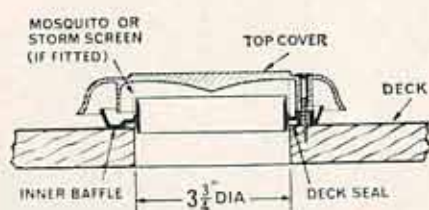
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- ★ Being protected from condensation and the formation of mould and dry rot

and that

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## FOR ALL TIME



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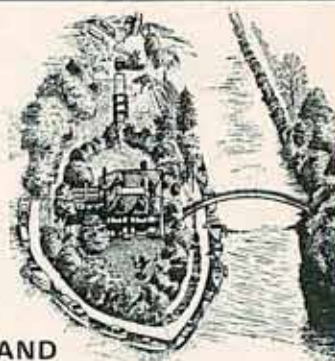
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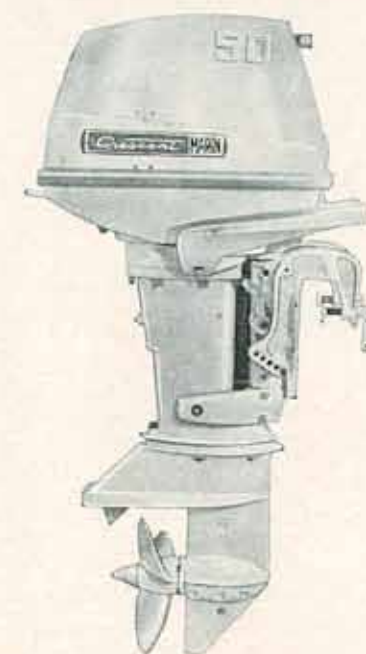
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PBO/1/67



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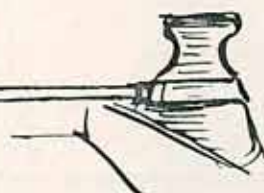
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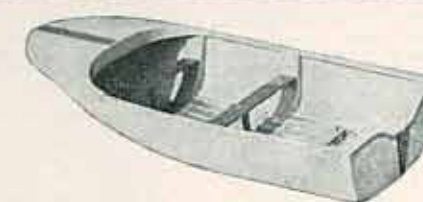


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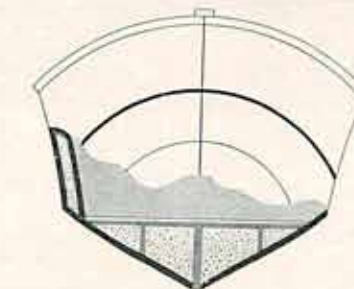
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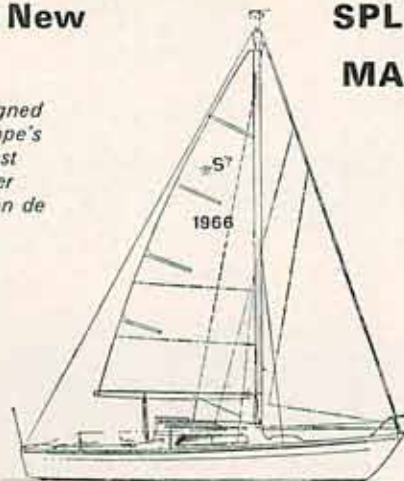
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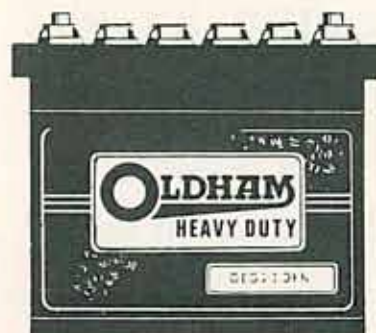
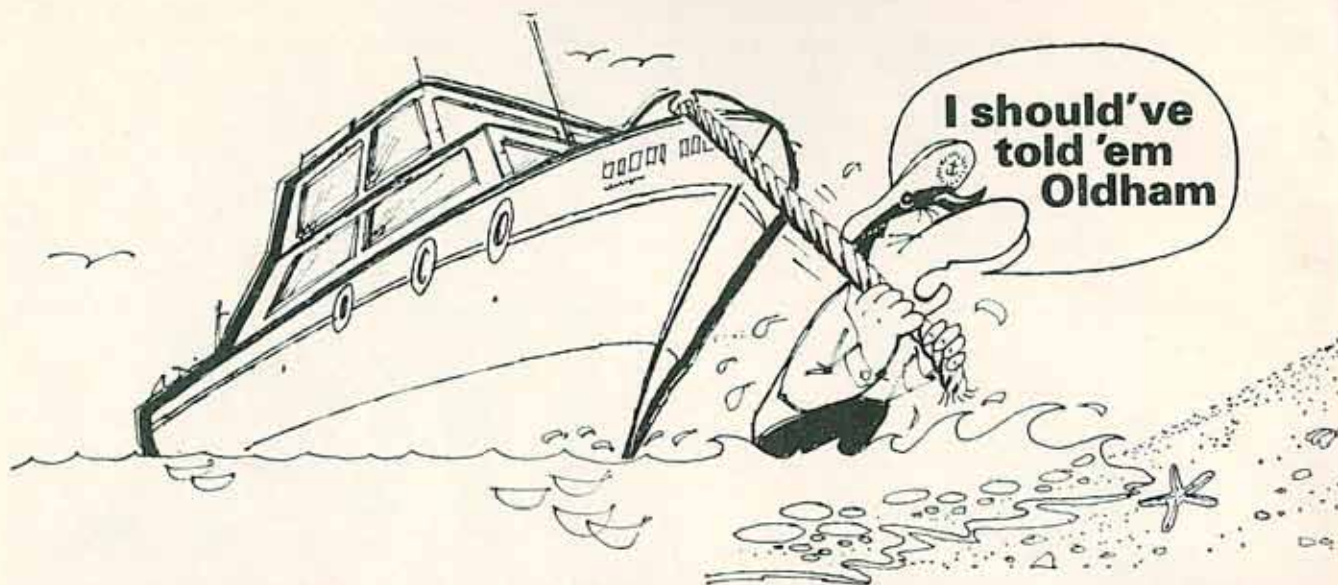
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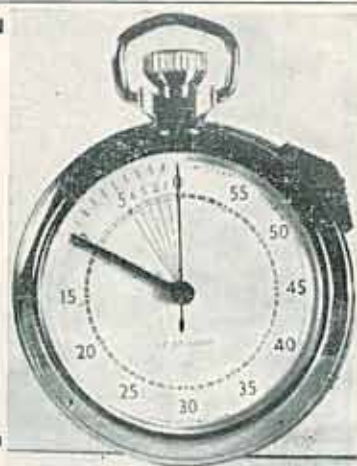
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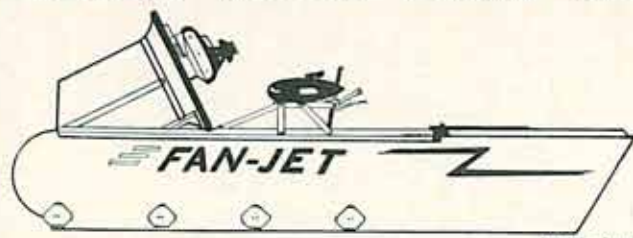
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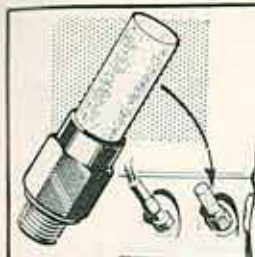
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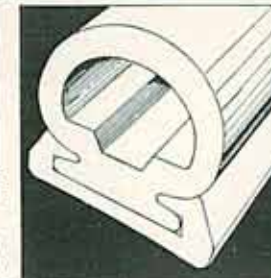
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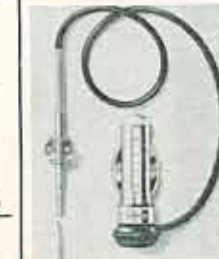


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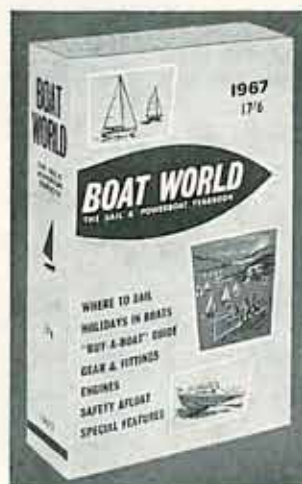
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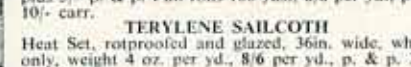
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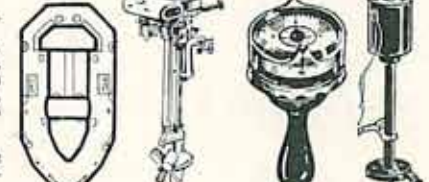
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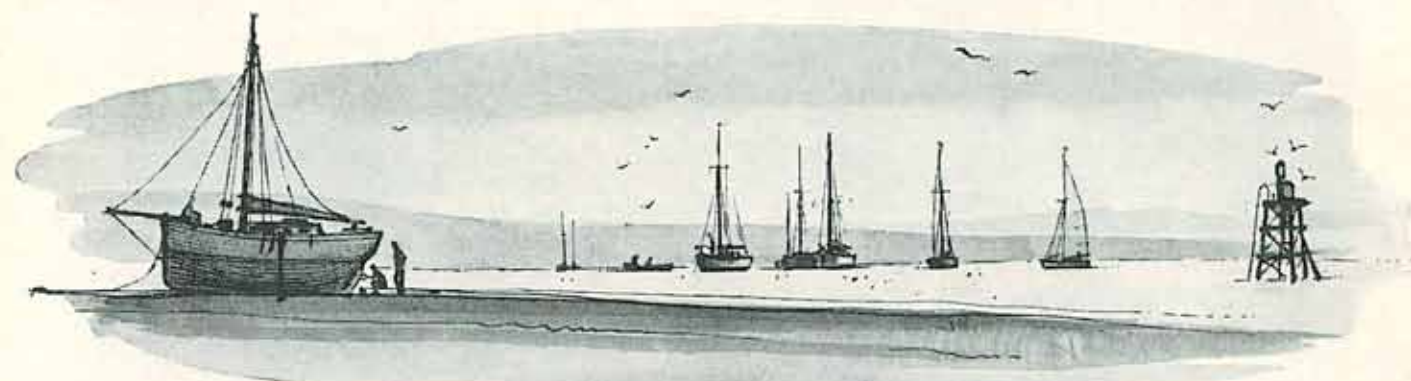
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# Waiting for the tide . . .



## Well . . . ?

No big speeches.

We won't explain ourselves—the magazine should be able to do that for itself. When you've had a look we would be glad to hear what you think. In this first issue there are no readers' letters, for obvious reasons, but what we especially hope is that practical boating people will use this magazine as a means of communicating with each other.

Let's have the bright ideas for gadgets, repairs, living aboard . . . and let's hear the problems too. Somewhere there's always someone who has had to tackle a similar snag.

Over to you.

## Beware of the curator

What could be nicer than to sail up the Exe to a new yacht harbour in Exeter, and step straight ashore into a maritime museum.

The idea of a museum of working boats of the past is due to a serving soldier, Major David Goddard of the Somerset Light Infantry. The craft he plans to preserve in this museum will be of all types and all nationalities. If all goes as planned it should become an outstanding collection of work boats with catamarans from the south seas, prahs, dhows and other exotic craft still surviving from before the days of mechanical propulsion.

Visitors may ultimately be able to hire out gondolas and

sampans, as well as to see the use of traditional tools in the repair of the exhibits.

The site chosen, Exeter Haven, is only a few minutes walk from the Cathedral, and has some mellow and well-proportioned brick warehouses which will make fine exhibition halls. There is also a very fine Custom House which will be the central administrative building and library.

There will be plenty of



Major David Goddard—  
a taste for old boats

work before it all comes true, but the project is a most exciting one for anyone who has an affection for boats—and that's a large proportion of the British population.

But if you should visit the place in a rather old boat keep your eye on the curator.

## Fittings for fairies?

I buy fairly chunky galvanised fittings because I have that sort of boat. But the fixing holes are always too

small. The chain-plate or bow-plate that would be proportionate to a ten-tonner is obviously expected to be attached with a couple of wood screws that would be overstressed if they had to support a kitchen towel rail.

So they have to be bored out, perhaps countersunk too, and that means the galvanising is spoiled.

It's a common enough moan. Perhaps we could try some lobbying. If we all complained to our chandlers long enough and loud enough, they might get the message across to the manufacturers.

## Put the hood up, Fred

Ball pens may write under water, and wrist watches may tick wetly, but most human beings perform rather badly when they're wet. Even worse when they're wet and cold, and tired and the sea is rough.

Well, why do we get wet? Is it really necessary? That chap sitting in an open cockpit, huddled in his oilskins, eyes smarting and water running down his neck—he drove down to the coast in a dry, warm car.

It would be much easier to drive a car in such conditions than it is to sail a boat. You can stop a car while you have a think. There are places where you can pull up and get a warm drink. There are signposts, and it's far easier to follow the road than a hazy coastline, easier than peering through the drizzle for a greyish buoy in a grey sea.

At sea you need a chart, a list of lights and buoys, perhaps a tidal atlas and a pencil and paper. Clambering up and down from the cabin in oilies is a tedious process, not conducive to efficiency, yet you can't have all the paperwork in the cockpit with you. How much more efficient is the man in a dry wheelhouse who can look straight from the chart to the world outside, who can thumb through the almanac with a dry thumb and can take a radio bearing without leaving the helm.

We can't all have boats with wheelhouses, but we ought to be able to have some sort of shelter. Tiller steering, the need to tend sheets, and the desire to minimise windage all tend to complicate the design of cockpit shelters. But there is a wide variety of possible solutions, and you can be sure that designers will find practicable answers if there is a strong demand from buyers.

My prediction is that there will be an increasingly strong demand for boats which give protection from the worst of the weather. And in ten years' time cockpit hoods will be as commonplace as motor car hoods were in the twenties.

## Cosy bedtime story

To give even more ammunition to the people who will write in and say that the nation's going soft if we must have sheltered cockpits, let me suggest a natty line in night-wear for people who

really like to be warm on cold nights.

Get a track suit. One of those head-to-toe enveloping rigs made in Viyella, or is it winceyette (or am I hurting somebody's commercial sensibilities?). Anyway it's a loose, soft, stretchy material and if you wear a track suit over your pyjamas you'll always be snug.

A navy blue one gives the correct tone if you do have to go on deck in the early hours to tend lines or fend off some new arrival. It will keep you warm while you work outside, and you will avoid the ebbing morale that accompanies a public appearance in flapping pyjamas.

## Yah, fatty!

And while we're on this soporific subject, why don't more manufacturers make wide, wide sleeping bags? A sleeping bag is certainly a very convenient form of bedding aboard a boat, but usually they're made for campers and climbers who want weight and volume to be kept to a minimum.

On a boat there's no point in skimping on size, it's better to be able to turn over. Even my kindest friends would not describe me as slim, so I know what I'm talking about. The widest sleeping bags I've found so far were at Gamages (32 inches). I'm using one of their's now (no Fred, not actually here in the office) but it's not all that warm. Perhaps that's the fault of the Terylene filling.

Anyone got any better ideas?

## Waste heat

Every little bit of power, heat or light on board a boat has to be carried there. Well, for most of us it has to be carried—in the form of glass bottles or petrol cans or the like. Yet so much of the energy and value is wasted in engine cooling systems that it really should be well worthwhile for someone to devise ways of using it.

A few owners already have means of collecting the hot sea water pumped out by a directly-cooled engine. One or two make use of engine waste heat for airing cup-

boards and to warm the cabin . . . but such people are in a minority. There are many permutations, even a simple hot water tank with a tap at the bottom and an overspill at the top would make a good receptacle for hot sea water. This could be used to fill hot water bottles—and it is rather nice to have a hot water bottle on your lap, under a tarpaulin if you have a long trick at the helm on a cold day (even if it sounds 'sissy' to some).

A simple copper pipe to conduct the water round the cabin sole before it is pumped overboard could be quite a comfort too, and from time to time one hears of some mythical character who pumped it into his Avon dinghy and had a hot salt bath.

Perhaps there are readers of this magazine who have found a good way to make use of this waste heat, if there are we'd love to hear from you so that we can help others.

## What do you mean?

If you walk into Her Majesty's Stationery Office and ask for the "Collision Regulations" they will know at once what you want. It seems a strange name for regulations which should really be anti-collision.

Still, as long as we all know what we mean, I suppose it doesn't matter, though when it comes to the regulations themselves I sometimes think that they might have been better worded. Rule 17, for example, which was changed



Which is the main . . . ?

with effect from September, 1965, talks about a vessel which has the "wind on the port side". And if you want to know for sure which side the wind is on, the rule-writers explain that this shall be deemed to be the side

opposite to that on which the mainsail is carried.

Well, if the position of the mainsail is the ruling factor,



. . . this one?

why not write that into the rule itself?

This is the way the rule is actually written:

- (i) When each has the wind on a different side, the vessel which has the wind on the port side shall keep out of the way of the other.
- (ii) When both have the wind on the same side, the vessel which is to windward shall keep out of the way of the vessel which is to leeward.

Then comes the qualification that enables you to decide which is the windward side—"the side opposite to that on which the mainsail is carried."

This is my version of the rules, written my way:

- (i) When they carry their mainsails on different sides, the vessel which carries her mainsail to starboard shall keep clear.
- (ii) When they carry their mainsails on the same side, the vessel which is to windward shall keep clear.

A couple of days ago it was blowing five, maybe six and there were several boats running up the harbour, or reaching, under headsails alone. Presumably in that case a genoa becomes the mainsail, though semantically it cannot be ranked main when it is the only one.

All right, we don't want to

split hairs, but rules which are framed to be the basis for litigation and perhaps for damages should be closely defined. And are you really sure which sail of a schooner is her mainsail?

*Amity*, shown here, looks lovely when she's running with one blue sail boomed out to port and the other boomed out to starboard. But on which side is the wind deemed to be?

Perhaps one day we shall come down to the simple, unambiguous powered vessel rules. Then we shall all be under one system, avoiding the confusions which the new International Regulations have brought in their train.

## Oh . . . I see

Do you wear spectacles? Do you wear your sou'wester back to front?

You could try it. I find that the reversed sou'wester will keep rain and most spray off my spectacles. In an open cockpit boat like mine, spectacles quickly become useless in rain or spray, and without them I'm a menace to myself and anything smaller than an aircraft carrier!

I would really like to see a manufacturer tackle this problem. What about a visor with a peep-slot moulded in polypropylene or some other plastic material, soft enough to be comfortable and stiff enough to support itself.

And something of the same sort might be better than sunglasses. You're not dazzled when you peep out of a scuttle on a bright day, so why not a slot-type eyeshield to keep out the glare of sea and sky? It would keep the rain off my spectacles, too.

## Hoarder's corner

One of the troubles with a 'how to' magazine is that you cannot time any particular article to suit everybody. You, dear reader, may be well impressed by our simple, clear, practical hints on lining up a propeller shaft. Only you don't happen to be lining up any shafts this week.

Never mind, that job will come your way one day, and you'll remember that you once read something about it, somewhere, sometime.

Our solution is so simple that thousands of people



have thought of it before. An index.

You won't have to write in and ask for one, nor will there be anything to pay, because we shall make it an integral part of the last issue of the year. (More frequently, if that seems necessary.)

'So you're going to have an index. Can't you think of something better than that to boast about?'

Well, not actually, just at the moment. But it wasn't swelling pride that made us raise the subject. Just to warn you, so that you can keep your copies, because the index will be no use without them. What's more, it's a readymade excuse for all the hoarders who are ashamed to hoard just for hoarding's sake.

#### Who's binding?

Persuaded by the foregoing masterly piece of propaganda, everyone will henceforward be keeping his copies of *Boat Owner*. Those who like to keep their hoards neat and tidy will be pleased to know that we have arranged with a specialist firm that binders will be available for the magazine.

Most people have seen this style of binding before—each copy of the magazine is held inside the stiff covers by a flexible wire. It's very easy to fit the copies into the cover, and it's equally easy to take one out into the workshop if you want to.

A stock of these binders is being manufactured. They will be advertised from time to time in the pages of *Boat Owner*, with the price and the address whence they can be had.

#### They call it 'reproduction,' sir

Every dinghy should be stable so that she can be stepped into with confidence.

Still, as I know how cold the water was when this picture was taken, I feel that Leslie Landamore was carrying duty to the limit in order to show the steadiness of his new clinker dinghy.

Clinker? well not really. Like reproduction furniture it's a modernised version of the kind of hull that so many

people love. Landamores mould these dinghies now, reproducing exactly in glass-resin the shape of their already well-known lapstrake glued clinker boats. So you have the pretty looks, but a strong and 'almost maintenance-free' hull.

The boat is 9 feet 6 inches long, with 4 feet 3 inches beam, and she is available in rowing and sailing versions. The sailing version has a centreboard and a lugsail. The transom of either version can take an outboard.

These boats are good carriers, and in calm water



Mr Leslie Landamore—glad to be back on dry land again?

half a dozen people can be ferried. But they are perhaps better for carrying than for being carried—the weight of the rowing version is about 135 pounds. Still, that weight means strength.

#### Wood will fight back

In laboratories in Britain and several other countries, timber's counter-offensive is being planned. Already chemical treatment can greatly enhance and strengthen timber. On the other hand, more than one means is now available to make wood soft and formable. One such method, developed in Britain, makes it possible to tie a knot in a chair leg, or a least in a piece of wood with approximately those dimensions.

The latest development seems to make possible first a softening process in which timber can be fairly easily formed into the sort of shapes that are required in a boat, followed by a strengthening treatment which makes the material significantly stronger than the natural material we have used in boats so far.

Impregnation with resin is already known, and so, of course, is protection by impregnation with fungicides, and so forth.

It may not be long before we have timber that has the pleasing appearance and feel of timber, yet is equal in resistance to rot and biological attack to resin glass. But with all these chemicals in it—how will it smell?

#### Ed makes Floridash

A while back I went to Florida for the week-end. A thing I would not normally do, domesticated as I am in Surrey. A thing like that is made possible only by jet travel and by the typically American generosity of the Kiekhaefer Corporation. Kiekhaefer's plan was to show off their range of Mercury outboards and outdrives for 1967. My plan was to try a little boating Florida-style.

We were situated (in air-conditioned luxury) on the northern shore at the entrance to Tampa Bay, which opens westward and is about 10 miles wide at the mouth. The sea outside was calm, and in the bay it was even calmer, for the mouth is protected by low-lying sandy islands with rarely more than a mile between any two. In the few days I was there a really warm force three blew steadily all day...

Set fair for a day afloat... but what's this? British editor up creek on wrong side of channel. Obviously doesn't understand simple principles of beacons marking channels between the sandy keys (islands).

Too true. Nor could I understand the buoyage. Later I found out that their port-hand buoys are black and that their starboard hand buoys are red. Similarly their beacons have the opposite colours to ours. Still the shapes are roughly the same, flat-tops for port, pointed tops for starboard.

But whereas our port-hand buoys have even numbers, and the starboard are odd, theirs are the other way round.

Well, it just goes to show that you should always look in the book before you leap into the cockpit.

#### Yachting? ... or boating?

Say "I'm going boating", and they think you're taking a skiff out on the Serpentine.

Say "I'm going down to my yacht for the week-end" and they think you're either insufferably wealthy or slightly bogus. If you have a yacht you call her a boat, but you don't talk about going boating.

The anxiety to avoid ostentation can explain some of these difficulties with words but the major part of the blame must be laid at the door of language itself. Technically, a yacht is a private pleasure craft, though a duck punt, or a fishing dinghy would not normally be called a yacht. Neither would a Firefly, nor any other racing dinghy, though a Star or a Solent Sunbeam would be given that name by many people.

Indeed there are many people, though not yachtsmen, who will take "yacht" to be synonymous with "private sailing boat". Those are people who have never heard of a motor yacht, though some of the older ones will have faint memories of the days when monarchs, earls and wealthy tradesmen had steam yachts.

Nor is the language deficient only of words to define the craft themselves. The activity itself is in some doubt. I suspect that in the columns of *The Times*, "yachting" implies only racing between sailing boats. Yet for thousands of people "yachting" means cruising or pottering, under sail or power, and sometimes under a bit of each.

Does it matter? Only to journalists perhaps, and to the people who write advertisements and wonder just what words they must use in order to attract the right kind of people.

#### Fitting out

Time was when most owners left the cares of fitting out and laying up to the boat-yards, just as their wives left the cares of the household to the cook and the housemaid.

In those days a craft was first fitted out and then handed over to the owner, a transition that in itself marked a precise term to the process of fitting out. Nowadays the owner whose fitting out begins to drag gets

## '67 MERCURY OUTBOARDS

Engineered to stay ahead...



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From the world leader in marine propulsion comes the most advanced, most complete line of outboards!

New **Thunderbolt** ignition without breaker points... unique System of Silence that makes Mercury the quietest outboard you can buy... Jet-Prop exhaust to bury sound and fumes deep underwater... these are just some of the features that will put you ahead with a Mercury '67.

At Lake X and Sarasota, Florida, at Fond du Lac and Oshkosh, Wisconsin, Merces are put through the toughest tests Mercury engineers can devise. They run day and night for weeks at full throttle, in both fresh and salt water, over timed, measured distances... hit sandbars at 40 MPH to prove shocks... plough through saw grass and water hyacinths to test cooling systems. The '67 Mercury you buy has already been proved in years of customer use—squeezed into weeks of intensive tests.

Only Mercury has **Thunderbolt**—a super-power electronic ignition—now without breakers and available as standard equipment on all 95- and 110-HP models and on 50- and 65-HP electric-starting models with alternators. With **Thunderbolt**, exclusive **Polar-Gap** spark plugs last seasons—not hours! Pre-ignition, even with highly leaded fuels, is virtually unknown! Engine efficiency and reliability are dramatically increased! Idling is silken-smooth, plug fouling is forgotten—and there are no breaker points to replace! **Thunderbolt** fires new four and six cylinder Merces with lightning speed and power.

# '67

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Please send me your Free Brochure and name of nearest dealer.

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I am/am not a boat owner (Delete where not applicable)

I am interested in your \_\_\_\_\_ h.p. motor. (Please complete)





## TERYLENE sails to victory in the Little America's Cup

The catamaran Lady Helmsman, winner of this year's Little America's Cup, carried a revolutionary Una Rig evolved by Sea Horse Sails. The actual sail itself was made in TERYLENE, chosen for its strength, lightness and ease of handling—and because it partnered the unique wing mast so well. For the fifth year running sails in TERYLENE have helped to keep the Little America's Cup in this country. Sure sign that TERYLENE keeps up with the rapid developments in cat construction.

**Sails in TERYLENE are strong (wet or dry), won't stretch or shrink, resist abrasion and attack from mildew and bacteria, won't stiffen, and dry quickly.**

If your problem involves sails, find out about the characteristics of TERYLENE in sailcloth by getting in touch with your usual supplier or ICI FIBRES LIMITED, INDUSTRIAL USES DEPT., HOOKSTONE ROAD, HARROGATE, YORKSHIRE, HARROGATE 68021.



'TERYLENE' is a Registered Trade Mark of ICI

## ICI Fibres work

Lady Helmsman is owned by A. Sanderson & Co. of Hull and built by Sail Craft of Brightlingsea.



Racing is the toughest test for every part of a boat's equipment; much that was good is now outmoded. This is one reason why Helmsman paints sponsored a revolutionary C class Catamaran. The fastest sailing craft in the world, "Lady Helmsman" is winner of the "Little America's Cup".

HELMSMAN ONE-CAN-POLYURETHANE stands this test, proving the finest wear resistant finish available with its unique quality of polyurethane hardness and flexibility.

But Helmsman did more than just protect the hulls, it actually made them go faster.

*"Her two hulls were like knives with their graphited bottoms, black cutting edges that ripped the muddy water into continuous cascades, streaming aft like white vapour trails."*

So said David Thorpe in the Daily Telegraph (20th September) when "Lady Helmsman" won her race against the American Catamaran, "Gamecock," by 7½ minutes. Using Helmsman polyurethane know-how, a new graphite paint was formulated which provides a much smoother and more slippery finish than any yet available—this new racing finish and much more can be seen on the Helmsman Stand at the International Boat Show, 1967.

#### HELMSMAN ONE-CAN-POLYURETHANE

Enamel. Varnish. Reactive copper anti-fouling. Non-slip deck paint. Available at all yacht centres in U.K., France, Holland, Belgium, Germany, Finland, Sweden, Switzerland, Greece, and Italy.

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# Helmsman ahead!



impatient and, envious of those who are afloat before him, puts the boat into the water with the promise that "the last few jobs can be done during the season".

In fact those last few jobs may never get done, not because the good fellow is indolent, but because an endless stream of other tasks will crop up. Is there anywhere an owner who does not have some little job waiting to be done? If there is such a man then perhaps it is his imagination that is lacking.

And even if you do really compress all your fitting out into a neatly-defined few weeks at the beginning of the year, the processes of maintenance, modification and titivation will go on through the year.

In fact there's a great deal to be said for making the whole business as nearly continuous as possible. When you lay up you rub down topsides, and give them a coat of undercoat; you rub down and varnish your spars before they go into store. A few owners paint their topsides in the middle of the summer season, when the weather is fine and daylight hours are longer. Then the boat looks better at the end of the season and can be got afloat quickly at the beginning of the next.

Now that nearly all of us have to do our own work new patterns and methods are being devised to get the best out of our boats.

#### Taking the waters

There's water, and water. The kind that's outside the boat and the kind that's inside—not inside because you have leaking seams or some more frightful calamity, but the nice fresh kind that's there because you can't resist the insidious message of Teachers' ads.

This fresh water is a precious commodity, and raises problems of what my well-read friends call logistics—you have to fetch and carry the stuff.

In big yachts there are large tanks in the bilges, filled with a hose alongside a quay or from a water tender. There's a tendency to try and imitate this practice with smaller boats but I doubt if it's the best way.

The number of quaysides

with hoses has not increased all that much, and water tenders seem to me to be scarcer than they were 20 years ago. In any case, if you have a five-tonner with a tank capacity of 20 gallons, is it really worth the trouble of coming alongside? It seems much more practical to take one or two polythene water barricoes ashore each time you go, and to top up your tanks little and often.

In any case, I always like to have a few gallons spare in a separate container because in my own boat I have no simple means of telling whether the tanks are only half full or (much worse) half empty. And there's always the fear that the pipe run under the cabin sole might spring a leak. (Some people are born worriers.)

But in small boats I am not sure that tanks in the bilges are a good idea anyway. You have those pipe runs and you have to have a galley pump, which will need maintenance from time to time.

A much cheaper system and certainly simpler and more reliable, is to use a small gravity feed tank for the galley. It need not be all that high up—the tap can be as low as is convenient, and that may be a mere foot above the cabin sole if you wish. But if the tank holds four gallons when full its average weight (half full or half empty) will be only 20 to 30 lb.

Your main store—say three three-gallon plastic tubs can be stowed below the cockpit sole, or at the lowest convenient place. Then every couple of days you empty one of them into your gravity tank, and you refill it on the next run ashore. If you make a good-sized hole in the top of your gravity tank, topping up will be swift and you will be able to get your hand in to clean it.

Whatever kind of tank you use, it's a good idea to fill through a filter, which can be a clean scrap of cotton sheet or any finely woven material. In my experience all public water supplies deliver a bonus of small particles of one kind or another—usually rust.

At home that does not matter much, but whenever you are using some kind of storage tank these particles accumulate. If you keep them out in the first place it reduces cleaning work, and avoids troubles with the more fastidious members of your family.

#### Pinched from Fairey ... with thanks

The bilge pump installation on the Fairey Hunt 18 is rather neat, and could easily be copied by others. The pump itself is mounted against a vertical bulkhead, and the handle comes through a slot in the deck.

As Don Goodsell points out in his buyer's guide to



Concealed, but accessible  
Bilge pump on the Fairey Hunt 18

bilge pumps in this issue, it is one of the merits of the Henderson pump that it can be mounted in a variety of ways. Fairey have made good use of that versatility, and perhaps someone else will now make good use of their idea in turn.

By the way, unless I make some major boob, we shall have a short account of this new Fairey boat in next month's issue.

#### Service for a Seagull

How do you service your Seagull outboard?

The makers of these reliable and well-known motors reckon they never need servicing. Asked what suggestions they had for our readers they merely replied, "All an owner need do is to read the instruction book, and give the engine its proper food and drink. Then it will look after itself... it is self-servicing."

Almost as good as nature's Seagulls, which like other biological phenomena shame the engineers by their self-servicing and self-repairing capabilities. Still, the capital S type of Seagull is a reliable

animal, as I have myself discovered, though it does make a lot of noise. I suppose I can't be the first to have mentioned it...

But what about the man who really feels something ought to be done to his Seagull—the fellow who has bought one secondhand for example. The makers have the answer ready, on a leaflet that's given out to every new owner. It's unlikely to be still around when our secondhand buyer comes along, so here's what it tells you:—

1. A new sparking plug, Lodge C 1, Lodge H 1, Champion 88 Com, gapped to 0.018 inch maximum. Gap the old plug to 0.018 inch if kept as a spare.

2. Renew the high tension lead (price 5/9)... you can't tell by looking at it, so be safe and sure.

3. See that the tank is dry and clean, and use fresh fuel for the new season... ¼ pint of S.A.E. 20 oil per gallon. Tighten up fuel line connections and replace washers if necessary.

4. Empty gearbox and refill with S.A.E. 140 gear oil... cost negligible.

If after that the motor does not run like a Seagull, don't tinker, don't touch, get really expert advice from the firm's service department. Telephone Poole 1651, and ring early in the day if you can.

#### Aussie recipe

Reading *Australian Seacraft* (it's one of the perks of the job to read the world's yachting magazines) I came across a recipe for a rigging treatment that was new at least to me. I wonder if it's new to anyone else?

Bernard Heath recommends us to take one pound of anhydrous lanolin and melt it in a saucepan or other pan. Then, carefully taking it away from the flame, and indeed dowsing the flame itself, you stir in one pint of acetone before the lanolin has cooled off.

If you store this mixture in tins or jars and paint it on rigging and rigging screws once a month they will never rust, even in severe conditions, he says. What's more, rigging screw threads will always be easy to turn.

Anyone want to try?

Denny Desoutter





# A DOGHOUSE FOR A MYSTIC

BY C J BURNINGHAM

A worthwhile modification to a popular standard boat which gives light and headroom below, as well as adding to her looks. Correct proportions for a well-balanced appearance are explained by the author.

The doghouse looks "natural" on Pooka, and seems to make her look bigger.

WHEN I DECIDED TO complete a Mystic from a commercially-built hull I realised that I would need more headroom. A doghouse seemed to be the only solution.

The builders were by that time prefabricating the main deck—two sheets of  $\frac{1}{2}$ -inch marine ply glued and screwed together in a jig to form an extremely strong deck  $\frac{1}{2}$  inch thick with no deck beams. There seemed little risk of weakening the hull by cutting away the deck, and discussion with the builders confirmed that view.

The planning stage occupied several evenings. Odd bits of hardboard were used as patterns, and offered up for inspection. I wanted to be sure that neither the appearance of the boat nor her sailing qualities would suffer. I decided to give a rake of  $52^\circ$  to the front,  $65^\circ$  to the sides and  $75^\circ$  to the back of the doghouse. The last point was to avoid the long vertical line which would otherwise have been seen in the sheer plan at the main bulkhead.

To keep the sides as low as possible a fairly strong camber (radius 5 feet) was chosen for the roof. This also

appeared to blend better with the curve of the deck than a longer radius camber.

The overall dimensions—4 ft. 3 in. x 3 ft. 10 in. x 1 ft. 4 in. to top of hatch—and general shape having been decided, I turned to construction and came up against the first snag.

The hull had been brought into the garden through the garage, which has double doors at both ends, and with the doghouse added it would be just too high to go out again. It had to be

built so that it could be removed when completed, and refitted after the boat had been taken through.

A strong frame fastened to the deck with  $\frac{1}{2}$ -inch galvanised coach bolts spaced 8 inches was the first step. The two side members were made from lengths of  $2\frac{1}{2}$  x  $1\frac{1}{2}$  inch mahogany sawn down the length at the appropriate angle to give the required rake to the sides of the doghouse.  $2$  x  $\frac{3}{4}$  inch ply battens were fitted under the deck to take the squares

Figure 1. Outline plan of the frame which formed the basis of construction. It is fitted to the deck with coach bolts. The cut-out in the deck was made a few inches smaller than the frame, giving a useful shelf for the stowage of cameras, pipe, woolly hats and so forth (See illustration opposite).

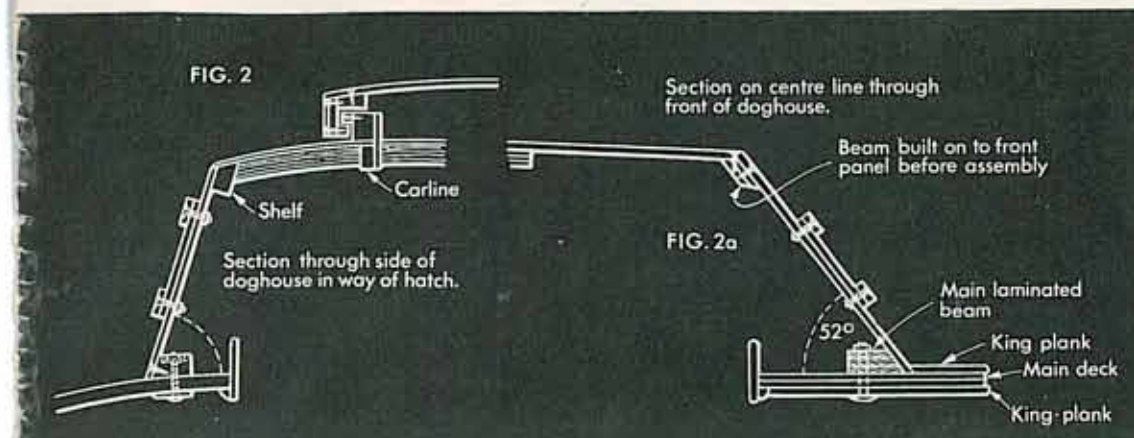
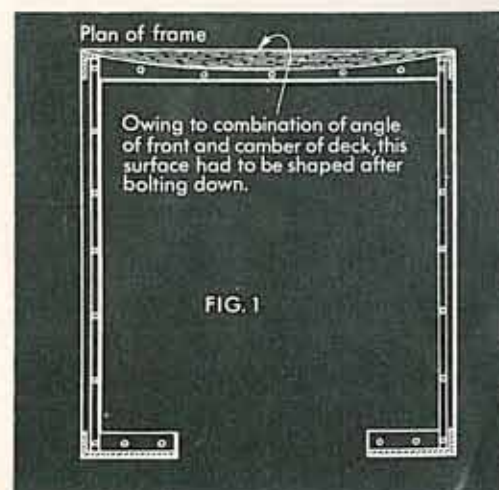


Figure 2, left, shows the construction of the dog-house sides, with beam shelf and carline for hatch. Figure 2a, right, gives details of the front.

under the heads of the coach bolts and to give a neat appearance.

