



Built for ocean cruising

By JOHN and LANA CAMPBELL

Part one, designs, early plans and developments...

Our boat is home for my wife, Lana, and myself. As such, she must be capable of carrying all our worldly possessions, from clothes through books, tools, and cameras to our Scuba diving gear. This fact alone dictated a fairly heavy displacement design, and precluded from our thoughts a multihull, which has to be kept light to be efficient, apart from any personal reservations that I have as to a multihull's seaworthiness.

We like to live in the tropics, but need to return to temperate climes from time to time, so the boat must be capable of extended ocean passages. My first ocean passage was in a modified Contessa 26 a few

years ago. I was sailing alone from Venezuela to England and had the misfortune to be rolled over some two hundred miles off the Azores.

This experience has affected my thinking in the design of *Papilio*. The realisations of just how rough the sea can get in storm conditions, and some small appreciation of the forces involved, determined me to overbuild our boat. For an ocean passage to be successful, one must first of all complete it. Seaworthiness and strength became a major consideration for the design.

We go sailing mainly to arrive. We enjoy the things that go with the life more than the actual

sailing, so we want to arrive fairly quickly, yet as we are not masochists, fairly comfortably. The boat does not have to be particularly exciting to sail since we both prefer reading a good book to jumping around on the foredeck fighting a spinnaker.

So where did all that lead us? It seemed better to get the displacement from length rather than excessive beam, so the boat would be more easily driven. Our funds are always limited since we find many things to do that are more enjoyable than earning money, so it was obvious we would have to largely build the boat ourselves. For the same reason, we picked a

maximum size of thirty-five feet. This, we felt, was big enough to afford to build and, as important, small enough to maintain.

Having at last fixed something — an overall length of thirty-five feet — we next considered the shape. For cruising boats, overhangs are a waste of boat. The internal volume of a boat is more closely related to its waterline length than its overall length. Why pay for, and maintain, extra bits of boat that you cannot use? I once owned an old gaff cutter with a long counter stern. In heavy seas, the counter slammed so hard, the old girl quivered from stem to stern and leaked faster than ever. So, our new boat would have short ends.

Next the underwater shape. We enjoy getting into secluded an-

Papilio Ruga in the very early stages. Unpigmented gel-coat, below the waterline, shows up her internal stiffeners.

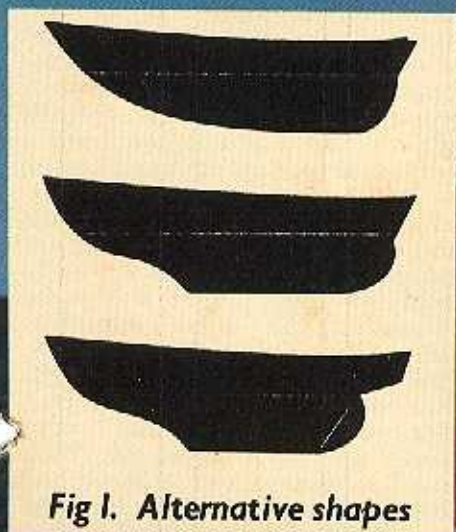


Fig 1. Alternative shapes

chorages away from the masses. Having once navigated a large ketch drawing fourteen feet among coral reefs, I appreciate shallow draught. Shallow draught suggests twin keels. Would twin keels be the best solution for us? The areas in which we spend most of our time have virtually no tidal rise and fall, so it is of no advantage to us to be able to dry out in the way that twin keels excel. Then I heard a horrific story of a twin keeled boat being swept ashore in a storm, over a coral reef. As she drifted in sideways, she tripped over one keel and was rolled over and over until she reached the beach. Perhaps a single keeled yacht would have slid over the reef with less damage to herself and her occupants.

I got to wondering how a twin keeled boat would behave laying ahull in a storm. Would she tend to be more easily rolled over than a single keeled boat, again tripping over one keel rather than sliding sideways and giving to a wave? We decided to stick to a single keel for this boat as we have much more experience with single keeled boats.

What shape should that keel be? We have no pretensions whatever

towards racing, so the underwater shape was to be that which would give us the greatest safety and most comfort. A modern fin and skeg underwater shaped boat is physically easier to steer than a long keeled boat, but mentally it is much more demanding. It requires much greater concentration to keep a short keeled boat on course as every wave seems to knock her off course a little. A long keeled boat tends to get into a groove and stay there. To get her to alter course takes more effort on the part of the helmsman, but likewise, the waves do not affect her the same. We spend little time steering the boat, leaving most of the drudgery to our wind vane, and it has been my experience that a vane will steer a steadier course with a long keeled boat than with a very lively fin keeled one.

