

# Ferro News

June 1999

Quarterly Newsletter for Ferrocement Boat Owners

Issue 10

**W**ell it feels such a long-long time since the last Ferro News, and I'm glad to back with you. I am still at our home in Manly convalessing from my paragliding accident on March 17, wondering when if ever we shall sail our yacht Lilly-Ann north. Certainly not this year. The x-rays of my lower back now look like a macano-set. I thank all those of you that sent letters and cards of support during the past few months. They did make a difference.

To matters more Ferro! This issue is full with good stuff, making up for lack there-of last month. We look at some pictures of Ferro '99 in the Brisbane river. I cover the details of a repair that I performed to my own hull after another boat in the marina sheared its gearbox coupling and speared the ferro side-deck with a 15 foot bow-sprit (well maybe next

month) . We again look closely again at Mystery's refit. More valable tips from Keith Flemming aboard Zodiac, which regreably we hear is up for sale!

We feature our Northern ferro friends Bev and Darrel Westlund aboard the fine yacht Bevarel.

Welcome to our new members: Martin Helyer and the good vessel "Kowhai" now based in Singapore, Peter and Delisa Thomas on board "Bedouin" a 42 foot Samson, and Hank Rosendal with Tai Winds a Hartley Queenslander in WA. I hope Ferro News meets your expectations. I will look forward to hearing more from you about your boats and cruising experiences so that we may share these with all the other Ferro owners.

Trudy and I still hope to get to the Nottthern Territory (by road) this year so look-out those Territorians amongst you!

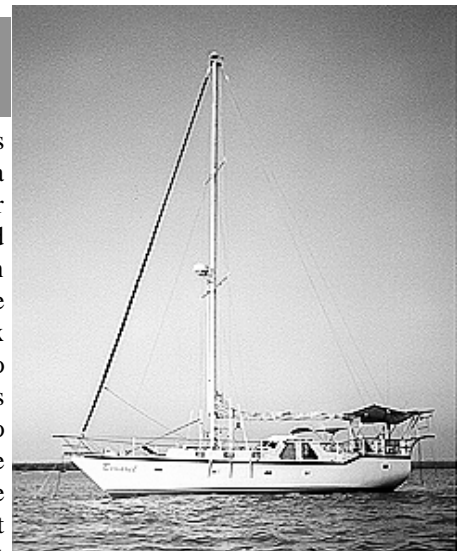
## **SV BEVAREL** by Bev and Darrel Westlund sv "Bevarel"

**D**ear Ferro News. Thank you for the pleasure of past news letters. As relative newcomers to sailing Bev and myself have much to learn, contributors to your newsletter have often made comments of things that have assisted or confirmed our thoughts and actions. It is also nice to hear positive comments about ferro cement construction. We believe we have an excellent example of a ferro craft in our 46' whimoway cutter rigged, sloop built in Queensland and first launched in 1985. She was still in original paint which was a horrible buttercup yellow and looked very tired. Some Old. readers may have known of her as Bahloo 111. Our first year was spent in dry dock where we sandblasted and stripped her back to the base and recoated with west system epoxy and

nucep undercoats and finishes. It was a great relief to see her hull in such good condition when stripped bare. The motor and gearbox was an MB3 Volvo which we found was uneconomical to rebuild, some suggestions were quite rude as to what we should do with it

so we gave its remains to another proud Volvo owner for spare parts. The new motor is a Perkins which we acquired for about 75% of the projected repair bill of the Volvo. Many more hours and dollars were spent on the numerous jobs that may as well be attended to while you are in the grip of the hard stand and its ever smiling proprietor, who rides off on his brand new Harley Davidson knowing full well that the yachties of the world will ensure he gets the new model when it is released. With everything done she was placed gingerly back in the water where she looked a picture of style with her raised aft deck and new old fashion white hull with dark green gunwale.