The side beams were then cut away at both ends for half jointing into the thwartship beams. One of these across the forward end of the doghouse joining the two side beams and a short one on either side of the hatchway at the after end. They were made from three laminations of  $\frac{1}{2}$ -inch marine ply glued together and bolted into position to set. The beam across the front had to be  $3\frac{1}{2}$  inch wide to allow for the angle on the front panel and the camber of the deck, and still leave sufficient "meat" at the centre line.

## Finding the correct angles

For obvious reasons these parts were made slightly over-size and planed down to give the correct angle for the front and rear panels after bolting in position.

The sides were then made from  $\frac{1}{2}$  marine ply to BS 1088 spec which was used throughout, and glued and screwed into position. To receive the roof, shelves were fitted to the side panels, their top surfaces roughly shaped to the camber required for the

roof. Rebates were cut to take the ends of the roof beams.

Before the front and rear panels were glued up they were shaped and fitted, and laminated beams were fastened to the top edge, with the laminations parallel to the panel. Roughly shaped to the camber of the roof, these beams were made slightly oversize. This method was chosen in order to save weight. A horizontally laminated beam in this position would have had to be very wide to fit the angle of the front panel and the camber of the roof. Triangular section pieces were fitted at the corners and the front and rear panels were put in with their deck beams already attached. At this point the main deck was cut away to make it possible to work from inside. It had to be done some time!

The roof beams were made of three laminations of  $\frac{1}{2}$  ply  $1\frac{1}{2}$  inch wide, glued together and clamped up in a jig which was simply made from a wide plank with blocks screwed on to it to give the correct radius.

The beams were then fitted and the carlines for the hatch way. These, and the shelves, were then faired up by planing, using battens, a square of hardboard and a radius template to

test that all were true before the  $\frac{1}{2}$ -inch ply roof was screwed and glued into position.

Runners for the hatch were made from  $1\frac{1}{2}$  x  $\frac{7}{8}$  inch mahogany with  $\frac{1}{2}$  x  $\frac{1}{2}$  inch pieces glued and screwed along the sides, corresponding pieces fitted inside the hatch sides to run beneath them. One side of the hatch is only screwed into position, so the hatch can be taken off if necessary.

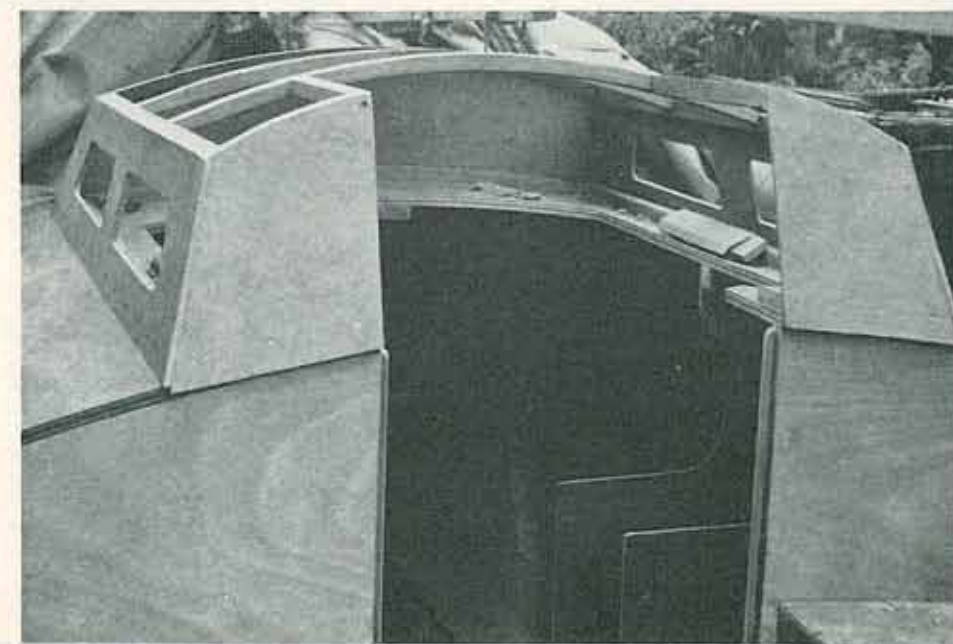
The hatch cover itself is 6 inches longer than the opening so it can be pushed aft to overhang when the top washboard is left out for ventilation at night. It is very effective in preventing drips and driving rain from entering.

## Fitting Perspex windows

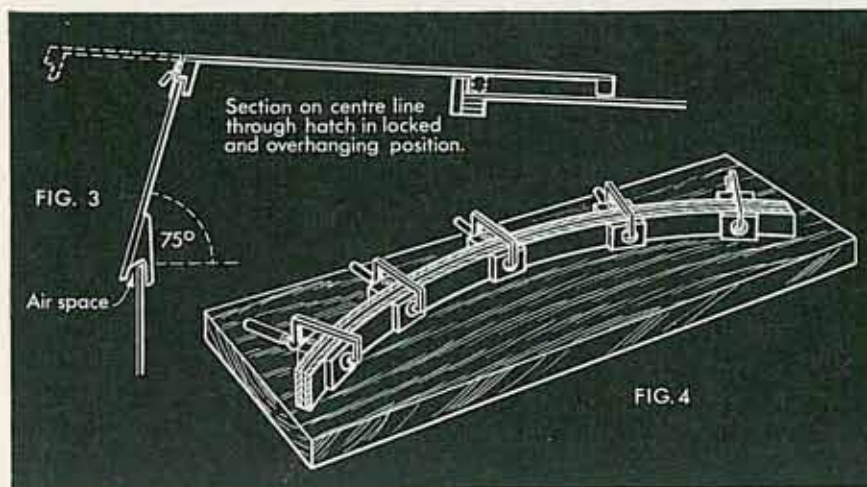
Hand rails were made from  $1$  x  $1$  inch mahogany with blocks of the same material between the holds. This is far easier than cutting them from one piece and gives quite a neat appearance.

The windows were made from  $\frac{1}{4}$  inch Perspex with ply frames of the same thickness cut from sheet in one piece, the two being bolted in

Roof beams were made by laminating strips of marine ply (see sketch on the next page). The correct curvature for shelves and carlines was achieved by planing, using a hardboard radius template as a check.







position with 3/16 inch brass counter-sunk head bolts, spaced about 3 1/2 inches. Perspex and frames were bedded in Sealastik.

The top washboard was fitted with two "legs" which fit inside the washboard below it. They are arranged to leave a gap of about 1/2 inch between the two boards for ventilation when the hatch is locked, the top board overlapping to prevent water entering.

#### A useful shelf for small gear

Half-round beading covers the joints between the sides and the front and rear panels, and the roof edge is rounded, the paint being taken about 1/2 inch down the side below the joint.

Right, battens under the deckhead spread the load of the coachbolts. Far right, finishing details include handrails, mouldings to cover ends of ply, and window frames made from ply sheet.

A coaming was fitted round the edge of the deck inside the doghouse to finish it off, taken 1/2 inch below the deckhead. A quarter round beading was fitted into the angle between deckhead and coaming to give a neat appearance from below. The opening had been cut in the original deck slightly smaller than the area of the doghouse, giving a very useful shelf all round.

When finally fitted, the doghouse was bedded down in a good layer of mastic and no leaks have appeared after three seasons, in spite of the



Figure 3, left, the arrangement of the topmost washboard to allow ventilation. The overhang of the hatch cover is also shown. Figure 4, right, illustrates the jig used for making roof beams.

fact that there is no beading between the sides of the doghouse and the deck.

The exterior was originally varnished, with the roof painted to match the deck. However, the difficulty of keeping varnished plywood uniform in colour caused me to paint the sides and front white this year, which seems to blend in quite well with the white sheerstrake.

At first I was a little worried in case I might be adding too much weight but when the job was done I found the weight to be only a few pounds more than the section of deck which was removed.

Although an area of only 3 ft. 3 in. x 2 ft. 10 in. is gained with 5 feet of headroom, it is just where it is needed for chart and galley work. Furthermore there is much more light in the cabin than in the standard boat. I am sure that any Mystic owner would appreciate these advantages and the joy of being able to stand nearly upright to put on his trousers.



HOW THE LAZY man suffers every time he tries to lace up his sail cover with an unwhipped lacing.

Yet ordinary servings are difficult to do well on thin stuff. A quick method is to use those heat shrinkable plastic sleeves, but they are excessively expensive. At least the good ones are—and the cheap ones seem apt to drop off after a month or so of wear.

Among suggestions made by readers, two sound effective, even though slightly messy. One is to whip in the normal way, after having first coated the end of the codline with varnish. When the varnish dries it stiffens the end of the

## Whippings for lacings

line as well as sticking the whipping in place.

A similar dodge uses Evostik instead of varnish.

For a really long-lasting job, which gives a rigid end to poke through the eyelets, Araldite seems the best of all. With Araldite you need not actually whip the end at all. Just put a blob of the mixed resin and catalyst on a scrap of greaseproof paper (from the

liner of a cereal packet) and work it into the end of the line.

Then fold the paper and twist the line inside it, twirling to a point. Leave to dry; this can be the one snag in the process because it takes a couple of hours unless you arrange heat to accelerate the cure.

When really hard (the next day) the solid end can be filed and cut to shape if necessary, though with a bit of practice you can get a good shape in the moulding of it between your fingers.

These solid ends never come off and you can make them up to a couple of inches long if you want. About an inch is a good length.

PRACTICAL BOAT OWNER

# Effective fire fighting gear is easy to install

BY THE EDITOR

SO MANY BOAT OWNERS assume that a fire on board is something that happens to the other fellow—never to themselves. Yet the fire risk is always present wherever there is an engine or galley.

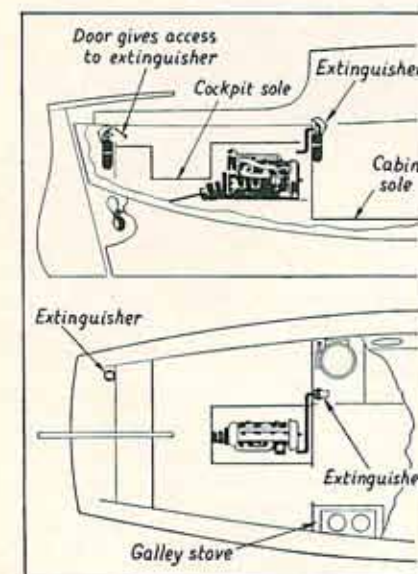
I decided to become one of the more sensible owners and fit proper fire protection equipment. In its general power arrangements the craft is representative of thousands, with a semi-buried petrol engine in the cockpit and a galley just inside the cabin. I discussed the problem with Graving (Colnbrook) Limited—a company with long experience of fire protection for aircraft as well as for boats. Possibilities ranged from a simple hand fire extinguisher to a comprehensive automatic system. The cost of a fully automatic system was too high and was really not justified. I compromised with a Graving dual-purpose extinguisher and the simplest detection equipment. For the average auxiliary powered yacht this is particularly suitable and moreover, is a system that can be installed by the owner quite easily.

The installation was planned with two main principles in mind:

You must be able to get to the extinguisher:

The extinguishant must be able to get to the fire.

To be accessible, an extinguisher



must not be 'on the other side of the fire', so it was decided that one should be located on either side of the likely fire zone, in the positions shown in the drawing. One hand extinguisher was, already on board, sited to be convenient to the helmsman.

The second extinguisher was to be forward of the engine, because the worst case was assumed to be when a fire started in the region of the petrol engine or galley (bottled gas).

This one is the Graving dual-purpose model 38H which can be discharged *in situ* in its bracket or can be instantly detached and used in the hand.

#### Choice of Extinguishant

Assuming that the engine, the fuel system, cooking gas bottle and so forth have all been installed so as to keep the risk of fire to a minimum in the first place, the most likely danger points are going to be in the vicinity of the carburettor, the fuel pump or the drip tray.

The extinguishant to be used in this region was selected with those thoughts in mind. It is best called BCF; but for those who *must* know, its full name is bromochlorodifluoromethane. It was developed by ICI in conjunction with Graving. Its main advantage for boat use is simply that it emerges from the nozzle as a heavy vapour, and is, therefore, able to penetrate all those deep dark spaces under the cockpit sole and round the bilges. Thus it overcomes one of the problems of a boat on fire—getting at the source of the fire itself.

BCF has certain other advantages. As an extinguishant it is faster and more efficient on a weight basis than any other comparable fire extinguishing agent and is rated as safe in use as carbon dioxide. It is less toxic than carbon tetrachloride. BCF has no effect on materials such as metals, timber, plastics or textiles and will not harm glass fibre hulls. It can be used on petrol fires, on burning paints and other liquid combustibles.

The best position for the dual-purpose extinguisher would have been on the side of the engine casing, the



The simple pipe-run brings the gas from the bulkhead-mounted bottle to a point near the carburettor.



Above: just one hole had to be made.

Below: fitting the bracket on the forward face of the bulkhead (see sketch opposite).





bracket nozzle poking through near the carburettor. But that was not practicable in this case, and there was need for a short run of half-inch bore copper tube to lead the extinguisher to the primary danger zone. The capacity of one of these bottles is sufficient to fill the engine casing completely, as well as the volume under the cockpit sole of this particular boat several times over, but it is sensible to start it off near the likely ignition area. Obviously this 'coverage' will depend on the installation concerned, but as a yardstick it can be assumed that one of these extinguishers will inhibit a 50 cu ft engine bay with no airflow passing through it.

The outlet end of the pipe needs no special fitting, but the inlet end must be joined to the nozzle on the extinguisher mounting bracket. The nozzle to which the copper tube (if any) must be attached is threaded with a male  $\frac{1}{4}$  in. British Standard Pipe thread. A corresponding fitting must, therefore, be attached to the copper discharge tube, and the easiest way to do it is to use a compression fitting which can be obtained from DIY shops and good ironmongers. Another way is to use Yorkshire ready-tinned fittings which turn into a soldered joint with the application of a little flux and local heat from the boat's own cooker or from a Ronson gas torch. (But be careful with the naked flame!)

The pipe run from the bottle may be up to four feet in length, but the shorter the better. In this case it was a matter of about 18 inches, with a couple of right angle bends, for which ready-tinned elbows were bought . . . after some abortive attempts had been made to bend one piece of tube into the required shape.

Once the location had been deci-

The detector is easily fitted with a couple of screws.



## NEW AVONS

THREE NEW inflatables from the Avon Rubber Company make their debut at the Boat Show. Known as the Red Rover MK I, MK II and MK III, they will sell at £90, £105 and £125 respectively. The MK III is seen above.

All three models, which have been produced to fill the gap between the small Avon dinghies and the large Red Cat models, come complete with floorboards, wooden transom, bellows, oars, seats, lifelines, lifting handles and repair kit. Each boat packs down into a kit bag, with the floorboards designed to stow flat on the floor of a car boot.

Envisaged uses for the MK I and MK II craft are as fast yacht tenders, pleasure runabouts and for anglers. The MK III is a party boat and will provide a stable,

mobile platform for sub-aqua clubs.

Basic construction of the Red Rovers is a heavy-gauge nylon fabric impregnated and coated with an anti-abrasion and weather resistant hypalon-neoprene compound. Finish is a light grey, an advance over the more orthodox black finish which tends to heat up in the sun.

Each craft is subdivided into three air-tight chambers which are inflated to a pressure of only two pounds per square inch. A feature of the design is a raised floor which acts like an inverted keel. When the craft is taken into a tight turn, water builds up underneath the floor allowing the craft a good slip-free grip on the water.

Length, beam, outboard power and seating capacity, as follows: MK I; 9 ft 6 in by 4 ft 4 in, 6½ hp, 4-5 persons; the MK II; 10 ft 6 in by 4 ft 8 in, 10 hp, 5-6 persons; MK III; 12 ft 6 in by 4 ft 10 in, 10 hp, 6-7 persons.

Delay is probably the worst enemy; better to stop the engine and fire the bottle in that order—stopping the engine will at least restrict the fuel supply feeding the fire—and ask questions after. The full discharge will last for 15 seconds, but after about 10 seconds that little red light should have gone out. That means you can release the trigger and give yourself a couple of seconds to turn off the fuel and make a cautious investigation with the dual-purpose extinguisher unclipped from its bracket and now in the hand. Be ready to shoot off the rest of the bottle at once if the fire re-lights.

Above all, don't doubt the evidence of the red warning light. It could be a false alarm, and if it is you will waste a little BCF. If it is a real fire and you lift the hatch and feed the fire with oxygen in the air, you risk serious injury and the loss of a boat.

### The cost of safety

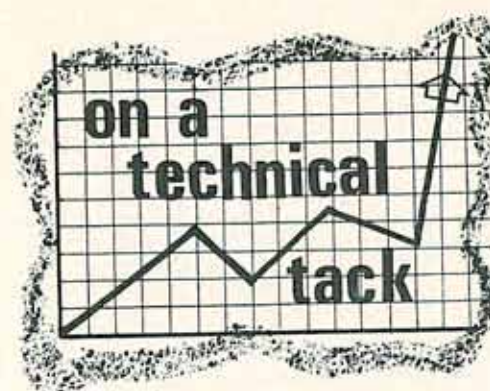
One of these dual-purpose extinguishers costs £18 1s 3d, complete with bracket. But Gravinier, of Colnbrook, Slough, Bucks, will supply a kit which contains extinguisher, bracket, detector, warning lamp, switch and five yards of fireproof cable, for £28.

# IF YOU WANT TO COMPARE BOATS—here's how to do it

By "The Artificer"

WE ALL COMPARE the boats we see in qualitative terms. 'She has a fine run', we say, or 'There she is, the narrow-gutted old bitch'. This last is a true one from an Ancient Mariner of Falmouth when he recognised my then boat, an even more ancient Falmouth quay punt. But comparison implies measurement; it is only in the more extreme cases that one can judge by eye, and even then one can come to very wrong conclusions.

The way to compare entities so diverse as boats is to use the ratio or proportion between different quantities. Some of the simpler of these ratios have passed into the current boat-owners' talk. Doughty ocean racers are credited with ballast ratios (ballast weight/loaded displacement) of over 50 per cent, and many people are familiar with the idea that the speed of a hull in knots is related to the square root of the water line length. ( $V/\sqrt{L}$  ratio). By



*A monthly feature dealing simply but soundly with fundamental points of yacht architecture and marine engineering*

comparing actual speed with this ratio one can gauge how hard a displacement hull is being driven, the normal maximum being with  $V/\sqrt{L}$  approximately equal to 1.4 where V is in knots and L in feet. But there are ratios which are much more useful than these, even if they may be a little more trouble to work out.

Length/beam ratio indicates whether the boat is beamy or not—the lower the ratio the beamier she is. But it illustrates a typical hazard, because the larger a boat is the larger her L/B needs to be. This reflects the fact that if a hull is scaled up the stability increases as the fourth power of the scale factor, but the heeling moment of the sails only as the cube. To understand this one has to think of a cube, each edge of which is one foot long. The area of each side is then  $1 \times 1 = 1$  square foot, and the volume of the cube  $1 \times 1 \times 1 = 1$  cubic foot. But if the linear dimension, the length on one edge, is doubled, so that each edge is 2 feet long, each side of the cube has area  $2 \times 2 = 4$  square feet.

### Scale factors and dimensions

To compare the area of sides of two cubes, one of which has edges twice as long as the other, one has to apply a factor equal to the scale factor squared, i.e.  $2^2 = 4$ , or two to the power of two. This is why in algebra the power of two is called 'square'. Similarly, for volumes the scale factor or linear dimension has to be raised to  $2 \times 2 \times 2 = 2^3$ , two to the power of three, or two cubed. The same of course applies when the linear

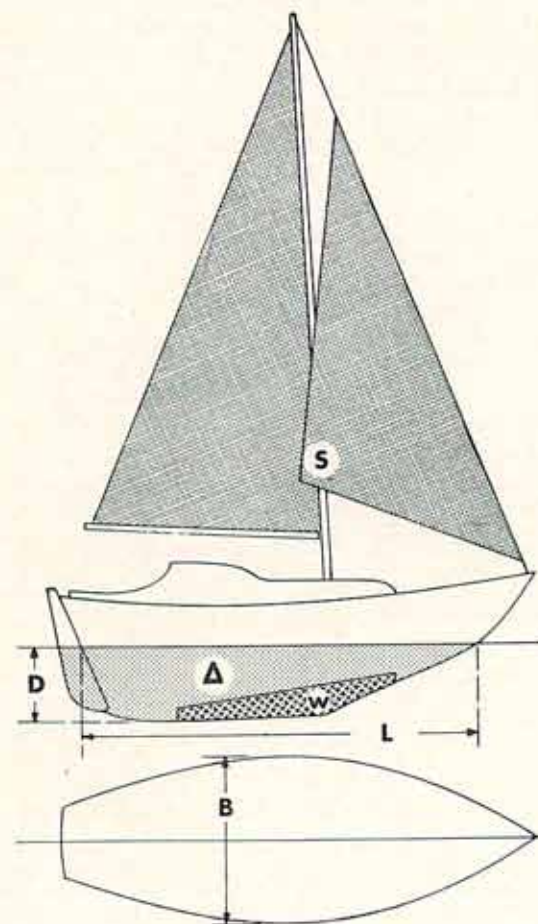


Fig. 1—Basic elements for the ratios discussed in this article:

L=length on the waterline—basic measurement of size

B=extreme beam

D=draught

S=sail area, representing the motive power

Δ=displacement—the weight of the fully equipped yacht, giving an indication of resistance, and of space inside the hull. The symbol is Greek capital delta, decreed by convention for displacement



scale factor is not two; if the linear scale is increased by five times, areas are increased by  $5^2=25$  times, and volumes by  $5^3=125$  times. Since weights are proportional to volumes they too are governed by scale factors which are cubes of linear ones.

Returning to stability factors and heeling moments, stability is represented by a weight (equivalent to a volume) multiplied by a lever arm—so linear scales are involved to the fourth power. Heeling moments are proportional to sail area times a lever arm, area x linear, or third power. So if one doubles the size of the boat, keeping proportions the same, the stability is increased by a factor of  $2^4=16$ , while the heeling moment increases as  $2^3=8$ . This means the larger boat will stand up to twice the wind pressure for the same angle of heel. In practice it is usually more advantageous to increase L/B and benefit from reduced resistance.

#### Qualities of performance

For reasons such as this it usually pays to use ratios only for the comparison of boats of roughly the same size. The principle can be extended to craft of very different sizes (this is of course the basis of the tank testing of models), but the method calls for some mathematical expertise.

What ratios can we use to measure the qualities which determine performance, in its widest sense: sail area for size, displacement for length, and so on? We can't just divide sail area by length, or displacement by length, because the scale factors would not be valid for the reasons I have explained: we have to juggle with squares and cubes. The most useful ratios in practice are the ones which can be worked out from the details normally given about any boat, without measuring mid-section areas or the like. The ones I think essential are given in the table, together with the values I have worked out for some popular standard craft, and one or two others.

The information is in very condensed form, but it will give a definite frame of reference and help to bring logic into the discussion of boats' qualities—and into the choice of boat to buy. It is interesting how close the beam ratios are (all between 2.4 and 3.0 except for **Sumner**) although quite a range of size is covered. **Sumner** also shows up clearly for her extremely light dis-

PUBLISHED FIGURES FOR SOME WELL-KNOWN YACHTS

	LWL ft	B ft	D ft	Δ ton	S sq ft	W ton	£	TM
National 23	19.0	6.42	3.66	0.85	220w	0.36	—	—
Signet 20	16.0	6.70	3.00	0.96	192w 257g	0.36	1300	2.7
Hurley 18	16.0	6.70	3.20	1.05	160w 188g	0.45	860	2.7
Golif	19.4	7.40	3.20	1.28	214w 251g	0.47	1550	4.1
Kestrel 22	19.7	7.10	2.25 3.25	1.33	194w	0.45	1400	4.0
Magyar 7	20.3	7.50	2.30	1.38	215w 241g	0.43	1000	5.0
Hurley 22	20.0	7.40	3.70 2.50	1.74	203w 290g	0.58	1350	4.3
Arden 4	18.5	7.25	3.50	1.75	250f	0.95	1800	4.0
Westerly 22	18.3	7.40	2.25	2.00	230w	0.45	1925	4.2
Westerly 25	21.0	7.40	2.50	2.30	276w 312g	0.65	2100	4.2
Kingfisher 30	25.0	9.00	3.90	3.50	320w	1.50	3750	9.0
Sumner	32.5	6.75	4.00	3.80	635g	1.16	—	9.5
Golden Hind	24.0	8.50	3.40	4.00	320w	1.25	2800	8.0
Warrior	26.5	10.50	5.00	5.40	452f	2.15	8900	9.7
Nicholson 32	24.0	9.25	5.50	6.15	425w 557g	3.04	5500	9.6

The Figures you usually get



The Figures you really want



RATIOS FOR SOME WELL-KNOWN YACHTS

Based on published data—in order of increasing displacements

	Beam ratio L/B	Draught ratio L/D	Displace- ment ratio $\Delta/(L/100)^3$	Sail area ratio $S/\Delta^{2/3}$	Ballast ratio $W/\Delta$ per cent	Cost per ton £/TM
National 23	2.96	5.2	125	244w	42	—
Signet 20	2.40	8.0 5.3	234	196w 265g	37	480
Hurley 18	2.69	5.0	257	157w 184g	43	320
Golif	2.62	6.1	177	196w 214g	37	380
Kestrel 22	2.76	8.7 6.1	177	156w	34	350
Magyar 7	2.72	8.8	157	175w 196g	19	200
Hurley 22	2.70	5.4 8.0	218	141w 202g	33	315
Arden 4	2.55	5.3	278	173f	54	450
Westerly 22	2.48	8.2	323	145w	22	460
Westerly 25	2.84	8.4	248	159w 180g	27	500
Kingfisher 30	2.78	6.4	221	139w	43	420
Sumner	4.80	8.1	111	382g	30	—
Golden Hind	2.82	7.1	290	127w	31	350
Warrior	2.52	5.3	287	147f	40	920
Nicholson 32	2.61	4.4	445	127w 166g	49	570

Notes: L=length on waterline; B=extreme beam; D=draught; Δ=displacement; S=sail area; W=ballast weight; TM=Thames measurement tonnage. Units: feet, square feet and tons; w=sail area with working jib; g=genoa; f=with 100 per cent foretriangle. Two values for L/D are for twin-fin and fin-keel versions respectively.

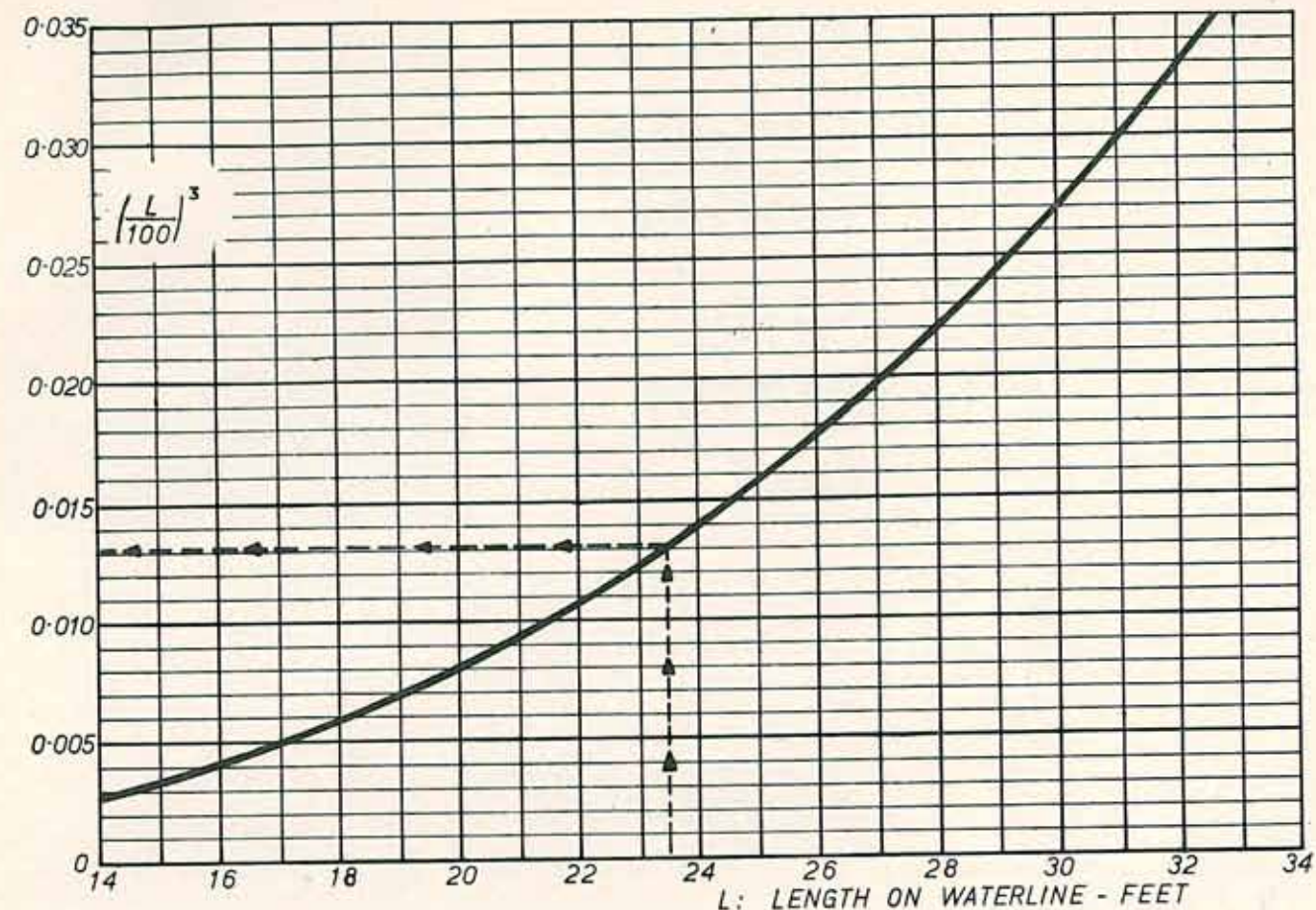
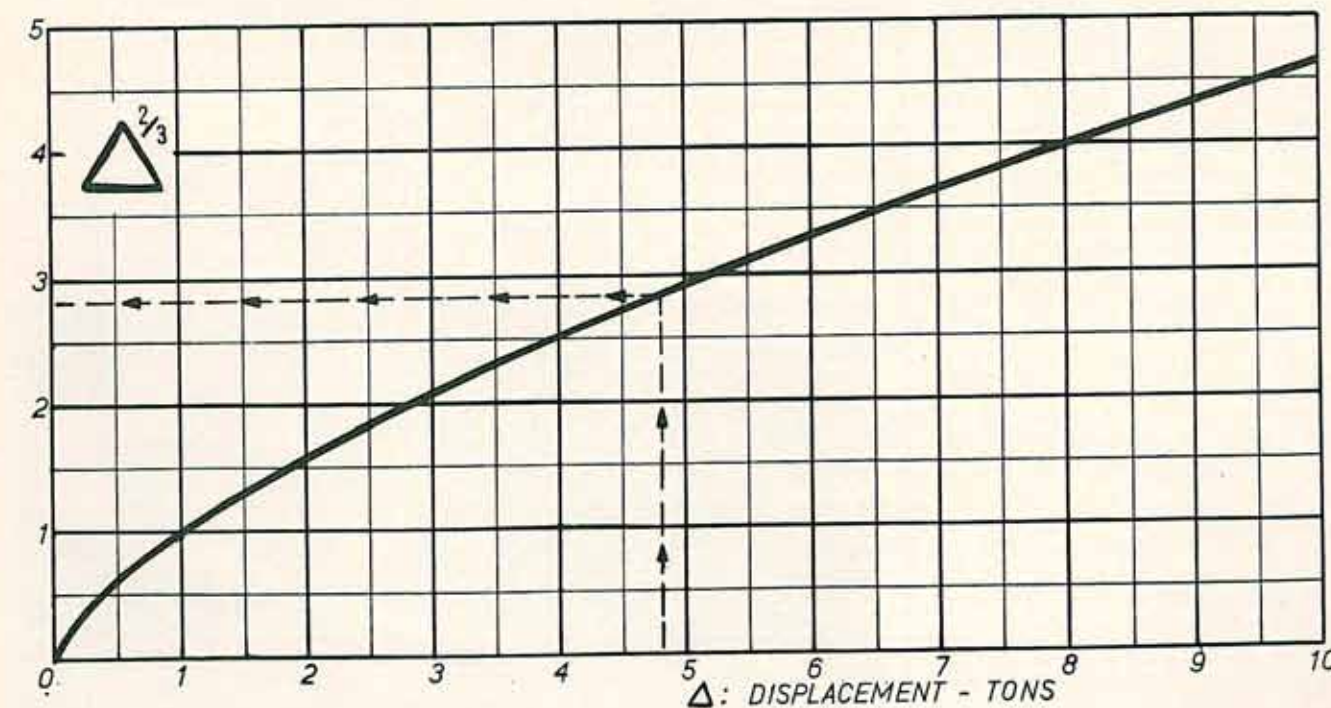


Fig. 2 (above)—To calculate displacement ratio, one of the most useful ratios, one has to divide the displacement in tons by  $(L/100)^3$ . To save calculation this can be obtained from the graph: start at the value of L, length on the waterline, for the design in question, and follow straight up to the curve; strike across horizontally and read off the value of  $(L/100)^3$ . The dotted line shows, as an example, a value of L of 23 ft 5 in, for which  $(L/100)^3$  is 0.0131. Values of displacement ratios for normal craft will range between 100 and 500. L/100 is taken instead of L to give convenient values.

Fig. 3 (below)—For the sail area ratio one needs  $\Delta^{2/3}$ , which can be obtained on sight from this graph in the same way as  $(L/100)^3$  from Fig. 2. The dotted line example shows that for a displacement of 4.8 tons  $\Delta^{2/3}=2.8$ .





placement and large sail-area ratio. The 54 per cent ballast ratio for the Arden 4 is hard to credit in a boat of this size and displacement ratio, but seems to be in accordance with the published figures.

Very comparable boats (from the basic design proportion point of view) are Kestrel 22 and Golif. Beam ratios are similar, draught and displacement ratios identical. Golif has more sail, with higher ballast ratio and slightly bigger beam ratio to give the extra stiffness needed to carry it. She costs a little more per ton.

Thames tonnage is used as the basis of cost ratio, because it is still the most familiar measure of the 'amount of boat', crude though it is. Gross tonnage, which is based on internal volume, would be better, but it is not usually available. Some modern boats are difficult to measure for TM, Warrior being an example; her cost per ton is even higher than it might be because the LBP (length between perpendiculars) for Thames measurement is artificially low.

#### Ratios help in choice

I don't want people to give up choosing the boat that appeals to them subjectively, but I do think a set of measurement ratios helps to compare one boat with another for the intending buyer, as well as being an essential tool for the yacht architect. Broad beam, shown by a low L/B, gives stability, as does a high ballast ratio. Draught, shown by low L/D, gives a grip on the water, and windward ability. A heavy displacement for the length, shown by a high displacement ratio, means that a hull will need more driving. A high sail-area ratio means plenty of sail for light winds. Cost per ton should be reflected in quality of construction, materials, finish and equipment. Many other factors come in, such as length of overhangs, wetted surface, prismatic coefficient and others, but I don't think they are as revealing to the amateur as the ones I have listed first.

Too much mysticism has been allowed to cloud the issues in the past. Working out the ratios is not too laborious, particularly if you can use a slide rule, and to help I give graphs for the quantities which are more difficult to calculate. Meanwhile, I shall press the Editor to tabulate these ratios for all designs reproduced in PBO!

(Right. We will—whenever possible. DD)

## SMALL CRUISER ROOM...

### Large dinghy feel

ROOM IN THE cockpit for half-a-dozen adults and a forward cabin with two fixed berths for week-ending all within an overall length of just over 18ft. This is what Seafarer, the latest addition to the Small Craft range of boats offers.

Designed by Alan Buchanan, and built by Small Craft Blue Hulls, of Blockley, Glos, Seafarer is said to combine the responsiveness and 'feel' of a large dinghy with the stability and seaworthiness of a cruiser.

She has a 9ft cockpit capable of accommodating six adults without upsetting her sailing trim. The small cabin makes a snug shelter when it starts to 'blow', and can also be used for a changing room for mixed bathing parties.

Over 5 cwt of ballast in Seafarer's iron keel and  $\frac{1}{2}$ in steel centreplate, together with a draft of 4ft 9in with the plate down, combine to give her a useful windward performance. With the plate up she draws only 18in making her extremely easy to launch and recover.

The hull is resin-glass with a wooden deck and coachroof.

Spars are light alloy, and the mast is pivoted at the heel, enabling it to be raised and lowered single handed, using a special crutch. Included in the standard specification is a pulpit, stainless steel standing rigging, and cam-cleats for jib and main-sheets.

According to one report, the centreplate winch is so simple and powerful that a 10 year old child can handle it.

Adequate auxiliary power for the Seafarer is provided by a Seagull Century Plus or 6 hp Mercury outboard.

To cater for owners with handicap racing inclinations, a suitable genoa is available as an extra and, the makers of Seafarer recommend that it is used with a pedestal-mounted sheet-winch and roller-leads, also available as extras.

Small Craft are also marketing the Seafarer in a kit form suitable for home-finishers. The kit comprises a resin-glass shell and prefabricated kit of parts to finish it. This includes spars, keel and centreplate, fittings and rigging, fastenings, paint and varnish.

#### Main dimensions

LOA 18ft 3in.  
LWL 16ft 7in.  
Beam 7ft 2in.  
Draft plate up, 18in.  
Draft, plate down, 4ft 9in.  
Total ballast weight 5½ cwt.  
All-up weight 15 cwt.  
Mainsail 105ft².  
Jib 50ft².  
Genoa 85ft².

