

The
freedom
Story

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Originator, Freedom concept

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Somewhere between the stately clippers of the late 18th century and the spin-out specials of the SORC, sensible sailing design seems to have lost its way. Perhaps the problems started when sailing ceased to be the main method of locomotion for international trade and became more of a rich man's sport instead. But whatever the reason, there has been a dreary lack of progress and even some discernible regressions in the field of cruising design. The slightly better speeds shown by modern sailing boats when compared with their forebears of a century ago are more to be accounted for by the improvements in building materials - aluminium, dacron and fibreglass - than by any actual advances in design.

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Just how seriously we have gone astray was vividly illustrated to me some years ago in the Caribbean. We were taking a new cruising/racing machine out on her trial run. No expense had been spared in giving this superboat every possible technological refinement, and when we had finished admiring the Barents, the Loran, the Sonar, the single side band and the gleaming array of dials, we scanned the horizons for a victim on which to test our speed. The only target in sight was a large and cumbersome Tortola sloop, crammed with cement bags, vegetables, children and several goats, and powered by a tatty old battened sail. Well, even though this didn't present much of a challenge, we set out to make short work of her. Winches whirred, lines hummed, and lips were whetted for the kill.

Except, somehow, maddeningly, that wretched old sloop just wouldn't come back to us. True, we were gaining on her - but agonisingly slowly. We were finding out just how good - despite appearances - the design of a Tortola sloop was, especially in 25 knots of breeze, on a reach. After all, it was the product of 300 years of constant testing. And when a boat went well, they went back and built another just like her, only changing when they were sure they had one that went even better. That's how progress used to be separated from change.

Anyway, after sustained hiking by all members of the crew, and determined efforts to keep our new wonderboat drawing, we finally came abreast and passed the old sloop. The new owner, who had paid richly for the ability to leave the competition in his wake, looked particularly relieved. The conversation on board changed at this point from how well our boat sailed to "how well she rated". We happened to have a lady novice aboard who had the temerity to ask "But doesn't rating well mean sailing well?" Embarrassed by such ignorance, we explained (with the patience that experts reserve for the very young and the very inexperienced) that ratings were something quite apart from performance. "I see," she said - but I don't think she did. Poor girl - what naivety to confuse a good rating with a good performance.

So on we went to our harbour destination, beating that old-fashioned sloop by a full 3½ minutes. Naturally we used the engine a little at the end, to manoeuvre in to the beach, so that did give us a small advantage. Fortunately we also had our modern depth finder switched on, giving us an admirably clear picture of what was below us. And if only that coral head which we glancingly struck had been below us, we would certainly have spotted it. As it was, we just bounced off, which we all agreed was a great tribute to the strength of our modern fibreglass construction and indeed our 6½ feet of draft was a small price to pay for our high performance fin keel. We were just getting our 160% genoa down (after sending someone aloft to clear the halyard which had jammed in our high performance airfoil forestay), when that old sloop came swooping by, turned cleanly into the wind and neatly dropped her anchor in about