(Continued on page 6)



## Features...

<b>FERRO 99 ROUND UP</b>	<b>2</b>
<b>THINGS MECHANICAL ON MYSTERY</b>	<b>3</b>
<b>FERROCEMENT AND THE INTERNET</b>	<b>9</b>

**NEWS FLASH** by Mahesha Goleby sv "Sea Mentality"

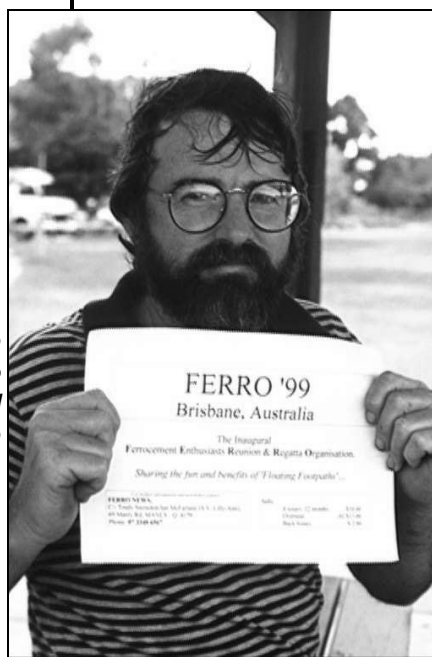
**— FERRO '99 A SUCCESS DESPITE SCANDAL —**

**"Scandal rocks Ferrocement community..."**

Hints of bribery, corruption, and corrosion at the highest levels of committee management caused sponsors to withdraw. This years event was NOT held at South-Bank Convention Centre as the Brisbane City Council distanced themselves from FERRO '99. McMickey's, Choke on Cola, and The Australian Cement Manufacturers spokespersons unanimously agreed to 'see if there's anything concrete to the allegations before continuing sponsorship'. Ferro '99 Coordinator, Mahesha, said the rumours were started to *discredit Ferros by other interests in the boating fraternity due to jealousy over the affordability, low maintenance, and comfortable sailing by the heavyweights in yacht construction.* "FERRO '99 went ahead despite the furor." he said.

A BBQ was held at 12noon (Forget the 'Equation of Time', close enuf is good enuf) in Brisbane, Australia. The group motored up river and anchored off COLMSLIE PARK. The small beach and pontoon made access easy. We munched and chatted and enjoyed ourselves and talked of things ferro.

Phil Hirst of SV Gratitude will take the helm of the FERRO 2000 bash. He can be contacted via FERRO NEWS or (temporarily) via my email at [maheshag@hotmail.com](mailto:maheshag@hotmail.com) or for the locals on Seaphone, VJQ9775



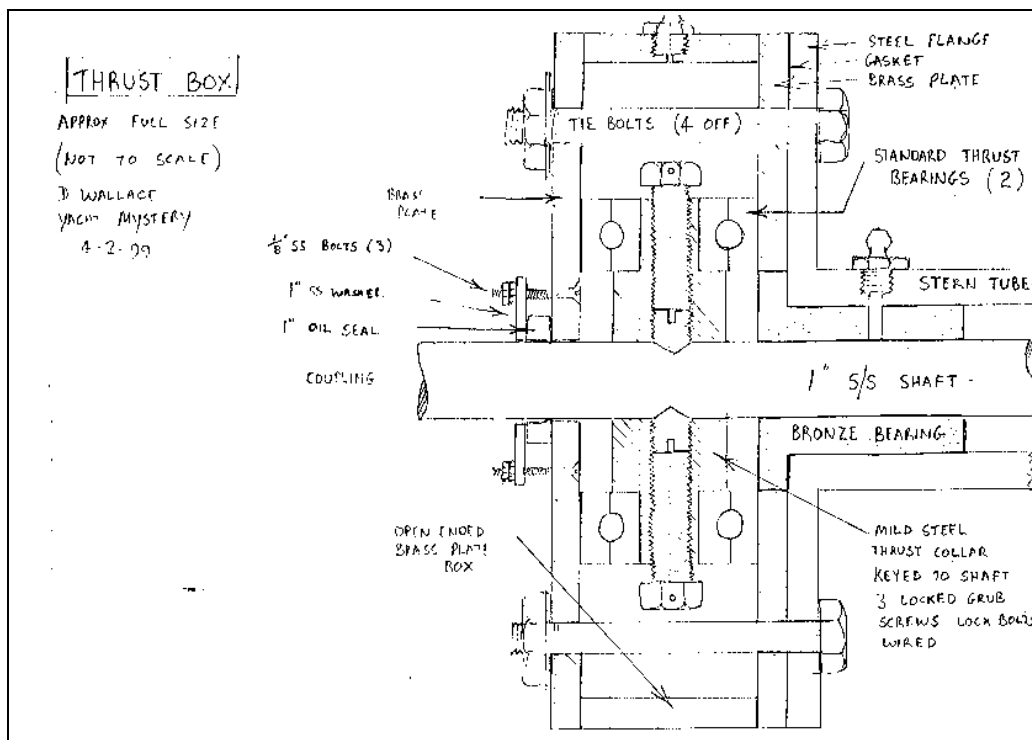
# Engines and Things - aboard Mystery

by Doug Wallace S/V "Mystery"