#### Main prices

Complete sloop, £550.  
Hull and parts to complete £450.  
Mainsail with battens and sailbag, £28.  
Jib, with batten and sailbag, £12.  
Genoa, with battens and sailbag, £19.



# Springtide—four berths, two keels

## Test report on a new and moderately priced shoal-draft cruiser

SHOAL DRAFT, four berths, a separate WC compartment and standing headroom—those could be the main headings of many a man's shopping list.

Springtide, a new design by Kenneth Evans, AMRINA, meets these four requirements. Her length of 26ft is near the minimum that will allow standing headroom, except for the tallest of the species, without producing ugly top hamper. It also results in a size of boat which is convenient for family cruising. Four people can easily live for two or three weeks aboard a boat of this size, yet she is not so big that she becomes too much of a handful, either for maintenance or for handling at sea.

Springtide's shoal draft is achieved with the aid of twin bilge keels, of  $\frac{1}{4}$  inch galvanised steel plate, with flanges, or 'heels' on their lower edges to stop them sinking too far into the mud. There is 1,200lb of cast iron ballast on the central keel.

In planning a boat that will allow a party of four to cruise in comfort, the designer has naturally arrived at this sort of size, and has then had to achieve a moderate price level. Not a man to skimp on structure, he decided to leave out the frills. Thus Springtide at £1,760 is not offered with a great amount of fittings and gadgets, but with just about the minimum equipment that would allow a new owner to sail her away and live aboard. Hulls, comprising the bilge and ballast keels, with deck, coachroof and bulkheads, are available for £1,095.

The quoted price includes Proctor light alloy spars, a suit of working sails, a four horsepower Stuart Turner installed, a marine WC, four berth mattresses, warps and fenders, and 25lb CQR anchor with a sensible 15 fathoms of galvanised chain.

In the standard boat the berths are fitted with stowage underneath. There is a working top where the owner must provide his own cooker, with cupboard below and further stowage behind. To make proper use of the boat the things one would need beyond the standard specification are a steering compass, cabin lamp, water tub, and such things as a fire extinguisher, boat hook, bedding and crockery.

Perhaps a pair of sheet winches would be needed for the headsail, though that might not be necessary if each headsail sheet were rove through a lightweight block at the clew of the sail, so as to form a single whip.

Most owners would want to add bookshelves, lockers and such knick-knacks below, but that is work that could extend over several seasons without causing any delay in pleasurable use of the craft.

The large, light saloon invites the attentions of an amateur joiner and gives ample opportunities for an owner to fit this boat out below in accordance with his own (and his wife's) ideas. When this magazine's small party was on board each member had a variety of ideas of his or her own for fittings, which would not only be useful but would also embellish the boat and give a 'homely' look below decks.

Features of the standard accommodation which deserve mention are the provision of two hanging lockers (one wet, one dry), the water-tight double coaming of the forehatch, the well-made sliding main hatch, the good view of the outside world from the saloon windows, and the quite roomy loo.

#### CONSTRUCTION

The 12 mm (half inch) marine plywood hull has a single chine and is of a form specially developed by the designer.

The lines and sections reproduced on the next page show the deep forebody and the clean entry at the bow. There is a sharp rise of floor in her forward sections.

The stern and forefoot run down in a long curve to the ballast keel from which the dead wood extends aft in a straight line.

This not only provides a strong, and level, base upon which

the boat can take the ground—it also has the function of providing directional stability. At least, that is the idea and in our short experience it seemed to be borne out.

Good use is made of the properties of resin glues. The coach roof is in fact a strong deck made with 12 mm ply supported and stiffened by close-spaced laminated beams. The not inconsiderable bulk of the editor (200 + lb) was not enough to induce the slightest spring or quaver in any part of the deck or coach roof.

Looking at the prototype, and at the beginning of a second hull in the shop, it was possible to see that this stoutness of structure is achieved by exploiting the high strength-to-weight property of ply, while giving it the necessary stiffening.

LWL ft	Beam ft	Draft ft	Disp tons	Sail sq ft	Ballast ton
21.42	6.42	2.66	2.5	285w	0.58

Care has been taken, for example, to ensure that there are no large areas of unsupported ply in the bottom of the boat. The designer has also been meticulous in isolating the skin from engine vibration. Substantial engine bearers distribute the load through oversized floors to the bilge stringers which run 23ft through the boat. In keeping with the strength of the rest of the boat, the prototype has a handsome tabernacle fabricated in stainless steel, though one supposes that if any money could be saved most owners would be just as happy to have one in galvanised mild steel.

#### UNDER SAIL

The builders showed faith in their own product by giving us the chance of a trial sail only a few days after the prototype had been launched and before they themselves had been able to get down to development sailing.

When we went aboard, the lightly loaded boat was floating well above her marks, helmsman's seats had not yet been fitted in the cockpit and there were one or two other minor points still needing attention.

The cockpit on the standard version is deep (nearly waist high) and square. In spite of the good headroom below, visibility forward is good when standing and should still be sufficient in the open for a seated helmsman.

With guard rails to lean against, some owners might prefer to 'sit the boat out', making small seats on the side decks where one can always get the best view forward in a boat of this type.

Although this particular boat has a deep cockpit, there is no reason why a smaller, self-draining well should not be built in, with wider side decks. It is simply a matter of the owner making his wishes known when ordering.

Making sail is eased by the wide side decks, well placed hand rails, and the fact that there is only slight camber on the fore-deck and coach roof. A pulpit is standard, but stanchions and lifelines all the way round would be a sensible improvement, to be made as soon as possible after the owner's bank account has recovered from the initial purchase.

To take the boat out of Ramsgate, the little Stuart started

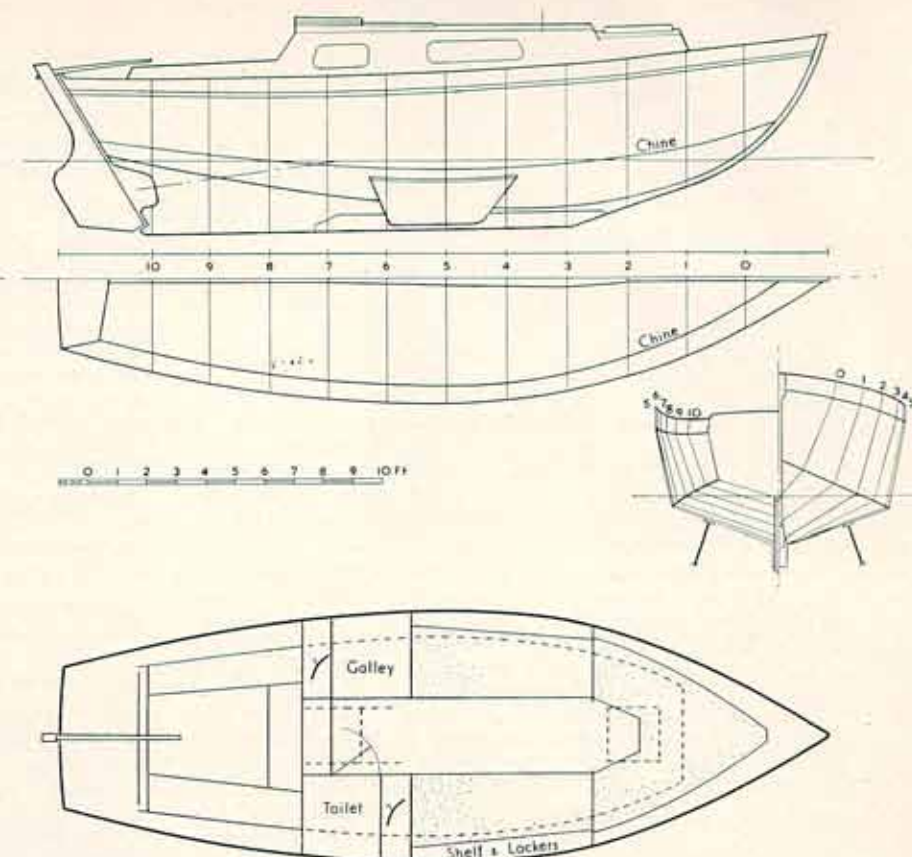
Beam ratio L/B	Draught ratio L/D	Displace- ment ratio $\Delta/(L/100)^3$	Sail area ratio $S/\Delta^{2/3}$	Ballast ratio W/ $\Delta$ per cent
2.46	8.1	250	158w	22

(See "Technical Tack" on page 41 of this issue for an explanation of these terms)





Good side decks and well-placed grab rails. The deck and coach roof are strong, and will not flinch under the crossing traffic when alongside.



Twin keels, and long straight central keel. Note deep forebody and relatively fine sections forward.



Above, forward there is unexpectedly good headroom, but what about a shelf right across the bow? Below, headroom in the saloon. Stanchion takes mast thrust.



first time and ran very smoothly. One sensed that the strong engine bearers, communicating with the considerable mass of the bilge stringers, were providing the inertia necessary to isolate engine vibration from the rest of the boat. Returning from the trip, by the way, the Stuart did not behave so well (the plug was thought to blame) still, it was an occasion when a twin cylinder engine with twice as much chance that one cylinder at least would fire, would have been appreciated.

In any case, many owners would prefer to have more power available, for there is always the office waiting, or Monday morning's return to school.

It's a matter of cost, naturally, but the 7 horsepower Penta MD 1 single cylinder diesel can be installed for an additional £198. It is the sort of decision that must be faced early because it becomes much more expensive if a change has to be made later on.

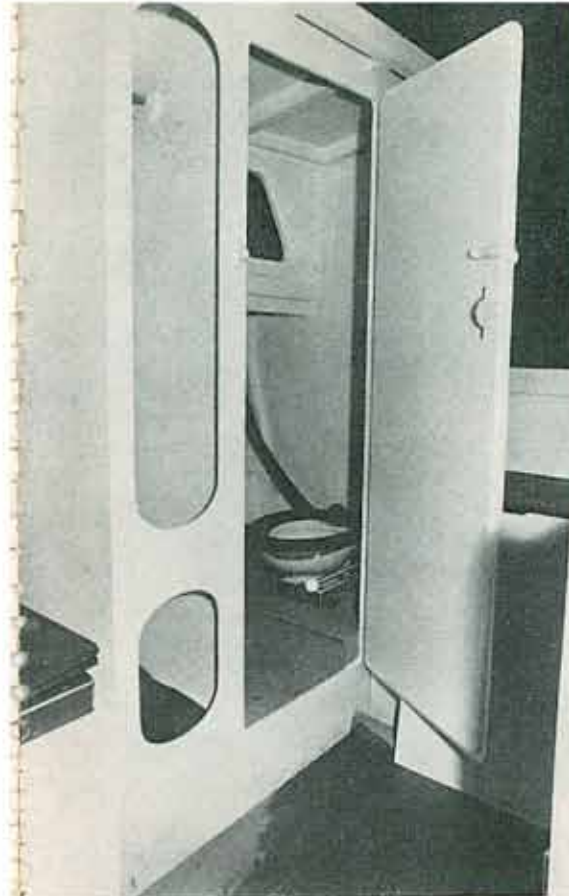
On this day it was blowing quite hard—Force 5 most of the time, and the opportunity was taken by the builders and ourselves to see how the boat would behave if asked to carry her full canvas in conditions when she should properly have been reefed down.

In common with some other chine boats she lay over fairly quickly and settled on her lee chine. Once there she was happy to accept the seas that were running, whether on the stem or on the beam. In this condition she carried a large amount of weather helm—in fact, there was little power left in the rudder to resist any further tendency to luff-up in the puffs.

It was to some extent unfortunate that the boat, without chain, fresh water, and all the other weighty items of cruising gear was so much above her marks.

Of course, the designer can take due credit for having so much in hand for cruising gear, but it meant on this occasion that the rudder was not fully immersed. Thus, after we had taken a few rolls in the main to ease the weather helm, there still seemed to be a deficiency. Running in a quartering sea, the hull held a steady and true course, with no signs of that 'corkscrew' motion which is not unusual in shoal draught boats. That true run was probably to the credit of the long keel.

Obviously, it was too early in the boat's life to form any



A good-sized we compartment with plenty of space for shelves or cupboards. Hanging locker for dry clothes.



She hove-to comfortably with a couple of rolls in the main and working headsail aback. In this condition she would look after herself with tiller left free.

definite conclusions, especially as a lack of sheet winches made it virtually impossible to get the headsail sheeted fully home in that breeze. Naturally the boat would not balance properly in those circumstances. (The condition in which she was being sailed may be judged from the photograph above, taken by John Watney's own special 'wet lens' technique). In spite of all, she showed a very good turn of speed and there is little doubt that when she is tuned up she will be fast for her length.

One overwhelming impression one had of the boat was that she would look after herself in quite rough conditions.

Reefed, she hove-to comfortably, without the helm lashed, and from time to time she was left to her own devices while the assembled party clambered around each other in the cockpit, adjusting sheets or taking turns to be helmsman.

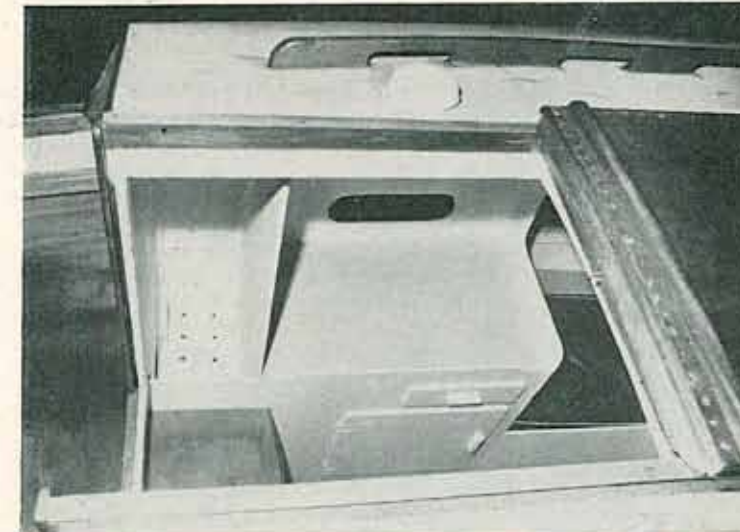
In those conditions she would lie on her chine with headsail shaking and main drawing without shipping water anywhere—not a drop over the lee deck nor over the weather bow.

Indeed it seemed evident from the short sail on that day that the deep body forward, combined with the clean entry and rising sheer were doing all that was expected of them. She is a dry-decked ship.

In discussing what we believed to be a lack of rudder power with the designer, we were impressed by his preparedness to make modifications to both the profile and balance of the rudder itself, whether or not any adjustment to sail balance would be necessary. Indeed Mr Evans, and his fellow directors, Mr Perkins and Mr Wanklin are enthusiasts who are clearly determined to find the best possible realisation of a 7 ton, hard chine, twin-keel cruiser.

Both Mr Wanklin and Mr Perkins have owned boats of this description—some half dozen between them it seems—so they are well acquainted with the problems that come with shoal draft, broad beam, and shallow rudders. For his part, Mr Evans certainly has the technical experience and acumen to achieve the desired effect.

So we look forward to having an opportunity to sail another Springtide in a few months' time when this enthusiastic team will have had a chance to develop her great potentialities to the full. We believe she has a great future ahead of her.



Seagull's view into galley area, with oilskin hanging locker. Below, the standard 4 h.p. Stuart obtrudes slightly into the cabin, but is quickly accessible.





# CHOOSING CHISELS

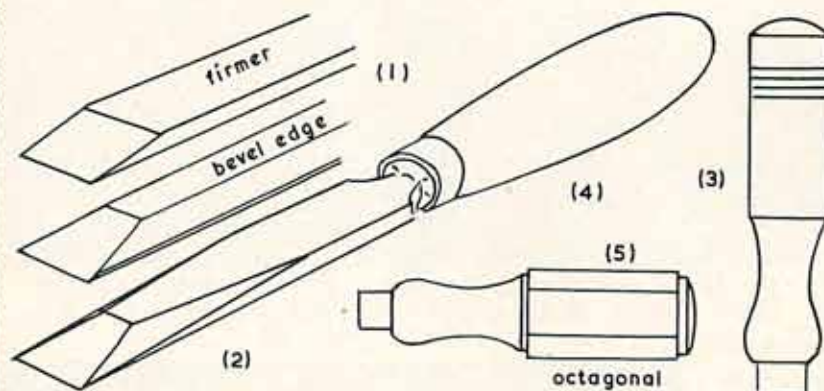
TOOL SHOPS HAVE a bewildering array of chisels. Pop in and ask for simply "a chisel" and you'll find out just how many shapes, types and sizes—and more important, prices there are.

Most of the work encountered aboard and on shore can be done with "firmer" chisels. In their cheapest (though not to be despised) form they have square edges. If someone's buying them for your birthday, plump for the

the waste and pare away the surplus, they have little use now.

Chisel widths are commonly from 1/2 in to 2 in or so. If you are starting from scratch, a 1/2 in bevel-edged firmer chisel might be your best first buy, followed by a 1/2 in, 1 in and 1 1/2 in. For paring broader surfaces, it is easier to work successfully with a wide chisel than a narrower one and a 1 1/2 in chisel is worth having.

Handles have traditional forms.



bevel edged form of firmer. These will get into corners and rapidly clean out those wooden whiskers which left in, ruin so many joints.

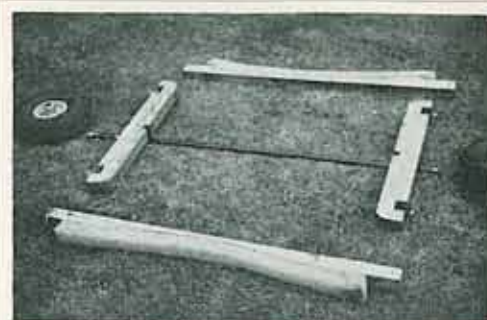
If you have any square-edge chisels and have access to a grinder, the corners can be taken off near the cutting edge to give most of the advantages of a bevel-edged chisel (1) but watch out for overheating with subsequent loss of temper! (2). More slender chisels are called "paring" chisels. They are also long and have uses in cabinet work, but they are not intended for hitting. They have little use on a boat except for some internal joinery. Thicker chisels are known as "mortise" chisels, from their traditional use in chopping out mortise joints, but as it is more usual today to drill out

At one time the cheapest handle was made of ash in a characteristic shape (3). More popular is a barrel shape (4), but a better shape, if you can get it, has an octagonal section which prevents the chisel rolling about (5). These last two were usually made of box wood, which is yellow and very hard.

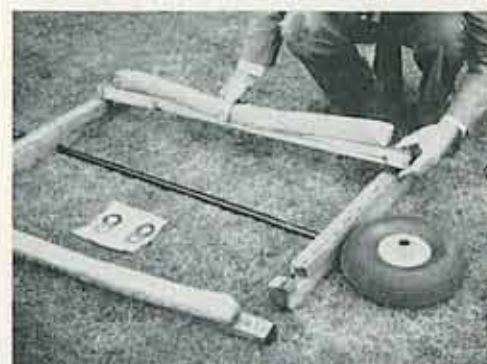
However, there is a good case for modern plastics and the familiar amber semi-transparent plastics handles are quite satisfactory and will stand up to hitting with a hammer, where traditional wood handles should really only be hit with a mallet.

Remember chisels do not float! A line looped around the wrist when working over the side or on the gunwale will save many muttered imprecations!

FEEL INSPIRED? NEXT MONTH  
A BLOW-BY-BLOW ACCOUNT OF  
BUILDING A MINISAIL FROM A KIT



1



2



3



4



9

1 Trolley dismantled. Frame members 42in by 1 1/2 in by 1 1/2 in and 25in by 1 1/2 in by 3in. Axle 1in diameter electrician's solid drawn conduit. 12in diameter tyres.

2 & 3 Cross members fit into notches and fixed with coach bolts. Wire loops at end of cross members for shock cords.

4 Wheels, with washers, fixed to axle with split pins.

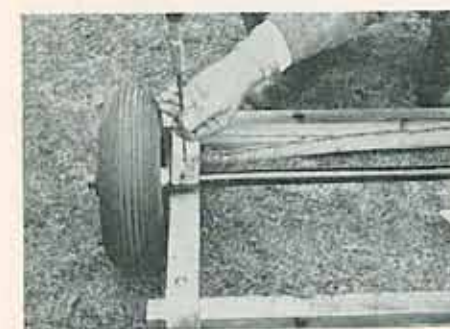
5 Axle slipped into notches on underside of trolley and fixed in position with plate and screws.

6 Finished trolley. Most of the materials came from our 'come-in-hand'. Main direct expense was £5 5s 0d for the pair of 12 x 4 inch pneumatic wheels.

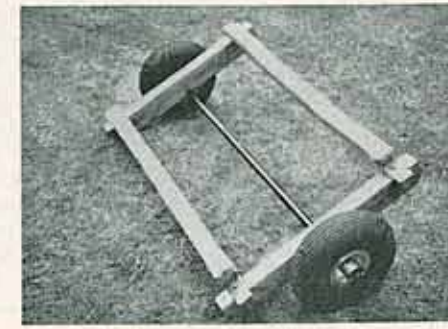
7 End of one roof rack member, showing webbing loops to take mast and boom parts, and spring clip for centre fixing over boat. The webbing is fastened with spring clip over hull, pulled taut across mast and boom and clipped.

8 Loaded for local travelling.

9 Reward for all the effort!



5



6



7

## HOLIDAY BOATING PROBLEM SOLVED

by  
INGRID  
HOLFORD

8

APART FROM THE actual fun of sailing, the success of insinuating a boat into every family holiday depends to a great extent on its unobtrusiveness. It must be readily accessible but not impose too much on the time, comfort or efforts of less enthusiastic members of the family.

Our particular solution is a sailing raft, a Minisail. The hull and sections of mast and boom are less than the length of our car and approximately the permitted weight for our roof.

When in place on the roof rack it adds little to the height of the car. It does not reduce the performance of the car to any appreciable extent nor restrict manoeuvrability as would a trailer. Moreover, it travels free or at nominal charge on Channel ferries.

The boat stays on the car roof the whole holiday except when in use. Plate, tiller, rudder and sailbag pack flat on the hull for the main journey when the boat is full of luggage, but are otherwise kept in the boot.

With long distance transport so simple, there remained the niggling problems of the short distances from car to water's edge.

Our fibre glass hull weighs 90lb and is quite easily lifted off the roof to the ground by one stalwart man and weakling wife. It is quite a strain however to manhandle it down to the water's edge with the said labour force, even supplemented with two children-power, in view of the lack of handles, awkward angle of walking and possible distance from the car park. The problem doesn't always arise.

In Guernsey the locals were fascinated by the raft, stood around and gaped when we

unloaded and then all joined in to carry it to the sea.

In France the locals were fascinated by the raft, stood around, gaped as we unloaded—and continued to gape as we struggled seaward, alone!

One needs to be comfortably independent and so my husband built a small trolley, stowed easily in sections at the back of the boot for the main journey but sitting assembled on top of the hull for local travelling.

When balanced properly the weight of the raft keeps it firmly in position on the trolley and shock cords over the hull to loops on the trolley are only needed over rough ground or on slopes.

The thick pneumatic tyres cope with everything but very soft dry sand. Sailing gear, mast and boom are held on the hull with shock cords and everything gets to the sea edge in one journey.

The actual strapping of hull, mast and boom to the roof rack is made quick, efficient and neat by using webbing straps from either side, fastened with spring clips over the centre and pulling taut through loops over the sectional tubes to finish in a snap closure. These webbing loops are merely loosened, never unthreaded, when unloading.

For peace of mind we add a fore and aft line over the hull to eyes on the bumpers for long journeys but we have no real reason to doubt that the webbing cross straps, so efficient for local journeys, would not be adequate on their own.

When on top of the hull, the trolley is held in place by shock cords through the loops on the frame to the roof rack.



Compiled by D. L. Goodsell, this is the first in a series of regular surveys for readers of *Practical Boat Owner*. Each month some particular category of equipment will be presented. This particular article takes a look at the more popular manually-operated bilge pumps in use today in the smaller boat, and explains some of the whys and wherefores of their operation, their various merits, and some points to remember not only when buying a pump, but when you come to ask yourself if your present pump is really equal to its task.

IF YOU LOOK UPON your bilge pump as a necessary piece of hydraulic evil to be stowed in some inconspicuous corner of a locker, or as a means of venting your silent feelings about those moored alongside, then remember, one day much more may depend on it than a few wet floor-boards.

All boats with anything that resembles a bilge need some means of removing water and other liquids which may find their way into those too often forgotten regions beneath the floor-boards. This includes almost every vessel except sailing dinghies, rowing boats and river punts. Water finds its way on board in a number of ways. It may be as spray thrown up whilst sailing, rain water, seepage between planks or through the stern tube, or in the most drastic instance by pooping in a following sea or even through stoving-in a plank. Even drinks spilt below come into this category. What is not seen is often not grieved over, but the smallest quantities of liquid... the wrong liquid... in the bilge can cause more damage than one may care to consider.

## For example —

"Well found thirty footer, will go anywhere. A little old, perhaps, and not quite so dry as a modern boat. Pump almost as good as new. Needs priming, of course. Just down there, below, between the companion way steps and the galley."

And who's going to man that when you're caught out

in a Force 8 with your wife as crew, and you've got to reduce sail, and you've already been pooped?

Yes, the bilge pump is not a thing to be overlooked. It may some day prove one of the most vital parts of the ship's gear. At sea, a clean bilge is next to Godliness.

The number of sizes and types of pump on the market nowadays is enough to confuse anyone, but approach the problem systematically and you will certainly be sure of obtaining a reliable unit which is the right size for your boat.

These are the questions you will have to ask yourself:

*What is the relationship between the size of pump and the size of boat?*

*What type of pump is most suitable?*

*Where should it be installed?*

*What about the plumbing?*

## Size of pump for size of boat

When speaking of the size of pump one is usually referring to the capacity. That is, the amount of water which it will discharge with normal effort. This is measured in this country in gallons per minute, often contracted to *gpm*. With mechanically driven pumps the capacity is directly related to the speed at which they are driven, but at present we are concerned only with manually operated pumps, for all boats, with the possible exception

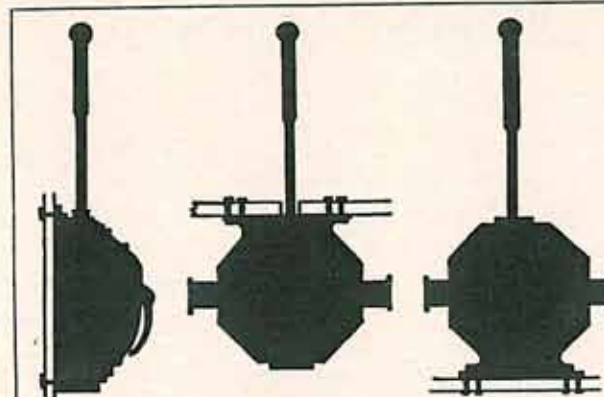
of twin screw motor launches, should be equipped with a manual pump.

The size of pump will depend on a number of factors: Whether the boat is used on inland waters or whether she is a sea-going craft. Whether she is sail or power. Whether she is open or decked and, of course, on the size of the boat. Table 1 gives some indication of the size of pump which should be used. On smaller craft one pump is usually sufficient, so long as it is reliable and well maintained, but on ocean-going yachts of 8 tons or more, two pumps are essential, for in an emergency both can be manned at the same time... except by the single-handed sailor... and one pump should have at least 50 per cent. greater capacity than the other. If in doubt, err on the safe side. Many times a boat has been kept afloat long enough to reach safety by the continuous use of a good pump.

The figures in the table have been based on a number of factors, including the likelihood of shipping water, which is naturally greater for a sailing boat, but the final decision must be left to the owner. A notoriously wet boat, such as the Dragon, will obviously need a more powerful pump than a much slower and beamier craft of the same tonnage. Again, a self draining cockpit is a great advantage, and provided that there is no possibility of leakage through lockers or down the companion way, the figures in the table could be safely reduced by a third.

Some thought must also be given to the human factor. Whereas on dry land and with a full stomach, a healthy young man could pump 40 gallons of water a minute to a height of four feet, on the high seas this would be a different matter. Tired, cold and hungry, it would be asking a lot for a man to pump more than 10 gallons a minute for more than two minutes, even with a good pump. This might lead one to the conclusion that there is little point in installing a pump of greater than 15 gpm capacity, and within the limitations of argument this is true. Energy, though, is not only dependent on the volume of the water—the efficiency of the pump, the depth of the bilge, and, of great importance, the location of the pump, all enter into the question. There is a good case here for the double-acting diaphragm pumps which discharge on both strokes. These are definitely more efficient as less energy is wasted, and would be an obvious choice for the larger yacht.

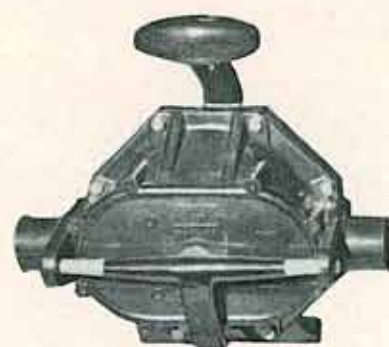
The problem of choosing a pump is one that could be argued all night. There are some measurable factors to be taken into consideration, while others are peculiar to a particular craft, or even to a less than particular owner. For example, an owner who is willing to endure a leaking hull without taking some permanent corrective action may



A particular advantage in small boats is the ease with which the diaphragm pump can be installed. The overall size is much smaller for the given capacity, and there is little restriction on the way in which these units are mounted. The diagram shows how the Henderson diaphragm pump may be mounted on a bulkhead, below a deck, sole or cockpit seat, or above a suitable horizontal surface.

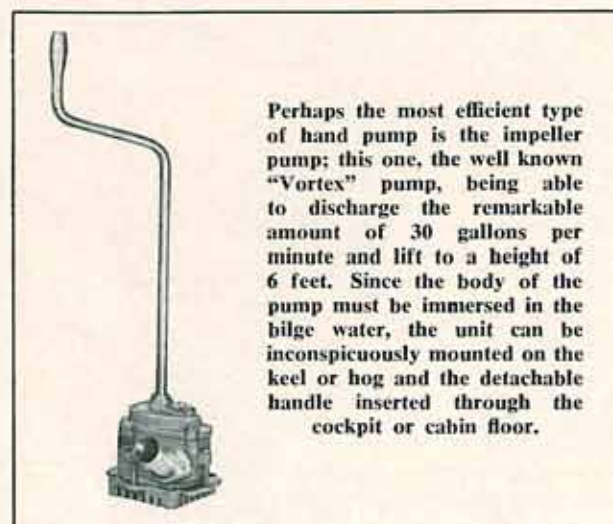
TABLE 1

Type of vessel	Up to 3 ton TM	3 to 6 ton TM	6 to 12 ton TM
Open motor boat for river use	3gpm	—	—
Cabin cruiser for river use	3gpm	3gpm	5gpm
Open or half-decked sailing boat	10gpm	—	—
Cabin cruiser for estuary and coastal cruising	5gpm	10gpm	15gpm
Full decked yacht for coastal cruising	7gpm	10gpm	2 pumps, total 20gpm
Ocean-going yacht	12gpm	15gpm	2 pumps, total 30gpm



Recent years have seen the diaphragm pump come into favour with many yachtsmen and boat owners. Not only are these units small, easily maintained and reasonably priced, but they are virtually impossible to choke, passing matchsticks and other small objects with ease. Some models, it is claimed, will even pass a necktie, but the sailing man may do well to remember that this article of masculine dress when discarded makes an excellent sail tier, and should not be relegated to the bilge.

On the left, the Henderson Mk. 3 B/A, a versatile 9 gpm pump made from pressure-moulded resin-glass and plastic-coated aluminium. On the right, the Whale Gusher 15, appropriately of 15 gpm capacity, a sturdy and effective unit made by Munster Simms Engineering Ltd.



Perhaps the most efficient type of hand pump is the impeller pump; this one, the well known "Vortex" pump, being able to discharge the remarkable amount of 30 gallons per minute and lift to a height of 6 feet. Since the body of the pump must be immersed in the bilge water, the unit can be inconspicuously mounted on the keel or hog and the detachable handle inserted through the cockpit or cabin floor.

be quite used to the idea of pumping out a large volume of water every weekend.

If you bear in mind that the bilge pump is basically a piece of emergency equipment on sea-going craft, and not just a means of removing rainwater, you will not go far wrong in choosing a pump. Always follow the manufacturers' installation instructions, particularly regarding valves and sea-cocks. Plastics pipes, which will fit many pumps, have solved many problems of installation, but remember, before you go to sea; a final check to make sure you have connected the inlet and the outlet the right way round!

On the following pages the characteristics of the three common types of pump are described. Models commercially available are tabulated, with design details and prices.



## Reciprocating pumps

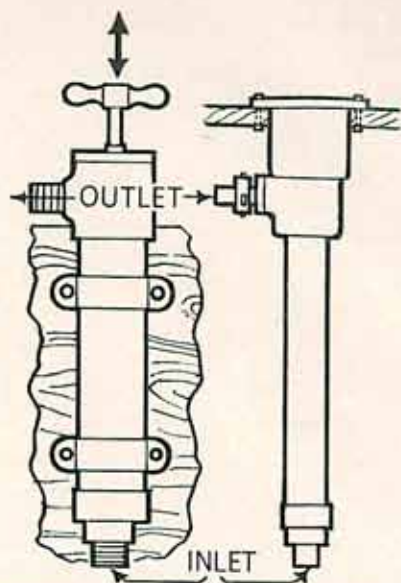
Until recently this was the most popular type of pump for yachts and other small boats, being simple to operate, reliable, and easy to install. Though somewhat less efficient than the modern diaphragm type, they are often preferred on smaller boats and make a good standby to the main pump on larger craft.

They are usually classified by the way they are mounted; the bulkhead fitting type (left) being attached to a vertical face by brackets around the barrel, and the deck fitting type (right) being mounted flush with the deck or seat by a flange at the top. The handle of this type is generally removable to avoid obstruction.

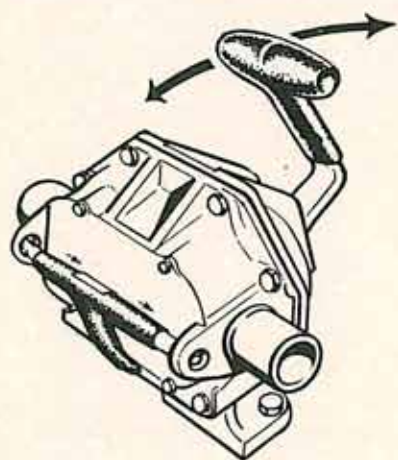
Water is sucked into the chamber on

the up-stroke through an inlet below the barrel, while at the same time the water taken in on the previous stroke is discharged through the outlet at the top to which is connected a pipe which discharges the water overboard. Since the down-stroke is idle, more effort is required to discharge a certain amount of water than with most other types, and for this reason they are rarely made for discharging more than 10' gal/min. Deck discharging pumps of greater capacity, though often found on fishing vessels, are rarely suitable for yachts.

Reciprocating pumps are usually made from brass or gunmetal (expensive materials nowadays), but there has been a trend of late, particularly in America, to make them from plastics.



## Diaphragm pumps



Two factors have influenced the present popularity of the diaphragm type bilge pump: their relative cheapness compared with most reciprocating pumps of the same capacity, which is generally between ten and twenty gallons per minute; and also the fact that they are much more difficult to choke, the valves being larger and of simpler design.

In operation the flexing of a rubber or plastics diaphragm alternately increases and decreases the volume of the chamber, and in doing so displaces water through the one way valve system, water being sucked in on one stroke and expelled on the return. Some larger models are of the double acting type

(in effect, two units bolted together) and so expel water on each stroke of the handle.

Although the pump shown in the sketch has a small fixed handle, almost all are equipped with a longer removable handle, which reduces the amount of force needed to work them, and facilitates mounting lower in the boat—with adequate safety precautions. The problem of mounting is further reduced by their ability to work effectively in almost any position, upside down or on their side, and the single handed sailor could with advantage mount his pump where he can operate it without leaving the helm—beneath the cockpit sole is a good position in a boat which is not self-draining.

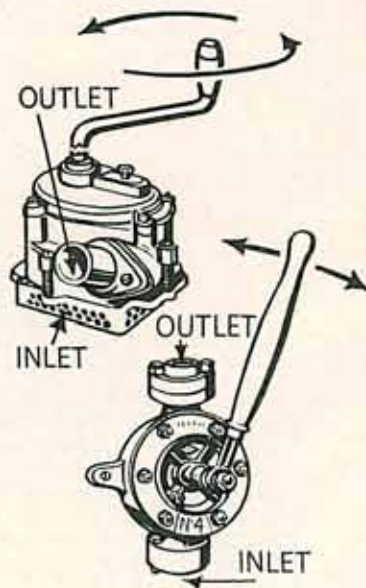
## Rotary and semi-rotary pumps

Of these two types, the semi-rotary is not found in many modern boats, though some years ago it enjoyed a certain popularity on larger yachts. It is, however, rather bulky and difficult to install on small sailing yachts, but, for the older type of cabin cruiser or fishing boat it is quite satisfactory.

True rotary pumps have been devised to work on a number of principles, but the most common for yacht work is the impeller type, of which the 'Vortex' is an example. These units displace water, rather as an electric hair dryer blows air, by driving a fan-like impeller at high speed through a series of gears. Unlike the majority of reciprocating and diaphragm pumps, they are not self-priming, this being overcome by

immersing the body of the pump in the bilge water. All that is then needed is an output hose, the outlet of which must not be more than six feet above the level of the inlet, which is an integral part of the body.

The pump is worked by rotating a detachable handle which is inserted into the top of the unit. Although handles are available in a range of lengths, the location of the pump may still present some problems, since, to be effective, it must be mounted fairly well aft and near the centre line of the boat so that the pump body is immersed in the deepest part of the bilge, but as this pump is intended more for boats of greater than six ton TM this may not be so great an inconvenience.