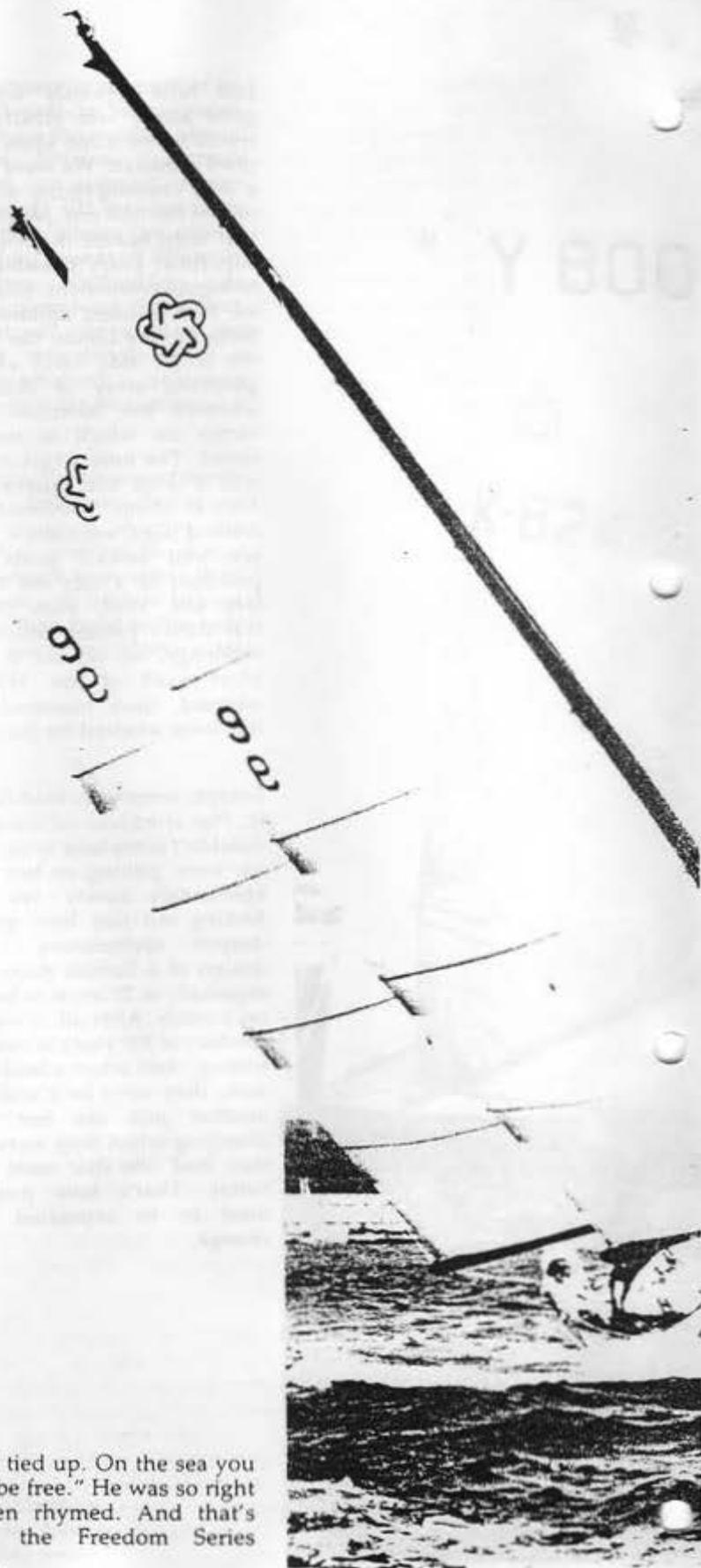


four feet of water, right off the best bit of beach. Quite frankly, we all thought it a bit cheeky of him to show off and anchor there when we were left about 90 yards offshore.

However, the prospect of a piping hot meal out of our super electric stove soon gave us something else to think about. We sat around, watching the refrigerator, the oven, the lights and the hi-fi all humming away together. It was wonderful to see how modern science had triumphed over all the inconveniences of nature. That was just about the moment we discovered that some sort of electrical malaise had drained our batteries to desperately low levels, causing the slow demise not only of our oven but also our entire electrical life support system. I mean, what do you do with half-cooked beef stroganoff? And no water because the pumps won't work?

After some argument, we decided to requisition help from the only source in sight - the native sloop. After ten minutes of wrestling with the inflatable dinghy (specially packed for quick assembly in an emergency), and ten more minutes of trying to row this impossibly ungainly design into 15 knots of trade wind, I came alongside the sloop. Light was streaming from their battered old oil lamp, and on the ancient paraffin stove they were cooking a delicious-looking kingfish which they had caught on the way. I ignored the admittedly enticing aroma of this primitive fare and explained our plight. At least the native skipper was polite enough to appear puzzled rather than amused. There wasn't much he could do to help us, other than give us some water, which he quickly tapped off a simple barrel on deck. But he did pass along some advice as I was leaving. "Mon," he said gently, "those conveniences got

you all tied up. On the sea you got to be free." He was so right he even rhymed. And that's where the Freedom Series began.



Pure reason demands that there must be a better way. Our first resolve is to abandon forever the folly of designing to meet the annual aberrations of some ratings committee, whose principal purpose seems to be the equal distribution of defects and disadvantages. Planned obsolescence certainly keeps naval architects gainfully employed, but it's the worst possible way to build better boats.

If we retrace our steps to where the way was lost, we find in the late 1800s a golden age when the debate between "deep and narrow" and "wide and shoal" hulls had been resolved by truly practical men, and there emerged a whole series of nimble, functional and durable craft. And the desire to return to plain proven performance took me over to Rhode Island, U.S.A., where Halsey Herreshoff's Bristol boatyard combines an appreciation of the traditions of this old boat-building family with a willingness to use new materials in the cause of greater simplicity. In designing the Freedom Series together, strict adherence to simplicity and strict avoidance of complexity were our chosen watchwords.

The Hull

The sea provides restrictions of its own with regard to hull shape and size. There are heavy disappointments in store for those trying to make a 23ft cruising boat as frisky as a planing dinghy, or as stable as a 30-footer. For, while plans can be cleverly miniaturised to show almost any combination of facilities, people can't be. So when you read about a triple-cabin, centre-cockpit, racing/cruising 33-footer, you know that something's amiss, because there's no way that all those attractive-sounding features can be built into that size of boat.