**W**ork on the renovation of "Mystery" is dragging on very slowly due to work commitments but I have decided to retire on 1-1-2000 and devote myself full time to getting her back in her natural element. The engine is in, coupled up, exhaust system, fuel, cooling water connected, almost ready for a test run. I extended the inlet sea cock lever so I can turn it off without having to open the engine box. I am a firm believer in closing all sea cocks every time the boat is left unattended. My morse engine control cables are too short to mount the control lever back beside the wheel so I will have to order longer ones. Engine box design. An engine box is a barrier between a hot smelly noisy piece of machinery and a cool quiet un-smelly living area, the cabin. This means sound and heat insulation and air tightness. The best insulation is a vacuum, quite impracticable. The next best is a solid stone wall equally out of the question.

I will have to settle for 12mm ply with some fluffy fibrous stuff glued on the inside to soak up the high frequency noise. This will have some heavy foil (sheet lead would be nice) to protect it from oily grime

the cockpit or from the bilge. My Yanmar 1GM has the air inlet at the top of the engine which sucks out the hot air rising to the top of the engine box causing cool fresh air to be drawn in from under the cockpit. I am

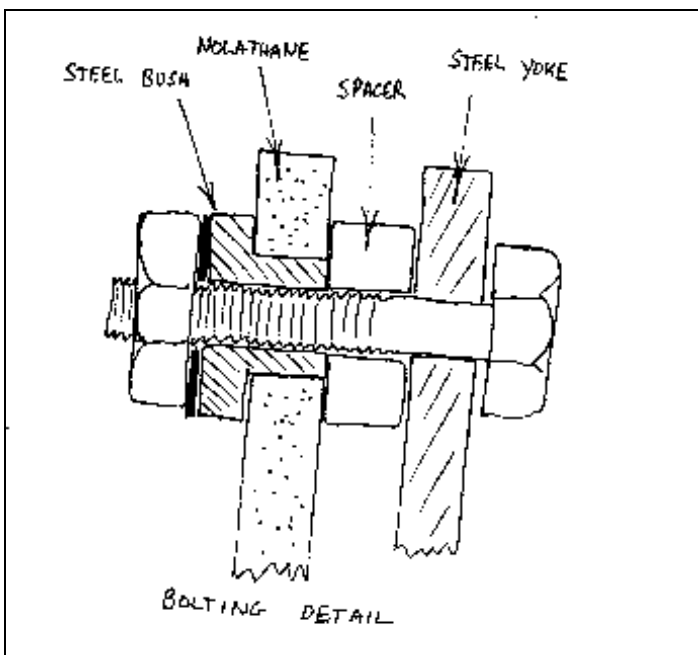


**Propellor shaft thrust box assembly.**

condensing out of the hot engine fumes. On the outside of the ply, perhaps some heavy sheet rubber (old conveyor belt) as suggested by Allan Lucas to dampen the lower frequencies and some nice polypropylene carpet. An engine needs a supply of fresh air to breathe, and any vent to let air in also lets the noise out. The air inlet should be from a non-living space, eg under

considering bolting a small plastic multiblade fan from the motor wreckers to the alternator pulley to stir the air around so there are no hot spots in the engine box. There must be access to the engine for routine servicing as well as major maintenance. Every lifting lid, hinged flap, dipstick door is a potential leak in your airtight sound proof fume proof box and also liable to develop annoying rattles. I will make the whole top of the box removable with a soft rubber gasket like an ice box lid. In the front of the box will be a brass bushed crank handle hole with a plastic cap of some sort. The cast crank handle will have to be cut and a piece of pipe welded in to lengthen it. If the battery ever goes flat or the starter motor fails I can remove the lid to operate the decompression lever and hand start the