Having twice hit whales at sea, and even bumped the occasional coral head, I am very aware of how easy it is to damage a boat underwater. I can visualise bumping over a coral reef or even a floating tree trunk and reaching a situation where the keel gets over but the skeg does not. So, all in all, for my money a cruising boat must have a reasonably long keel, and preferably the rudder should be hung on the back of the keel as this is the safest place for it.

We really then had a choice of three shapes (Figure 1). We decided that (c) would give the best compromise between having a long keel with the rudder mounted on it, and an excessive amount of wetted area so that the boat would be dreadfully slow in light airs. At last the boat was taking on a definite shape.

At this point we began to think



Fig 2. Our "ideal"

about the deck and cockpit arrangement. The first consideration was seaworthiness and strength, so we opted for a flush deck. Coach roofs are often a source of weakness, and although we never expect again to experience the horror of being rolled over, we feel our flush-decked boat is strong enough to probably survive it. The flush deck also proved easier and cheaper to build than a conventional coachroof, valid points for consideration bearing in mind our limited resources and skills.

Because it is very frustrating not being able to see out from inside a boat, we decided to have a small doghouse over the galley area. This would be strongly built and have sloping sides to withstand being battered by waves, yet if it did get removed, it would leave a

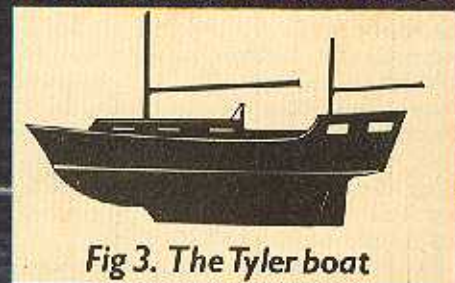


Fig 3. The Tyler boat

small enough hole that we would have a chance of covering. It also provides some shelter for the cockpit.

The cockpit would be aft, primarily because we wanted tiller steering. The added complication of wheel steering would mean more things to go wrong, to maintain and to buy. Lana and I both find that the small amount of time we spend in the cockpit at sea is spent either stretched out sunbathing or sitting to windward with our feet on the leeward seat. We find that we rarely sit with our feet down in the well. During one passage, on a small sloop, returning to the cockpit from the wet and windy foredeck, the boat lurched as I stepped in over the coaming. My foot slipped off the seat and I fell heavily into the footwell. That decided it — we would eliminate the footwell and just have a flat

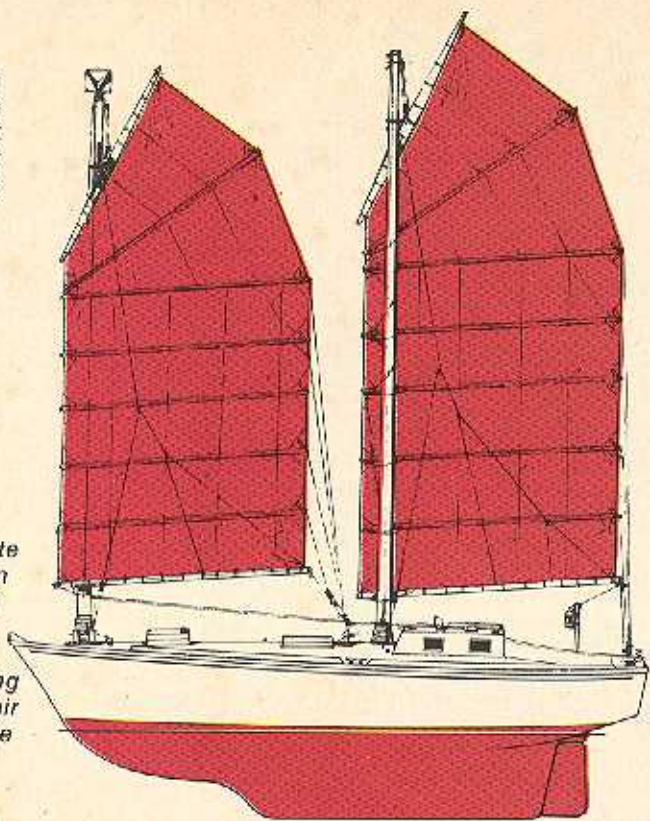
Papilio Rûga

LOA 35ft 2in
Beam 10ft 6in
LWL 30ft
Draught 5ft
Sail area 700 sq. ft.