With these thoughts in mind, we chose 40ft as a length capable of providing a nice open stride and sufficient authority in a seaway, while at the same time allowing space, to move around freely with a reasonable degree of privacy. Because privacy, we feel, is part of freedom, too.

The Rig

The same respect for performance that led us back to tradition in the hull led us forward to some rather bold innovations in the rig. Because the big improvements in the weight/strength ratios of aluminium spars and dacron cloth, as opposed to their wood and canvas predecessors, present a whole new range of rigging alternatives. Previous rigging arrangements were far from the simplicity we were so keenly seeking for the Freedom Series. Boats acquired ever larger headsails, plus ever larger winches to trim them, and ever tighter forestays to hold them properly. This in turn demanded ever tighter backstays. Which of course meant that you couldn't really have a decent-sized mainsail because the boom had to be short enough to clear the backstay. So designers steadily reduced the mainsail down to what it often is now - a useless scrap of dacron whose gross inefficiency has been disguised by pseudo-scientific terms like "high aspect ratio" but which is in fact just not up to the job.

But isn't a big genoa the key to speed? No. The fastest boats are catamarans and ice boats, and they reach their fantastic speeds very nicely without a jib. The real reason why a jib is more effective on the average cruising boat than the main is that the jib is the only sail which presents a clean leading edge to the wind.

Another, and more serious problem with big headsails is that the very high tension which is needed to make them efficient imposes a whole chain of subsequent strains - on mind, muscles, rigging and pocket. Firstly, big genoas are extremely expensive, as is the equipment necessary to support them. Secondly, all headsails have periodic fits of self-destructiveness, and wildly flap themselves to death at inconvenient moments. And thirdly,



you need a full crew complement to hoist, trim and change them. A further penalty exacted by the tight headstay/backstay is the impossibility of using mast-bend to adjust the shape of the mainsail. But experienced sailors know that with a bending mast they can have a large, full mainsail for light winds and reaching, and yet for heavier winds to windward they can flatten the same mainsail and still carry it. This kind of flexibility is consistently denied to ocean racing craft.

Any observer of, say, the Finn Class, would note that these lively boats are all able to carry a lot of sail without benefit of rigging, because the flex in the mast is a built-in shock absorber. This creates a lovely natural balance, whereby the harder the wind blows, the harder the unstayed mast tries to do exactly the right things. With each puff it bends back at the top, and also off to leeward, nicely freeing the leach so that the mast and sail can valve off the impact of harder buffets. Furthermore the demand strains and compression forces which plague all stayed rigging do not affect an unstayed mast - and nor do worries about terminal fittings, turnbuckles, chainplates, etc., the failure of any one of which means dismasting.

These thoughts give rise to some exciting possibilities. For instance, why not have an unstayed mast or masts on a 40-footer? And once you have a mast without stays, why not make a sail with a sleeve, to get a clean leading edge? Better still - why not make a two-ply wraparound sail in order to create a full-length airfoil section?

Doubts about the strength of an unstayed mast can be countered by looking at the wing tip of a jet in flight. Because if aircraft designers can support an unstayed wing, 100 feet out from the fuselage, under the strains imposed by speeds of 700 mph and above, boatbuilders can certainly design an aluminium spar that will stay in place. In fact, the very flexibility of a properly-designed unstayed mast gives it far less chance of failure.

Each one of the unstayed masts on the Freedom Series is capable of singly levering the entire boat over on its side - which is much more strain than the rig will ever have to face on the sea. Mast bend is the best possible guarantee against mast breaking.

Freedom 35 Construction
1988 Yachting Monthly
Triangle Race winner



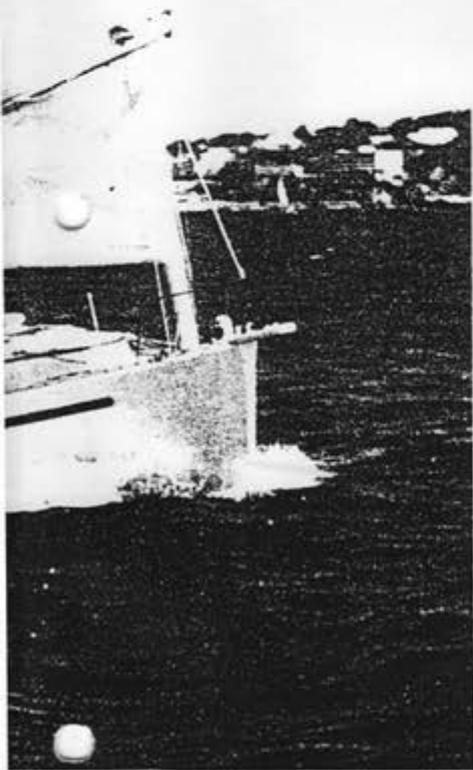
Abstinence, experience teaches us, does not make the heart grow fonder. Yet most boats are designed in such a way that sex is either impossible, or else a public spectacle. The Freedom Series cheerfully accepts that privacy is an important part of freedom, and sets out to achieve it sensibly.