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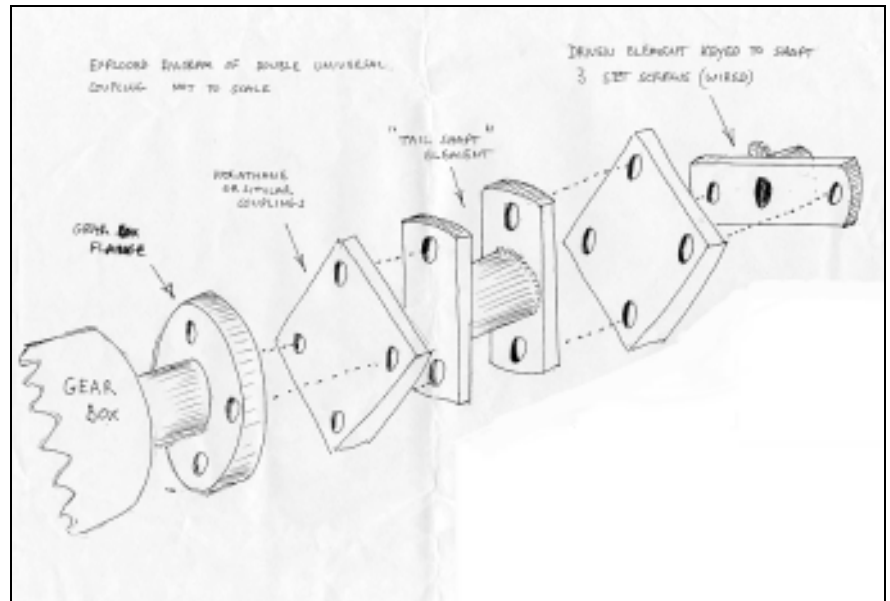
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engine. (When I weld the handle on I will position it so the engine comes on to compression near the bottom of the down stroke). The engine box will be sitting on brass angle on the engine bearers so that it can slide back to seal against the bulkhead at the aft end of the cabin. there

will be four stainless steel lugs bolted to the bearers with short slots cut in them. In the bottom of the engine box sides will be four stainless steel pins which engage with the slots so the box "plugs in" to the bearers like a linear bayonet fitting. To hold the box back against the bulkhead I will have some barrel bolts or snail cams or hardwood turn buckles. In an emergency if I need to get to the water pump or any part of the engine in a hurry, I can remove the whole

engine box in a couple of seconds without having to disconnect things

and find tools. I have enclosed some sketches of the thrust box and ultra-



flexible coupling as requested. Best wishes and good sailing, Doug.

## More Mystery by Doug Wallace S/V "Mystery"

**W**ork on Mystery is slowly going ahead and I have had the engine running. I had the engine bolted down, coupling connected, control cables installed and was hooking up the battery cables and wiring loom. I thought I would just test the starter motor by cranking the engine over a few times. The engine had been sitting in a shed collecting dust for four and a half years. To my utter astonishment, it immediately burst into life and commenced chugging away merrily as though it had only been used yesterday. I was amazed because I hadn't installed the fuel line and there must have been a couple of teaspoons of old diesel in the injector pump. When I picked my bottom jaw up off the cabin sole I remembered that the block was dry, I hadn't connected the cooling water line so after letting it thump away on idle for 15 seconds I shut it down. It was a good demonstration of a diesel engines reliability when it can sit cold and motionless for years, then fire and run on the first turn over compression. Refrigeration. At last, after years of drinking warm cheap cask wine in preference to warm beer, I have

purchased a real, no nonsense rotary compressor, 12/240v freezer/fridge system. You buy the refrigeration unit which is a stainless steel box 400mmx230mmx230mm containing the compressor, inverter, condenser, dryer, fan and control panel. You also get a cold plate which can be supplied flat 400mmx500mm or "bent" 90 degrees or "U" shaped to suit the internal dimensions of your existing ice box. There is the option of a eutectic tank which takes longer to cool the cabinet down, but stays cold longer. You can have your frozen fish and ice cubes -23 degrees if you like. The unit works by stepping up your 12v ships supply to 240v with a high efficiency solid state sine wave inverter which runs the compressor. Any "spare" 240v power is available for use from a standard 3 pin socket. If more 240v power is required, the fridge can be switched off and up to 250 watts of 240v power used to run small appliances. What a useful feature for recharging battery drills, mobile phones, video camera battery packs etc etc. If shore power is available, the unit runs on that and automatically reverts to 12v when the 240v is disconnected.

