

The
YACHTSMAN

N°3 NOV/DEC €2.95

The World of Classic Yachts & Yacht Restorations



- IMAGES OF SAN FRANCISCO
- LINES FOR THE LAYMAN
- SIX METRES TODAY





Photo: KOS

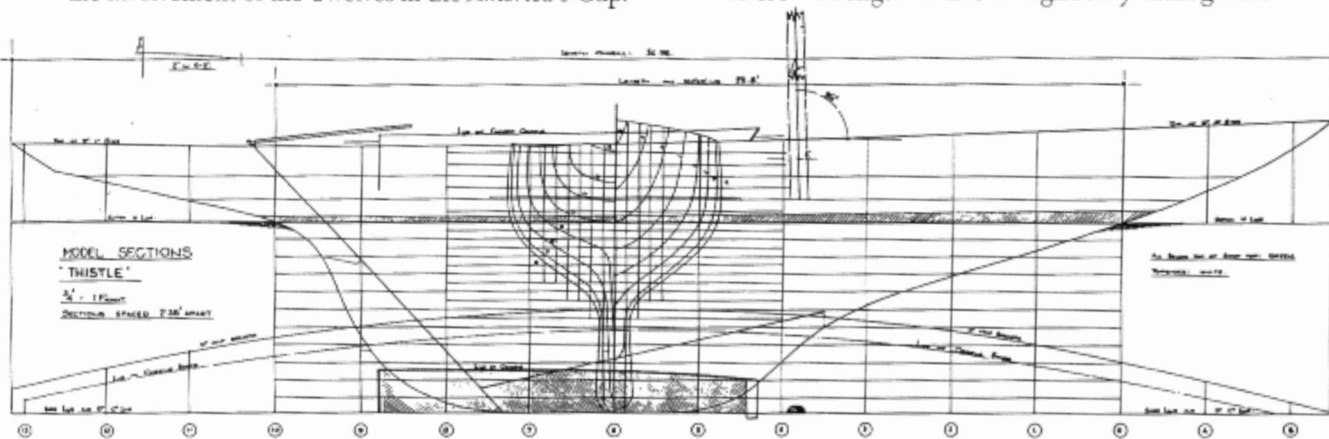
Left:
'No other rating rule had ever produced, or will ever produce, yachts with such elegance and so predestined for pure racing as the Metre Rule ... and at the same time, no other yacht has given so much pleasure to its sailors.'
 Bob Bavier.

Facing page:
A well-sailed classic such as Thistle can still give a modern boat a run for her money.

Ever since its inception, with the inauguration of the International Rule in 1906, the International Six Metre Class has stood at the forefront of development, involving yachtsmen and designers who were, and are, the leading lights of their day. Any idea that these boats exist to provide some form of junior training ground for the Eights, the Twelves and the other larger classes is far removed from the truth. Indeed, the Sixes were the driving force for progress throughout the history of the Metre boats until the involvement of the Twelves in the *America's Cup*.

There are a number of reasons for this role, beginning with reasonable cost and a ready portability which assists relatively painless shipping to any part of the world. Within Europe, boats can be trucked from one regatta to the next, and almost all active Sixes are equipped with a converted lorry. Fortunately for impecunious proprietors, the official measurer has not yet turned his attention to transporters, and the rumours of a new EC directive that yachts rating more than 5.83m shall be carried by a 15-wheel vehicle appear to be unfounded.

A crew strength of five is logistically manageable



The dominant designer of the immediate pre-war era in the USA was the incomparable Olin Stephens, whilst in Britain David Boyd held sway. The plateau of development for full-keel designs had been scaled by the late thirties, so it was inevitable that the first post-war designs from these two masters showed little change of character. Indeed,

David Boyd noted to the author that the only alterations between most of his designs lay in the spacing of the sections. 'What else could you do without being able to work in a towing tank?' He also remarked that William Fife the Younger had a 'Golden Rule' for this apparently well-established system: 'Never alter the waterline length of a new Six design by more than 2in between seasons, nor that of an Eight by more than 3in ... etc.'

for most individual owners, while it also enables teams of chums to organise a boat without the need for professional help. In Sweden such groups have successfully syndicated so as to share campaign expenses. Lastly, where Sixes are concerned, the term 'International' is truly the case. The Rule has managed to avoid the development of boats of specialist proportions, which means that a yacht suitable for Geneva can also win in Cannes, Helsinki, Marstrand or any other civilised venues the class contrives to select for its regattas.