The original centre cockpit version featured a Master's cabin aft, strongly rejecting the subversive modern notion that all on board are entitled to equal quarters. Sea captains in days gone by were never in doubt on this point. They knew that old Number One needed special space to gather his thoughts, ravish curvaceous captives and otherwise fortify himself for the many stresses of leadership. Accordingly, our aft cabin is equipped with a capacious double bed, its own toilet and wash basin, and six opening portholes for all-round ventilation. It is also worth noticing that the centre cockpit is the largest of any 40-footer on the market. After all, why skimp on size in a place where you plan to spend so much time? And since one always seems to want a table in the cockpit, we made a permanent one forward of the wheel. It houses the compass and instruments, and provides easy access to the engine rooms. And when the hinged teak leaves are extended, it makes a banquet area which can seat ten people.

Meanwhile, for those who prefer a traditional aft cockpit and more space below, we designed the aft cockpit version. Here the rear cabin is eliminated and the sheer carries right out to the stern, giving a lower profile. The deck extends right out to the bulwarks, which considerably adds to the space below. The result is a boat with a completely different look and feel. And this version is particularly handsome with inlaid teak decks.

So much, then, for theory. What really matters, of course, is performance out on the water. And having sailed the Freedom 40 in every imaginable weather condition, I can state categorically that this is demonstrably the swiftest and simplest cruising yacht on the market. I have taken it for long single-handed ocean voyages, and in and out of the most crowded anchorages. The latter was a particularly exacting test of manoeuvrability, the prototype having no engine. The boat has survived 60-knot squalls which dismasted nearby conventional craft, taken knockdowns that filled the cockpit (as a result of which we doubled the size of the drains) and, best of all, fed wake to every other cruising boat we met while more than matching them for comfort at anchor. At Antigua Race Week and the Rolex Cup – the two premier yachting events in the Caribbean – the Freedom 40 swept the cruising division and beat half the racing boats as well. On one memorable occasion, running before 35 knots of breeze, we easily overtook a racing Swan 44, complete with spinnaker, groaning winches and cursing crew. In a 40-mile open ocean race between St. Croix and St. Thomas, the Freedom 40 left the entire fleet behind, averaging 8.9 knots for the course. And on another occasion, with the races cancelled and the yacht club anemometer registering gusts of up to 55 knots, a two-man crew sailed the Freedom 40 off the anchor and entertained the crowd on shore with tacking and jibbing manoeuvres.

Naturally we have encountered critics and sceptics, but bit by bit this boat has been winning them over with its indisputable performance record – a record which includes sailing across the Pacific, through the Bermuda Triangle and all-over the Caribbean without one single major rigging failure.



The Freedom 35 employs the same Cat Ketch configuration with freestanding masts, wrap-around sails and wishbone booms. This is, quite simple, a better rig, and only the Freedom Series has it in time-tested form. The presence of wishbone booms, of course, is by no means a nostalgic bow to the appearances of "the old days". Their superiority in efficiency to conventional booms comes from the fact that they allow the curve of the sail to come right down to the foot - something that straight booms cannot match. And wishbones utilise the free foot of the sail as a natural boom vang which prevents the wishbone from being pulled up. With the result that the full sail area is effective, no matter what course you steer. The importance of this point is well illustrated by the dilemma of the average genoa jib headed

craft. Between a broad reach and a run, the jib becomes a useless annoyance which slats back and forth and cannot be made to pull steadily. The mainsail hikes wildly up and down, causing a dangerous windward roll and considerable chafe on the shrouds. By contrast, the Freedom 40 wings out a completely controlled sail on each side, which makes for properly balanced steering and an instant set of your full sail area. And by hoisting a large, light staysail between the two masts, you get the extra drive of a spinnaker with none of the associated problems.

The proof of this is that two people can set this rig easily and quickly, and with it you can pass racing boats under spinnaker arrangements which required the work of four to six men.

Reefing the Freedom's rig is hard to explain - but it's far from hard to do. The method I favour is just to lower the after sail, since the boat sails very well on the foresail alone. Others prefer more gradual reductions, and there is a variety of ingenious possibilities to choose from.

The Freedom Series is not, of course, ideal for everyone - but then popularity was never the main part of the plan in the first place. But Freedoms are designed for those who have a special allegiance to the art of moving swiftly and silently with the wind. The freestanding concept takes a while to get used to, but the more you think about it, the more sense it makes. And if THE FREEDOM STORY does nothing more than awaken you to the attractions of greater simplicity in your sailing, it will have served a useful purpose.

As the man said: "On the sea you got to be free".

freedom
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