The low voltage cut out protects against the fridge flattening your batteries past the point of "no engine start" (if you don't have an isolated, dedicated engine starting battery). I saw the advertisement in "Cruising Helmsman" (REFRIGERATION RESEARCH 14 HILL St Mt BARKER SOUTH AUST 5251 Ph 0417 864 450) I am making a male plug out of masonite, cheap pine and crash patch to mold the fibreglass cabinet liner. Slabs of 50mm urethane insulation will be shaped and glued to the insides of the fridge compartment and the liner dropped in. The volume will be a modest 70 litres with a top opening lid and drain plug for easy cleaning of fish scales and exploded beer bottles. I will have room on top of my solid ply cockpit awning for three large solar panels, and hopefully with the tropical sun blazing down vertically there will be enough amps to run the fridge without having to run the engine. Looking forward to the next Ferro News (suffering withdrawal symptoms), hope you have a full recovery soon, best wishes, Doug S.V. Mystery.

# A QUICK WORD

From some of our readers

## **Kowhai** by Martin Helyer

I have recently purchased a 30' ferro cement yacht. The vessels name is "Kowhai" and was built in the mid to late 70's on Stradbroke Island. It has spent the last 4.5 years moored at a marina in southern Indonesia, with no maintenance what so ever. The general appearance of the boat is dreadful, but appears mostly superficial. The Hull has many blisters under the paint, a couple of which when burst contained some moisture. The underlying surface does not appear effected in any way. I wish to gain as much knowledge as possible on ferro cement construction/ maintenance/ repair and the experience of others. To this end I have been scouring the Internet with little success on things to do with ferro cement boats until I came across a Danish Web page which mentioned your magazine. This is my first boat purchase as was gotten as a means to explore some of the surrounding island and also as a project in developing



**Kowhai**



Welcome to Ferro cement Martin! Please Don't hesitate to write with specific question. I and our readers are always happy to help where we can.



## IMAGES OF "Sea Mentality" .....



## Rays Hell

Greetings from Darwin, March finds us almost ready to re-launch Ray's Hell, after 5 months "on the hard". Work, that four letter word, has a way of interfering with ones lifestyle, and so it has once again. 60 days of constant toil in all weather conditions on the Bass Strait oil field has come and gone and we've secured a floating berth in Darwins famous "Duck Pond". The wet season is nearing an end, and we can hopefully give the air-conditioner a break soon. With the strong probability of further off-shore contract in S.E Asia this year we have decided to wait it out in Darwin, probably for another year or so, before we make our next move, which will be to Asian and West Pacific waters. We have met up with Darrel and Bev of Bevarrel recently, and look forward to seeing more of them and their beautiful vessel.

Regards Ray and Cindi



## **Kumax** by Steve & Shelley

We are finally leaving Gladstone after a year of working to continue our Queensland coast cruise. Our Hartley Queenslander Kumax is looking all set to go; thanks for the information on bottom paint. One day (soon!!) we'll get around to penning an article for FN on our repairs. Keep up the good work; we love to read all the newsy bits and people's goings

*(Continued from page 1)*

Off went the novice crew of two into the sunset feeling so proud of the great work accomplished. Next morning we prepared to put her in the marina but to our disbelief they had lost our records and told us to berth at the Ferry jetty while our papers were found, we approached the jetty and placed the new Perkins in reverse, to our horror, nothing happened; the boat continued on at what felt like increased speed. Frantically diving into the engine bay to manually stop our progress was achieved with great skill & the agility of a younger man. The corner of the jetty however, wanted to show everybody that it was quicker than the couple of novice boat handlers playing with 22t of unstoppable stone. The result a dinner plate size hole on the starboard bow about 300mm above the waterline for all to see and talk about. Needless to say the damage was repaired in record time by the reddest faced amateur afloat.

With the repair completed it was soon forgotten so off went the novice crew once again for a weekend away and naturally with us our little silky cross Jessie. This little dog is very well

house trained, but this is a boat "where do I pee etc she asks", on the foredeck by the deck wash outlet would be a good place we indicate" but no instead she sits legs crossed whinging to go ashore. So after successfully anchoring in a very pleasant crocodile infested bay a mile off shore it was up to the davits, lower the dingy. what about the out board its a bit choppy down there so the motor was lowered on a line and nervously attached to the dingy bouncy conditions. The three of us then proceeded to shore it seemed to take hours, the dog relieved we returned, by the time we reached the yacht there was as much water inside as out from a developed split almost the length of the dingy which resembled a well designed irrigation system. By now we are becoming regular boat owners and realise these little things are sent to try us. Next morning a small croc was drifting between us and the shore it was then the spoilt little dog learnt to pee aboard. The dingy has been replaced with ;ahh,, how would you describe it "one with less leaks".