## BUYER'S GUIDE

## No 1: Bilge Pumps

Model	Manufacturer	Type	Capacity	Pipe size	Fitting	Price
Whale Lightweight Dashboard Pump	Munster Simms Engineering Ltd	Reciprocating	2gpm	1/2 in.	Dashboard	£4 7 6
Whale 1 1/2 in. Non-choke Pump BP21 & 22	Munster Simms Engineering Ltd	Reciprocating	3gpm	1 1/2 in.	Bulkhead	£4 15 0 (BP21) £5 12 6 (BP22)
Whale 1 1/2 in. Lightweight Pump B16	Munster Simms Engineering Ltd	Reciprocating	4/5gpm	1 1/2 in.	Bulkhead	£4 4 0
Non-choke Pump A	Simpson-Lawrence Ltd	Reciprocating	4/5gpm	1/2 & 1 in.	Bulkhead	£6 7 9
Whale 2 in. Non-choke (brass) BP 23 a & b	Munster Simms Engineering Ltd	Reciprocating	6gpm	1 in.	Bulkhead	£8 10 0 (a) £8 15 0 (b)
Whale 2 in. Non-choke (chrome) BP 24 a & b	Munster Simms Engineering Ltd	Reciprocating	6gpm	1 in.	Bulkhead	£9 12 6 (a) £9 17 6 (b)
Whale 2 in. Non-choke Pump BP 25	Munster Simms Engineering Ltd	Reciprocating	6gpm	1 in.	Deck	£13 13 0
2 in. 'V' Bilge Pump No. 1000 & 1001 A White & chrome B All chrome C	Blake & Sons Ltd	Reciprocating	6gpm	1 in.	Bulkhead	£6 13 9 (A) £7 15 11 (B) £8 18 4 (C)
Non-choke Pump B	Simpson-Lawrence Ltd	Reciprocating	6gpm	1 1/2 & 1 in.	Bulkhead	£9 6 9
The '425' Pump /1BR & /ICP	Simpson-Lawrence Ltd	Reciprocating	7/8gpm	1 in.	Bulkhead	£8 2 3 £9 6 0
2 1/2 in. Non-choke Pump No. 1010 'A'	Blake & Sons Ltd	Reciprocating	9gpm	1 1/2 in.	Bulkhead	£13 1 8
Whale 2 1/2 in. Mark 1 BP 28 & Mark 2 BP 27	Munster Simms Engineering Ltd	Reciprocating	9gpm	1 1/2 in.	Deck	£23 2 0 Mark 1 £27 16 6 Mark 2
Mark 3 B/A & Mark 3 T/A	Henderson Pumps & Equipment Ltd	Diaphragm	9gpm	1 1/4/1 1/2 in.	Deck or bulkhead	£9 0 0 B/A £10 0 0 T/A
No. 4281 and 428BR/No.0	Simpson-Lawrence Ltd	Semi-rotary	9gpm	1 in.	Bulkhead	£7 17 6 £14 0 0
Whale 2 1/2 in. BP26	Munster Simms Engineering Ltd	Reciprocating	10gpm	1 1/2 in.	Bulkhead	£17 12 0
New Gusher '10'	Munster Simms Engineering Ltd	Diaphragm	11gpm	1 1/2 in.	Deck or bracket	£8 15 0
The '425' Pump /2BR & /2C	Simpson-Lawrence Ltd	Reciprocating	12gpm	1 1/2 in.	Bulkhead	£11 18 0 £13 16 0
2 1/2 in. Pump No. 1011 'A'	Blake & Sons Ltd	Reciprocating	12gpm	1 1/2 in.	Bulkhead	£11 11 11
Whale 3 in. BP30	Munster Simms Engineering Ltd	Reciprocating	14gpm	1 1/2 in.	Deck	£30 8 0
The 'Tarbert' Pump	Simpson-Lawrence Ltd	Reciprocating	15gpm	1 1/2 in.	Deck	£23 15 0
'S-L' Diaphragm Pump	Simpson-Lawrence Ltd	Diaphragm	15gpm	1 1/2 in.	Bulkhead	£9 0 0
New Gusher '15'	Munster Simms Engineering Ltd	Diaphragm	15gpm	1 1/2 in.	Deck or bracket	£12 10 0
Mark 3 Model A Model B	Henderson Pumps & Equipment Ltd	Diaphragm	18gpm	1 1/4/1 1/2 in.	Deck or bulkhead	£13 10 0 £15 10 0
'Vortex' No. 441	Simpson-Lawrence Ltd	Piston	18gpm	1 in.	Bulkhead and bracket	£20 19 9



## OUTBOARD CARE

# Time to take a look at your Johnson

PICTURES AND TEXT BY JOHN WATNEY

*Practical Boat Owner* shows you in close-up how to service your outboard . . . what to do . . . what not to do . . . and adds some hints on the way to get the best out of your investment.

**STICK TO THE CORRECT** fuel mixture and keep your plug gaps right.

That's the short prescription for a carefree life with a two-stroke motor. It's important to follow the maker's instructions because a petrol-oil mixture is a potential generator of sooty deposits which can foul the plug points. Where there ought to be a

juicy spark there's just a speck of oily carbon, and you have the tedium of a non-starter on your hands.

If you want to avoid that situation, then stick to the prescription.

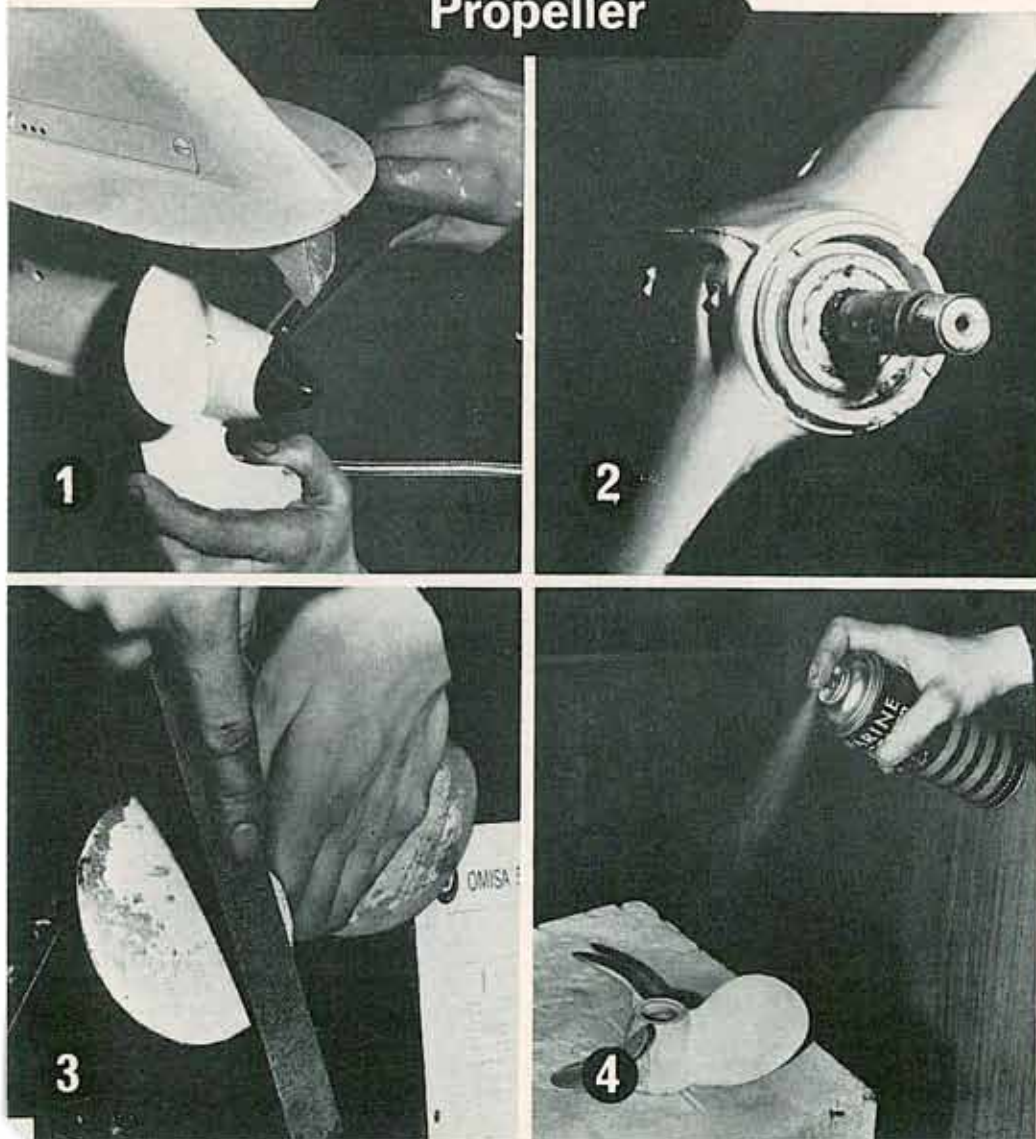
Another cause of outboard engine failure is fiddling around with carburettor jets. Johnson's say "Leave well alone."

(continued overleaf)



A dustbin makes a good tank for test-running the smaller engines. Its shape gives sufficient depth, but wooden chocks should be improvised so that the motor bracket can be firmly clamped in position.

## Propeller



**1** To remove propeller merely remove cotter pin with a pair of pliers and pull it off the shaft.

**2** Inspect the prop shaft and rubber seal for wear. This one (the rough black ring at the base of the shaft) has been chewed up by a nylon fishing line. If this damage is found the engine must be returned to a service dealer for a new bush. But after removing the nylon line, if no oil leaks past the bush, the engine can be used for a while until it is convenient to have it serviced.

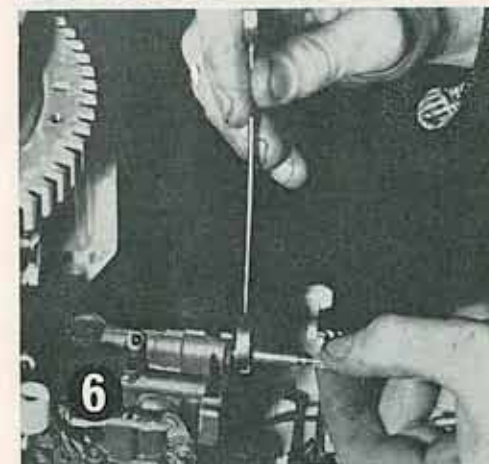
**3** If the edges of the propeller blades are burred, dented or blunted they can be dressed up with a medium coarse file. They should not be filed too sharp, otherwise quite small rubbish in the water will knock the edge off them. A rough propeller blade causes vibration which can have long-term damaging results on the engine.

**4** The propeller should be re-painted with an aerosol spray, provided the paint is salt-resistant. Johnson market a range of aerosol paints matching manufacturers' colours.

PRACTICAL BOAT OWNER



**5** To remove the slow-running knob, ease off with a screw-driver or pliers.



**6** To tighten up gland of slow-running needle, turn clockwise with a set spanner, while holding the knurled end from which the slow-running knob has been removed. This adjustment should be necessary only if the gland has slackened by excessive vibration.



**7** Injecting inhibiting fluid into the air intake of the carburettor. This should be done before storing for winter. Inhibiting fluid is injected with the engine running, until it

## Fuel System

chokes itself to a stop. On re-starting the engine at a later date it may be necessary to clean the plugs, and the exhaust will smoke at first.

**8** On Johnson engines of vintage 1965 and later the fuel filter is built into the fuel pump and there is no filter bowl. To clean, remove the screw on the face of the pump and—

**9** clean the small disc-shaped filter inside. When replacing, make sure the cork gasket shown on right of picture is in good condition.

**10** The bowl comes off and the filter can be removed. The filter is made of nylon coated with a special lacquer which can deteriorate if left in petrol for a long time without movement. After cleaning, inspect that the lacquer coating is sound. If not, renew. This should, in any case, be done each season. Nine times out of ten petrol starvation in these engines is due to deterioration of the filter.

**11** To remove sparking plug for cleaning, inspection and setting, use a 14mm box or socket spanner. Make sure spanner sits square, or it may crack the insulation.

**12** Plug electrodes should be cleaned with an ordinary wire brush and not sand blasted which damages the internal insulator glazing and can accelerate carbon deposition.

**13** Gap should be 30 thou. Check with feeler and if too big tap down gently. If too close open carefully with small pliers. Correctly set, the gap should remain so for a long time.

## Plugs





If an outboard is used in salt water it should be run in fresh water before being left without running for a week or more. If the boat is not in fresh water the engine can be run in a rain butt or dustbin filled with water for about a minute, but no longer or it will overheat (see picture).

The whole unit should be kept well greased—at least once a month.

Now, that fuel mixture. On all Johnson Motors of 1965 and later a mixture of 24 to 1 should be used during the running-in period, and a mixture of 40 to 1 after the engine is run in. All older motors

use a 24 to 1 mixture at all times.

If the engine is used on waters where there is fishing, the propeller should be removed at frequent intervals to check that no nylon line has been caught up by the shaft. Nylon line can cut the oil seal causing loss of oil in the lower gear box, with the eventual possibility of seizing, or it may damage the prop shaft itself.

On no account should the owner tamper with the flywheel as this requires both a special tool to remove it, and a torque wrench to replace it. Therefore he cannot do any work on the timing mechanism.

**14** Don't forget to grease the transom bracket clamp screws. If they are allowed to become heavily corroded they may have to be sawn off. A complete new bracket may even be needed.

**16** Where remote control is fitted the tiller arm may not be used for long periods. But do not forget to grease the tiller arm nipple. If you do the arm may be stuck solid when you want to use it.

**15** Also a "must" is the swivel bracket. If not regularly greased, it will make the steering stiff and may even cause it to seize up. Salt acts on the nylon bushing and it is a costly job to put right.

**17** Immediately above the grease nipple under the swivel arm bracket are the throttle rack and pinion. These should be kept lubricated by smearing grease on to the teeth with a finger.

## Greasing

## A New Cord

Remove starter head and wind tension spring fully (18). Hold spring wound with thumb on underside, undo knot and pull cord out (19). Pass new cord in reverse through hole from which knotted end will project (20). Make stop knot and pull cord through. With cord bent on to tommy bar (21) both hands are free to thread end of cord through handle. A special tool is being used here (22) but cord can be hooked to a thin wire, and grease will help. End of cord follows groove all round interior of handle (23).

PRACTICAL BOAT OWNER

**24** The starter housing is removed by undoing three screw bolts with a screwdriver or a ring spanner.

**25** Lifting the manual starter housing off the flywheel after the screw bolts have been removed.

**26** To remove the centre cup in the starter housing for greasing, unscrew the lock nut in the centre of the top of the housing . . .

**27** . . . and also unscrew the bolt in the centre of the underside of the housing. In some models the bolt has a slotted head.

**28** The cup is eased off with a screwdriver for greasing. To replace it, simply press back into position.

**29** Examine the cup for wear—caused by a loose retaining bolt. If the cup is scored or rigid it should be replaced by a new one.

**30** Squeeze grease into the cavity in the starter head, or smear on the cup itself. Also smear grease on the pawls of the spring seen in picture 27.

**31** The cup can be greased either by squeezing grease into the cavity in the starter head or by smearing it . . .

**32** . . . on the cup itself. Also smear grease on the pawls of the spring seen in picture 27.

**33** Remove lower plug in skag. Vacuum will restrain oil until upper plug is removed. Pour in a little paraffin and turn prop to flush.

**34** Refill by squeezing oil into lower hole with plastic dispenser or oil gun, until oil overflows from the upper hole, then replace lower plug.

**35** If dispenser or oil gun is held against lower hole while plug is inserted in top hole you have more time to replace lower plug, as oil drain is restrained by vacuum.

## Gear Box

32

33

34



## STURGEON— WELL-MADE AND ROOMY

LITTLE KNOWN, as yet in the UK, but popular on the Continent where more than one hundred have been sold already, the Sturgeon has the looks of a well-made yacht. Her glass-resin is nicely harmonised with wooden trim.

With an overall length of 22ft and a water line of 18ft, she carries 7ft 6in beam, and is available either with twin keels or with a single ballast keel. But even with the single keel her draught is no more than 2ft 6in. The iron ballast amounts to rather more than 1300lb out

Dutch-built Sturgeon has mast-head rig. With a single keel her draught is only 2ft 6in.



## Fast launch for far fishing grounds

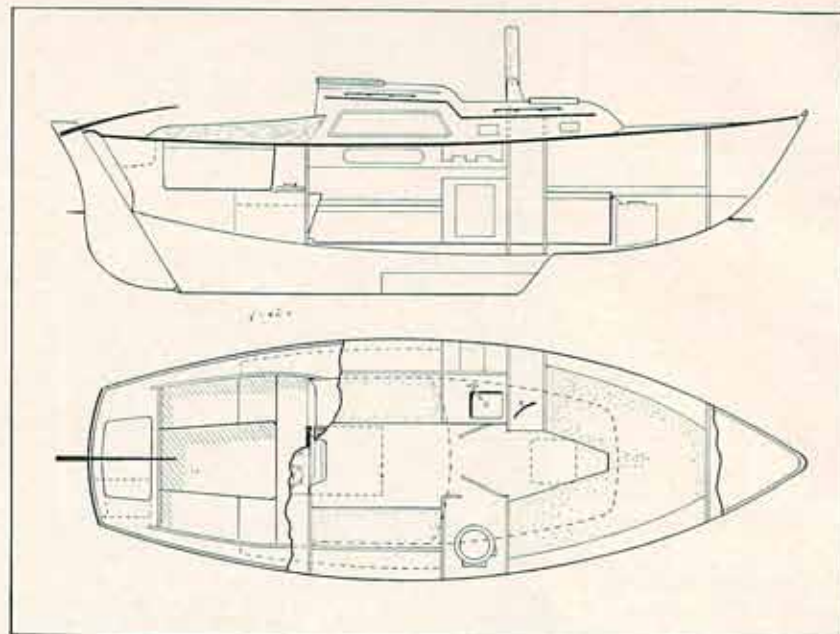
THE BURNHAM Fast Fisherman is a new addition to the Burnham range of launches. According to the makers the craft is intended to provide a higher performance for those whose fishing grounds may be some distance away and who might wish to reach them in the shortest possible time.

Developed by Sandbanks Yacht Company, the hull is the result of a compromise between the requirements of a really comfortable hull with a soft

LOA 20 feet 3  
inches, Beam 8  
feet. Draught  
engine down 2  
feet.

ride through rough water and of obtaining an adequate performance with an engine of modest power.

The Fast Fisherman on show at the Boat Show is equipped in a very basic form allowing it to be offered at a low price. It can be modified in terms of engine and accommodation lay out to suit customers' requirements.



of the total displacement of approximately 3600lb.

Hull, deck and cabin top are moulded in glass-resin. Cockpit and cabin soles and one or two other parts, including the bulkhead beneath the tabernacle-stepped mast are made in a sandwich construction using a balsa wood core.

The boat has a self-draining cockpit, fitted with a grating over the sole as part of the standard specifications. On deck, hatch covers, combings, grab rails and so forth are in mahogany, setting off the standard white of the moulded hull. Also included in the standard sail-away price of £1,455 are stainless steel deckfittings for the stemhead and chain plates. The cleats and blocks are of light alloy, which is well established in Holland and becoming more familiar in Britain.

The arrangement of the accommodation is made clear in the drawing, and from photographs we have seen, the finish would appear to be of that standard which one associates with Dutch yards. The cabin sole is fitted with a waterproof Vinyl carpet and the deck-head has an anti-condensation coating. A Ball Head marine WC is the standard fitment.

Four berths, galley and separate WC and roomy cockpit. Sturgeon appears to be a well-made and comfortable cruising boat.

Main components of the galley space are moulded in glass-resin and a fresh water pump is provided to draw water from the 20 gallon tank which is stowed beneath the forward berths.

If there is one criticism that might be levelled on the basis of the purely paper information we have, it is one which would concern many small craft. Sturgeon's designer, J Kok, has provided four berths each with a length of 6ft 5in. Is this quite common practice really sensible? Very few people need a berth so long as that, and it must be rare on a small cruiser for all four members of the party to be so lengthy. Usually there will be one or two women. Two long berths, and two shorter ones would release space and would nearly always be enough.

Mast and boom are hollow, in sitka spruce. Standing and running rigging are in stainless steel and the sails, with a working area of 330 sq ft, are in Terylene.



This particular craft is fitted with a 60 horsepower Watermota petrol engine with Perkins inboard/outboard Z drive, shelter and large open cockpit.

Wheel steering is by Teleflex and full engine instrumentation is provided. Cost in standard form with a maximum speed of about 20 knots is expected to be approximately £1400 ex works.

MANY FAMILIES ABANDON the attempt to introduce their children to life afloat until after the nappy stage. As I have two completely nautically orientated children, aged four and six, friends often ask how they can persuade their own exuberant youngsters into the same frame of mind.

We resolved our own financial and domestic problems by taking up full-time residence on board. But that solution is not open to everyone. A family who spend the weekends out and about together and enjoy each other's company should be able to take sailing in their stride. They will overcome the difficulties inherent in any new venture and learn to enjoy the hard work and occasional discomforts for the ultimate satisfactions.

Safety is the first concern with everyone. I am sure that personal safety has more to do with an attitude of mind than with the wearing of life-jackets and lifelines. These are essential pieces of equipment but they must never be allowed to blunt one's awareness. Care must be taken at all

cult to get children to wear their lifejackets. This has to be something about which there is no argument at any time. Grossly disobedient or unco-operative children prejudice the success of any venture and sailing is no exception.

## yes, boats are right for children, if . . .

times, when moving about the boat, climbing in and out of the dinghy or walking ashore. Children will watch their parents and copy their example.

Lifejackets and lifelines for children can be bought at most chandlers. Shops stock a variety of makes and styles and it is best to visit more than one before coming to a decision. The important factors are the weight of the child (rather than the age), and the amount of buoyancy provided. Some jackets have an air valve as well as the permanent buoyancy pads and this allows adjustments to be made. The jacket that fits one child may make another miserable, the plump child may be cramped in a waistcoat style or the thin one lost in a pop-over vest. The fun of buying such a novel garment should ensure co-operation in fitting on and choosing the most suitable.

A child has to learn to look after himself from the first moment he steps aboard. Parental supervision should be thorough but unobtrusive. I am often asked whether it is diffi-

I like Carolyn and Roderic to make up their minds before we get under way whether they are coming out into the cockpit or staying below. If they are coming outside they can be toggled up beforehand; if they are staying below I can put a snib on the door until everything is under control. We have a divided stable door arrangement. The children can open the top half and look out into the cockpit but a small hook drops into position on the outside of the bottom half so that they cannot escape and get under foot when we are busy. At times of stress it is particularly useful to be able to insist that they go below and to know that they will remain there. They may jibber and rage over the half-door at times but a few sweets or an apple will silence a mutinous crew until the crisis is over.

Dark coloured clothing, strong denims and pvc are with us in profusion. The greatest difficulty is that these materials are now used for high fashion and with the growth of interest in sailing and boating, cheap

hard-wearing clothing is not always easy to find in all the shapes and sizes required. Some of the pvc raincoats are very reasonably priced and can be used for ordinary wet weather occasions. If something less dashing than lifeboatman yellow is required for school-age children, most chandlers have black. A good dark blue is harder to find. Jeans and shorts are ideal for the older child, but Bri-nylon slacks fit more snugly on the little ones and are easier to wash through.

Children can easily become chilled and not think to mention it until they are thoroughly miserable. Several layers should be provided for: a vest, a T-shirt, a jumper and, if it is particularly cold, another large loose-fitting jumper. For out of doors a pvc coat or smock goes well on top. The ordinary showerproof anorak will keep the wind out but soon gets damp and grubby. It is surprising the wonderful amount of warmth a child can generate when properly protected from the weather. Socks and gloves, wellingtons and pumps, woolly hats and gloves, sou'westers and sun-hats will all be required at various times.

If children are completely unused to the nautical way of life a few quiet weekends up a creek or back-water getting used to the feel of life afloat will pay dividends. They can take a trip or two in the dinghy, climbing in and out in quiet conditions. They can try sleeping in their fo'c'sle bunks and learn to remember not to bang their heads when they sit up. There will be time to explain what all the ropes are for, why the boat won't turn over when she heels, and that the water in the bilge does not mean that the boat is sinking.

Children need to be amused and occupied. The very novelty of the





boat will keep them happy at first. They can stand in the cockpit, watch the waves and the other boats, look out for buoys and beacons and wave to all and sundry. The innovation of speed-boats and water-skiers in such profusion is a new and diverting spectacle. The highlight of a recent trip was the man who sped past us on his bicycle attached to a tow. Older children will be able to take an interest in the actual sailing and navigation and gradually learn to tackle some of the simpler tasks. We have a large heavy old boat which limits even what I can manage. But on a recent holiday in a small Harrison Butler sloop, the children were able to take a much fuller part and thoroughly enjoyed it.

When the sailing palls, the wind is too cold for the cockpit or the passage is long and wearisome, the children will need some congenial occupation. Despite the minimal space for storing gear and equipment, some space must be found for children's books, toys and games. The youngest ones will probably retire to their bunks with a well-loved, cuddly friend. The movement of the boat and the fresh air tend to make them very sleepy and they will often take long naps on passage. We usually find that they will still go to bed about the normal time in the evening.

Confined in the limited space aboard, children will erupt into noisy or excitable behaviour if they are not given an opportunity to let off steam. After an exhilarating sail your thoughts turn wistfully to a snug corner of the foredeck, a curl of sail and a quiet doze. However, this is just not to be. A hard row ashore against the tide, a brisk game of cricket or walk along the beach and

an invigorating swim are the lot of the family man. The only remedy for more decrepit parents who cannot stand the pace, is to find an endless supply of youthful uncles with abounding energy. The youthful uncles we find usually prefer to go to sleep, too.

Learning to swim from the beach is far from ideal and not always successful. We have too few days when the water is really warm, and the movement of the waves can be disconcerting. At Maldon, on the River Blackwater, there is an open-air pool behind the river promenade. I took Carolyn there on several occasions while we were berthed at the town quay. Her confidence in the water increased remarkably in a very short time and she became keen to learn to swim properly.

Once a child is able to swim he is far more able to look after himself and can play by the water in greater safety. However, lifejackets and lifelines will still be necessary when either the boat is moving or when the tidal flow is strong. If a child has any doubts about the necessity of this let him watch a piece of wood float by. The speed with which the water is travelling can be quite frightening when properly appreciated and even strong swimmers can get into difficulties in such circumstances.

Some people may ask whether it is worth all the extra effort to take the children sailing. This probably depends largely on the attitude of the parents. If sailing is sufficiently important to them they will give their children every help and encouragement to find their sea legs and learn to enjoy a stimulating and satisfying experience.

Boat's gear makes a natural playground for small children, though the limited space aboard means that someone has to take them ashore to let off steam.



A boat of your own is rather fun, even if it is stowed safely on deck. Buoyant wear is the rule all the time, unless an adult is really standing by within arm's reach.

## Afloat



GIVEN A REASONABLE size boat, reasonable stability and everything to hand, a baby of eight weeks can cruise to the Continent and back without knowing he has left the country. People perform marathons of endurance with very tiny babies in even smaller boats, but a certain degree of comfort is preferable. The first baby is quite a different creature from his subsequent brothers and sisters. He is a piece of luggage, an appendage to be taken around wherever his parents decree. By the time he is strolling across the saloon with a nautical gait, number two will be in the carry-cot and the era of the family man will have begun in earnest.

### Making do without much water

We hear altogether too much about the wonderful, labour saving devices which are supposed to reduce work to nil. Still, a mother who intends to take to the boats really can cash in on all these marvels.

Water will be in short supply compared to shore standards. But a very small baby, which does not crawl off into the bilges or hide in the engine compartment, need not depreciate in cleanliness and wholesomeness. We

## in a carry-cot

are blessed with disposable nappies. A good supply of cotton wool and tissues can be kept to hand and lotions will substitute for water in an emergency. Sheets can be saved up for the washing machine or launderette. There is no need for the nautical baby to be dressed in purest white: bright coloured clothing looks very jolly and jumpers are warmer than matinee coats. Dresses and jumpers are best washed out each night and then the drain on the water supply is less noticeable.

Feeding a baby afloat is much the same as at home. But you must lay in a good supply of the necessary tinned and dried goods as local shops do not always have what is required. I found breast feeding almost impossible at sea but some may prefer the convenience. A large screw top jar is the best container for the sterilizing fluid for feeding bottles. The last feed at night should if possible be given under calm conditions to ensure a peaceful night.

Since the terrible cold winter a few years ago we are all supposed to know about hypothermia. A small baby on a boat is particularly vulnerable. He is often in a constantly changing stream of air and if he exercises his legs by kicking off his blankets before going to sleep he is going to get very chilly even down in the saloon. Sleeping bags are useful but may be too restricting all the time. A pair of socks or tights and a loose fitting pair of woollen trousers are better and a little woollen hat to keep his head warm.

The carry-cot is usually safe

enough wedged down on the floor or in a corner somewhere. But be careful about putting things down on the cabin seats. I once had to make a quick rescue bid under a pile of woollies and oilskins which had fallen over the cot in rough seas. Harder objects may also slip off shelves if they have been badly stowed.

Once the baby can sit up he can be fixed up with a chair seat arrangement. He can then take part in the activities in the cockpit, amuse himself with toys in the saloon and generally take an interest in what is going on. The carry-cot will be too small and a bunk cot will have to be fitted in somewhere with fairly high rails to ensure he cannot topple out.

### Not a first-class passenger for ever

When he gets on the move the troubles really begin. He is likely to dismantle essential equipment and stuff the parts into the bilges. He needs watching under way to avoid serious tumbles, and he will always require attention just as you are coming alongside, have gone aground or are being run down by a steamer. He will acquire a special skill and cunning to divert your attention at the crucial moment. However, he has to learn that he cannot be a first-class passenger for ever and must take his place as one of the crew.

The greatest advantage of taking the first little mite sailing at the earliest opportunity is that one does not have to decide at a later date when to introduce the family to the boat. A child who is well into his

## SCRUMPTIOUS SIMPLICITY

large pan of freshly boiled potatoes,  
one or two egg yolks,  
knob of butter or margarine,  
tin of salmon or tuna fish,  
salt to flavour,  
breadcrumbs or flour to coat.

Mix the whole lot up in the saucepan together, shape into cakes, coat with breadcrumbs and fry in shallow fat. For speed the potato and fish can be fried in one large dollop. If the boat is blessed with an oven the patties can be left to bake on a well greased tray. Quantities depend on the size of the crew. I double normal quantities and find the children will eat the men under the table. Butter or margarine is sometimes more digestible for frying than white fat. Vegetables and sauces can be added to the menu according to taste, peas and tomato sauce are usually favourites with the children.

third season's sailing by his second birthday will be telling you how to sail the boat as soon as he can talk and will be completely at home on the water.

The strongest objections to this plan of campaign will come from non-nautical grandparents. The first grandchild is a wonder and a joy for ever and the thought of such treasure being launched prematurely on the inhospitable seas will bring forth the loudest protests. The only real consolations for these very reasonable fears are a safe and speedy return and lots of jolly snapshots they can show their friends of wee Willy on the beach at Ostend in the altogether or up the mast in Dunkirk.

Young babies need every care and attention but there is no reason why this cannot be provided, even at sea in a small boat. When sailing with small children it is well worth while to take an extra crew member so that someone can always be available is necessary. It can be a very strenuous holiday for a mother, especially on a foreign cruise with the children to care for, domestic arrangements to see to and her share of the sailing. Extra days on the beach and a few more days in port can give an opportunity for the rest and relaxation which seem more necessary when every day starts at 6 am and the night is no longer one's own.

**NEXT MONTH—Wintering afloat, with its problems and answers**





ALL YOUR



OWN WORK

## 'Puff-feed' cures petrol problems

IT IS SOMETIMES a problem with inboard engines in small cruising boats to get the fuel tank high enough to give a good gravity feed. Having installed my tank under the side deck on the port side, I found that my engine would stop if we heeled too much that way.

This was rather embarrassing as we usually go into our permanent berth port side to, and the weight of two people handling fenders and lines on the port side was enough to cause fuel starvation.

A length of plastic tube fitted to the air vent and a garden hose nozzle for a



valve makes it possible to put a few pounds air pressure on the tank and we have no more trouble. To do this, of course, you must have an air-tight filler plate and a separate air vent.

Anyone who has this trouble should proceed with caution. Carburettors will vary in the amount of pressure they can stand and too much pressure could overcome the float chamber valve and cause flooding.

Though I have frequently put as much pressure as I can on my tank by mouth, in order to test, only once in three years has the carburettor flooded and that I believe was due to a particle of dirt rather than too much pressure.

In normal use quite a gentle puff does the trick. I am always careful to open the valve on the plastic tube when the engine is not in use to ensure that pressure does not build up due to temperature change.

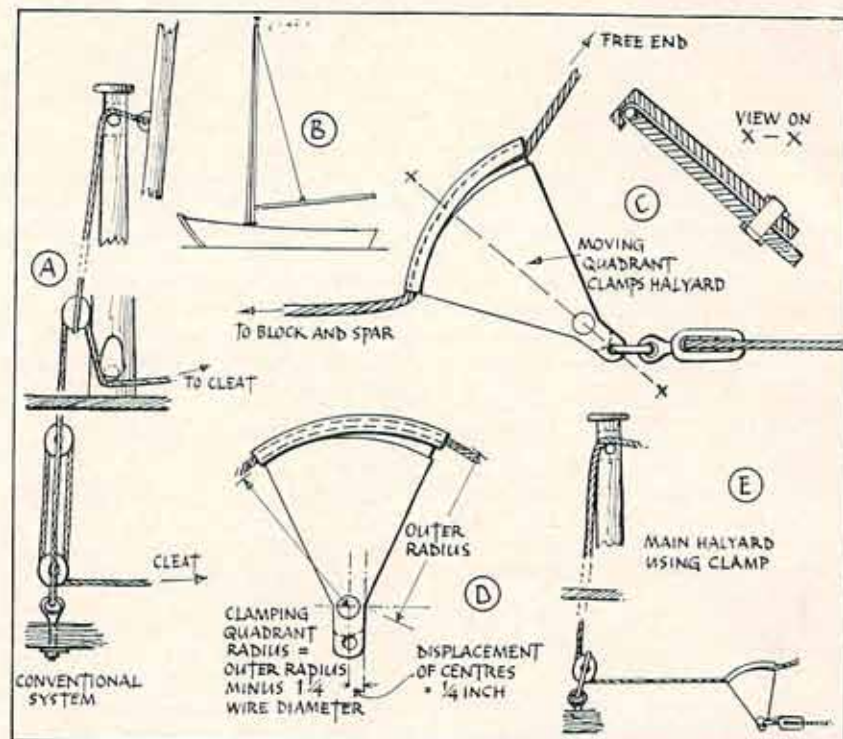
CJB

## A halyard clamp

ANYONE WHO HAS owned or sailed a boat with a sliding gunter rig will know how essential it is to sweat the yard right into the mast. Many systems of halyards have been devised for this, possibly the most common being the one in (A). This unfortunately has a major short-

the sail is dropped for reefing the yard is in the air.

Both these problems can be eliminated with the halyard clamp shown in (C). Basically, this consists of two quadrants of bronze, brass, steel or other such robust material (non-ferrous preferred) which are pinned together eccentrically as in (D). Tension on the halyard, combined with tension on the purchase



coming. Almost invariably, when the halyard is let go, the block in the main part of the halyard travels to the sheave and stops—leaving the yard swinging in mid air, as shown in (B). This has two major disadvantages—one, that when fastening the halyard to the yard either very high crutches are needed, or alternatively, the yard needs raising, and two, when

effectively clamps the halyard without damaging the wire.

This type of system allows a halyard in the style of (E) to be used—a one part wire with a rope purchase for the final six inch nip. The same type of wire clamp can be used effectively in the setting up of rigging, and, in an emergency, to hold a broken shroud.

MB

## BLOW BY BLOW



THOSE LITTLE horns which were made for Continental railways and have been available for some time from Thomas Foulkes make very serviceable foghorns for small craft. But they have one snag. Prolonged use could cause dizziness. I fitted a piece of plastic tube ( $\frac{1}{2}$  inch inside diameter,  $\frac{1}{4}$  inch wall thickness) a few inches long to mine, heating the end to stretch it over the mouthpiece. I cut a slit about 1 inch long in the other end and bevelled the edges so that the tube can be pushed into the hose of the Avon dinghy bellows. A child can now blow the darned thing all day long—if you don't hide it!

CJB

## Details give dinghy mastery

DON'T LOSE your rowlocks. Splice lanyards on to them (1). If you do—and you should—use the collar above the shank, it's easy to tie them on to somewhere handy then. The sketch on the right shows how, and shows some other good tips too.

And rowlocks are best stowed in holes drilled in the thwart between the knees (2). But make sure the lanyards are long enough to allow you to use them in both the forward and midships positions.

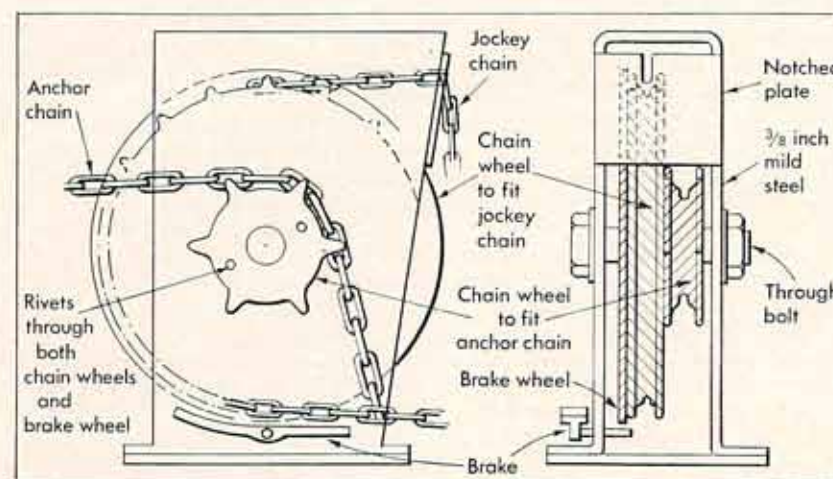
Whilst on the subject of rowlocks—it often pays to leather them—then you avoid having to weaken the oars by tacking leathers on (that is, if you're not one of the perfectionists

who stitches the leathers on to the oars).

The old adage—never cleat a sheet in a dinghy is a sound one, but it can get very tiring sitting a dinghy out holding the tiller and holding the main sheet. A thumb cleat in a handy spot can take much of this load off the arms, and yet still allow you to let the sheet run at will (3).

And, for that matter, have you ever had to drop the sail in a hurry when a heavier than usual squall hits you—think about using the old Navy method of belaying a halyard (4).

Loose footed sails pose many problems in return for the advantage of ease of control of sail flow. One feature, missed by many Mirror owners apparently, is that it is



## Make a simple differential winch

LIKE MOST OTHER items of gear, an anchor winch, although essential (or virtually so) on a boat of five tons and over, is not a cheap item. Here is a simple differential winch which can be made by anyone with a mechanical bent and access to a workshop.