First and foremost, Six Metres are *tactical* racing boats. Boatspeed differences are in reality small, generally arising from crew and sails rather than from other factors which are most apparent on the trucks and at the dockside. However, the very essence of a development class reflects a desire for progress and refinement, and without such evolution even the modern cruising yacht would be quite different from the one we know today. Regardless of any side

benefits, a group of boats of widely varying character is far more interesting than a fleet of one-designs, even if they do all go at about the same speed. Formula One Motor Racing would certainly lose much of its appeal if the machines were the same shape and of the same colour.

Characteristics of the Boats

'It's as if someone had taken one of the 'Ton' classes and distilled it to produce the essence of a racing boat. Add to this mystique a certain aura that goes with a Metre boat, and you have the reason for the new Sixes'.

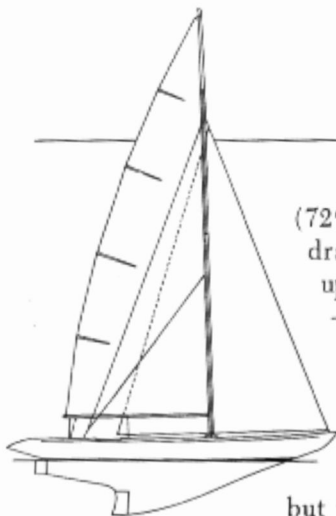
Gary Mull.

The last Seawanhaka Cup match to be sailed in Sixes of the old era took place in 1957, after which the class became very quiet until it was revitalised in 1969. In 1987 the Seawanhaka Cup finally returned to Six Metres, to be won in Long Island Sound by *Battlecry*, representing the Royal Yacht Squadron.

Six Metres are 10.5m long, 3900kg, ballast 2800kg



Photo: KOS



(72%), beam 2.0m, 1.6m draught and with a real upwind sail area of 67sq.m - numbers are interesting, but they can never tell the whole story. The boats are remarkably close-winded, tacking through as little as 70°, but upwind speed is rarely more than 5.9 knots because they are pointing so high. Downwind, protagonists of light displacement would have us believe that these yachts must be lead mines that dig holes for themselves.

But do they?

In Newport Beach, California, the author has been jumped from wave to wave at a quite extraordinary speed in *Gitana* (F107), later *Battlecry* (K85), while reaching in 35 knots of true wind. Fortunately, there was no speedo aboard, because nobody ashore would have believed its readings. At the 1988 European Cup in Torquay, the new *Battlecry* registered in excess of 11 knots on some of the runs. She was not surfing, and her speed was substantially lower than those we experienced in California.

'But, Mr Naval Architect,' howl the pundits, 'we all know that a displacement boat can only sail at 1.35 times the square root of her waterline length. The square root of 23.3 (in the old money) multiplied by 1.35 gives 6.51 knots.' A Six, of course, has shallow overhangs, giving a greater sailing LWL, but even if her length were taken on the measurement plane 90mm above LWL, giving a length of around 24.5ft we can only predict a speed of 6.68 knots. 11.4 knots corresponds to a multiplication factor nearer 2.35 than 1.35. The implication seems to be that while the old-style yachts tended to suck down at speed and bury themselves, there is no clearly defined wave barrier for well-formed, modern displacement shapes.

So how do the boats 'feel'? How do they behave? Why do they provide such pleasure to those who race them, and why do they inspire such loyalty?

On the wind, Six Metres are highly sensitive. 'In the groove', there is a crispness of feel that is otherwise only generally known to those who sail well-set-up dinghies such as the National 12 or the Merlin Rocket.

The narrow tacking angle makes for fascinating tactical racing. Working the wind shifts is all-important, and the tactician has a full-time job unless he is rendered redundant by a helmsman of Lawrie Smith's



Top: The smoothly-blended profile of the 1971 Gosling (K80). Above: St Kitts in 1989 was a memorable venue for a regatta.