John and Lana
Campbell

Fig 4

A more than adequate compromise between what we wanted and what we could get. Tyler Mouldings surprised us by saying they could modify their mould to produce the shape we'd decided upon at a price we could still afford . . .



piece of deck surrounded by coamings.*

The coamings are wide enough to sit on, and the sole of the cockpit large enough for us both to sleep on in the tropics. If we get pooped, the cockpit cannot hold much water, and we have an enormous amount of storage space beneath the cockpit. In practice it has worked well. In heavy weather sitting on the sole, feet braced against the lee coaming, one feels very secure. In fine weather, or at anchor watching the sun set, perched up on the coamings, one has an all-commanding view.

The next major consideration was the rig. We wanted a cheap rig, easily handled by just two of us, and one that did not require constant attention. When I got back to England after my epic voyage with the *Contessa*, I had the good fortune to meet Jock McLeod who was sailing *Ron Glas* in the Round Britain Race. I was in Crosshaven, the racers' first port of call. They had had a tough beat up from Plymouth and most of the crews arrived tired, wet, and bedraggled. Jock and his crew arrived looking relaxed and ready for a party. Shortly afterward, Peter Crowther arrived on *Galway Blazer*. He and his crew had watched a football match on TV on the way! These were the only two

junk-rigged boats in the race that year.

Curiously, it was not until four ocean crossings later that I made up my mind. Lana and I were bringing *Robertson's Golly* back to England for Clare Francis after OSTAR. We were very definitely cruising back but found that the boat was rather tender and required constant attention. We had to change headsails with monotonous regularity just to keep her going reasonably well. If overpressed or undercanvassed, the boat ground to a halt. Not ideal for cruising, and all those wet headsails took up almost a third of the boat. About 2am one wet and windy morning on *Golly's* foredeck, I decided. Junk rig it would be, and as soon as we got to England I wrote to Jock McLeod and bought his folios on the 'Chinese Lugsail Rig'.

Jock suggests that thirty-two feet is about the upper size limit for a sloop, so we would have a schooner rig. At last we knew what our boat would look like (Figure 2).

Now that we had an idea as to the design of the boat, we had to decide what to build her in. We first considered wood for cheapness. We had friends in the Seychelles with a lot of seasoned timber, but an untimely coup and an uncertain political future for the islands put paid to that idea.

Steel is undoubtedly very strong, but I have done little welding, and have seen some very rusty boats. We spend much of our time in the

tropics, which is hard on any boat, and as our financial fortunes wax and wane, we may have to leave our boat unattended from time to time, perhaps to go off on a delivery trip. Wood or steel boats must be kept well painted, particularly below the water in the tropics. What would happen if we could not afford to slip the boat every six months? Ferrocement I know little about, but I have heard alarming stories of rapid electrolysis in the tropics, and the possibility of electric currents set up in all those loops of chicken wire and steam pipe as the boat sails across the earth's magnetic fields. Perhaps I am easily scared.

We began to consider resinglass. While not being a real fan of resin and glassfibre, it does seem to have some advantages. It is not attacked by borers, does not corrode, and unlike steel or ferrocement, does not suffer from electrolysis. Although the upward spiral of resin prices has made a resinglass hull an expensive item, we felt it could be a sound investment. We started writing letters to moulding companies outlining our wishes for a hull upon which to build our boat. There was a reluctance from some manufacturers to sell a hull without a deck. This was typified by Rival Yachts who very strongly told us that without their deck, the yacht would not be a Rival 34. They failed to understand that we had no intention of building a Rival 34 as such. The keel wasn't the right shape anyway!

Other companies proved equally inflexible in other ways, and we were about to look again at steel when we visited Tyler Mouldings. They showed us a number of boats from their vast range, but none seemed really suitable. Then Mr. John Tyler took an interest in the proceedings and showed us drawings of a boat that was the right shape underwater, but for our purpose, hopelessly wrong above (Figure 3).

He picked up a pencil and started doodling on the drawing. He altered the sheer, covered the rig, and redrew ours. Suddenly there was *Papilio* (Figure 4), close enough to our original drawings. We were rather surprised when he said they could easily build a hull to that shape by screwing pieces of wood into the mould and laminating to them. We were even more surprised when they worked out the cost and we found we could afford to have them build the hull for us. The project was well and truly on the way . . .

Next Month...

Converting the empty shell into a cruising home

*The same system was used by Peter Poland and Anthony Brunner for their Atlantic crossing in the *Wind Elf*, *Josa II*. See *Boat Owner* No. 25.