Basically, the winch consists of two chain wheels bolted together. Final output is dependent on the ratio of their diameters—one wheel four times the diameter of the other gives a purchase power of 4 : 1. In its simplest form, mount the two wheels on an axle and mount the axle in a steel bracket as shown in the diagram. The jockey chain is endless, and fits the outer wheel. (The jockey chain can be decreased in strength from the main cable by the same ratio as the wheel diameters.) However, in this form the winch only gives a power gain. To make it more useful, a

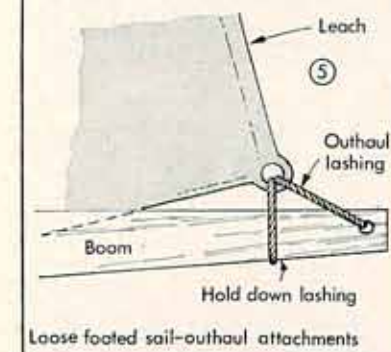
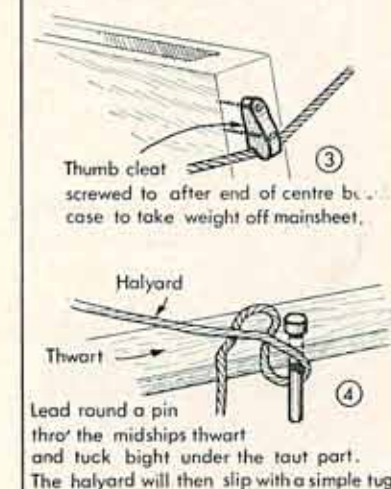
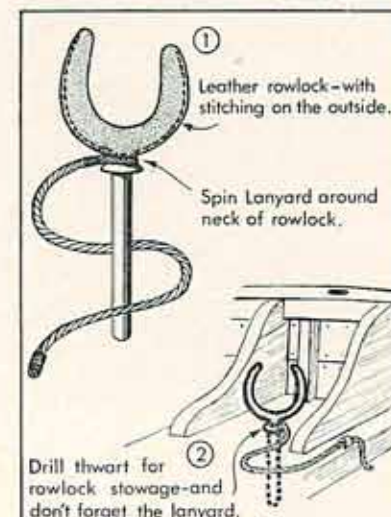
brake and ratchet and pawl should be fitted.

The brake is an easy matter—simply through fasten a flat disc (oak, or a similar hardwood would be adequate) on to the side of the large chain wheel and fit a brake lever as shown in the diagram. Pressure on this will slow the chain down.

Providing a ratchet and pawl isn't particularly difficult, although it increases the bulk of the winch. The most satisfactory method is to bolt a ratchet wheel to the cable wheel and fit a pawl on the frame.

A much simpler solution is to provide a notched plate in which the jockey chain can lodge. If you adopt this solution, make sure that the plate is at an acute angle to the line of the chain, so that tension tends to draw the link down into the notch. You can either set the notch-plate at an angle when you fit it to the frame, or you can make the rear edges of the frame slant slightly backward.

essential to pin the clew of the sail down on to the boom. A separate lashing should be used, and if this is left a little slack, then sail flow can be adjusted whilst under way (5). MB



ALL YOUR

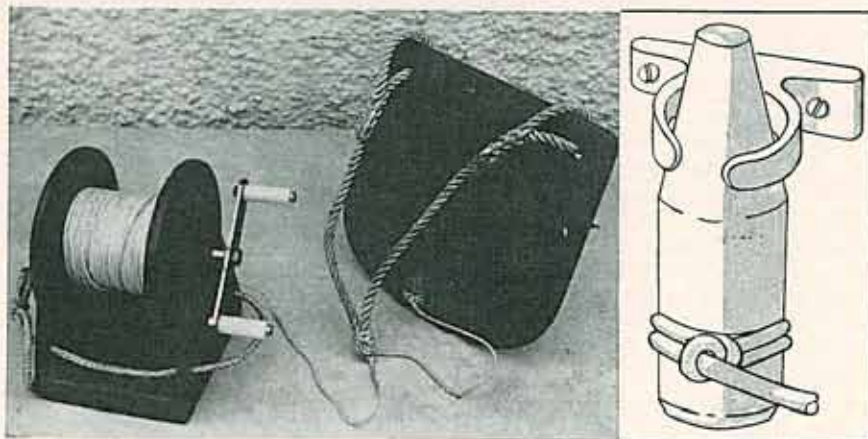


OWN WORK

CONTINUED OVERLEAF



## No guesswork with a log-ship



IF YOU ARE GOING to make even coastal passages of more than a few miles, a log is really necessary and yet to the average owner of a cruising yacht under 5 tons the cost of a patent log seems high for an instrument which he may well be able to use only two or three times a year during the annual cruise. The rest of the season consisting of weekends spent in local waters.

I know that a log-ship cannot compare with the proper article for accuracy or convenience but it is



certainly better than guesswork. If properly arranged it can be so simple to use that readings can be taken frequently enough to give pretty reliable results. After all, a lot of ships travelled a great number of miles before the patent log was invented.

By using a reel, the line can be recovered easily, but the reel must be well balanced and free running. I used nylon for the bearings and fitted a double handle for balance. The shock cord through the base of the reel holds it to either of the cleats on my after deck.

The log-ship itself is simply a piece of marine ply about a foot square with a bit of lead at the bottom edge to make it float upright with an inch or so above the water. It is fastened to the line by a yoke attached to the two top corners of the board. Traditionally the peg on the third line fits

in a hole in the centre of the bottom edge of the board. This should pull out when the line is checked to make recovery easy. I found the peg frequently jammed and when this happened it was a terrific job to get the board back. So I put a plastic-covered spring clip on to hold the peg, and this has never failed to release.

The conventional method of marking the line is to have knots equally spaced, the distance between them being the distance travelled at 1 knot in a given time interval. Obviously, the greater the distance and time interval the greater the accuracy. At one knot a boat travels 101.3 feet in one minute. But this would call for over 500 feet of line for a 5 knot max speed.

I chose another method, making use of the whole line at all speeds and measuring the time interval by stop watch. I used 101.3 feet of line as being a reasonable length, and have a table of time-speed equivalents.

60 sec	=	1 knot
30 sec	=	2 knots
20 sec	=	3 knots
15 sec	=	4 knots
12 sec	=	5 knots

I have sufficient line before the Start mark to lead it out over the transom in a short bight. With the log-ship in the cockpit, bight towing astern, and the Start mark on the transom, we are ready to run. I drop the log-ship and start the watch when the line starts moving. I have three or four small paint marks on the line a few feet ahead of the Stop mark to act as a warning.

On passage it is no trouble to check speed half hourly, or more often if necessary, and in this way a reasonably accurate record of speed can be maintained. **CJB**

## The bitter end and better end

IN ANY SORT of cruising boat the bower anchor should always be ready for use. That does not mean to say that you are likely to make use of the gear when you are half-way across the Channel, but unless it is kept ready for use it is more than likely that it will not always be got ready for those times (in shallow waters) where it may be wanted.

Of importance is the fact that an anchor is often an emergency brake. There are times when you are motor-ing up a congested tideway with moorings on either hand—the engine stops and you have a few moments while the boat carries her way in which to act.

### PASS IT ON

If you have any useful tips or wrinkles that would be appreciated by other readers, please let us know.

We don't ask for more than just a brief note, and perhaps a rough explanatory sketch—we'll clean it all up and sort it out.

A fee will be paid for any practical idea or gadget that is published, but the real reward will come from passing on an idea that can help others.

Sometimes the emergency can arise when the water is quite deep—too deep, in fact, for the scope of bower chain you keep bent on to your anchor. Will you then be able to bend on a warp to the inboard end of the chain without delay?

Too often, the bitter end of a cable is inaccessible, and even when you've pulled up bunkboards to get at it you find a rusted shackle that can only be freed with a hacksaw.

The best way to prepare for this kind of problem is to cut the chain and insert a small shackle a few feet from the bitter end. In other words, pull all your chain out on deck, and saw through at a point about six inches outside the chain pipe. Re-join here with a small and well-greased shackle. It can afford to be small enough to pass through the pipe because you will never expect the boat to lie-to it—the shackle itself will always be inboard of the turns round the samson post.

If you like you can join the chain at this point with a lashing of some synthetic cordage which will not perish in the damp of the chain locker. With either of these methods you can always free the inboard end of your cable quite easily and bend on a warp. **AP**

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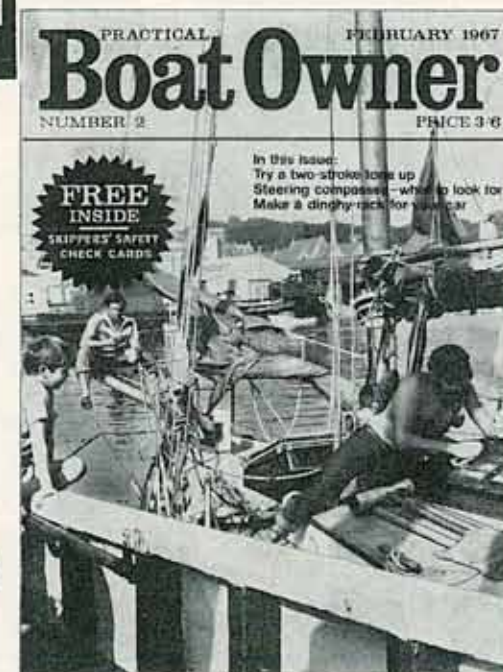
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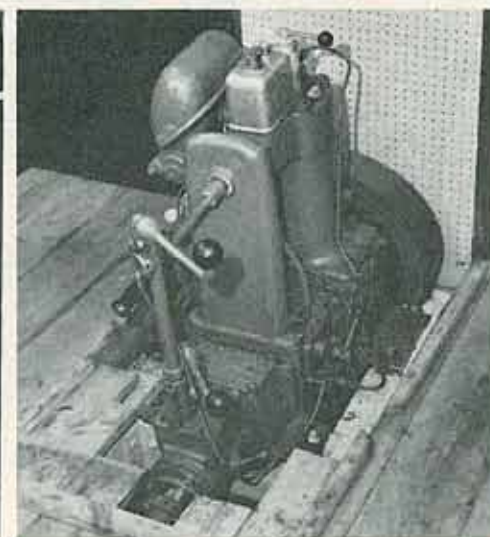
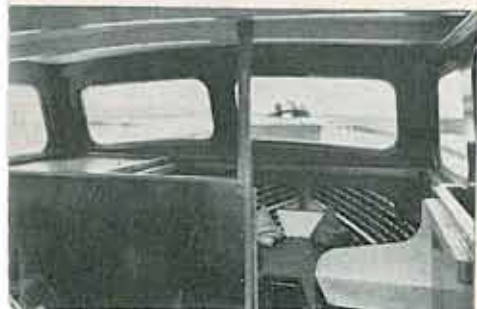


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Exterior and interior views of Jaunty 22. Hatches over the galley have been removed. Deck and wheelshelter roof are covered in glass-fibre scrim and epoxide paint for a hard-wearing, waterproof surface.

## Jaunty by name...

UNCOMPLICATED QUALITY... these words describe the Jaunty 22 diesel fishing cruiser to perfection. Quality in the way of materials used and the lovingly lavished workmanship, and uncomplicated in that the design is sound and sensible giving a simple, ready to sail-away, craft easily handled by all but the most inexperienced.

Designed by J Francis Jones for Beagle Boats of Ferry Quay, Woodbridge Suffolk, the Jaunty 22 is traditionally built in either clinker or carvel form using mahogany over-oak. Deadwood is oak, Baltic pine or iroko, and keel, hog, rubbing streaks and sampson posts are oak or iroko.

Her most noticeable external features are a bold sheer flush foredeck and an 8ft 3in beam complementing her length of 22ft. Hull length has been sensibly divided up between providing roomy interior accommodation for two, and a large cockpit, designed to allow half a dozen sea rods to be wielded in comfort.

A spacious wheel-shelter with full head room for a six-footer protects the cockpit from wind and spray when under way, and design is such that a folding cruiser hood with side curtains can be fitted turning the cockpit into virtually another cabin. Below decks accommodation is ample for two. A generous beam and raised topside provides a roomy interior, with a separate WC compartment.

Standard equipment includes among other things two 6ft 3in berth mattresses with Vynide covers, fitted rubber backed carpet, a dry powder fire extinguisher, a mirror, lino on the galley sole, a plastic fresh water container and one framed picture—rather an inessential, but a charming touch.

The "fishing" version comes complete equipment, the Jaunty comes complete with such items as three oak-iroko sampson posts, one galvanised roller chain, four galvanised fairleads, a 25lb Fisherman's anchor, 15 fathoms of 2in Ulstron, an ensign staff and socket, a bilge pump and strainer, three mushroom ventilators, an emergency tiller, boathook, two fenders a mooring wrap, a draw bucket, line and fuel funnel.

The "cruising" version has pulpit, foredeck lifelines, a steering compass, a marine wc, and a single-burner alcohol stove. This version also has a 12 gallon water tank plumbed to a pump at the sink.

The Jaunty's galley arrangements are adequate with an L-shaped Formica covered galley bench, fitted stainless-

steel sink and cutlery drawers and storage lockers as standard.

Working on the very sound premise that full vertical headroom is not required for sleeping... but is essential for cooking, the designer has incorporated a pair of lift-off hatches. These are secured by interior barrel bolts when the craft is locked-up. Removed, they give the cook an extremely well sheltered galley under the steering shelter, close to the helmsman.

Powered by a slow-running SABB 8-10 hp model G engine with a variable pitch 15½in propeller, the Jaunty 22 has clean underwater line giving a service speed of 6-7 knots. Manoeuvrability is extremely good.

Built by the long-established east coast firm of Frank Halls & Sons, of Walton-on-Naze, the Jaunty 22 has a 2ft draught enabling her to get under way from half-tide moorings before otherwise comparable cruisers. Substantial bilge keels allow her to take the ground well.

Running costs of the SABB diesel are so small as to be hardly worth writing about... except for the fact that they are so small. At full throttle fuel consumption is in the order of ¼ to ½ gal/hour. The engine's Norwegian makers claim that the single-cylinder unit will work quite happily with water lapping about its half-way up mark.

In its standard version, as fitted to the Jaunty 22, the engine is started on the handle via a raised crank at the rear-end geared to half engine speed. A large flywheel takes all the effort out of this operation. It has been developed specifically for marine applications and a design feature which should ensure a long working life is a balancing system of counter weights in the flywheel rotating in the opposite direction to the engine, minimising engine vibrations.

Power output is 10 hp at 1,800 rpm or 8 hp at 1,500 rpm. The latter figure is the 24 hour rating. The propeller is driven via a built-in 2:1 reduction gear. Total engine weight is in the order of 440lb; rather on the high side compared to some diesels around with similar ratings, but listening to the SABB unit purring away, one gets the impression that it will still be going when some others are on the scrap heap.

The Jaunty 22 is clearly aimed at the buyer who is not beguiled by chrome trim and plastics. According to Beagle boats, and echoed by PBO, the important thing is to get afloat without waiting for every refinement.

The fishing version is priced at £1,850, while the cruising version is £1,950 with the extras mentioned earlier.

### Main dimensions and tonnage

Length OA 22ft.  
Length WL 19ft 10in.  
Beam 8ft 3½in.  
Draft 2ft.  
Displacement  
(average loading) 2.3 tons.  
Thames Measurement 5 tons TM.

## CURE FOR WATERTIGHT PLUGS WHICH AREN'T

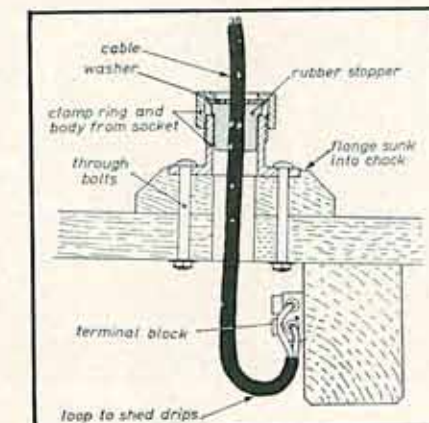
BEFORE I HAD developed the necessary degree of cynicism about sea-going materials in general, and for electrical equipment in particular, I fitted a pair of so-called waterproof plugs and sockets for the sidelights of an old boat, which were carried on lamp boards on the shrouds. After one season of use the sockets had become a mass of moist verdigris and the cable connections below decks had corroded through. Each lead had round it a walnut-sized cluster of crystalline products of electrolysis.

The mistake was to think such plugs and sockets are waterproof enough, even well greased and maintained, to use in the scuppers at sea. The holes in the socket flanges are usually too small for anything but wood screws so even if the plug seals tight to the socket, water can get in under the socket body because it isn't clamped down firmly enough.

A simple and quick cure for the trouble, which was still working well when I sold the boat several years later, is shown in the drawing. The socket insulator is removed from the body and the flange holes opened out to take 1/8 or 3/16 in through bolts. The body is mounted on a hardwood chock, recessed into it for extra strength and sealing. The whole assembly is mounted on the deck where it's wanted, with all the joints carefully bedded in compound. Drill through the deck to about the bore of the socket body. The cable

from the lamp is pushed through the hole in a chemist's cored rubber stopper—if you can't get this a solid one can be pierced with a hot rod. If the cable is round pvc-sheathed it will make a good seal on the rubber. The stopper is chosen to be a tight fit in the socket body, and the clamp ring from the plug is used to press it home; a washer between the ring and the stopper prevents the stopper from bulging up inside the ring.

A length of cable is left inboard, and the ends of the conductors are



Remove the innards, replace by a rubber bung, and fix down firmly—that's the gist of it.

soldered so as to make prongs which can easily be inserted into, and removed from, a terminal block which connects with the main leads to the switchboard. Alternatively spade terminals can be used to connect with screw terminals. The cable is left in a loop so drips fall off and water does not run up to the exposed contacts.

When the cable is disconnected the cap is screwed home to the body in the usual way. The beauty of this arrangement is that the exposed metal contacts can be put where they will not get wet, yet the lead goes through the deck wherever it is wanted. Nothing complicated has to be done, and the whole job can be completed quite quickly at negligible cost.

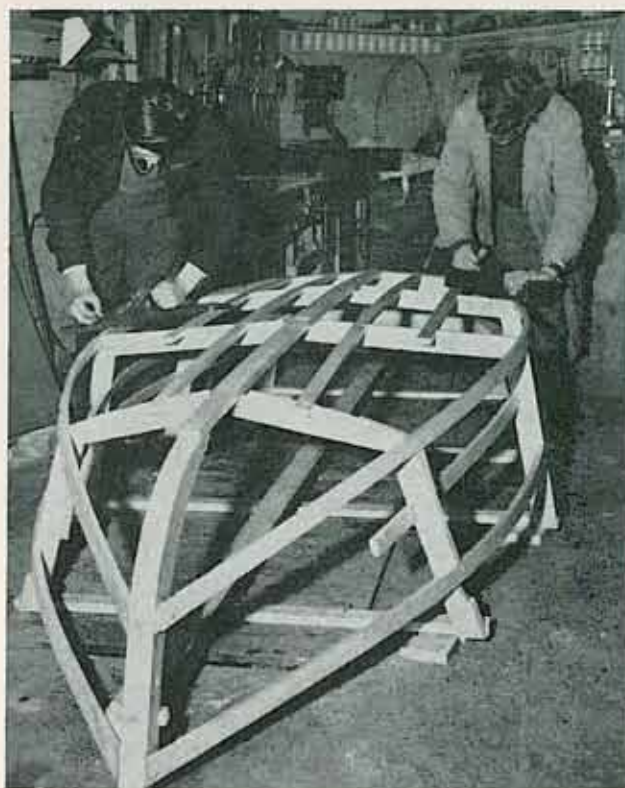
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# PUTTING IT ON THE FLOOR

by Francis Tagg

**BOAT BUILDING** preliminaries introduce most people to something they had not expected—the need to do some large drawings with a good degree of accuracy on the floor. Even with a simple dinghy the designer may instruct you to draw a centre line with certain other lines crossing it at right-angles, over which you are to assemble the frames, transom and stem. He does not tell you how to do this and there is no reason why he should. He has provided you with the design for a boat and cannot be expected to teach you the boatbuilder's craft as well.

## Lofting needs skill and patience

With most small boats designed for amateur construction, this is the only setting out to be done, but if you get ambitious and want to build a large cabin craft you may find that the designer expects you to get the main shapes by laying down the lines of the boat full-size. This is what a professional calls 'lofting' and is a job needing a lot of patience.

Going back to square one, the expert starts with the assumption that nothing is accurate until he has checked it. If you have a strip of wood to use as a straightedge, draw a line with it, then turn it around and try it on the other side of the line (fig 1A). This doubles any

error, so if you true up the edge by planing remember to only take off half of the difference between the edge and the line. When you have done this draw another line and try turning the straightedge over instead of around.

Right-angles are normally tested with a set-square (fig 1B) or a try-square (fig 1C). Both may only be used within their capacity. Usually the largest you have is 12in long and this does not amount to much when setting out for a boat.

The tools have their uses, but should be checked. Draw a line with either square level with the edge of a piece of wood, then turn the square over and see if the edge of the square agrees with the line (fig 1D). The corner of a plywood sheet may serve as a large try square, but its accuracy should be checked.

A good method of checking the corner of a plywood sheet or any other large right-angle is to use the schoolboy's '3:4:5' method. This utilizes the fact that in a triangle with the sides in the proportion of 3:4:5 the angle between the two shorter sides must be a right-angle (remember?) On your sheet of plywood measure from the corner 3ft and 4ft along the two sides. Measure between these marks and the distance will be exactly 5ft if the corner is a true right-angle (fig 1E).

The first job in setting out is to draw a straight line. This seems

simple enough, but quite often it has to be much longer than any straightedge you possess. Drawing along a board in stages will produce errors. If this line is to be a base line on which other lines will rely, errors will be multiplied. A stretched string is straight and using this fact is much more reliable than drawing along a piece of wood.

Your base line and many others should be drawn with a 'chalk line'. The only type that can be bought is intended for use by house builders and is rather thick. It is better to use a thinner stout line, but it must have sufficient roughness to take up chalk dust. Synthetic threads and lines have ample strength, but they will not hold chalk. A good line is made from crochet cotton. Tie a loop in one end and wind it on a reel of some sort. Use it with blackboard chalk.

## Chalk and string method

To draw a line, without an assistant, fix the looped end down with a fine bradawl. Allow the cord to unwind from the reel in one hand while you walk backwards from the bradawl and rub chalk on the line with the other hand. Do this steadily and without jerking the line.

A proper chalk line reel has recesses each end so that pressure with finger and thumb in them pro-

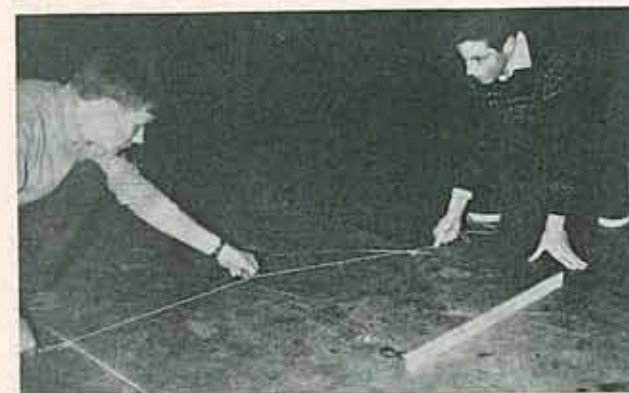
vides friction to keep the line taut as it is run out. When you have chalked enough, stretch and hold the line to the ground with the hand that held the reel. Give it plenty of tension. With the other hand reach as far towards the middle of the line as you can and lift the cotton a few inches, then let go. The resulting 'twang' deposits a true straight chalk line on the floor. The professional calls this, 'striking a line' (fig 1F).

Sometimes there is no definite point where you can put a bradawl, as when the line has to pass through

lead to errors. The 3:4:5 method can be used with a tape measure, a bradawl and a pencil or piece of chalk. From the point where the right-angle is to be, measure along your base line three units.

What the units are depends on the size of the job, but choose a figure that will make your four units the other way farther than your construction line will have to be. At the same time do not make it so great that you could only get there by knocking down the wall of your neighbour's house.

the other end on the base point and have the compass about 45 degrees to the base line, although the exact angle is not important (fig 2C). Swing the compass to make another mark on the base line (fig 2D), then put a pencil or piece of french chalk against the end to draw a short arc at a place where the right-angled line may be expected to pass through. Remove the compass and either use a straightedge or your chalk line through the second mark on the base line, your compass centre and the arc. Mark where it



ABOVE. "Striking the line" a good "twang" deposits the chalk on the floor.

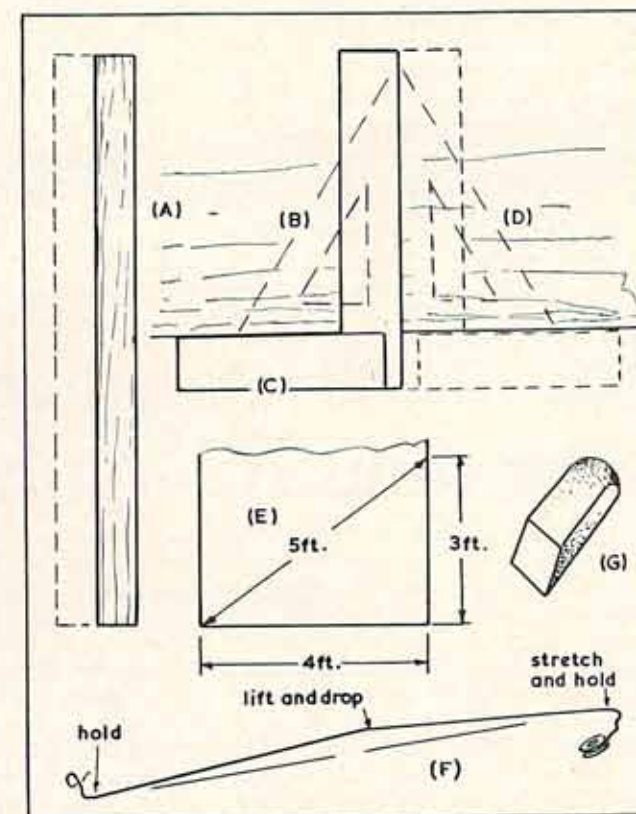


Fig 1. Never take anything for granted. Squares and straightedges must be checked.

## The right angle on right-angles

A positive point is marked if the line is 'pecked'. This is a V-shaped mark with the exact position at the point of the V. An expanding steel rule is convenient, but because of the inside and outside piece on the end it is better to measure from the one-inch or one-foot mark, but remember to allow for this when reading the rule. A steel tape measure is better for long distances, and this has to be read from the outside of the loop on the end.

There are several ways of drawing right-angles. If the line you want is within the size of your plywood sheet set square, that is the best thing to use, but extending a line past the limit of one of these can

From the base point, hold your chalk against the four unit measurement and swing the tape to draw a short arc (fig 2A). Move the end of the tape to the three unit mark on the base line and peck a line at a distance of five units on the arc (fig 2B). Take your chalk line through the base point and this crossing to draw your right-angle.

Some other methods of drawing a right-angle involve some probably long-forgotten schoolboy type geometry with compasses.

The compass in this case has to be a light strip of wood with a bradawl through it. For a simple way of drawing a right-angle at the end of the line, have a strip of wood rather more than half the length of line you wish to draw. Put a bradawl through near one end. Put

crosses the arc, then a line drawn through this crossing and the base point will be at a right-angle to the base line (fig 2E).

If the line at right-angles has to cross the base line some way in from the end, measure distances equal each side of the base point. What these distances are is not important, but about half what the length of the line each side is expected to be is about right. Make a strip wood compass that will reach as far as the line is to go. Put your bradawl in the two points marked on the base line in turn and draw arcs. Strike a line through the points where these arcs cross (fig 2F).

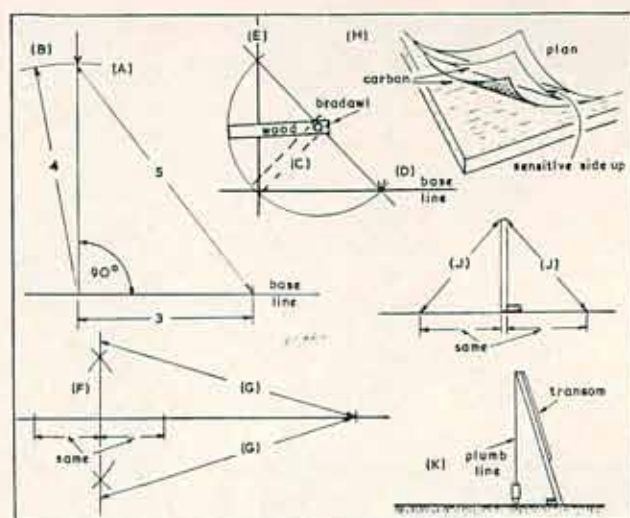
Continuing the idea that you do not believe the accuracy of anything until you have checked it, one right-angle method can be used to check



When frames are marked out they should be symmetrical about their centre lines. Because of this some designers only provide drawings of half frames, leaving you to draw the other half. But how? If you have a full-size drawing of half a frame on paper, it is a good idea to draw the complete frame on hardboard or cheap plywood. If it is very large, it will have to be drawn on the floor. A rigid base on which to assemble your frame is better than paper, which may also expand and contract with varying humidity.

## Carbon-paper halves the job

The best way to use the half drawing to make a complete one is to trace the right way up over two pieces of carbon paper, with the upper one facing the paper (fig 2H). As the tracing is made the other half will be reproduced on the back of the drawing. The job can be done with small pieces of carbon paper moved around if necessary. A few pins will prevent the paper being traced moving around.



**Fig 2. Schoolboy-type geometry and common sense. Angles can be generated accurately and quickly using these techniques.**

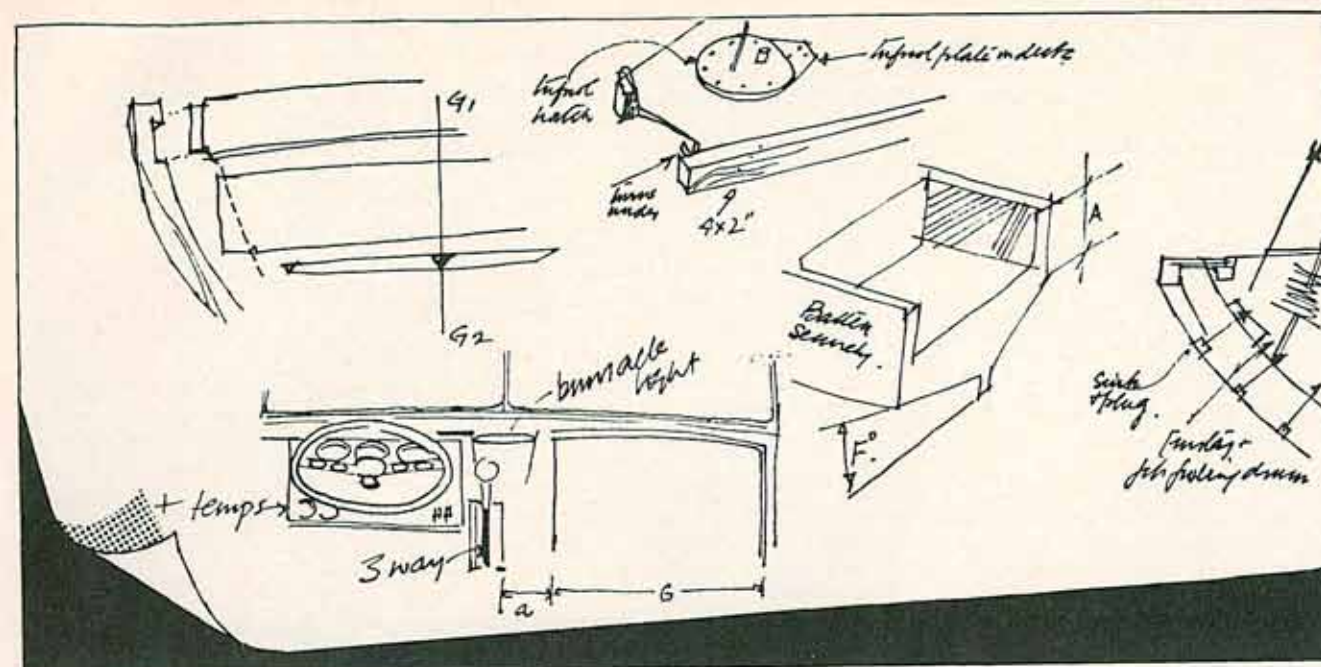
Pins can also be used to locate the reversed drawing after you turn it over. Pricking through with pins will position the centre lines over each other and mating parts can be lined up.

Most frames have to be vertical when mounted on the floor. If one near the centre of the boat is trued up, others can be set parallel to it. Assuming your floor is horizontal, one way of checking this is to use a builder's spirit level, with a cross tube in it. Another way is to use a plumb line (any weighted string) and sight from the side to see that the frame is parallel to it. The geometric alternative is to measure along the base line distances about the same as the height of the frame, each side of it, then measure from these points to the top of the frame. Of course, these distances should be equal (fig 2J). A point to watch with a built-up frame is that you work from places on the frame which should be vertical to each other, and

allow for the thickness of joint covers or other wood.

A designer will usually set his transom at a certain angle, but as angles are difficult to measure in these larger sizes, he usually indicates the distance the transom is to slope. This is simply arranged by dropping a plumb line from the transom and measuring along the floor (fig 2K), but make sure you are working from the two reference points the designer intended.

If the centre lines of stem, transom and frames are all over the centre line on the floor the boat should be set up straight and symmetrical. If you have any doubts, stretch a string between stem and centre of transom and check that



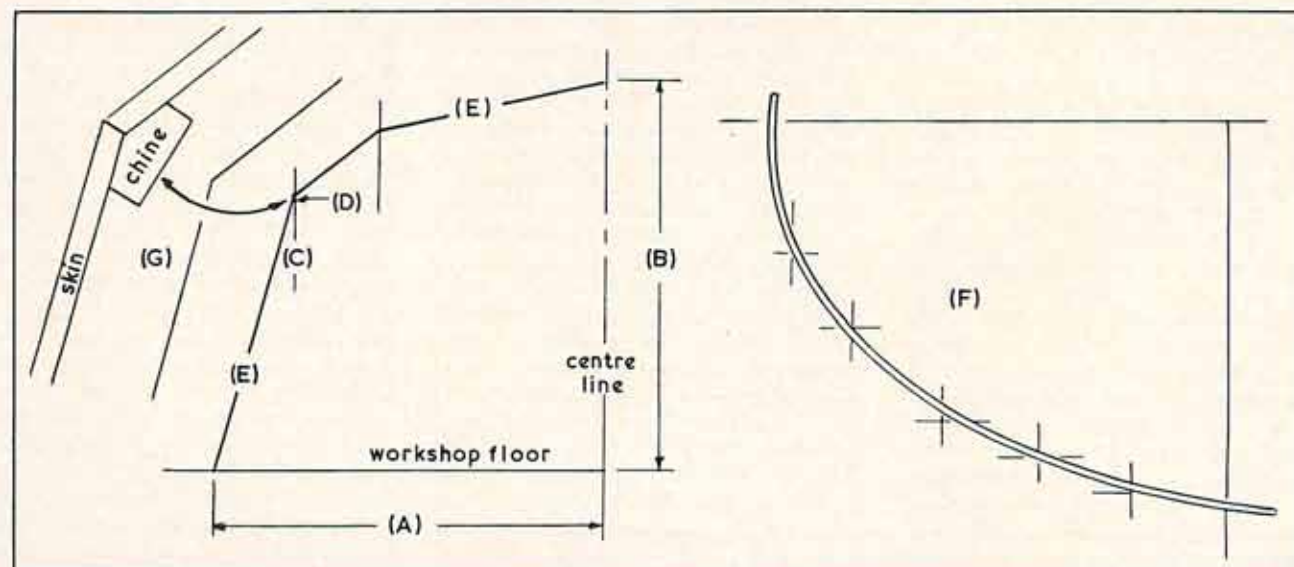
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**Fig 3. How to draw a frame, mark its limits and outline in**



the centre lines of the frames are in line with it.

The best check after this is to go for a walk. Not too far, but if you can get well away from the boat and sight along it any discrepancies will show up. If you are in a restricted space, take a critical look from each end, standing as far away as the workshop allows.

For the majority of boats intended for home construction the designer provides full-size drawings of frames and shaped parts, but in some cases and for the larger craft there are only scale drawings accompanied by a table of offsets. For large frames and other parts a point is reached where they are too big to be drawn on available sizes of paper.

The table of offsets is not as frightening as it may at first appear. It gives the location of points on the outline measured from two base lines, rather like co-ordinates in map-reading.

In the case of the frames the base lines are usually the centre line of the frame and the workshop floor.

The measurements may be in ordinary figures, or they can be in three columns indicating feet, inches and eighths of an inch, but there will be something on the drawing making clear how the measurements are given.

#### Curved cross-sections

Two lines are set down at right-angles. If space and time are not important each frame may be dealt with separately, but usually several frames are drawn on each pair of right-angled lines. As the frames near the middle of a boat are not so very different, confusion may be reduced if alternate ones are done on different pairs of base lines.

To draw a frame, mark its limits on the base lines (fig 3A, B). Take another point and measure its distance from a base line. As you do not know its position in relation to the other line, draw a short line (fig 3C). From the other base line measure and mark the position of this point on the short line (fig 3D). Get the position of other points on the frame in this way and join them up (fig 3E). If it is a plywood boat, the section will be in straight lines except for a slight curve in the frame nearest the stem where the plywood takes a twist.

If the cross-section is curved the widths may be given at a series of heights which are the same for all frames. These may be called 'water

## If you've only one pair of hands . . .

A PEG RAIL for the tiller is a gadget that gives a great deal of value for the minimum cost and trouble.

The way you make it will depend on your boat—the one shown here was just too easy because the after cockpit coaming provided a convenient place to screw that piece of 1½ x 2 inch oak. Without the coaming it can be screwed to the deck, and when the deck is well below the tiller the rail can be supported on blocks. For a higher rail a practical method is to use galvanised bolts with spacers of ½ inch galvanised water pipe slipped over them beneath the rail. In that case a thicker rail would be



better, to give strength around the bolts.

My pegs are ordinary dowelling of ⅜ diameter, dropping into ½ holes. The simple rail shown here has the holes drilled in a straight line, but for finer adjustment of tiller position you can get more holes into a given length by drilling them in a zig-zag pattern. Zig-zag holes need a wider rail. The holes are drilled right through, so water will drain out.

Pegs are much quicker than lashings, easier to adjust, and easier to remove in a hurry. They can relieve the helmsman from a good

deal of effort when the boat is on the wind, and they can give him the opportunity to go below for a few minutes at a time.