A further 12 months passed with a hand full of minor trips within a day or

so of Darwin and the boat spending most of it's life motionless in the overpriced marina. We had intended to live aboard, but a couple of weeks before the big move the marina advised that all Darwin residents could only live aboard for two days a week so those plans had to be thrown Overboard.

Our next plan was to go back in hock and build a local house. So most of this season was lost while we concentrated on setting up a new home.

This finally achieved we gave Bevel a bottom job and rewarded ourselves with a well deserved three week trip up to the old Victoria settlement and around local areas which went without a hitch, other than the minor things you would expect from a couple with very little experience. Our 450m trip was a milestone in our dreams and has stirred the enthusiasm for regular trips immediately after the current wet season. We then hope to be able keep you posted on our progress or perk.

Looking forward to your planned trip to Darwin there will be no excuses to miss us.

regards , Bev & Darrel Westlund

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**Name:** \_\_\_\_\_

**Postal Address:** \_\_\_\_\_  
\_\_\_\_\_

**Vessel Name:** \_\_\_\_\_ **Port:** \_\_\_\_\_

**Design Name:** \_\_\_\_\_ **Length:** \_\_\_\_\_

**Mail To:** Ian McFarlane, 69 Manly Road, Manly Q 4179, Australia

## Practical Thoughts *by Keith Flemming S/V Zodiac*

### STARTER BATTERY.

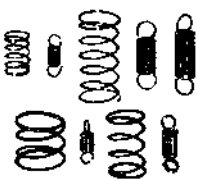
For many years we have been taught that one battery should be used and reserved for purely starting the motor. After all it can be bad news to be caught out with no way of starting the main motor. It sounds like a good thing but there are other uses for that battery that are quite compatible with its use. For instance the HE radio and the anchor winch are a couple which could be sourced from the starter battery. Because the starter battery is always full of power both these items require plenty of power in volts to operate them. If the house batteries go down then you can still raise the anchor or call for help. On yachts with twin engine systems like a catamaran or where you have a main engine and an auxiliary do you really need 2 starter batteries? What about starting the engines from the one starter battery and thus giving you an extra house battery that is always useful ?

### GAS BOTTLE STAINS.

For safety sake many cruisers seem to have their bottles mounted on the deck or the pushpit. While the price of stainless or alloy bottles is far beyond the average cruiser we have to make do with painted or galvanised ones. Both these coverings are affected by wear so it is not long before the raw steel is exposed to the saltwater and the elements. This causes rust that leaves stains on the surface on which they are resting. When I go overseas I carry extra bottles on deck but I carry them in old milk crates to protect the deck. The 9 kg bottles fit exactly in a milk crate. It also makes it easy to tie the crate to the pushpit or fence. Another method of avoiding the rust stain on the deck is to take a piece of garden hose of the right length to go around the bottom ring on the bottle and split it so that it grips the bottle. This provides a barrier between the bottle and the deck. Before you fit the hose sand and paint the bottom ring otherwise the rust will bleed out of the

### FOR SALE.

Ferro cruising yacht 'Zodiac'. Khan Walker design. 40 fit long. Draft 2m. Ply wood deck, cutter rig. Twin furlers, fully battened main. Perkins 4236 4 cylinder 70 hp engine. 5 hp gen set. 12v refrigeration. Fully equipped for cruising and just returned from its fourth trip to the Louisiades. Allgear in excellent condition. Photos available Price \$75;000 enquires to Keith Flemming on 07 49 465 073.