Photo: KOS

Since the early 1970s, the St Francis Yacht Club syndicate has constructed yachts to compete in world events. Helmsmen have included Tom Blackaller, John Bertrand, John Kostecki and Paul Cayard, seen here at the 1987 Seawanhaka World Cup.

calibre. Nonetheless, a good start remains axiomatic in big fleets, because second-hand air is of no more use to a Six than to any other boat. Of course, obtaining the maximum speed that can be derived is also fundamental, and in variable conditions the gear changes required are considerable. On simple boats the adjustments are governed by sail trim and runner tension, while their more complex sisters combine these with a merry tune on the hydraulics which can pump up the forestay, the mast foot and mast jack. Sensing these needs and the remedies comes only with practice, but despite the obvious benefits of an extra

squeeze of boat speed, an obsession with the shape of your rig to the neglect of the shape of fleet is not to be advised for the Six-Metre sailor.

As ever, it is the helmsman who has the most fun, which may well be the reason that the owner so often selects himself for that position. At the tiller, he enjoys the ancillary benefit of keeping out of the spray. He can also see at least some of what is happening from up there, but it has to be said he has a blind side to leeward, which makes crossing tacks particularly good value to the man with sporting instincts.

Although 'the hands' are never out of the light of

day, crew visibility is generally not satisfactory, to the extent that some of the Gary Mull boats of the late seventies were provided with portholes. The 'official' artist to the fleet, Marc Berthier, achieved an ideal solution to this unhappy state of affairs aboard *Gitana Junior* by drawing a panoramic view of Six Metres racing on each side of the hull interior. By this device, a crew can even have sunshine as well as being in the lead.