They can also be very valuable when tacking. Sailing single-handed, I put the helm down and peg it. Then step forward to cast off the headsail sheet, step across to the sheet winch on the other side of the cockpit to get the sail sheeted in as the boat's head comes round, then back to take the peg out. It is a neat manoeuvre with the peg, a perfect mess if attempted without.

Although bronze belaying pins might look better, I strongly

recommend wooden dowel, and not too strong. I used metal pins on one boat, but changed to wood because I thought that it would be nice to be able to snap one in a real emergency. Not long after I was proved to have done the right thing when a sudden and powerful little squall burst from nowhere while I was sailing up through some crowded moorings. On her ear, the boat luffed sharply and set her stem vindictively at some chap's costly floating gin palace. I was glad that the dowel snapped when I pulled really hard on the tiller.

AP

lines' in the plan, although none of them may be the actual water line when the boat is afloat. To get the outline of a frame points are marked at all these levels.

With help, a thin flexible lath or spline is bent around these points and a line drawn. The designer has obtained his offset measurements from a scale drawing and they may not be perfect. The curve drawn has to strike a mean. Bending the lath around will soon show any that are slightly out (fig 3F). It is possible to bend a lath unaided by using nails to hold it, but having an assistant is a big help.

Drawing shapes from a table of offsets is not the end of the particular job as these usually give the shape outside the skin. The next step is to draw in the thickness of the skin, followed by sections of lengthwise members and finally the outline of the frame (fig 3G).

All of this may seem tedious, particularly when you are anxious to get on with the actual building, but a boat with a twisted stem, a dog-leg shape in the keel, uneven sides or some other flaw in shape is no use to anyone—certainly not you and you may have difficulty in giving it away let alone selling it.

Photograph by courtesy of Rowcraft Ltd., Beccles



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# Fight cold and damp with a solid fuel stove

says **CHRISTOPHER DAWSON**



FOR PRACTICAL PURPOSES solid fuel in small boats means anthracite or charcoal. Wood is too bulky for the heat it gives, and much the same is true of coke; coal is really too messy.

The big advantage of charcoal is that only a small flue is needed. The Pascall Atkey Pansy, standard charcoal heater for yachts, having a 1-inch bore copper pipe for a flue, calls for little cutting away of the deck and makes a tidy installation. The snag is that it needs cleaning out after every few fills of fuel, which can only be done with the fire out, so it is not so good for continuous use of more than eight to twelve hours. For the odd chilly evening, however, or for a day's work aboard in the winter, it is ideal.

If you want continuous heat, the capacity to burn all night or longer without attention, then the anthracite stove is the answer and the biggest range is made by Pither. The stainless steel models are worth the money if you can afford it. It is not easy to find room for a Pither installation in a really small yacht, unless the accommodation has virtually been designed round it. Anthracite beans or peas are stocked

by better class coal merchants, and probably the easiest way to buy the fuel is to take two or three old army kit bags to the coal yard for filling. The bags can be used to store the fuel on board if no locker is available.

## Fuel storage

Charcoal is not exactly clean to handle but it can be put into paper bags and sealed down with Sellotape before it is taken aboard. These bags can then go in a heavy-gauge polythene bag if there is no other storage provision. The fuel can then be put in the stove, in its paper bag, though if the paper is damp it may hinder lighting. Buy charcoal in 28-lb bags—at about 28s a bag—and two or three will last a season and winter of weekend use.

An ideal locker for anthracite or loose charcoal would be a zinc- or aluminium-lined bin, filled through a deck plate (3 or 4 inches in diameter with special funnel) and opening at the bottom inboard. Anthracite for the Pither cannot be so easily pre-packed as quite a large quantity has to be fed into the small filler hole, because the whole of the top part of the stove consists of a hopper which holds enough fuel for

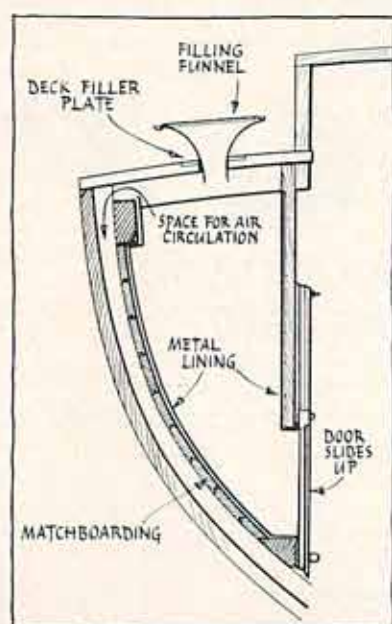
a good eight hours' burning. One has to watch that small enough peas are bought or the fuel does not feed down to the fire and it burns out.

With either fuel it pays to have an efficient scoop-shaped shovel to handle it, whether straight into the stove or into bags. I have one of those scoops that old-fashioned grocers used for ladling rice or sugar out from un-hygienic bins behind the counter.

## Careful installation essential

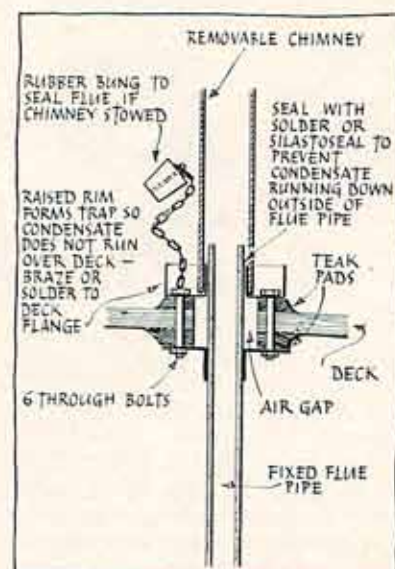
The two main points to watch in installing any solid fuel heater in the confined quarters of a boat's cabin are good insulation from the structure and a properly arranged flue. Plentiful ventilation and proper securing of the stove are of course essential too. The drying effect on woodwork of a stove in continuous use is great and may open up shakes if adequate separation and air circulation are not provided for.

The charcoal-fired Pansy is circular in plan and comes complete with mounting brackets which keep it well away from the bulkhead or other structure to which it may be fixed. Its heat is less intense than the Pither's but even so it is a good idea to cover the immediate neighbour-



Left. With solid fuel it is worthwhile to make a locker specially for the purpose of stowing the stuff. If it is carefully designed and built, mess can be kept to a minimum.

Right. One of the crucial points in any stove installation is the passage of the flue through the deck. This sketch shows the arrangement that is used with the Pascall Atkey Pansy charcoal stove.



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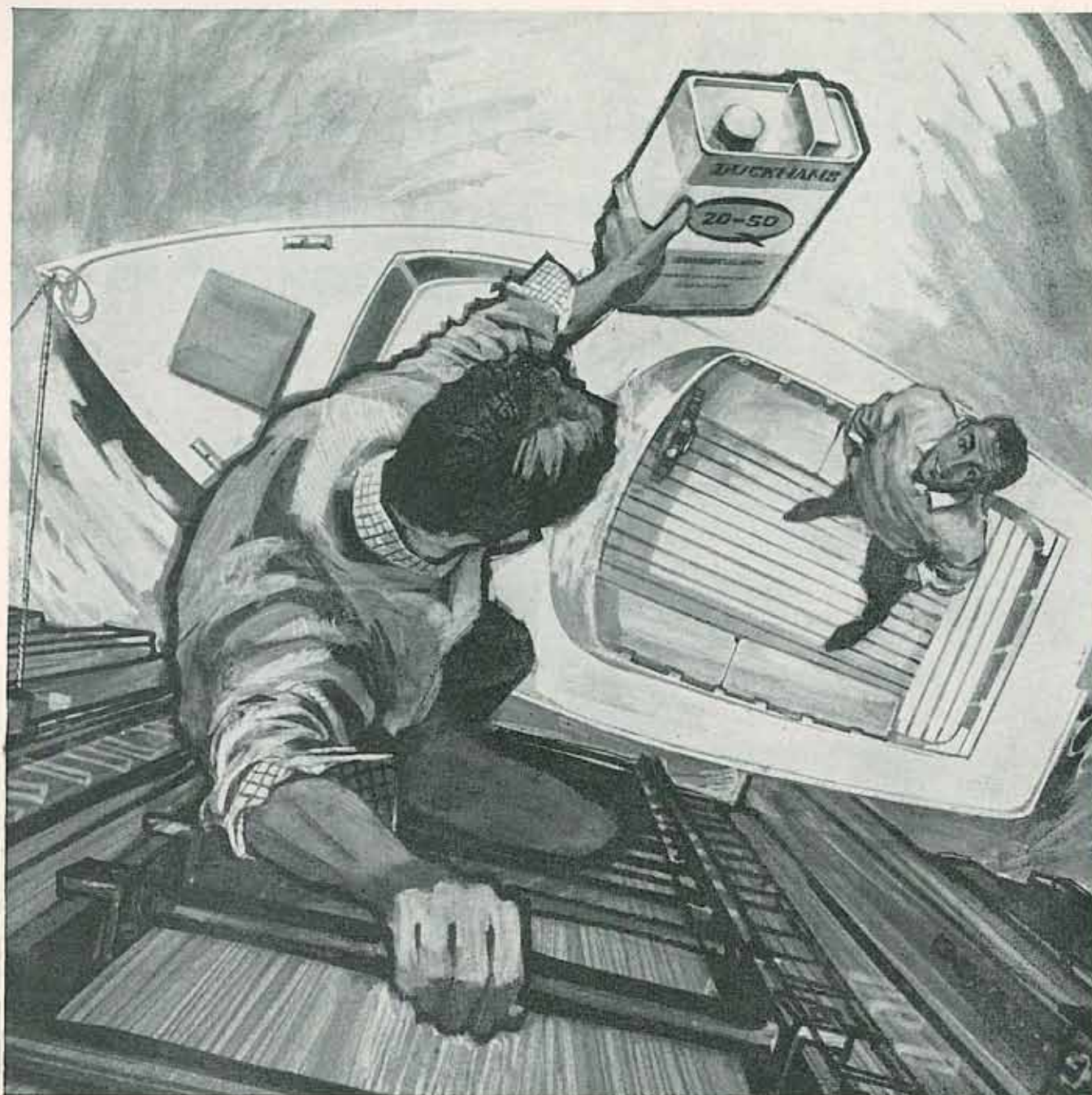
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hood with stainless sheet over thin asbestos. Part of a stainless kick plate for a house door screwed over a piece cut from an asbestos stove mat has worked well in my boat. Aluminium alloy is a cheaper alternative, but if it comes in contact with the copper or chromium plate of the Pansy brackets corrosion is sure to follow. Use stainless or aluminium (or at a pinch galvanized) screws with aluminium.

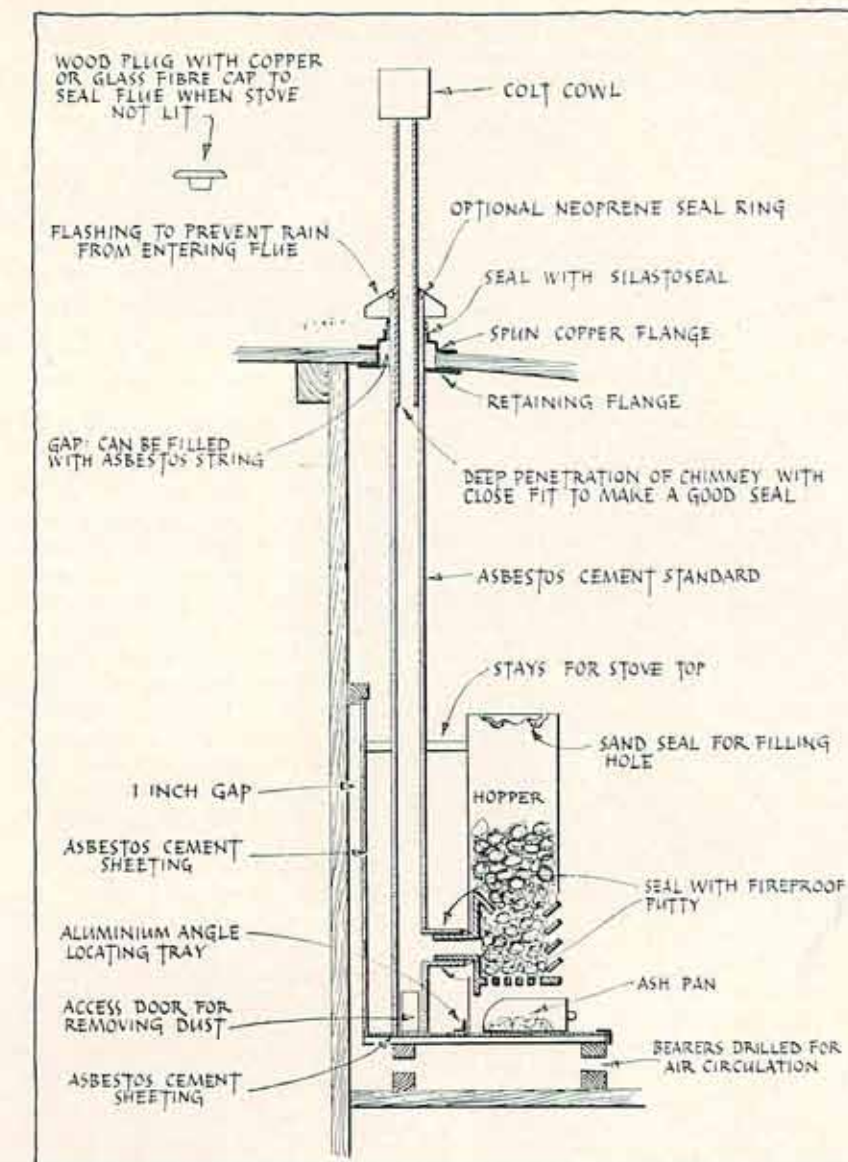
The Pither type of stove gives a tremendous heat—if allowed to the casing can become red hot in places. It needs to be firmly mounted on 1 inch boarding with a 2 to 3 inch air space beneath, lined with  $\frac{1}{4}$  or  $\frac{1}{2}$  inch asbestos. Asbestos cement building sheet is cheaper than soft asbestos board, and quite suitable. It can be sawn and drilled, but care is needed if it is not to crack and it blunts tools quickly. It has the advantage of being self-supporting, and the 'good' surface is quite smooth and pleasant to look at.

Any woodwork within a foot of the Pither should be covered with asbestos board, with an air gap of  $\frac{1}{4}$  to 1 inch between the asbestos and the wood. Special brackets have to be made to support the top of this type of stove, which is tall and narrow, and a locating tray is needed to receive its base. This can be made by bending aluminium angle, or consist of separate lugs of stainless steel.

Caravans often have water tanks heated by the flue of an anthracite stove but they need a good deal of space, and in marine use are apt to have a short life because damp and condensed fuel gases attack the galvanized steel tank. The usual type has to be filled by hand through a hole in the top.

### Keeping the goo at bay

Both charcoal and anthracite give off products of combustion which condense in the flue. The anthracite ones are corrosive, and both are fairly unpleasant. Careful detailing of the deck joint is needed if unsightly weeps are not to disfigure the decks and trickle below. The old solution was the water-tough deck plate, but the size, space and weight are prohibitive for today's small boat. If the drawings are followed closely there should not be any trouble. With the all-metal Pansy flue the joint between the flue and the upper deck flange can be sealed by soldering, preferably silver soldering. Heat resistant Silastoseal or other silicone rubber sealant is an alternative, and will also serve to seal the asbestos flue of the Pither to its deck flange. Another way is to



The Pither range of heating stoves have been supplied for use aboard boats for many years. This sketch shows the installation of a Pither anthracite heater which can be used for continuous burning with little trouble.

bond with epoxy resin, but the flexibility of the rubber accommodates deck deflections better.

If the chimney fits *outside* the flue, as with the Pansy, a trap must be formed at the deck flange to prevent the mucky condensate running over the deck. The Pither chimney fits inside the flue, so any drips will be returned whence they came and be evaporated.

It is a good plan to have some sort of plug for the flue top for when the stove is out and you want to stow the chimney.

### Flues must be high enough

No stove will draw properly if the flue is inadequate in height, or blocked. The 1 inch Pansy flue works well at about six feet of height,

measured from the ash pan once the stove is going. Avoid constricting the flue in any way to less than 1 inch. Functioning depends on keeping the slots in the iron bottom casting clear of dust, and they must be cleaned out thoroughly every time the stove is lit. The higher the flue the more it will draw through a clogged grate, but the height is severely limited, at least in sailing boats, and there is little choice but to keep the bars clear.

The Pither also needs at least six feet of flue, normally of  $3\frac{1}{2}$  inch bore asbestos cement pipe. Special standards can be bought to join up with the flue stub on the back of the stove; the joint is sealed with fire-proof putty. To get height, and to have the deck hole in a position not



too much in the way, it is best to take the flue through the coach roof. A flange spun or silver-soldered from copper sheet makes the best deck connection.

#### Chimney cowls

The Charley Noble, as the cowl is traditionally called at sea, needs to be a good joint with the flue pipe or deck fitting, to avoid condensate leaks, and to be as high as possible above the deck. The pattern used



The flue connection through the coach roof.

with the Pansy is one of the simplest and best non-directional cowls, but the Colt type is more suitable for the larger flue used with anthracite. Aluminium is cheap but will only last a year or two with anthracite. Copper will verdigris, so stainless steel would be best. Under present conditions some forms of stainless are cheaper than copper, too. A really tall chimney for harbour use is a good idea—one can make do with temperamental burning on the few occasions when the stove is lit at sea under sail and the boom limits height. I have one made from stain-

Close-up of a Pansy charcoal stove. Just the thing for a chilly evening.



less steel tube as long as I can stow on deck for my Pansy.

#### Spark-proofing

The Pansy, designed for boats, has a closed fire and a fine-mesh gauze air intake which is spark-proof. If you want to use the Pither at sea see that a brass or copper gauze screen is firmly clipped over the opening, covering it from every angle. This is a wise precaution in harbour, but essential at sea when the ship's motion may result in sudden back draughts.

#### Lighting-up hints

Pansy stoves are lit by a meths torch in the ash pan, and the makers recommend pre-heating the flue with meths too so that it draws at once. With the normal flue, which is sometimes in a wind eddy from the boom, I find a tendency to down-draughts under some conditions of wind. This blows out the meths torch. Repeated attempts to light with meths cause fumes, and my really tall flue is a tremendous help here. An alternative would be to remove the ash pan and light the fuel with a blowlamp—preferably a butane one.

Pither stoves can be lit with firewood and paper, like a coal fire, but with modest flue heights may again be temperamental, and a blowlamp is ideal here. If a Pither still shows reluctance to light, check that the flue nozzle at the back is not constricted with a pile of fine ash. If it is, remove the door in the flue standard and clean it out. If there is no door, or it is inaccessible (which is bad installation), make a scoop from an old tablespoon seized to a stick to rake it out.

If either stove is persistently difficult to light it may be worth fitting a small electric blower, branched at an angle into the flue so as to inject an upward airstream. Twelve-volt blowers used for cooling electronic equipment can be had from surplus stores, and do not take much current. In any case it should only have to be on for a few minutes. The blower should be removable, with a plug to seal the aperture where it fits.

It has been said often enough that solid fuel stoves are a joy, at sea on a cold night even in the summer, or when weekending in the winter. Certainly they are much more satisfactory than bottled gas or paraffin flue-less stoves, and once you have a flue you may as well have solid fuel. Until we all have central heating plants burning diesel fuel they are the best bet, and I for one put my Pansy very high up in the list of extra gear to be fitted.

## Roof rack loading simplified



Getting dinghies on and off roof racks from the side is both dangerous and awkward. If the dinghy is a heavy one the task becomes almost impossible.

To combat this, Victoria Motoracks Ltd, 80 Bessborough Place, Victoria, London SW1, has developed a rear loading rack which, as the chap above shows, makes things a lot easier.

The rack is fully adjustable and will fit virtually any make of car. By running the vertical telescopic supports down to the rear bumper, much of the actual weight of the dinghy is prevented from acting directly upon the roof.

Finish is paint over a phosphate base coating.

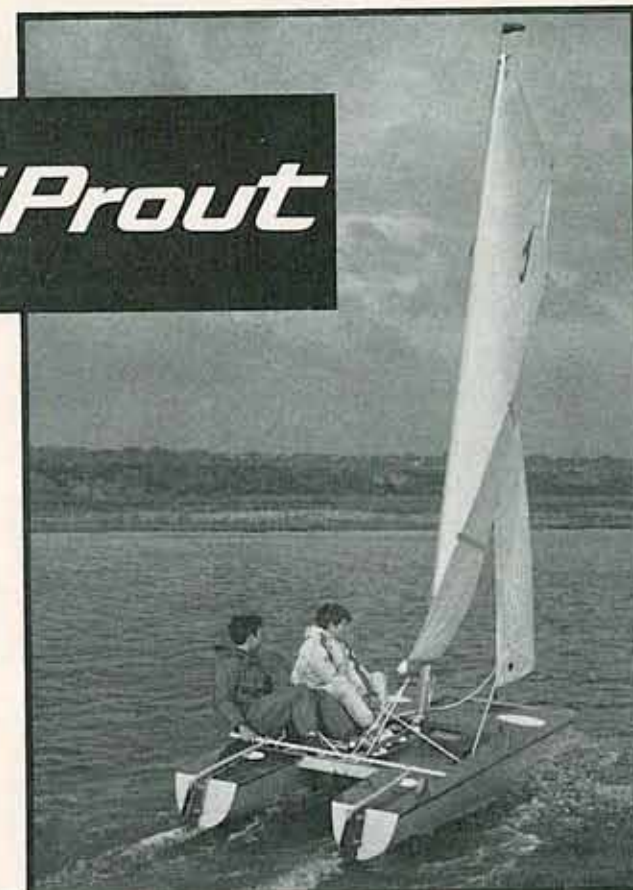
Victoria Motoracks are making a special offer via PBO. A limited supply of these rear loaders, usually marketed at a retail price of £8 19s 6d, is being offered at a special price of £4 10s.

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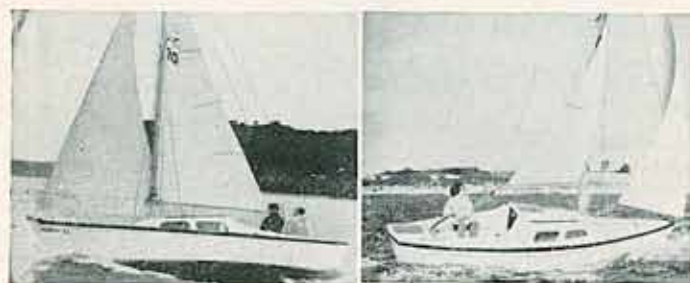
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EVERY CRAFT, sail or power, depends on ropes and cordage. And everyone who puts out in a boat, whether on river, lake or sea should know certain bends and hitches.

Knots have been worked out over centuries as the best way to do specific jobs. One criterion of a good knot is that it stays tight under strain but is easily undone when necessary. This is the first of a series of articles which is intended to put a knowledge of basic knots, bends, hitches and splices at the fingertips of every practical boat owner.

Originally the responsibility of the bos'n, his locker contained the essentials for whipping, splicing and the general maintenance of ropes. Today, this material is conveniently stored in a box or basket.

The basic requirements are a **knife** and a **marine spike** for splicing (these may be combined in a clasp knife), and a pad of **twine** for whipping a rope's end. Eventually a typical "bos'n's box" or "basket" will probably contain: **spun yarn** and **marine** for whipping and serving; **codline** for bending on sails and lashing down small objects such as boathooks and oars; **hambro line** for lacings and seizings; a roll of **waterproof self-adhesive tape**, used for temporary whippings on synthetic fibre ropes and for sealing off rigging screws; and possibly a **sail-maker's palm**, **needle and thread** for repairs to canvas, oilskins, etc., and for needle and palm whippings.

Every rope's end should be whipped in order to prevent the strands unlaying and unravelling and in order to allow the rope to be rove easily through a block or ring.

Here is the simplest whipping of all. A length of twine is laid beside the rope with its end extending to a distance of about six times the depth of the proposed whipping. The whipping is started by making a series of turns round the rope and the twine itself, working towards the rope's end. These turns should be made against the lay, i.e., in the opposite direction to which the strands of the rope are twisted together.

When half the depth of the whipping has been completed, the free end of the twine is brought round on itself, leaving a short loop extending beyond the rope's end. The remaining turns are now put on, leaving the free end of the twine projecting from the

middle of the whipping. Finally the twine is cut, leaving sufficient length to pass it through the loop which is then pulled through the whipping bringing both ends out in the middle of the work.

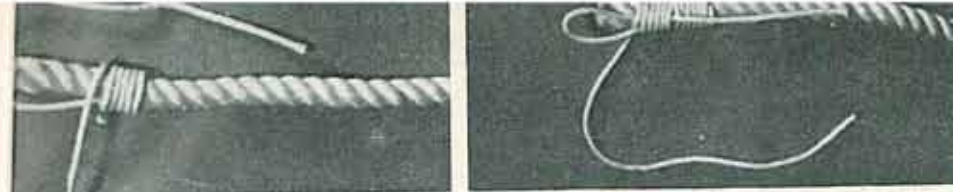
## BOS'N'S BOX No 1

by KEN BOYD

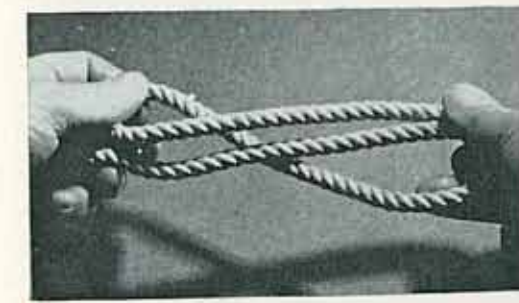
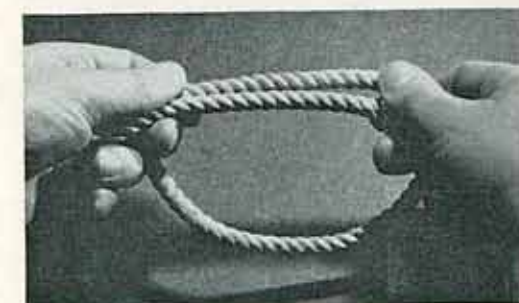
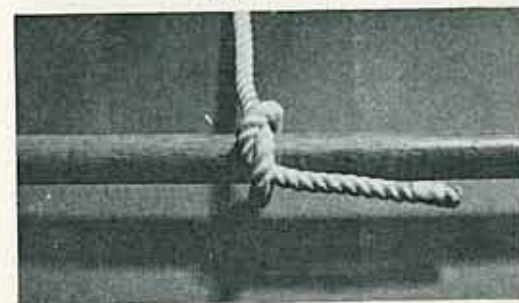
Pitfalls to avoid are leaving too little twine in the beginning to pull the end through, working too close to the rope's end so that the final turns spill over and work loose, and making the turns either so tight that the end cannot be pulled through, or so loose that the entire whipping can be stripped off the rope. Finish the job by cutting off the ends of the twine flush and rolling the work between the hands.

Probably the first knot most seamen learn is the **clove-hitch**, used to bend a rope to a spar or ring. It is the hitch used for mooring. It is tied by making two **half hitches** as illustrated. The **clove-hitch** can also be thrown. To throw a **clove-hitch** make a right over left hand loop in a bight of rope and twist the right hand side of the loop upwards and inwards and the left hand side in the opposite direction. Fold the resulting figure 8 together towards you and drop the two loops over the bollard or mooring post. By twisting the sides of the loop in the opposite directions we throw a **constrictor knot**. This is an "instant whipping" and as such is immensely useful. It is, in fact, an overhand knot with a round turn riding over it. **WARNING:** This knot grips relentlessly on any convex surface and is very difficult to untie without cutting. On no account should it be used for mooring up a boat. To tie a **constrictor knot**, first tie a **clove-hitch** and then lead the end of the rope over and up through the first half hitch.

**Next Month:** the **granny**, **reef**, **sheet bend** and **bowline**



Above, from left to right, a simple whipping, Below, half hitch, clove hitch, the technique for throwing a clove hitch, and finally a constrictor knot.







Sparkling with life once again, *Nirvana* lies aground in her berth at Shoreham. Her narrow beam and long bowsprit combine to give her dart-like proportions.

YOU SEE THEM everywhere—the bare hull of a once fine yacht, thirty, forty or fifty feet long, with a cutter bow and counter stern; or the plump, go-anywhere, roomy remains of a rugged fisherman. They lie in mud berths and float on about four tides a year; or they lean sadly against a jetty or workshop wall in little yards. They can be bought for a song.

Is there any point in even day-dreaming about buying an old hull, however cheaply, and with loving sweat and toil re-create for yourself a beautiful boat, your dream boat, which will make you the envy of everyone wherever you take her? Ninety-nine times out of a hundred the answer should be "no". Unless you have great skill with tools, all the time in the world and the patience of Job, and plenty of money, or you can afford to pay fantastic yard labour

## FORLORN EIGHT

charges, you will be buying a hobby for life but probably never set sail in her.

But if that is what you really want to do and your patience does not run out even after five, six or more years, then do not be too easily discouraged, for it can be done.

*Nirvana* was built in 1900 at Rosneath, a fine gentleman's yacht of 38ft 6in length overall, and narrow 9ft beam, as was the fashion then. Her draft was something over 6ft, with 3½ tons of lead in her keel. She was, of course, gaff rigged. In 1920 she took on board an unpaid crew in the form of a two-cylinder 10 hp Bergius Kelvin petrol paraffin engine, which she still has to this day.

She was designed by A Mylne, built by P R MacLean, and registered at Ardrossan.

It can be presumed that she spent her early life cruising round the Western Isles and was seen at many a Clyde Week. Nothing more is known of her history until 12 years ago when she got into the hands of a dealer. Lead was then about £400 a ton, so he had the keel taken off and sold it. He also sold everything else that was removable and would fetch a price.



JACK BURGESS—something to smile about.

## HULK REPAYS YEAR LABOUR

by  
**John  
Watney**

The bare hull was then filled with bits of scrap metal and old engine blocks to stop it falling over, and left leaning against a jetty at James Taylor Ltd., Surry Yard, Shoreham. That should have been the end of *Nirvana*.

She lay or leaned neglected for two years until 10 years ago Jack Burgess, a local surveyor—property, not boats—saw her, was intrigued by the look of her, and bought her for £85. She was just a hull, with a deck and a rusty old engine.

He was lucky to be able to find and buy a copy of the original plans. With those, and the advice of a Naval architect, he was able to calculate the size and shape for a new, smaller keel in iron.

The hull was refastened throughout. The frames are oak, the planks from the waterline of yellow pine, but above the waterline it is a very white wood, of uncertain origin, but thought to be Scotch fir or larch.

*Nirvana* cruising in the Channel. She makes a fine picture which could only have been bettered with her topsail rigged. But for gentle cruising in a fair wind she sails well enough without it.

The decks were refastened and canvassed, and a new mast of 42ft made for her. The original sail area was 933 sq ft; with the lesser keel her owner reduced the area to 600 sq ft. The sails were made for him by Jeckells. Most of the remaining work he did himself and all the below decks fitting out and furnishing.

The oak frames were pickled black and Jack Burgess was worried about the strength of oak in that condition. Some said they were good for ever, others had varying opinions. To be quite sure and confident in the old boat when she came to be sailed hard, he has reinforced the main frames with steel straps taken down and across the keelson, bolted through with the keel bolts.

Below decks there are two settee berths, a fixed berth and cot up for'ard, and a quarter berth avail-

Jack Burgess has had three seasons sailing in her and says she sails beautifully and that he can do anything with her. But he is thinking of weekend sailing; he is not making any wild statements about ocean passages. "In a boat of that age I would not be particularly happy about a full gale in mid-Atlantic. The fastenings are sound, but there are so many places in a boat that you can never get at." Wise words which should be engraved on the main beam of every very old boat to deter would-be circumnavigators in search of a bargain.

Newly painted last season (1966), *Nirvana* is now a dream-come-true sight to any lover of old boats, and a valuable piece of property, too.

At the yard they said she was not exactly for sale (no more than every boat is ever for sale at a price), and they thought the right price would be anywhere between £3,000 and £5,000. Her owner is a little more modest. He puts £3,000 as her top value, but thinks she would be more likely to fetch £2,500.

What everybody is agreed on is that it costs upwards of £15,000 to have a similar boat built today.

It may all seem very easy and successful, briefly written about like this. But Jack Burgess has put in nearly 10 years of continual weekend and odd moments' work to bring *Nirvana* back to her original state with a few modern improvements. He could do this only because he enjoyed doing it and lived a 10





Galley arrangement on port side looking aft. Every attempt has been made to utilise available space to its best advantage. A point well worth noting is the small hand-operated fire extinguisher conveniently placed.

Main cabin / saloon looking forward to fixed berth in peak. The good headroom and brightness of interior is provided by a man-size hatch.

Main cabin / saloon (left) looking aft with chart table on starboard side and galley on port side. The chart table can be lifted to give access to a quarter-berth. (Below) When the tide goes out *Nirvana* sits balanced like a ballet dancer on her points. Warps and springer must be just right. The tubular steel leg to port would not take the strain if she were to heel over, but it is a necessary precaution to steady her even when properly tied up.

minutes' drive from the yard. It was also a friendly and helpful yard that was not too commercially orientated to discourage a man working on his own boat nor so business geared not to appreciate the offer of lots of odd jobs on an old boat spread over a number of years.

The economics of this job are encouraging. The owner kept a meticulous record of all money spent on materials and yard labour. In eight years he spent £1,900. Quite a lot of money, and perhaps frightening to most wage earners.

But that was over eight years, an average cash expenditure of a little under £240 a year, or not more than £5 a week. Much better, and more possible, than the £12 to £14 a week that a £2,000 boat would cost on hire purchase.

Of course, in the end Jack Burgess has spent in cash at least £2,000, plus mooring charges, and contributed hundreds of hours of his own time to produce a boat which, if he sells it, will barely give him his money back. But think of the joy and satisfaction he must have got out of it, and all the sailing he can enjoy. He has had three seasons already, and presumably could sail her for many, many years to come.

#### The last problem—a reliable engine

There must be a snag—there always is to any story about boats.

With Jack Burgess the snag is two-fold: the old engine, and the 6ft draft. He says: "Being in business I am more or less restricted to Sunday sailing. The number of fine Sundays, when the tide is right and the right people are available for crew, are few. She has rather a big mainsail and it is a bit of a handful in the wind. I need one good chap with me. If I had an engine I could rely on I could sail her by myself. But it is an old paraffin engine and, although it always starts first time if we are lying alongside, it usually plays me up when entering harbour. With my draft and the overfalls outside the harbour I really need a reliable engine or a crew who can handle her manoeuvring into Shoreham. There is a terrific tide, and when it is running at four or five knots it is impossible to get her into her berth. And getting away is difficult. She is only off the bottom for an hour and a-half either side of high tide".

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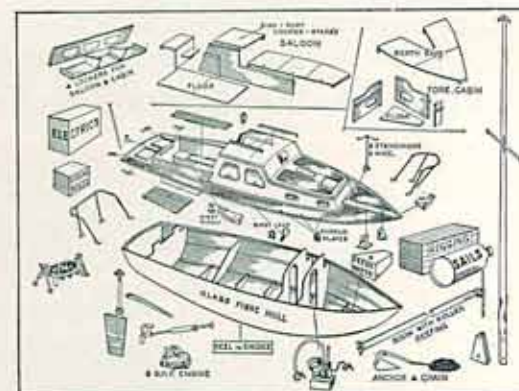
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## To win races... and cruise

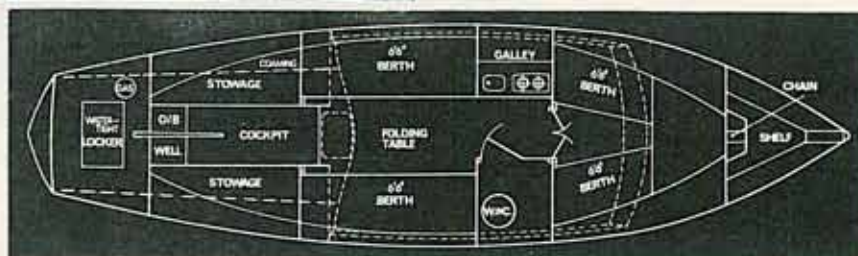
SPEED, AND EASE OF HANDLING are outstanding characteristics of the latest Tucker design, called TL 90.

Perhaps speed remains to be proved, since so much depends on the last few percent, but a member of our staff reports that the boat is very light on the helm and responds excellently.

In part this is due to the underwater profile with its fin keel, and in part it is due to the use of a hydrodynamically balanced rudder with sufficient area forward of the pivot line to keep the centre of pressure only slightly aft.

The boat seen here is of wood, and is in fact the 'plug' for a mould from which TL 90s can be produced in glass-resin.

The builders are Landmore's of Wroxham, a firm with a long and enviable reputation in boat building.



The boat has a very roomy self-draining cockpit with excellent visibility forward and easy access to the fore-deck past the blister-shaped dog-house. At the after end of the cockpit is an outboard motor well which will accommodate a motor up to Mercury 110 size.

Below, there is limited head-room, except under the after part of the blister. But the general effect is very pleasant because of the all-round windows.

Landamores offer the necessary sail-away essentials in their standard specification. This includes a suit of main-sail and staysail, two-burner gas cooker, water tank and sink, marine WC and 4-inch foam mattresses for the four berths. In fact the price of £1,982 is very good for this size and class of boat.

Length overall	30ft (9.14m)
Length waterline	21ft (6.4m)
Beam	8ft 2in (2.48m)
Draft	3ft 9in (1.24m)
Mainsail	130 sq ft (12.1 sq m)
No 1 Staysail	105 sq ft (9.75 sq m)
No 2 Staysail	125 sq ft (11.62 sq m)
Genoa	160 sq ft (14.9 sq m)
Ballast (fin and bulb)	1150lb (522 kg)

## AND A NEW ROUND-BILGE SILHOUETTE

ONE OF THE MOST popular little cruising boats of all time, the Silhouette starts a new life in round bilge form.

This new version has been designed by Robert Tucker and is in production at Hurley Marine, who have themselves already built more than 2,300 hard chine Silhouettes.

In the new version the central ballasted keel has been eliminated, and the steel bilge keels have been replaced with aerofoil section mouldings. The total sail area has been increased from 115 square feet to 165 square feet under working rig.

Hurley's standard price is £595, with alloy spars, stainless steel rigging, Terylene sails, roller reefing, and necessary deck fittings. Delivery is 'within three weeks of date of order', and Lloyds series production certificates will be issued with all boats.