### STACKING THE FREEZER.

Regular readers will know of my lack of enthusiasm for freezers on yachts. I am a great believer in refrigeration and have no '1: problems with vacuum packed meat for up to 3 or 4 months, why would you need a freezer? Anywayj either a fridge or freezer needs to be packed with special care and thought. A good fridge can be made to act as a fridge and freezer with the use of a horizontal divider. For instance when we go overseas we stack the floor of the fridge with tubs of margarine. This allows for any spillage that may happen during the trip like milk or open soft drink cans. The liquid filters through to the bottom and then freezes and does not spoil any other food. Packed on top of the margarine are the meal sized packets of vacuum packed meat like sausages, mince meat, steaks, and 3 boned out roast dinners. You cannot vacuum pack - anything with bones as they will go off or pierce the plastic bags. We usually also put in at this stage about 4 packets of frozen spinach. With this packed nice and flat we put in the divider which is Just a piece of board. The purpose of the board is to stop the warm air from filtering down right to the bottom of the fridge. With the thermostat set at 3 in the tropics this will keep everything below the the board in a state of near freeze. In the top of the fridge we have two open top; buckets suspended. We have a Trailblazer 100 It fridge freezer in which a mop bucket will fit exactly across the lip. The vegetables and current refrigerator items such as milk ,rnarg, open cans and fresh meats are stored. Everything else that requires refrigeration is packed between the divider and the bottom of the buckets. You may also have a number of items on a long trip that will last a long time if just kept cool rather than refrigerated. I have in mind cheeses and other items that do not need to be until opened. Weight has a lot to do with how you pack the items as you do not want soft items to be crushed and also thought has to be given as to how often you will use a certain item. The second bucket that sits beside the first is filled with vegetables as you cannot allow fresh vegies to touch the sides of the walls. It also makes it easy to get into the fridge by just lifting them out instead of having to unpack half the fridge. The freezer would be packed the same way including the buckets and without the divider to make it easy to select an item. When packed carefully you will be surprised how much you can get into the fridge. Of course you only keep enough cans that you will need that day.

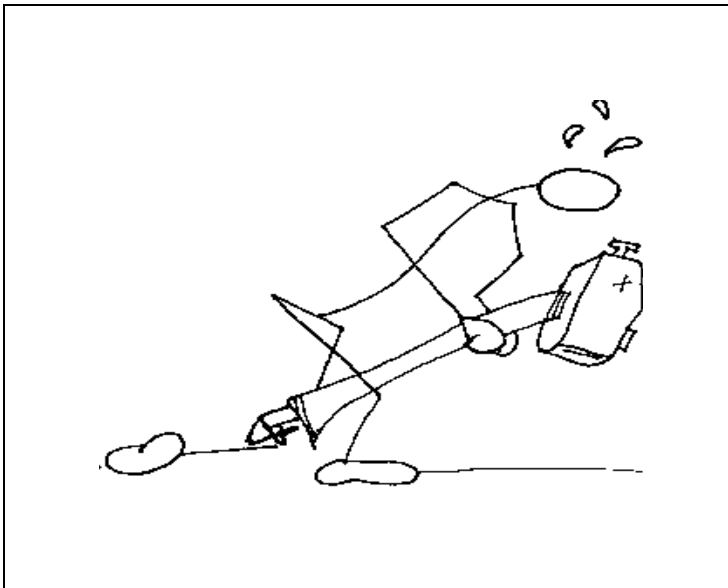
## RESUSITATING THE OUTBOARD

by Keith Flemming S/V Zodiac

If it hasn't happened to you yet, then it will at some time in your yachting or fishing life. The drowning of the outboard happens and you should be prepared for the happening. I have drowned an outboard about 5 times in my lifetime so can speak from experience. My present motor has drowned 4 times, once it stayed under for 10 days. That was 10 years ago and the trusty Mercury is still going strong. Knowing what to do is the hardest part and any small motor should take about an hour to resuscitate. Once a drowning usually necessitated the fastest trip possible to the Outboard Mechanic, but these days the quality of manufacture is such that any mechanically minded yachtie can resuscitate themselves.

Of course it is preferable not to have the drowning at all but it will happen. I have towed my 10 ft (3m) dinghy and 9.9 hp motor for thousands of miles up and down our coastline in all kinds of weather and seas and have yet to swamp it in transit. One time the motor was drowned by a big gust of wind while at anchor that lifted the dinghy up and turned it over. I used to think that inflatable dinghies were the only ones that got blown off the water like this but I was proved wrong. The most common causes of drowning is rainwater. For those of you who live in the southern States this may seem a bit far fetched, but one day you will cruise in the tropics and then you will find out what rain is all about. What happens is that you leave the dinghy in the water for a couple of days and come back to find just the bow floating. I have had the experience in the tropics of having to pump out the dinghy 3 times in one 24 hour period and each time it was about to sink. This included one 3am pump out and it was about to sink again at 7am. These days in one of

the cockpit lockers I have a 1" bilge pump with a long electrical cord that I can drop into the dinghy beside the yacht. Often you will sink the dinghy by getting into it to bail it out. If you have your dinghy in the water and it is raining heavily be aware of how quickly it will fill. Now to the sharp end of the problem, resuscitation. The easiest method of starting is to tow the dinghy ashore and turn it over in the shallows and removed the motor to dry land. The gear you will need to take with you is minimal. A 4lt can of petrol, rag, spark plug spanner, can of Inox or C?RC or WD 40, a funnel, and a bucket. Pull the dinghy up on the beach and remove the drain plug. Take out the fuel tank and