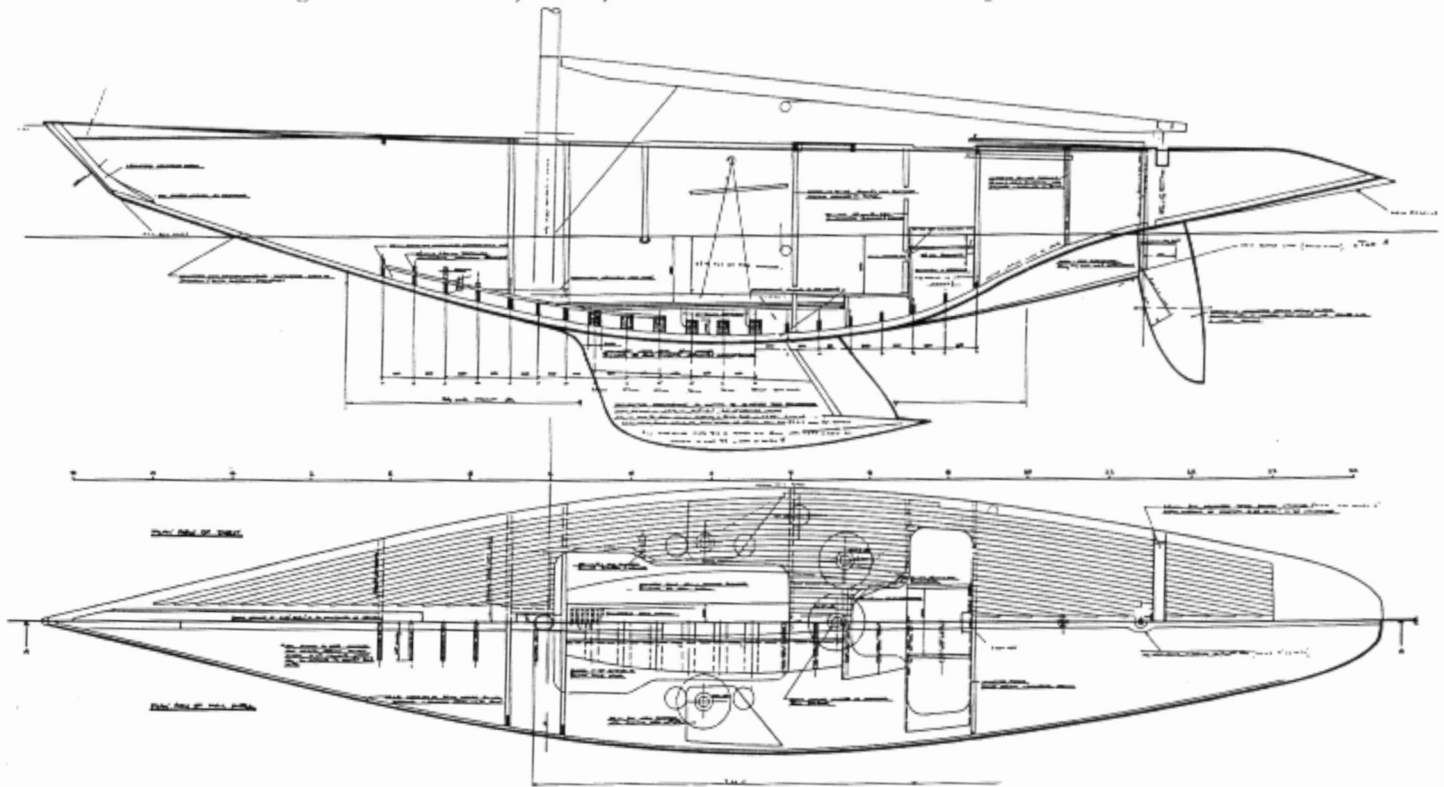
Hull-Shape Development

Little significant progress in pure hull form has been made since the mid 1970s, and certainly an updated Six Metre from at least as far back as 1981 can still be fully competitive. Although that is not good for the business of designers, it is extremely healthy for the

minimum displacement required by the rule for their particular waterline length. In the mid seventies, Paul Elvstrøm tried a bulbous bow without success, whilst an IOR bow was employed on the Norlin 1975 World Cup winner *Maybe X*. Neither of these features has established a following.

In terms of proportions, the displacements of Six Metres have tended to centre on the 3900kg of the 1981 *Kirlo* and *Marilyn*. Sail area has also increased to the *Kirlo* levels, which in 1981 gave her 450mm more boom length than was conventional at the time, but she was not allowed her advantage for long.

The writer's hull changes have concentrated on beam, with *Kirlo* and her sisters being the narrowest and *Scoundrel* the beamiest. Optimum beam is in fact a function both of expected conditions and of keel

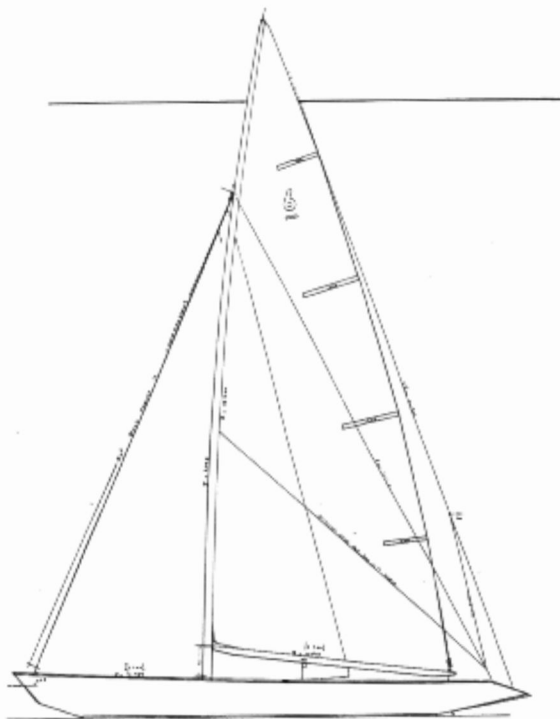


class and its future. Despite this, the class remains in the forefront of innovation for displacement hulls. This may take the form of shape variation, or the exploration of penalties imposed for stepping outside the standard proportions defined by the Rule. The penalties for nonconformity are severe, however, and in the case of the author at least, experiments so far have been confined to the towing tank.

The Swedish designer, Peter Norlin, has experimented with 'displacement penalty', particularly on the 1981 *Maybe XIII*. This boat proved remarkably fast in light airs, but the best all-round performance still comes from boats that correspond with the

form, and it is the complex interaction of the two that make the design of Sixes so interesting.

The 1989 *Woodoo* (the Swedes love to pun, *Sverig's* nanny boat was called *Swed 'n Tender*) attempted to adapt the canoe body for the keel to minimise mutual interference. In 'aircraft terms' this is called 'area ruling', and it certainly did *Woodoo* no harm, for she won a closely contested 1991 World Cup steered by Leif Carlsson, but this was achieved by fine tactical sailing and consistency rather than by exceptional boatspeed. Her crew also have the benefit of being brought up from below decks by her innovative deck layout.