Length overall	17ft 3in (5.25m)
Length waterline	14ft (4.27m)
Beam	6ft 7in (2.0m)
Draft	2ft 1in (0.64m)
Weight	1290lb (585 kg)
Mainsail	99 sq ft (9.2 sq m)
Staysail	66 sq ft (6.13 sq m)

## MAKE-HER-YOURSELF MICRO

FOR ANYONE who wants a smart, fast day boat with two full 6-foot berths and space for galley and WC, the Micro-plus 16 can be had as an uncompleted hull for £108. Various other stages of assembly are available, the hull with deck and cabin top would be £150 for example, and all the necessary components for a completed boat can be bought separately.

The boat is built in resin-glass, with a balsa wood sandwich construction for the planing bottom and for the fore-deck and cabin roof.

No filler is used in the resin and the

makers, Microplas Limited, maintain a standard considerably above the minimum set by the Ship and Boat Builders National Federation.

The Micro-plus 16 can be used with engines up to 40 horsepower when, if properly trimmed, a speed of 26 knots is attained. For those who are in no hurry a 6 horsepower engine will give up to 7 knots.

The standard boat, with mattresses, steering gear, rubbing strip cleets and fairleads costs £229. But with a chemical toilet, pulpit navigation lights, cockpit canopy... pretty well the lot, the price goes up by about another £100.



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# Fit a starter to your Stuart—and electrify your boat

BY PAUL LAMB

TO HAVE ENGINE power at a moment's notice when short-handed, or navigating in confined waters, just by a push of a button is a great asset. Stuart Turner Ltd, engineers of Henley-on-Thames, market a Dynastart\* kit for use of their well known models of two stroke marine engines not already fitted with electrical starting gear. Recently I installed such a kit on a P55 engine fitted in a Dauntless sloop.

Just how much of a job it would be for any other boat will depend on the amount of space you have to play around with. The actual fitting of the unit is a fairly straightforward task, but if it involves any structural alterations, it can speedily become a major issue. This is a point worth bearing in mind when contemplating fitting a self starter. The Dynastart is fitted to the starboard side of the engine, and extends outwards by about two inches, as well as increasing the over-all engine height by 2½ inches. This may not sound very much, but in a close-fitting engine compartment it can make a lot of difference.

The kit comes complete and ready for installation, and comprises the necessary brackets and bolts for

mounting; two vee belts; a control box; a switch box incorporating a start and stop switch, as well as an ammeter; and the Dynastart unit itself fitted with the necessary pulleys and guards. The unit serves two purposes, first as a starter motor, and once the engine is running, it supplies an 8 amp charge to the battery. A harness is supplied, and helps ease the wiring problem, but extra wire is needed. First are the main battery cables, these should be as short as possible to minimise the voltage drop between the battery and engine and control box, the recommended size for this cable is 37/036. This will probably have to be ordered, and if you know the exact lengths required, it is well worthwhile having the terminals soldered on at the same time. The other cables needed are either 3/029 or 28/012 size. The recommended battery size is 51 amp-hour, but others between 48 and 85 amp-hour ratings may be used safely.

## A snag with the piping

Having assembled all the equipment, the first thing that must be done is to drain the water out of the engine. This is important as some of the cylinder head bolts have to be removed when fitting the mounting brackets. Three brackets are required to carry the Dynastart and once these

With a belt drive running directly from the flywheel, a Dynastart is a simple enough addition to a Stuart Turner. The one job provides battery charging as well as starting, so that all the other benefits of on-board electricity can be enjoyed.

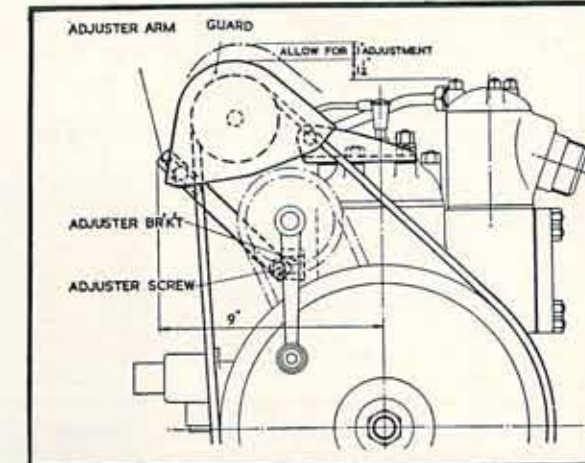
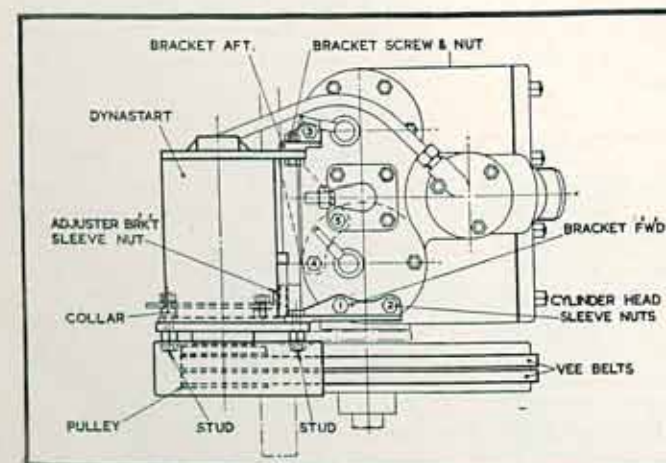


Everything you need, for £37 10s. Buy your battery where you think you can buy best. Dynastart can be fitted to single or twin cylinder engines.

are in position, their fixing bolts should be done up finger tight. The Dynastart is then bolted in position and the brackets tightened, by doing it in this order correct alignment is achieved.

It was here I met a snag, the copper pipe taking the water from the engine cooling system, out through the side of the boat had to pass through the narrow space between the Dynastart and engine. After one or two rather unsuccessful attempts to bend the pipe in a right angle, I conceded defeat, and sawed the pipe off leaving about ¼ in projecting from the union into the cylinder block.

A piece of Alkathene tube was then pushed onto the remaining stub, and with the aid of much hot water







## Hull weeps stopped by simple skin

THERE'S MORE than one-way to skin a cat. So goes the old proverb, but in our picture strips it's not a cat that is being skinned but a 19ft 10in 'dinghy-whaleboat' shown being sheathed recently in Cape Town, South Africa, with a new DIY material called Samcolastic.

Developed originally for the shoe trade, this material has already been used for decking and is claimed to be appreciably cheaper than more conventional sheathing media. It goes on like wall paper, cuts with scissors, cures itself and only needs dunking into a solvent before use.

Looking rather like grey cardboard, Samcolastic comes in rolls 48in wide in eight thicknesses from 0.025in to 0.128in.

The solvent is available in several grades with different drying times.

Hull preparation prior to skinning requires stripping to bare wood. No chemical stripper should be used. The surface must be sanded, and any holes made good with a plastic type filler.

The South African boys here laid the edge of the material along the keel, pinned it in place, and tailored it to suit. Edges were butted and filled in after curing and sanded flat. The shape of one half was used as a template to cut the other one to. Off-cuts provided 6in wide strips for the bow, stern and keel, with a generous 2in overlap all round.

The solvent was poured into an old oil drum which had been slit in two and welded together to form a large trough. After use the solvent can be returned to its container and stored.

Samcolastic is distributed in Great Britain by Samco-Strong Ltd, of Leicester, and is marketed by Mansell & Fisher (Marine) Ltd, London SW10 who are showing it at the Boat Show.



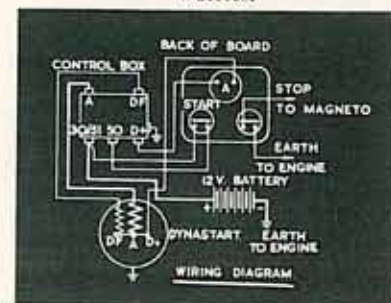
(Continued from preceding page)

was bent into the rather tortuous shape required, to be reunited with the remaining section of copper pipe well clear of the engine. The joints were clamped with hose pipe clips. It is important to heat the pipe thoroughly with boiling water before screwing them up tight.

Remove the plug caps first to avoid starting the engine, and it is a good idea to take the plugs out as well to ease the operation. The next move is to attach the vee belts, simply slacken off the Dynastart adjustment bolts, and pass the belts around the fly-wheel and the Dynastart pulleys, and then take up the slack on the Dyna-

start adjuster—about  $\frac{1}{2}$ in of play to and fro in the middle of the belt is about right. You are now ready to locate the starter box and control

The wiring diagram should cause no worries.



box. When doing this remember that it simplifies the wiring if they are close together and in fairly close proximity to the engine. A concise wiring diagram is supplied, and I managed to follow it with ease, though I consider myself an amateur in such matters. It should present little difficulty to anyone attempting the wiring.

Once completed and running, it is as well to check the vee belts after a few hours of use, as they are inclined to slacken rather quickly when they are first used. About 1 inch of play is permissible, but do not over-tighten as this may overload and damage the Dynastart bearings.

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18A Pintle Coupling. Capacity Length 11ft. Capacity Weight 200lb. Price £23.0.0.  
18B (illustrated) as above with ball coupling. £25.0.0.



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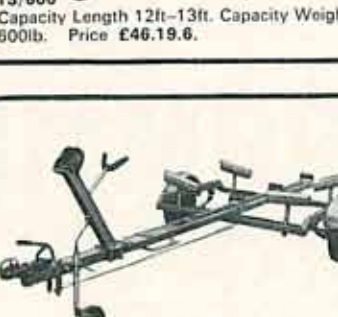
40B Capacity Length 14ft. Capacity Weight 400lb. Price £37.15.0.



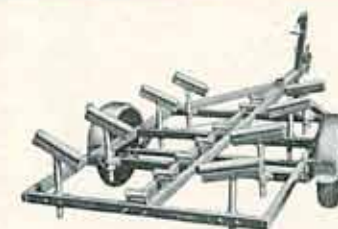
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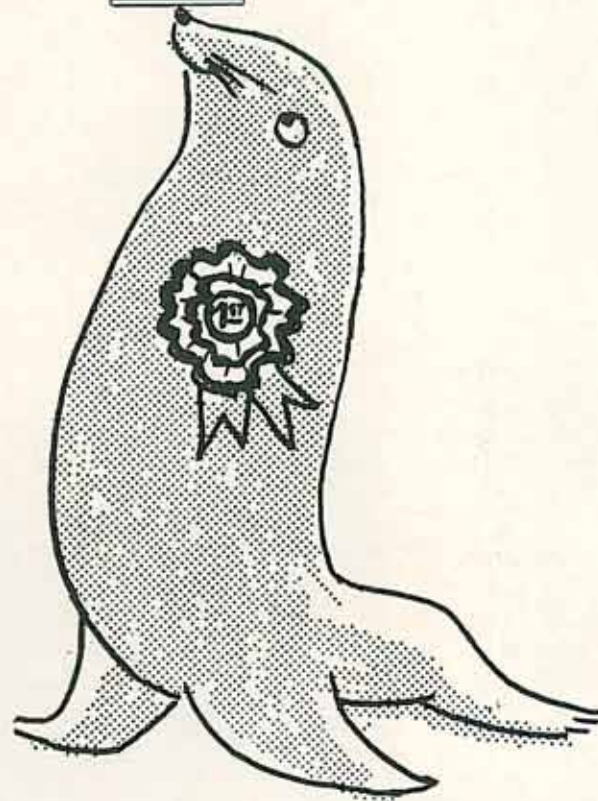
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No 1 JANUARY 1967



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## HORIZON to

### Boat hoods and canopies

HOODS AND canopies made to individual requirements, ready-to fit to any type of craft—that's the service being offered by a Berkshire firm. They are made against simple self-measurement charts supplied on request, with several basic designs to choose from. Assembly is easily completed by owner or yard.

The canopies and hoods feature welded windows, nylon zippered rear curtains, modern synthetic proofed and tested materials and sea-resistant die-cast fittings and frames.

Other items made-to-order include mattresses and seats, re-covering and new ones against brown-paper templates, boat covers, sailing dinghy covers and outboard motor covers.

Costs depend upon size and details but a cruiser hood for a 21-footer with a hood with frame 7ft long by 5ft 6in wide by 3ft 6in high would cost about £27, matching side curtains another £9 per pair. *The London Trimming Company Ltd, Marshgate Estate, Hitcham Road, Taplow, Nr Maidenhead, Berks.*

### Inboard-Outboard

THE NEW Crescent inboard-outboard drive unit is a three cylinder, two-stroke made from a special aluminium alloy with hard-chrome cylinders. It has a cubic capacity of 500 cc giving 50 hp at 5,400 revs/min.

Its lower unit is cast integrally with the gear housing eliminating screws, bolts and



joints from all underwater parts.

The propeller is mounted to pull (as opposed to pushing) the boat through the

water. This design feature is claimed to reduce the risk of cavitation by allowing the propeller to work in undisturbed water. The gear housing is fitted with a guard bracket to protect the propeller.

An entirely new feature claimed by the makers is two forward gears. First gear gives quick acceleration and second is for cruising. The gearbox, with reverse and neutral as well as the forward gears is water-cooled.

The entire unit is rubber mounted and fitted through a hole in the transom at an angle of 45 degrees. It has a steering swing of 35 degrees in either direction and can be tilted forward so that the gear housing and propeller are clear of the water.

The Crescent outboard is fitted as standard with bilge pump, 12 V dc generator for battery charging at up to 5A, and electric starter, electric choke and a cord pulley for emergency starting. Twin installations are possible provided the craft has a transom 5ft wide. *Kerry's (Great Britain) Ltd, Marine Division, Warton Road, Stratford, London, E15.*

### Radar reflectors

RADAR REFLECTORS are being marketed as safety aids for small craft, particularly those of timber or fibre-glass construction with poor reflecting qualities.

These small, lightweight devices are claimed to produce the same effect on a radar screen as a much larger craft with an effective response range of five miles.

Two popular patterns are the type SC3 and the Umbrawin Type 848M.

The SC3 is made from corrosion-resistant aluminium alloy, packs flat, and unfolds into a three-dimensional square with 18-inch sides. It should be hoisted at least 6ft above the water-line. Weight is under 4lb.

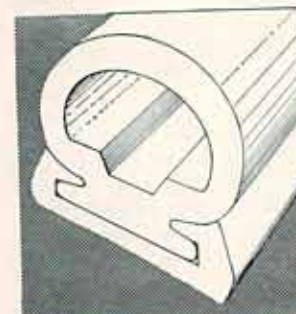
The Umbrawin 848M is made from silver-coated nylon-mesh supported by a tubular alloy frame. This lightweight unit extends to a cube with 36in, square sides,

## .... horizon

Shackles are provided at top and bottom for suspension and it folds into a cylinder roughly 30 inches long by 3 inches diameter for stowing. *Radar Reflectors Ltd, Rodney Road, Fratton Industrial Estate, Southsea, Hants.*

### Fendering and channel

ROPE FENDERING for dinghies will soon be a thing of the past with the ever-increasing use of extruded plastics sections. A new pvc dinghy fendering and channel



which when fitted leaves no holes showing and requires no brass or wood strips has become available.

Fendering is extremely simple, the channel is offered

up, marked to length, drilled and countersunk for screws and screwed to the gunwale. The channel can be bent around reasonable contours but for sharp corners mitring is suggested.

Once the channel is in place the fendering is slid in. Blocks are supplied to seal the hollow fendering—all that is required is the application of a hot iron to fuse the plastics together. Corner mitres can also be sealed together by passing a red hot knife through the join.

According to the makers the material will withstand all weathers and not powder through the effects of salt water or sun.

Supplied in white the fendering and channel together work out at 4s. per foot.

From the same stable comes a toughened pvc rubbing strake protector. This can be easily drilled, countersunk and fitted in place of the more usual galvanised iron strakes.

Apart from eliminating rust marks the plastics material has an in-built 'slipperiness'.

It will fit any contour and should withstand the hardest

\*\*\*\*\*

### SIX UP IN THE NEW DURAFLOAT



WITH A LENGTH of 12ft 3in and a beam of 4ft 8in the Durafloat '12' is the latest in the range. With accommodation for six people she can take an outboard motor of up to 25 horsepower and costs £150 ex works.

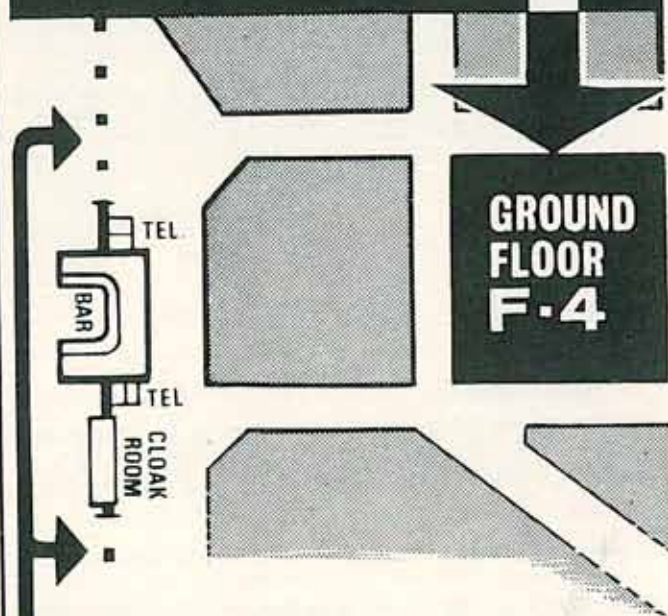
This new runabout uses the same construction as earlier Durafloats—the hull consists of a sandwich containing a core of rigid poly-

urethane foam between skins of ABS. The ABS skins are vacuum formed, and the unsinkable structure which results is not only strong but light in weight—200 lb. A foredeck and windscreen are available as optional extras. The boat in the foreground of this picture is fitted with them. *Clear Products Ltd, Heather Park Drive, Stonebridge Park, Wembley, Middlesex.*

\*\*\*\*\*

No 1 JANUARY 1967

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## HORIZON to horizon

treatment. It is impervious to all weathers and is supplied in grey at 1s 9d per foot. Mansell & Fisher (Marine) Ltd, 248 Fulham Road, London, SW10.

### Waterproof covers

**WATERPROOF COVERS** made from ex-Ministry green waterproof cotton duck canvas with a weight of 18oz per square yard before proofing have become available.

Made up into tarpaulins with eyelets and ropes as standard, the covers are marketed in sizes ranging from 15ft by 12ft (price £7 0s 0d), to 24ft by 18ft (price £16 16s 0d). All prices include free delivery in the British Isles in minimum quantities of five tarpaulins.

Copper naphtha has been used for waterproofing and this treatment results in slight staining being noticeable on some of the covers. George Cohen Machinery Ltd, 600 Wood Lane, London, W12.

### Plywood data

IF YOU WANT to know anything about plywoods a new 48 page fully illustrated booklet has been published by TRADA.

Called 'Plywood—its manufacture and uses', the book contains a vast amount of information on manufacture, bonding and structural uses of the material as well as on grading rules.

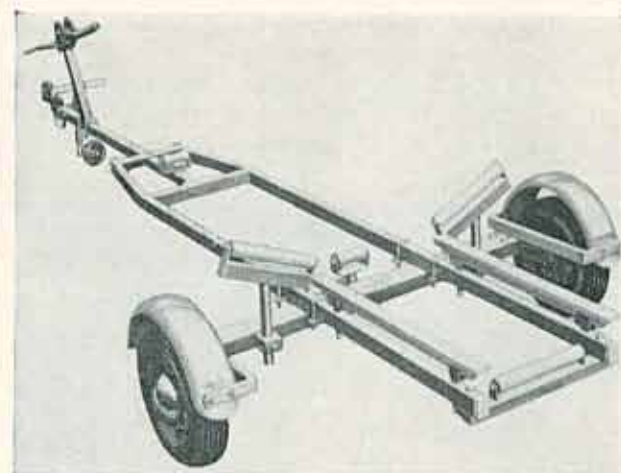
All principal types of plywood, blockboards and laminboards—their sources of supply, sizes, thicknesses, qualities and adhesives are thoroughly covered.

Decorative veneers, finishes, protective and fire retardant treatments are also dealt with.

The booklet, priced 10/- post free in the UK, can be obtained from the Timber Research and Development Association, St John's Road, Tylers Green, High Wycombe, Bucks.

\*\*\*\*\*

### LONG DISTANCE BOAT TRAILERS



A LAMINATED torsion bar suspension and 520 x 10 'Mini'-Wheels are claimed to add up to featherbed trailing for boats of up to 900lb and 15ft on the new Snipe Continental Powercraft. As its name suggests this trailer has been developed primarily for continental trailing but is

equally suitable for use over any distance. The makers claim to manufacture the largest range of trailers in the world with capacities ranging from 200lb to 4 tons. They also market launching trollies, trailer accessories and winches. Lew-Ways Limited, Conduit Works, Watling Street, Cannock, Staffs.

\*\*\*\*\*

### Lightweight dinghies

ONE OF THE criticisms usually offered against small fibreglass dinghies is that of weight. Advantages, on the other hand, include easy repairs, minimum maintenance and durability in general.

The Minipram Lightweight with an all up weight of 65lb and room to seat four adults and a child for short trips seems to be a step in the right direction.

It is a low cost fibreglass dinghy with moulded glass fibre fore and aft thwarts, and a clear cedar centre thwart

Kits are available in three sizes, producing 2½, 10 or 50 cubic feet of expanded foam, Seamarine (Northern) Ltd, 18 Union Street, Liverpool 3, Lancs.

### Small windlasses

THE NEW electric 'Mini' range of windlasses is available for both 12 and 24V and is suitable for craft up to 40ft. It provides a maximum of pull of 650lb at 25ft/min at 24V and 330 lb pull at 25ft/min on 12V.

The 'Mini' SDE is an

## HORIZON to horizon

and has been made virtually unsinkable by two built-in air tanks. A transom pad is fitted to take the outboard motor, and galvanised rowlocks, rowlock plates and towing rings are all included in the specification. Length overall is 7ft 7½in, beam is 3ft 11½in, stowage height is 21in. Price for the lightweight is £36.

A super model at £49, and a sailing model at £92, are also available.

For the Do-it-Yourselfer the makers will supply a part completed minipram which requires only the thwarts and rowlock fittings to be fitted to complete to minimum requirements. The bare hull costs £20. The Monachorum Manufacturing Company, Wixenford Farm, Colesdown Hill, Billacombe, Plymstock, Devon.

### DIY Buoyancy kit

BUOYANCY AND insulation specially developed for the amateur boatbuilder has become available in a twin-pack kit.

Called Seafoam, the kit comprises two separately packed chemical components, which are mixed together in equal parts and stirred, preferably with a mixer fitted to a power drill.

The mix is immediately poured into the cavity concerned, where, over a five-minute period, it expands into a rigid closed-cell foam. The foam adheres firmly to the inner surfaces, and is non-absorbent, oil- and petrol-resistant and fire-retardant.

hydraulic unit and supplied complete with an all-in-one composite pump unit which embodies the reservoir, oil filter, pressure relief valve, drive pulley and friction-type clutch. This particular windlass is said to be capable of a pull of 330 lb at 25ft/min.

Both the electric and hydraulic versions of the 'Mini' are available in a



range of hammered stove-enamelled finishes. The units are also available with warping drums in place of the chain gypsies. The range, together with other, more powerful units, is on show at the Boat Show. A W Smallwood Ltd, Pomeroy Street, New Cross, London SE 14.

### Electric bilge pump

FOR THOSE who dislike pumping out bilges by hand, a new electric unit sounds just the job. Known as the Kainer No. 300, the pump is submersible-switch controlled and its base and impeller are both moulded from Delrin. This is a material with low friction and wear characteristics.

The impeller has sufficient

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2-BERTH OFF-SHORE EXPRESS CRUISER



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HULL WITH ENGINE BEDS AND FLOOR BEARERS £375  
AS ABOVE PLUS DECKING £425

Prices include royalty and full set of working drawings.

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Suitable engines  
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WATERMOTA SEA TIGER  
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Speeds to 30 knots

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£11.16.6d, or with hood  
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Buoyancy unit £1.10.0d.

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£320



£235

International Boat Show  
STAND UH2

### GENERAL SPECIFICATION

Large double berth with upholstery. Galley sink and waste fittings. Provision for a calor gas cooker. Wrap round panoramic windscreen. Large ventilating hatch in cabin roof. Large locker and seat in cockpit. Remote steering. Deck fittings and grab rails. Heavy duty tendering fitted around gunwale. Self draining motor well suitable for single or twin long shaft outboard motors.

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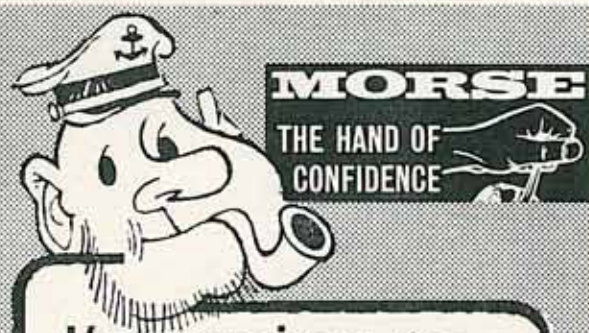
This is a clean lines 4-seater outboard runabout with sports like performance, capable of high speeds, combined with maximum stability for safety in the sharpest of turns. In fact an ideal craft for any fun loving member of the family.

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I'm going to  
stand number  
**UA1\***

at the International Boat Show  
Earls Court, Jan. 4-14th. 1967

\*MORSE  
of course

MORSE CONTROLS LTD. 2nd DROVE FENGATE PETERBOROUGH  
Telephone: PETERBOROUGH 67191-2 Telex No. 32253  
(An Associate Company of Morse Controls Inc. U.S.A.)

clearance to allow small particles to pass through without damage.

Supplied with 6ft of water-proof lead wire, the pump can be installed in any part of the boat. The discharge port is threaded for a standard 1/2-inch hose coupling, and a through hull fitting is available to facilitate permanent hook-ups.

Other accessories for the pump are a push-pull, two-position switch, 5ft or 10ft of reinforced hose with brass coupling.

Rated 10 gal/min at a 3ft head, the pump is available for 12V use, weighs 2 1/2 lb, and measures 5 1/2 in by 4 1/2 in diameter overall. C Bell Ltd, 59 West Quay Road, Poole, Dorset.

unit is said by its makers to be the simplest, lightest, and easiest to use marine WC available. A Lavac unit was selected for installation in Francis Chichester's Gipsy Moth IV. Lavac Ltd, Pope's Manor, Binfield, Berks.

### Flexible marking paint

INFLATABLES ARE becoming increasingly more popular as tenders and run-abouts. One snag which has been felt for some time is the impossibility of painting a name on an inflatable craft, unless it has a fixed, wooden transom.

Ramalon is a marking kit which has been developed to overcome this problem. Each kit consists of a tin of solvent

## HORIZON to horizon

### Rope and rigging links

THE NORSELINK is a useful stainless steel link designed to speed up rigging work, and forms part of a new selection of fittings available from Norseman Ropes.

Other new items include the Norseman D/F insulator, terminals/Pelican Hook and oval eye assemblies for guard-rail gangways, and an Aerial Insulator.

The D/F insulator is a Tufnol fitting which has been



developed to fit in guard-rails to eliminate 'loop' interference. The Aerial insulator is again in Tufnol and is for connection to Norseman wire rope terminals or swage terminals. It allows standing rigging to be insulated, providing receiving and transmitting aials. Norseman Ropes Ltd, Brantham Mills, Manningtree, Essex.

### Marine WC system

'BLOW-BACK' and other teething troubles have been eliminated from the new, improved Mk III Lavac marine WC system. With many improvements and a revised plumbing circuit, the

for cleaning the surface prior to painting, a tin of primer and a tin of yellow top coat.

The paint is made from a flexible polymer, which it is claimed, will not crack, or craze, and will withstand the ravages of ozone, sunlight, salt and fresh water. Full instructions are given and the packs retail at 22s 6d through most chandlers. If in difficulties contact Austin Paul Ltd, Industrial and Marine Division, Preachers Court, Charter House, London, EC1.

### Steering wheels

LOVERS of traditional boat fittings will be interested in the Classic mahogany and brass steering wheel. It has a standard taper and fits Teleflex and similar mountings.



Sizes and costs are as follows: 13in, £10; 15in, £10 5s; 17in, £10 10s; 19in, £10 15s. A chrome centre is extra at 10s.

Accessories include a bulk-head mounting for cable steering, with fixing bolts,

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'CHUBBY'  
FENDERS  
9" x 5" 12/6  
12" x 9" 28/-  
(illustrated)

MARKER BUOYS  
Spherical in shape. 7", 14", 18", 24". Orange, Yellow, Red, Blue and Green. Ex. 14" 45/-



MOORING  
BUOYS  
8" dia. Buoyancy 8 lbs. 1-in. eye. 20/-  
12" dia. (illus.) Buoyancy 30 lbs. 1-in. eye. 37/6

### BOW FENDERS

(Top) 11" x 4 1/2",  
Nose section 4 1/2"  
dia. Suitable for  
craft up to 16ft.  
20/-



(Bottom) 21" x 7 1/2",  
Nose 7 1/2" dia.  
Hole for line  
through nose on  
'Thru-line' principle.  
Suitable for craft up to 35ft.  
67/6



### STANDARD FENDERS

22" x 7" (illus.) 45/-  
10" x 3 1/2" 10/-  
17" x 4 1/2" 20/-  
36" x 13" 90/-  
(inflatable)



### 'THRU-LINE' FENDERS

Pass line through fender and knot. Entire 'Thru-Line' Fender is working space. Meet all docking conditions without retying. Can be hung vertically, horizontally or in pairs on single line. Smaller sizes permanently air-filled.  
12" x 4" (illus.) 16/-  
10" x 7" 21/-  
18" x 9" 45/-  
(inflatable)



### TRANSOM OR CORNER FENDER

Fitted retaining strip, bolting in position through hull and transom, protecting vulnerable points of square stern craft. Stand out 5" from both hull and transom, extending 5 1/2" along each. Suitable for craft up to 30ft. 60/-

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65/-	33/6	17/6	9/1	4/11

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### HORIZON to horizon

nuts and washers, heavy chromed tension springs; steering cable, and a single steering pulley. *Threestokes Marine Ltd, 114 Mile End Road, London, E1.*

#### Cold start kit

COLD WEATHER brings starting problems in its train. Mainly because the difference between battery efficiency from summer to winter can vary by up to 50 per cent on temperature alone. The Delco-Remy cold start ignition coil kit CS-1 has been developed mainly for motorists. It is, however, suitable for marine installations using coil ignition, provided a key-type ignition starting switch is used.

The kit is based upon the 'resistor' coil system for which three main advantages are claimed. These are easy starting at all times, reduced battery drain, and less starter motor wear.

The resistor coil operates at a lower-than-system voltage of about 7½ volts. A 2 ohm ballast resistor is connected in the LT circuit to reduce the battery voltage to this level during normal running. During starting, however, the relay causes the resistor to be by-passed allowing full battery voltage to be applied to the coil.

According to the makers, the much higher HT voltage obtained is equivalent to that of an ordinary 12 volt coil at normal summer temperatures. The kit consists of a special ignition coil, oil filled for better heat dissipation and internal insulation; a resistor to step down battery voltage during normal running; a relay which enables the full battery voltage to be applied during starting; a protective plastics nipple for the coil HT outlet; all necessary terminal connections; 6ft of suitable LT cable and full easy-to-follow instructions.

The kit is not suitable for use where a starter is operated directly by a pull or push-button switch. Price is £2 15s, available from most car accessory stores. *AC-Delco, Division of General Motors Ltd, Dunstable, Beds.*

#### Yachtsman shoes

CLAIMED TO BE some 25 per cent lighter and more hard wearing than comparable deck shoes the Avon Rubber Company's new yachtsman shoe has a patented anti-slip sole designed to shed sand and shingle in a self-cleaning action.

Priced at 37/6d a pair, the new shoes will sell over the counter this spring, in men's sizes from 6-11. Colours are either light or dark blue uppers with white soles and flush welts.

New features apart from the sole are a moulded wrap-over toe-guard (designed to stop big-toes poking out) and to give a positive support in the toe-straps of a dinghy.

Drawing on their knowledge of car tyre manufacture, Avon are making the soles



and welts of the new shoes from high hysteresis rubber. This is the type that gives car tyres a grip in the wet.

The fair-sex will have to wait a little before Avon start marketing a range for small feet. But when they do, some of the unstaid colour combinations will bring a Carnaby Street approach to boating footwear. *Avon Rubber Company Ltd, Melksham, Wilts.*

#### Three new fittings

THE JACK HOLT range of fittings has been extended by three new units. These are a moulded sheave and cage, a sail batten end protector and a reefing swivel.

Suitable for through deck sheet leads and cruiser mast

### HORIZON to horizon

haliards, the moulded sheave cage and sheave are designated HA 8. The cage is of nylon and the sheave is HA 215 acetal. Price is 6/9d.

The sail batten end protector is described as being of 'much improved design' and is claimed to ensure that the end of the batten is really encased. Price is 1/6d and designation is HA 51.

Designed to fit to wood or metal masts, the new stainless steel reefing swivel No. HA 4087 takes the thrust of the claw ring spacer rod. Price is 12/6d. *Jack Holt Ltd, The Embankment, Putney, London SW 15.*

#### Standing for a seat

MANSELL & FISHER, whose address is given elsewhere on these pages, tell us that they have a small lot of WC seats which will fit a Baby Blake or one of the earlier Simpson Lawrence models with round bowl.

Would suit anyone who wants to modernise an otherwise satisfactory installation, as they are of wood with a white plastic surface coating. With lid they are being offered at 30s.

#### Resin-glass primer

SUCCESSFUL PAINTING of resin-glass hulls has in previous years been depen-

\*\*\*\*\*

### THREE NEW METZELERS



THREE NEW speed boats and two tenders are additions to the Metzeler range for this year.

The 10ft Flipper capable of taking a motor up to 20 horse power, the 11ft Raystar, up to 40 horse power, and the 13ft Xandi also up to 40 horse power are the new speed boats. They are made in Trevira-Hypalon.

This is an extremely tough skin using Trevira fibre. This fibre permits the craft to be inflated to a pressure of 4.5 lb per square inch, which is about double the pressure generally used for inflatables hitherto.

It was tested during 1966 on certain of the Metzeler boats, and it will now be used for the two new yacht tenders, the four speed boats and three sailing boats.

The Metzeler range now includes five boats from 8ft 6in to 11ft 6in suitable for rowing or for use with outboard motor, the 15ft Sailstar and two smaller sailing boats, four speed boats from 10ft to 13ft, and a selection of canoes and other small inflatable craft.

Prices range from about £32 for the 8ft 6in Konstanz yacht tender to £250 for the 13ft Xandi which can be used for water skiing and other high speed work.

Metzeler tell us that they have put their new models through a programme of thorough testing on the Atlantic coast of France, to ensure that they can stand up to anything that comes their way. *Metzeler Marine Ltd, Burton Street, Peterborough.*

\*\*\*\*\*

### FOLKBOAT The outstanding Four Berth Family Cruiser/Racer

5 Ton Bermudan Sloop  
L.O.A. ... 25ft  
Beam ... 7ft 3in  
Draft ... 3ft 11in  
Sail Area ... 258 sq ft



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### Watertight Locker and Access Doors

*(wherever you need a watertight 'ole!)*



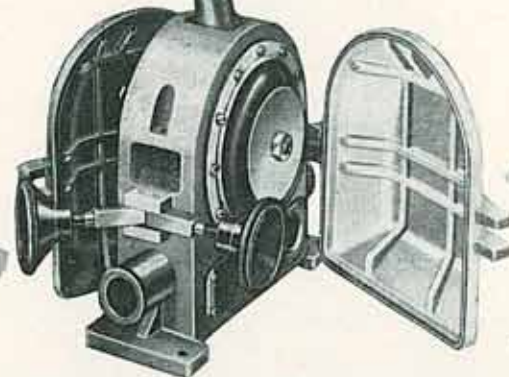
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## TWO PUMPS IN ONE



## FIT THE AMAZING WHALE GUSHER '25' BILGE PUMP

This reliable Whale pump has a very large capacity of approximately 25g.p.m. obtained with a special double action. Light and compact the unit weighs only 10½ lbs. Quick access to pumping chambers makes for safety and easy maintenance. This pump may be fitted in locker or on bulkhead or on deck, and the handle is stowable.

**REMEMBER! Emergencies demand the best**

See all the pumps on **STAND U03**  
LONDON BOAT SHOW



Manufactured by  
**MUNSTER SIMMS ENGINEERING LIMITED**  
Belfast, Northern Ireland. Cables: 'Whale' Belfast.

dent on two main factors. These are ambient temperature and the preparation of the surface by abrading so as to obtain good adhesion between the gel-coat and the 'paint'.

The first factor is really in the lap of the gods but the need to provide a good keyed surface is claimed to have been completely eliminated by the new Glassfibre Primer from International Paints. This primer reacts automatically and forms a

## HORIZON to horizon

chemical bond with the polyester of the gel-coat.

The only pre-requisite to the application of this primer is that the surface to be painted is completely clean. Special thinners for degreasing the surface and for removing any traces of the parting agent prior to painting new resin-glass are available.

Glassfibre Primer is a one-pack product that requires a single application; overcoating with the first coat of 'paint' must be within two hours.

This primer can be used with conventional enamels, one-two-pot polyurethanes, antifouling boot-tops, conventional and Hard Racing Copper antifouling. International Paints, Grosvenor Gardens House, London, SW1.

## A squid could be welcome aboard

SQUID is the name of a useful little adaptor which allows you to use the WC exhaust pump as a bilge pump. The adaptor is a tapered rubber cone which makes a close fit into the throat of the lavatory bowl. Complete with 10ft of hose it costs £3 3s 6d. Blake & Sons Ltd, PO Box 15, Sunbeam Works, Park Road, Gosport, Hants.

## Flexible adhesive

CLAM 90 has been specially formulated for bonding various materials to resin-glass, a material which is often difficult to bond other material on to. With this

new adhesive a flexible bond is said to be obtained.

The adhesive is water-resistant, but not waterproof in the strictest sense of the word. Because of this the manufacturers do not recommend it for structural bonds, that is, where the joint will be under continuous or near-continuous heavy stress. But it should prove highly suited to bonding below deck fittings in resin-glass craft.

Clam 90 is priced at £2 5s

per one gallon can. Approximate coverage is 36 sq yds per gallon. The London Adhesive Company, Maxwell Road, Boreham Wood, Herts.

## Natty boat-wear

QUADRANTS' already wide range of natty boat-wear has been extended for 1967.