hose (unless the hose is fixed in the boat). Tip the fuel from the tank into the bucket. Any water that has got into the tank will sink to the bottom of the bucket. Using the funnel pour the fuel back into the tank all the time watching that the water stays in the bottom of the bucket. Discard the last bit above the water. Reconnect the fuel line and using a small stick to depress the ball in the delivery end pump the fuel through the hose until clear. Now lets attack the motor. Remove the spark plugs and turn the motor on its head and shake well. While you have it upside down pull the starter cord a couple of timesto clear any from the crankcase. Now lay

the motor with the cylinders uppermost and fill the cylinders with petrol. You can use outboard fuel for this job, it does not have to be pure petrol. Push a piece of rag into the spark plug leads and slowly turn over the motor. Turn up the other way and let the petrol drain out of the cylinders while you pour some more petrol down the throat of the carby. Once again put the cord slowly a couple of times. Now lift the motor and shake well on both sides to remove excess fuel. Now stand the motor up. Remove the carby filter (you usually dont have to drain the carby bowl) and clean and wash and replace. Clean the spark plugs and the leads. Pull the cord sharply a couple of times to blow out any fuel left and fit the

spark plugs and leads. Spray the whole motor head and under the flywheel with Inox to get rid of any water on the electrics.

Now comes the moment of truth. Connect the fuel line, pump up the fuel, put the motor in start mode and pull the cord. Just go through your usual starting procedure. The motor should start on about the 3rd pull. If it fires and will not keep going then operate the throttle (butterfly) lever by hand and it should run and clear itself. You should not have any trouble firing up

the motor. Do not run it for long out of the water. Place it back on the transom of the boat and take it for a brisk run to warm it up and dry it all out. Another spray with Inox all over the engine head and replace the engine cowl. About this time it is back to the yacht for a cup of coffee. End of story. If it happens to you. dont panic. Time is not important. There will be no worse effect if it has been drowned for 5 minutes for a couple of days. If you have digested this then you will find it easy when it does eventually happen to you.

R

# FERRO IS ON THE NET by Mahesha Goleby S/V "Sea Mentality"

## Tidbit #1

**From:** thorsen@telia.com (ake thorsen)  
**To:** HyperNews@vacation-life.com  
**Subject:** Feedback: Ferro Cement Boats are Cheaper  
**Date:** Sat, 20 Feb 1999 11:24:06 GMT

The Ferrocement Boats are normally cheaper in material costs, but more expensive in labour costs. You can make an easy comparison between wood, steel, plastic and concrete. You will get a result that shows that concrete is the cheapest material available.

But when it comes to labor costs, ferrocement could be more expensive than other materials. In the end the hull could turn out to be as expensive as the hulls built in the other competitive materials. But, with the modern technique in building with ferrocement, as I do in Sweden, is to do it with steel fibre reinforced shotcrete! Now, we have found a combination of a cheap material and a rational cheap building method. But the method is not common yet. What we do here, is to use a mould for the hull and spray the reinforced concrete onto the mould. This is a few hours operation. We do not need a month or two, to create the mesh scelleto and after that do the concrete work by hand. We just start the air compressor, fill the concrete pump with fibre concrete and spray the whole thing onto the mould. Finnished. The wood works will ofcourse remain. But these are the same for all the choosen methods. The good thing is that a well built ferro boat will last for 100 years (Do not forget to prepare for your last will). The maintaining costs are low. The negative things are that there are few designers and few builders and therefore not so many references to look at. Most ferro boats where one-off built for a certain purpose and that is also the reason you have not seen them in races and in the fairs. Best regards Ake.

## Tidbit #2

An address I haven't yet written to is: [ferro-users@ferrocement.net](mailto:ferro-users@ferrocement.net)

## Tidbit #3

Shotcrete is alive and well and definitely interesting reading at: <http://www.come.to/fafner.marin> (translated to English and German!) *I particularly like his idea of metal fibre/concrete shot against formwork. MG*

## Tidbit #4

Taisto Pihlajamaa of <http://summa.krt.turku.fi/~taisto/bigger.html> supplied these photos of his(her?) ferros in Finland.