Above:
The sail plan of St Kitts/Battlecry, 1987.

Right:
Six-Metre helmsmen are often 'blind' on the lee bow, which makes crossing tacks particularly good value to the man with sporting instincts.

Facing page:
The 1988 Battlecry was constructed of cold-moulded cedar and mahogany.



Sails, Masts and Rigging

Since the beginning of the class, the Sixes have been leaders in new sail and rig developments. They were amongst the first to use synthetic sailcloths, both nylon for spinnakers and Terylene/Dacron for fore-and-aft sails.

By 1980, Kevlar was in use on the Twelves and by 1981 only one boat in the top ten Sixes employed a Dacron mainsail: that was *Kirlo* and she won the World Championships. The class has a tradition of regularly debating the length of battens permitted in the mainsail, but these are now established at levels that allow the sail to tack beneath the permanent backstay without undue interference. The lengths were derived from the proportions found to work well on sails built in 1988, which was a definitive year for North UK in the development of Six-Metre mainsails. Since that time, mainsails have stabilised in build and shape, and a Kevlar all-purpose main may be expected to last at least two seasons in a competitive boat.

When *Kirlo* was launched, she was advised by the experts to have a large selection of headsails in the manner of the IOR boats. Instead, she employed a 2.6oz Mylar for light going; a further 'Rule genoa', but

with a two-ply leach and a flatter shape for the medium/heavy, and a 6½oz 'get-you-home-jib' with a swipe off the leach for heavy airs. 'Two primary headsails plus one back up' remains the most common system in 1992, which helps costs in what may be a highly expensive area in many classes. In 1988, Larry Marks in *Blade* reduced the headsail inventory even further and won two races in the European Cup. Jibs are almost invariably hanked on, which ensures a clean drop at the top mark, and keeps the lowered sail safely on board the yacht.

For shape stability, Mylar headsails have been essential since 1981, but recently there has been an increasing trend to radial-cut sails employing Kevlar. This may seem needlessly sophisticated as the loads are not great, and the human element in the assembly of a multitude of panels can cause unfortunate results, to which the author can personally testify.

In 1981, *Kirlo* had the smallest spinnakers in the fleet and was as fast as any downhill. Later, at a regatta in fresh water it was expected that some 'Lake Specials' of enormous proportions would impress, but they failed to do so, other than as extraordinary examples of

modern sculpture. In heavier airs larger kites do seem to pay on the run and, as the Sixes increasingly sail windward-leeward courses, it is sensible to have one of these. A standard spinnaker wardrobe is now one 0.5oz all-rounder, one large 0.5oz runner, and a 0.75oz all-rounder.

Which adds up to a sail wardrobe whose demands are not too onerous.

Very sensibly, the Class Rules define minimum cross-sections, minimum weights and minimum centre of gravity height for the masts. Rule requirements for masts are conservative, so latter-day Sixes have generally been fitted with one set of spreaders. Jumpers, however, come and go with the seasons. Normal aluminium alloys do not vary significantly in stiffness and there is no reason why the latest production would perform any better than a well-preserved pre-war spar. Minimum mast weight is now 63.51kg whilst examples from very early craft were reported to be as low as 18kg.

The topmast taper is critical and with the arrival of Kevlar mainsails and increased leach loads, the extent of taper is usually reduced to above the minimum specified in the rule. Forays have occasionally been made into two-spreader country. *Kirlo* used them in 1981/88 until a change of mast was forced upon her following a debate with a lamppost in Benodet. *Woodoo* and *Lion* boasted a set apiece in 1989, but with inconclusive results. Generally speaking, the 'extra set' have proved to be another complication best avoided, but they did provide dockside entertainment in their adjustment, and extra footholds for anyone forced aloft in the course of a race to retrieve a halyard.

Rod rigging is almost universal, being readily available today. Lenticular sections had been used since *Goose* in 1938 but are now out of favour, although *Kirlo* sported a set in 1981 that was rolled into shape with the same machinery that had previously been used for the streamline rigging of biplanes. Calculations show that the drag of round rods is worth saving, but ensuring correct alignment of the answering technology seems to create more problems than it solves. As with other complications, it is generally more important to make a good start and go the right way up the beat.