Whilst the vessel might be out of the price range of most of us, the Shipmate Jacket and slim fitting



trousers with elastic waist modelled by this charming miss should prove to be within the purchasing limits of the fairer sex.

The sleekly styled jacket has concealed hip pockets and is available in blue-white, red-white and yellow-white.

Other new items of boat wear from Quadrant include the Dory Jacket which incorporates a heavy duty nylon zip with Velcro fastening for complete water-proofing with bib and brace type trousers with a matching hat.

Colours are turquoise, lilac and pink.

For the children there are the Quadrant Toddlers' Walt Disney Waistcoat and Child's Small Buoyancy Waistcoat. Both of these conform to the same method of construction as the adult items.

This new look from Quadrant is exhibited at this year's Boat Show. Quadrant (Sailing) Ltd, 250 Kennington Lane, SE11.

## HORIZON to horizon

### Disposable paint brush

AT LAST no more messy fingers and tiresome paint brush cleaning and storing.

The Dispose-a-brush is a pressed metal handle which grips specially shaped foam pads. The pads clip easily in and out of the handle and hold the paint.

One handle can be used for painting a multi-coloured job, saving the use of several orthodox paint brushes. Foam



pads can be cut to any width or shape and can be notched for wood graining.

Paint, varnish, stain, shellac, paint remover, epoxy, and chemicals can all be applied with the brush.

According to its developers the brush is ideally suited to sash, baseboards, mouldings and similar narrow areas.

It can be used with a stipple action to produce roller-like textures for matching spots that rollers cannot reach. The brush is unconditionally guaranteed and is available from Mansell & Fisher (Marine) Ltd, 284 Fulham Road, London, SW10.

### Mercury Outboards

CONTACT BREAKER points and the inherent disadvantages associated with conventional ignition systems at high revs have been eliminated on four models in the 1967 Mercury outboard motors range. Instead, the system used is described as 'Thunderbolt Ignition' which makes use of capacitance discharge, solid state techniques,

The four models are the 110 horsepower Merc 1100-SS, the 95 horsepower Merc 9500SS, the 65 horsepower Merc 650SS, and the 50 horsepower Merc 500SS.

Thunderbolt ignition is claimed to extend the working life of spark plugs, eliminate pre-ignition even with heavy loaded fuels, increase engine efficiency and reliability.

Other features of the new Mercurys are longer reach

spark plugs which provide more reliable sealing with minimised danger of thread damage with better heat dissipation. Engine noise has been greatly decreased by a silencing system which includes a support frame which isolates the engine from the acoustically-lined cowl via rubber mounts; control and fuel line fittings located inside the cowl and neoprene sealed, and an engine exhaust discharge through the bottom of the driveshaft.

Sole distributor in the United Kingdom for the range of Mercury engines, with outputs of 39 horsepower to 110 horsepower, is South Western Marine Factors Limited, Pottery Road, Parkstone, Poole, Dorset.

### Major advances in Minisails

MINISAIL MONACO MK II is the latest in the Minisail story.

The foredeck has been raised, with increased camber, so as to increase the cockpit depth. The side decks are also raised at their inboard edges and are heavily rolled so that the freeboard remains the same.

Thus, without making the boat look too heavy the cockpit has been made about 1ft deep (by 4ft long and 2ft wide) giving leg room and a feeling of security.

The overall weight is a little more than the Monaco I, at 100 lb, but it is still well within the capability of two people to lift onto a roof rack.

The price is £135 9s, complete with Terylene sail. Richmond Marine Ltd, 79, Sheen Road, Richmond, Surrey.

## NEW 'Super Carguette' SAIL TIES

Save time & effort

- Entirely unbreakable plastic, self-locking ball-ends.
- New simple design easy to use even with cold fingers.
- Twin nylon-covered multi-strand elastic cord.

Sizes	Retail
No. 851 11in. 3/3	
No. 856 16in. 3/3	
No. 860 20in. 4/3	
No. 879 30in. 5/9	

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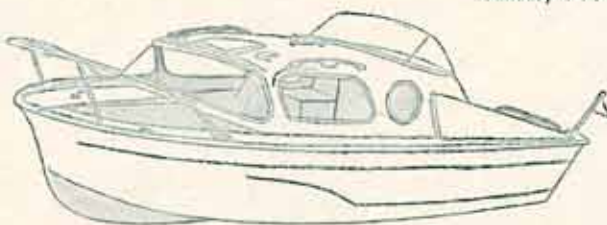
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## HORIZON to horizon

### Skidproof material

A NEW NON-skid plastic coating that will hold a plate on a tray at an angle of 60° has been developed by a Bristol firm, Dycem Limited.

Tea trays coated with this material were tested in Boat Owner's office—they certainly live up to the claims made for them—a tumbler of water would always topple over before it would slip.

Perhaps not many owners carry a tea tray aboard (though it is a very useful item of gear) but the non-skid material is available in sheet form so that it can be glued to table tops, chart tables and so forth. Place mats, faced on both sides with non-skid should also be available soon, from Mansell & Fisher (Marine) Ltd, 284, Fulham Road, London, SW10.

This new plastic is washable and various colours are available, and the material will withstand teapot temperature, but is no more able to resist a stubbed out cigarette-end than any other item of furniture. Dycem Limited, 9 College Fields, Bristol 8.

### Small Boat and Cruiser Compasses

THE 'BOSUN' IS ONE of five compasses specially designed for small boat and cruiser owner and made by Heath Navigational Limited.



the Marine Division of W. F. Stanley & Company Limited.

The 'Bosun' is designed for grid steering, and is externally gimballed allowing it to be fitted on horizontal or vertical plane surfaces.

As an alternative to lubber line steering, two parallel grid lines engraved on the glass can be set on any course by means of a 360 degrees verge

ring, facilitating easy maintenance of course in small boats. Card diameter is 4 inches and price is £10 15s.

Names, card diameters and prices of other compasses in the range are as follows: Cadet, card diameter 1 $\frac{1}{2}$  inch, price £2 17s 6d; Captain, card diameter 3 $\frac{1}{2}$  inches, price £23; Admiral, card diameter 6 inches, price £17 10s; Pilot, a hand bearing compass, card diameter 2 inches, price £36 10s.

Captain, Admiral and Pilot feature a Beta light device which has an expected life of about 15 years. South Western Marine Factors Limited, Pottery Road, Parkstone, Poole, Dorset.

### Beacon timer and power pack

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Known as the Precision Beacon Timer the unit provides a small, unobtrusive flashing light which flashes at a constant one second interval. The unit's flash can be synchronized with the flash of the buoy allowing the timing of the darkness intervals to be readily and accurately counted. The timer which operates on a 12 volt supply, is priced at £6 17s 6d, plus postage.

For those without power aboard, the makers offer a battery operated Power Pack unit. This is operated on two 6 volt Lantern Batteries which have a life of about three months under normal usage. These units cost £3 17s 6d each.

Both the Precision Timer and the Power Pack Units are available in completely waterproof (submersible) containers at extra cost. Maritime Instrument Company, 45 Bedford Road, Slough, Bucks.



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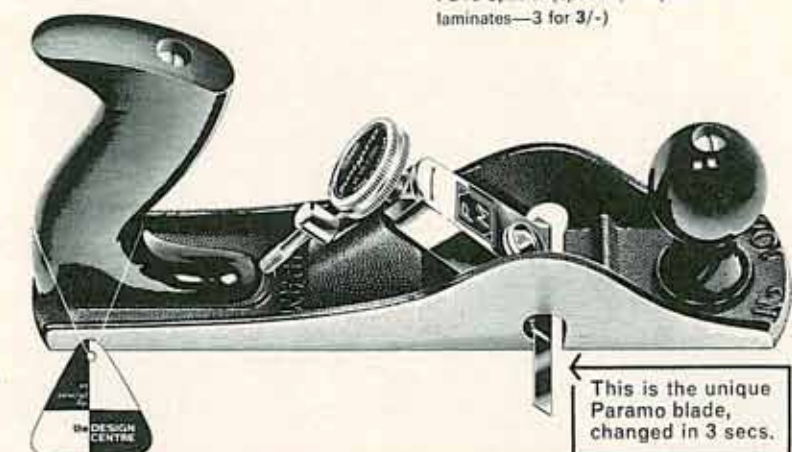
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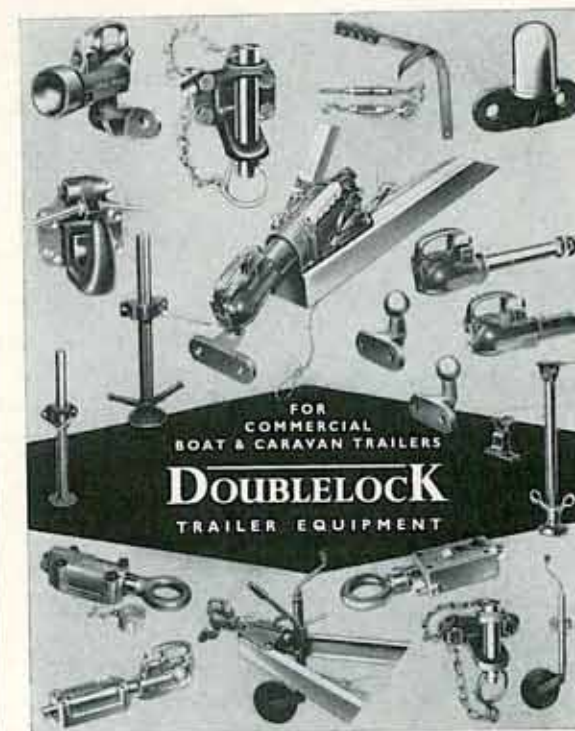
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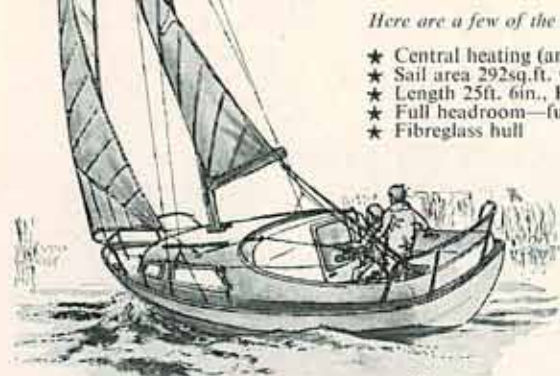
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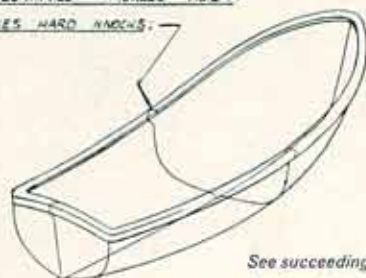
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The Seafarer Dual-Range Echo Sounder NEON-INDICATING display with an effective scale of 11½ in. Dual Range reading of 0-60ft. (0-18m) and 0-60 fathoms (0-108m).

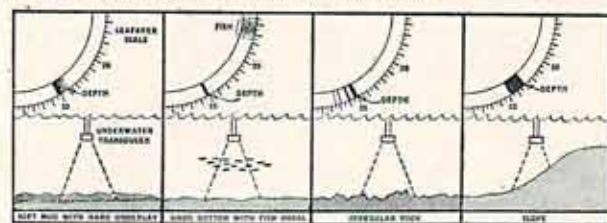
Price, unaltered for the 1967 season: £25.



The high quality, reliable design and performance of the Seafarer has now been proved over three full seasons and the popularity of the Seafarer remains unchallenged.

Let us briefly remind you why the Seafarer is now outselling worldwide competitors.

THE SEAFARER COMBINES THE IMPORTANT NEON-INDICATING ADVANTAGES OF COMPREHENSIVE INFORMATION AND PANORAMIC PRESENTATION.



The outstanding features are:

- 1 Instant readings. With a reference light at "0", a glance confirms the depth in total darkness and from a distance.
- 2 Seafarer never indicates more than true depth—a vital FAIL-SAFE when in shallow waters.
- 3 Minimum depth indicating capability of only 18in. is an invaluable aid for "ditch crawling".

Other Seafarer Advantages

CONTOUR NAVIGATION

★ The 0-60 fathoms range is essential for contour navigation in deeper waters.

WEATHER PROOF

★ The super high-impact shock-proof and corrosion-proof plastic case can be mounted in an open cockpit. It is unaffected by sun or salt-water spray.

NO ELECTROLYTIC PROBLEMS

★ The all-plastic transducer (even to the securing nuts!), obviates all corrosion and electrolytic action problems on any type of hull.

CHOICE OF POWER

★ Facilities are provided to power from a cheap 9V internal battery and also from 6V, 12V and 24V external supplies as desired. Battery drain only 95 m/amps. on feet range, 50 m/amps. on fathom range.

RELIABILITY

★ The comprehensive 12 months' guarantee is backed by a renowned after-sales service. It is further backed by our experience of over 10,000 Seafarers which have given complete satisfaction since the inception of the instrument over three years ago.

CRI DE COEUR

Our Seafarer indicator unit is tuned to the exact frequency of its transducer crystal to ensure maximum depth indicating capability. This frequency is shown on the transducer's co-axial moulded plug and also on the back of the sensitivity control case inside the indicator unit. Please ensure that these two numbers are identical when buying through a chandler or boat builder.

## THE SAME STABLE AS SEAFARER WE INTRODUCE "SEAFIX"

A Radio Direction Finder comparable to the world's best, irrespective of price, and yet only £28

Completely portable, waterproof and incorporating a precision prismatic hand-bearing compass for use under rugged environmental operational conditions.



Seafix—the navigational aid you demanded from us—a low priced Radio Direction Finder with the accuracy needed for ocean racing and the simplicity of operation required by all cruising yachtsmen.

DEVELOPMENT

In designing Seafix we have borne in mind that fully effective D/F instruments are already available—at a price. By incorporating the most advanced electronic circuitry and introducing imaginative design and construction principles, we have succeeded in producing an instrument comparable in performance to the world's best and yet in a price bracket to suit a broad market.

GENERAL DESCRIPTION

The receiver is contained in a compact, shockproof, grey plastic case, measuring only 7 x 3½ x 3½ in. (18 x 8 x 8 cm.), which the yachtsman holds by a convenient detachable pistol hand grip. Above the receiver (and also detachable) is a prismatic hand-bearing compass. Two front mounted control knobs and a large effective tuning scale provide all facilities for picking up marine and aircraft bearings and long wave shipping weather forecasts (Droitwich Light Programme). A comfortable and light stethoscope-type headset terminates in a waterproof moulded plug which is inserted in the front of the instrument.

Two cheap "long-life" batteries, available internationally, provide receiver power and pilot lamp (on/off as desired) illuminating both the compass and receiver scale. Safe stowage is arranged on any convenient bulkhead by two shockcord retaining bands.

The International Morse Code is engraved conveniently on the receiver housing.

COMPARISON OF SEAFIX PERFORMANCE AT APPROXIMATELY MAXIMUM BEACON RANGE



The graph shows the Seafix signal-to-noise ratio. Before you buy any R.D.F. we suggest that you ask what its signal-to-noise ratio is at 1 microvolt.

The efficiency of a Radio Direction Finder is as good or as bad as the ratio of its received signal to inherent background noise at high sensitivity levels. This varies considerably with instruments from different manufacturers.

COMPASS—LIQUID PRISMATIC

"Sestrel" compass specially designed to give an unusually good dead-beat performance under boisterous conditions. The card is clearly calibrated 0-360° in increments of 2° and is accurate to better than half a degree. Viewing is by prismatic magnifier or vertically by an optical magnifier. In either case, interpretation to within 1° is practicable. If desired the compass can be uncoupled from the receiver and used separately as an efficient hand-bearing compass.

SEAFIX PERFORMANCE

Under optimum conditions at half rated range of the beacon, an accuracy within 2° can be expected. Useful bearing can normally be obtained well beyond the rated range of a beacon.

The complete portability of the Seafix enables bearings to be taken from the most advantageous position clear of ferrous or magnetic objects. Bearings obtained are magnetic 0-360° and are directly plotted on suitable charts, using the magnetic rose. This avoids the introduction of irrelevant data, such as the ship's heading at the moment of taking the bearing, thus obviating the possibility of errors and inaccuracies.

Broadcast reception facilities are primarily intended for reception of the special shipping weather forecasts on 200 Kc/s from Droitwich.

TECHNICAL DATA

Frequency range: 200 to 400 Kc/s (KH)

SENSITIVITY—"Navigate"

Better than 20 dB on 1 microvolt Signal/Noise Ratio. (Perhaps better expressed as a 10 to 1 signal-to-noise ratio with a signal level of 1 microvolt).

SENSITIVITY—"Broadcast"

Better than 100 microvolts for 1 milliwatt output (modulated 30 per cent) at 400 cps.

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Autodyne with two stages of tuned R.F. amplification, followed by a linear detector and two stages of low frequency amplification.

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All transistors are of the Epitaxial Planar (Silicon) type. Gold bonded Germanium Signal rectifier.

Calibration:

Tuning dial is calibrated in increments of 10 Kc/s, allowing visual setting to within 2 Kc/s of desired frequency.

Aerial:

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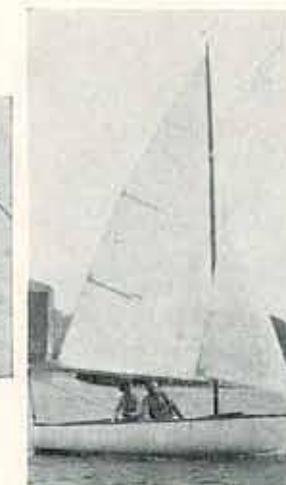
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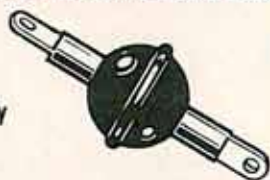
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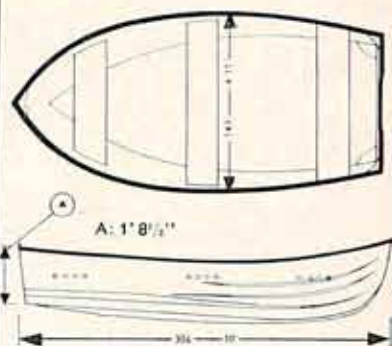


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**20ft. Cabin Launch,** fitted 4 cyl. Morris Vedette. Sleeps two. Good cockpit. Ideal for day fishing Solent. Offers invited.

**6-ton Falmouth Pilot.** Built 1959, fitted Ford Watermota Petrol engine, 1964. Recent suit terylene sails. Sleeps four. Well maintained. Reasonably priced.

**20ft. Twin Screw Tod Tuna.** Built 1959 in fibreglass. Two berths. Ford Watermota Petrol engines, giving up to 20 knots. Price £950.

**8-ton Aux Bm Sloop,** built 1902 of teak on oak. Morris Vedette Petrol engine. Sleeps four. Full suit sails. Fine little cruising yacht available at £1,250.

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AN ORDER FORM FOR CLASSIFIED ADVERTISEMENTS WILL BE FOUND ON PAGE 124

## CRAFT FOR SALE Sailing Cruisers



**CAPRICE DE LUXE,** built Clark of Cowes, B.O.T. Regd. (Mortgage available). Terylenes. 3-berths. Echo Sounder, Speedometer, 3.9 Mercury outboard. Y.W. pram dinghy. Would cost new over £925. Only £550. Seen Solent, Box No. 129. M1

**MARTINI 20ft.** moulded ply, bilge keels, toilet, four berths, Stuart Turner auxiliary electric lighting, new mast, rigging, sails, cooker, and upholstery. Free delivery. Trailer available. £550. Marlow, 57 Endcliffe Hall Avenue, Sheffield 10. Tel: 63395. M1

**MYSTIC 21ft.** 4in. x 7ft. x 2ft. 9in. Bilge keels. Sloop 3/4 berths. Doghouse giving 5ft. headroom in chart/galley space. Sea Urchin. Launched 1964. Good inventory. £750. Box No. 150. M2

**SAPPHIRE MARINE PLY** bilge keel sloop, 1962, 23ft. L.o.a. 4 berths, Calor gas lighting and cooking gimballing, table, toilet, sink, flares, bilge pump, fire extinguisher, compass, barometer, pulpit, stanchions, lifelines, anchor cable, 5 1/2 h.p. Evinrude, cockpit cover, winter cover, dinghy, moorings and gear available at Hoo on the Medway. Good condition, ready for cruise. Terylene main, storm and fair weather jibs. Tail valved. £750. West, 23 Marston Drive, Maidstone, Kent. Tel: Maidstone 53815. M1

**SALE, PIONEER** glassfibre 30ft. Bermudan sloop, fitted Southern Ocean Supplies. New May 1966. Three jibs, mainsail Terylene. Ready go anywhere. Cost £4,050; price £3,800. Curtis, 44 Stirling Road, Bournemouth. M1

**SILHOUETTE Mk. II.** Exceptionally well maintained, laid up under cover. Seagull outboard. Genoa, cockpit cover, dinghy trailer, £360. Denham, 2 Waverley Road, New Milton. Tel: 3637. M1

**SEAMEW SLOOP,** cabin, inboard motor, Terylene sails, £750, or car. Lines, Wendover, Staverton, Cheltenham. M1

**WESTERLY 22** Bermudan 1964. Alternative bowsprit cutter rig, dinghy davits, 4/5 berth, interior improvements, many extras. £1,550. Owner buying Westerly Wayfarer. Details: Stuart, Fitzharrys School, ABINGDON, Berks. View—Hayling Island. M1

**2 TON STERTE CB BMU, SLOOP,** with mooring Elmworth. Very good inventory includes Terylene sails, Seagull 102 motor. Sailing pram dinghy, £600 o.n.o. Details on request to R. G. Hosking, 27 Kings Avenue, Chichester. Tel: CHI 82805. M1

**ATALANTA.** Built Fairey Marine 1962. Good accommodation for six. Two separate cabins. Separate toilet. Galley with gas stove and sink. Chart table, Coventry Victor 16 h.p. engine. All Terylene sails, Brookies and Gatehouse Hermes echo sounder. Avon dinghy. A well-equipped and well-cared for boat. Extra windows fitted to fore and aft cabins to give increased light below. Offered complete with purpose built 4-wheel trailer, £1,950 plus trailer £250. Lying Sussex, P. Harris, Trundles, 71 Park Avenue, Eastbourne, Sussex. M1

**BEACON SLOOP BY PARHAMS OF EMS-WORTH.** 2 1/4 berth. Blake. Solid mahogany. £480. May, Bungalow, Lowershill Farm, Gay Street, Pulborough, Sussex. M1

**BUILD YOUR OWN BOAT.** See page 122 under PLANS—Boat Plans Ltd. M1

**CRESCENT MOON.** 6 1/2 ton Aux. Bm. Sloop. 31ft. 6in. L.O.A., 26ft. 6in. L.W.L., 4ft. 6in. draught. 8/9 h.p. Handy Billy engine. Terylene sails, new 1964. Lead ballast and keel. Blake w.c. New dinghy, Bargain at £800. Can be viewed at Haynes Boatyard, Rye, J. A. Hughes, Fairlight View, Udimore Road, Broad Oak, Sussex. M1

**DELL QUAY SHEARWATER SLOOP.** Fully equipped, excellent condition, lying Hayling Island; Price £875 o.n.o. Apply at weekends to: Scruton, 48 Bracklesham Road, Hayling Island. Tel: 72592. M1

**FELICITY 4-berth** sloop, gas cooker, toilet, inboard Solo engine, in fact fully equipped. £500. Bysouth, 1 Highams Road, Hockley, Essex. Hockley 2125. M1

**GALLANT—Marchelle (1966).** 4 tons, 4 berths (6ft. 0in.). Plus hammock, cooker (Calor), cushions, curtains, lifelines, main, Genoa, 2 jibs, roller reefing, 5 h.p. Evinrude (mounted internal lazarette), superb condition, white and navy blue, insured to June 1967, laid up at Westbury House, Hammersley Lane, Penn. Bucks. A superb family cruiser. Performs like an ocean racer. Owner buying 6-berth—dinghy and Seagull also. Free storage to 30.4.67. Reply to above or Tel: PENN 3334. Open to offer. M1

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**30ft. BMU CUTTER.** Stuart Turner 8 h.p. electric start. Four berths. Separate W.C. Pine on oak, teak trim. 8 sails. £1,200. Doel, 12 St. Barnabas Road, Cambridge. Tel: Cambridge 54308 (days). M1

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**1963 ESCAPE 281.** Registered 5 tons. 4 berths, w.c., Calor, sink, electrics, Stuart 4 h.p., winches, compass, D.F. £1,450. Lowe, Chartfield, Shore Road, Warsash, Southampton. M1

**1966 2 1/2 TON BERMUDAN 2-berth** sloop. Stuart-4, Dinghy. Lying Chichester. Wright, Brook Farm, Logmore Green, Dorking. £900. M1

**£650 O.N.O.—24ft. 9in. x 23ft. x 7ft. x 4ft. 4in.** fin keel, hard chine, marine ply, mast head cutter. Suitable J.O.G., Jones, Binder's Cottage, Post Office Lane, North Mundham, Nr. Chichester. M1

**EXCEPTIONALLY COMFORTABLE** but fast old timer. Built Silvers in 1937. Owner has bought larger boat, 4-ton cutter with mast in tabernacle. Three new red Terylene sails. Stuart Turner 8 h.p. dynastart. Makers complete overhaul 1965. Cruised France 1965, three men. Average 5 knots, 1 gallon per hour, 100% reliable. Pitch pine on oak, built up topsides. Baby Blake in forecabin, sliding door. Two Dunlopillo saloon berths. Galley with single burner Primus in gimbal. Large cockpit. Fully equipped with cutlery, crockery, compass, lead line, CQR, chain, fenders, boat hook, sea anchor, warps, 12-volt lighting and starting. No leaks. Recent survey 1966 some repair necessary so price only £650. Sailing dinghy £50. Mooring available if required. P. W. Boyd, Inholms Farm, Horley, Surrey. OCY 34 3108. M1

**BERTRAM 25ft. EXPRESS CRUISER,** twin Mercruiser 110 h.p., blue hull, fitted too many extras to list but include extra fuel tank, Magnasyn compass, Ferrograph sounder, convertible top cockpit cover, hot showers, spare propeller and various engine spares. Boat has done about 40 hours per year, meticulously maintained, refitted for coming season. Cradle with boat, 4-wheel trailer available. Open to any examination. £3,500. Rankin, 30 Westfield Drive, Gosforth, Northumberland. M1

**BUILD YOUR OWN BOAT.** See page 122 under PLANS—Boat Plans Ltd. M1

**CABIN CRUISER,** 23ft., beam 8ft. 3in., Hepcraft, 3-berth, 80 h.p. Volvo Penta, echo sounder, 8ft. dinghy and trailer, built 1964, price £1,550. E. Brown, Kimberley House, Millers Lane, Stanway, Colchester. Tel: 72607. M1

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FAIREY FISHERMAN 27, new boat. Offers invited, must sell due to other commitments, 39 West Street, Portchester, Hants. M1

MOTOR GUN BOAT. 70ft. x 19ft. 7in. Double skin mahogany hull, teak deck, one Hudson Invader engine 250 h.p. (would give 12 knots), on bearers, not installed, 24v. lighting, radio, quantity of materials, wood fittings, paint, etc., etc., partly converted, much work still to do. Full particulars on application. Chiefly interested in exchanging this vessel for a smaller one (work not objected to) sail or power, say 30ft.-40ft. or might sell. Lying Medway, 37 Birling Avenue, Rainham, Kent. M1

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MICROPLUS 16 fibreglass two-berth cruiser. Snipe trailer. £240; 40 h.p. West Bend £65. 24 Newington Close, Coventry 29903. M1

NORMAN 17 CABIN CRUISER. 2-berth, fitted gas cooker, toilet, sink, used one season, new Mercury engine and trailer, £345. Would exchange with cash for 20-23ft. cruiser. Whittington, Beacon Lane, Grantham. Tel: 2258. M1

WANDERER III 3-4 BERTH outboard cruiser. beam 6ft. 10in., length 18ft. 6in., glassfibre hull. £650. Moored Regent's Park. Stead, 418 Fulham Palace Road, S.W.6, Fulham 7779. M1

16FT. CABIN CRUISER with Austin engine, two berth. £220 o.n.o. 9 Reddington Drive, Langley, Slough, Bucks. Tel: SL 44429. M1

20ft. DOLPHIN, nearly new, four berths, stainless steel pulpit, navigation lights, hood and side screens, speedo, Teletex steering. £650. Also factory reconditioned Evinrude 33 h.p. £150, or 40 h.p. £175. Both unused since returned from factory. Tel: EAL 6152. GEO 4089. 4 Golden Court, Golden Manor, London, W.7. M1

22ft. 4-BERTH CRUISER, sea or river, Sutton marine. Aquadrive. Complete on trailer, £850. Tel: Horsham 3142. M1

26ft. x 7ft. 6in. ex-police launch, hull only. Round bilge. Carvel teak on oak. Requires painting. Wheelhouse, prop tube, etc. £325. o.n.o. Sankey, Top-o-the-Hill, Radfall, Whitstable. Tel: Chestfield 2605. M1

27ft. HALMATIC FIBREGLASS, twin diesels, 200hr. only. 6-7 berths, fridge, bath, every extra, cost £5,000 as new. £3,325 o.n.o. 100 Upton Road, Bexleyheath 7891. M1

35ft. R.N.L.I. CONVERSION. T.V.O. echo sounder, £425. 52 Land Lane, Crossens, Southport. M1

1966 DOLPHIN 20. Johnson 33 h.p. electric motor, pulpit, flush toilet, navigation lights and many other extras, cost £1,150 in April but owner now buying larger boat, £925 for immediate sale or H.P. arranged. Brown, 8 The Rise, Crescent Road, London, E.4. Silverthorn 0172. M1

£275 o.n.o. 18ft. 2-berth cabin cruiser, fittings with 16 h.p. Perkins, remotes. Replies to: J. Bagge, 5 Hanley Terrace, Malvern, Worcs. M1

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SHEARWATER III No. 1034. Wood spars, glass fibre hulls, aluminium plates and rudders, Terylene sails, stainless steel rigging. £120 o.n.o. Tel: Southend 76656. M1

VERY FAST 20ft. catamaran with part-built camping cabin. £165. Full details: Dear, Denbeigh Lodge, London Road, Wickford, Essex. M1

15ft. 6in. WILD CAT. Gunter rigged cottons, needs attention. £25. 9ft. 6in. fibre dinghy shell £10. 117 The Gore, Basildon, Essex. M1

32ft. FAST CRUISING CATAMARAN, built 1963 to a unique design. Cutter rigged of 450 sq.ft. in Terylene, extensively cruised; offers around £2,500. Seen ashore; full details and photos sent on request. Mr. P. Smith, 29 Voundarvour Lane, Penzance, Cornwall. Tel: PZ 3947, after 6 p.m. 3566. M1

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BUILD YOUR OWN BOAT. See page 122 under PLANS—Boat Plans Ltd. M1

CORONET 18ft. SEDAN, 40 h.p. Johnson, complete with trailer and all accessories. £695. Or exchange for small ski-boat and cash. D. L. Souter, 8 Rutford Road Streatham, London, S.W.16. Tel: Streatham 4563. M1

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TOBY SPEEDBOAT 15ft. Fast skiboat, 1964, as new. Mercury 4-cylinder, 65 h.p. electric start, rev. counter, speedo. Ridgeguide steering, ski-rope, anchor, £335. Exchange car. 172 Collier Row Lane, Romford 61778, Essex. Any time. M1

VENTURER DE-LUXE 11ft. 6in. ply hull. C/w windscreen, wheel steering, seat cushions, 71 h.p. motor. Bramber trailer, tarpaulin. New 1966. £200 o.n.o. Evenings, Cox, 38 Hampton Street, Tetbury, Glos. M1

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FAIREY FALCON (1965). Stable family daysailer. Buoyancy. Red Terylenes with Genoa. Alloy spars, stainless rigging. Numerous extras. Tollbridge easy-loading trailer with winch and spare wheel, £400, o.n.o. 1 Bryntirion Avenue, Prestatyn. (Tel: 403). M1

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FIREBALL 308. Certificate, Ratsey Terylenes, gold Proctor "D" section mast and boom, trapeze, s/s rigging, bailers, 2 Novex blocks, jam cleats, rounded foredeck, good record. £210 o.n.o. Long, 11 Roundhay Avenue, Peacehaven, Sussex. M1

G.P. 14. 3290. Bell built, Seahorse Terylenes, certificate, £140. Bulmer, 10 Hilmorton Road, Rugby. Tel: 4002. M1

G.P. 14. 6409. Windward Terylenes. New condition. £150. J. Blyther, 44 Crown Hill, Rayleigh, Essex. M1

HORNET 1098. Fibreglass hull, ply decks, two mains jib and spinnaker, cover and launching trolley. One season old. £300. P. Coleman, 16 Sandwich Road, Brightlingsea, Essex. Tel: 2977. M1

JOLLYBOAT 320, completed Fairey's, lavishly equipped, meticulously maintained. £250. Ryle, Fieldrise, Kingsland, Shrewsbury. M1

"LEAF" SAILING DINGHIES are good fun and very inexpensive. Large enough to carry two, small enough for cartopping. Ready for sailing £65; fibreglass hulls £29.10s. Details, photos—GDSCo. The Barn, Church Walk, Weybridge. M6

MERLIN/ROCKET 1063. Proctor Mk. 12. Fast boat in very good condition. Fully equipped. Delivered reasonable distance £150. Wilde, 52 Deerswood Court, Ifield, Crawley. Tel: 21903. M1

MERLIN ROCKET 776. Good racing record, Terylenes, spinnaker, polyurethane. Excellent condition. £110. Lowries, 14 Hanover Square, Sheffield 3. M1

NEW, FACTORY BUILT 8ft. fibreglass Dinghy with oars and sail. £60 o.n.o. Secondary School, Cheddar, Somerset. M1

## CRAFT FOR SALE Dinghies—continued

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SOLO 134. Holt hull, Holt and Bridge sails, special collar mast. Fully equipped in good condition. Good racing record. £120. E. G. B. Gilbert-Smith, 259 City Road, London, E.C.1, CLE 8422. M1

THAMES ESTUARY. One design, 18ft. 1-decked racing/cruising Bermudan sloop. Spare sails. Fully equipped. £175 or offers. Brown, 98 Liberton Drive, Edinburgh 9. Tel: Liberton 3430. M1

13ft. DINGHY with trailer. Marine ply, Terylenes. Best offer over £50. Details from: Jones, Brongwynedd, Pencaenw, Pwllheli. M1

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X.O.D. BURNES, 1959. Immaculate condition, refitted for next season. Cowes—S. Gausson, Pegglesworth, Andersford, Glos. M1

## CRAFT WANTED

CRUISING CATAMARAN 25-40 ft., full particulars to: 6 Highcroft Villas, Brighton, Sussex. M1

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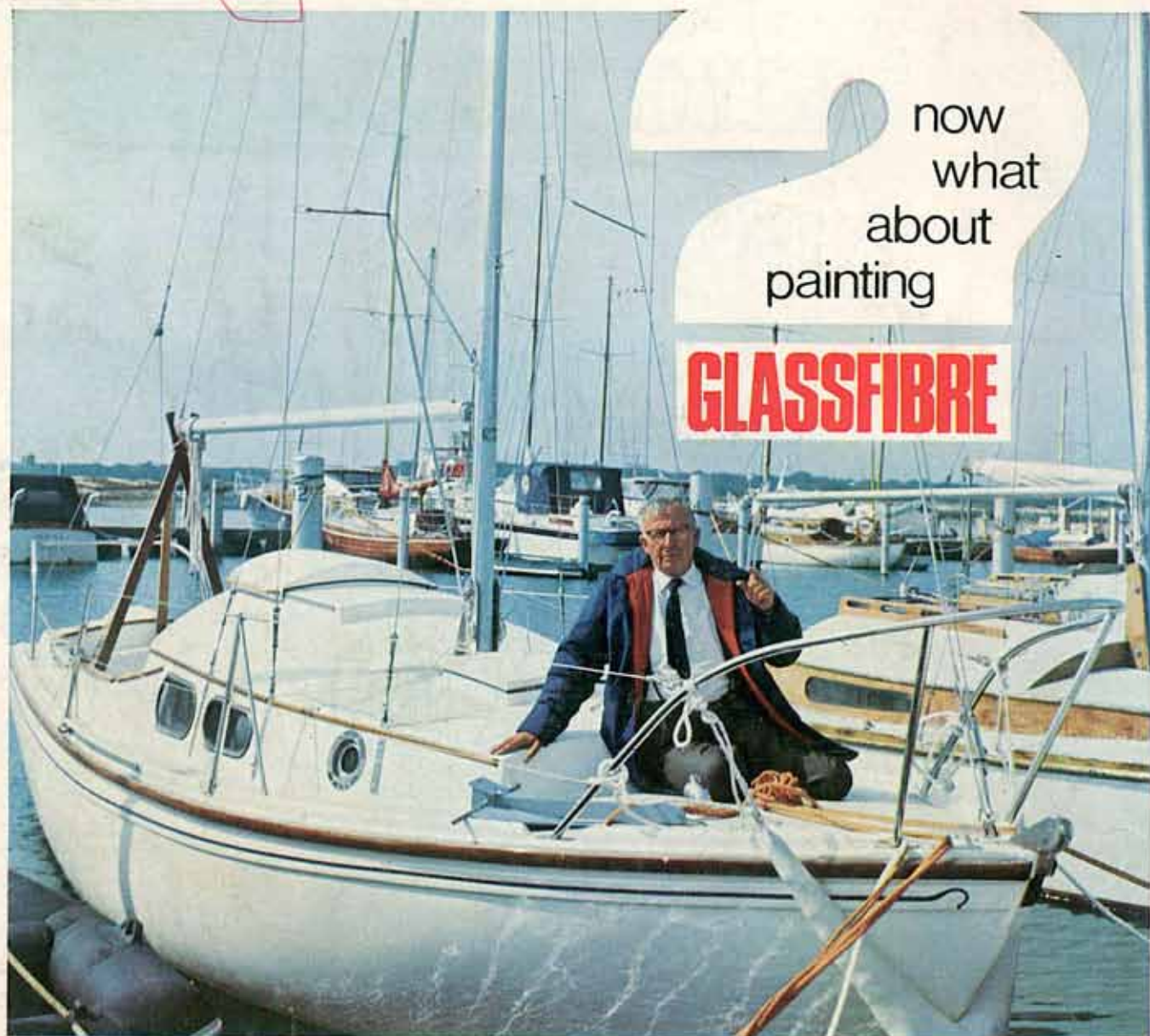
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