Construction

From the very beginning of the International Classes, owners insisted that the yachts should have scantling rules controlled and supervised by Lloyds Register of Shipping. They hung on to this philosophy in opposition to the designers, who felt it a denial of their art, but without this constraint the class would surely not exist today. No class has survived long without a sensible scantling requirement.

By the late 1930s, even with such sensible scantlings, traditional construction was struggling to cope with the increased loadings resulting from developments in rigs and sails. To combat this, designers moved towards double planking, either fore and aft as in the case of *Goose*, or with a thin inner diagonal layer as was used on the post-war *Thistle*.

The scantling rules were rewritten in 1973/74 by Gary Mull and Lloyds to permit the construction of GRP yachts. The concept of equivalent weight was employed and the new control has proved most successful, with minimal abuse. Wooden boats can now compete with GRP on an equal footing. The choice is essentially aesthetic and financial.

Another fine construction system that has been utilised on some of the writer's designs is that of epoxy glass skins (replacing transverse framing) over cedar strip core. This results in a hull of remarkable toughness, as witnessed by the fact that in Finland, in front of the press, *St Kitts II* was dropped a reported 1.2m on to hard sand with no apparent harm! The writer received a 'phone call from a shaken owner enquiring what damage might be expected from such an occurrence. It would be interesting to undertake comparative tests on different materials using this method.

More recently, the building rules have been rewritten by the writer and Lloyds Register so that the yachts are no longer required to be classed under Lloyds, though many still choose so to do. The weight and its distribution remain the same for all types of construction, which ensures performance equivalence, while the plans and construction process continue to be inspected by Lloyds to ensure proper compliance with requirements. The result of this conservatism is strong, long-lived boats that retain a ballast ratio in excess of 70%.

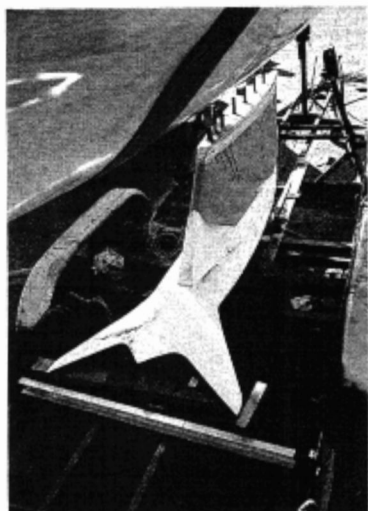
Not all classes are so sensible, particularly where the rule is designer-driven, as in the case of the new *America's Cup Class*. Here, a yacht with a displacement some six times that of a Six Metre has a minimum weight for its topsides that is only some 47% of the Six-Metre requirement. Put another way, this makes it only 60% more than normal dinghy practice. One can only speculate as to even the medium-term usefulness of such yachts.

Keel Development

It is in this area that the major gains have been made in the last twenty years, many of which are now beginning to appear in a 'watered-down' form in fast cruisers. The sequence of development from the writer's perspective has proceeded as follows:

Gosling/Pacemaker 1971 keels

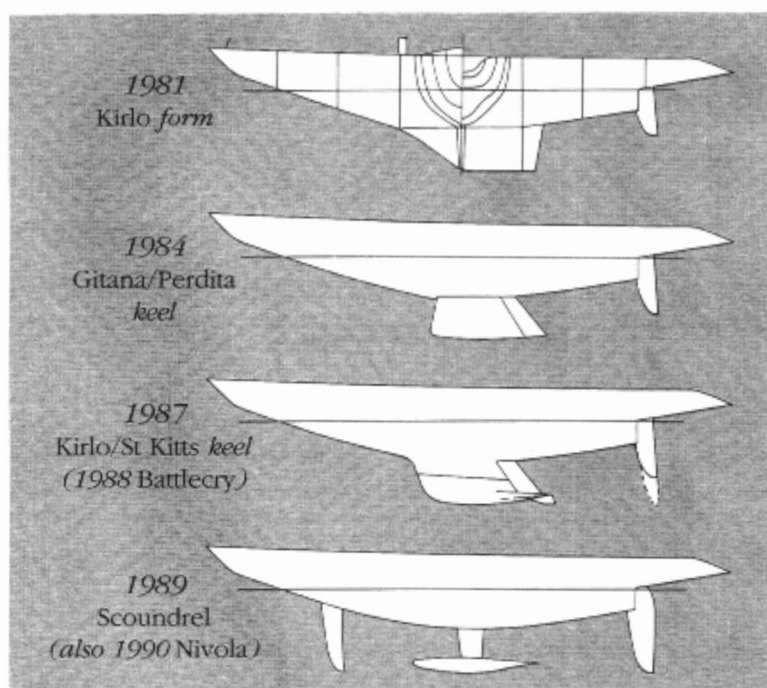
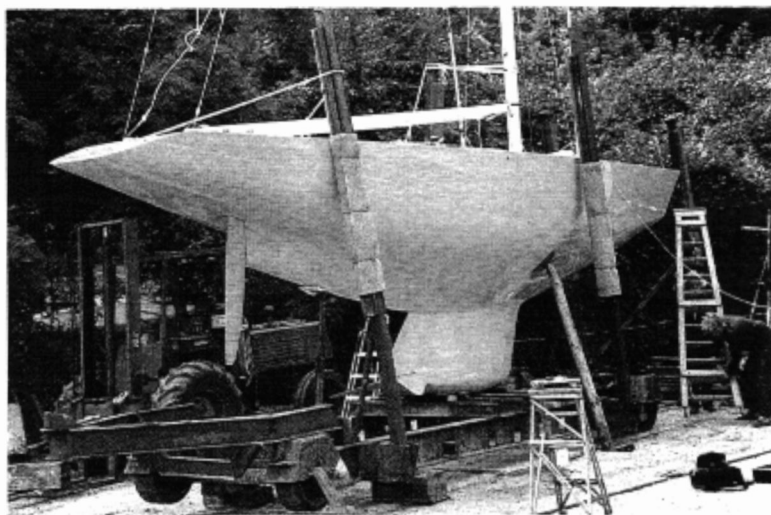
The keels of these yachts were still essentially



Top left: Kirlo about to receive her new winged keel in 1987. Kirlo went on to win a closely fought British Championship.

Top right: St Kitts at The Elephant Boatyard, Bursledon, in 1987. Steered by Philip Walwyn, this extraordinarily fast yacht won the British Open and European Championships in 1988.

Bottom left: The Canard bulb fitted to Scoundrel in 1989. With this arrangement she won the British Open Championship in 1991 in convincing style.



traditional, in that they were carefully blended into the canoe bodies to produce a smooth overall sectional area curve. What this means in lay terms is that as the hull moves through a particular plane of water, parting it at the bow and letting it meet together again at the stern, the form of the hull is such that the two processes come as near as possible to balancing one another, thus minimising the disturbance. This keeps wave-making to a minimum and maximises speed potential. This type of concept is of particular relevance on a Metre boat, because the keel represents a high proportion of the total volume and thus exerts a powerful effect on the overall wave-making of the hull. The same thinking went into the design of the Twelve Metres, *Courageous* and *Enterprise*, and continues with *Woodoo*.

The Kirlo 1981 keel in particular and 1981-1987 keels in general

The Kirlo keel of 1981 was quite separate from the canoe body although it was, of course, carefully faired and filleted at the leading-edge junction. The entire fin, other than the trim tab, was of lead and the resulting vertical centre of gravity was significantly higher than in the traditional long-keeled yachts. The keels of all the successful boats in this era were of similar planform. There were variations in section, sweep angle, tip shape and area, but the basic concept did not alter, and resulted from the fact that designers had been over-influenced by IOR developments.

By 1982, Peter Norlin had gone forward and in *Tricia* had swollen the bottom of her keel and thus

lowered the centre of gravity of the lead. He continued to develop this keel, and variants were to be found on *Notorious* and *Cool* at the Worlds in 1987, where they finished 2nd and 3rd respectively behind the wing-keeled *Scoundrel* sailed by Bruce Owen.

Australia II and the coming of the wing keel

The success of *Australia II* has had a profound and healthy influence on the design of keels for all yachts unfettered by artificial rule restrictions. The potential gains are greatest on shoal draught keels and in the future the majority of cruising owners will, probably unknowingly, owe a considerable debt of gratitude to Joop Sloof and Ben Lexcen.

Making such a keel work on a Six is much more

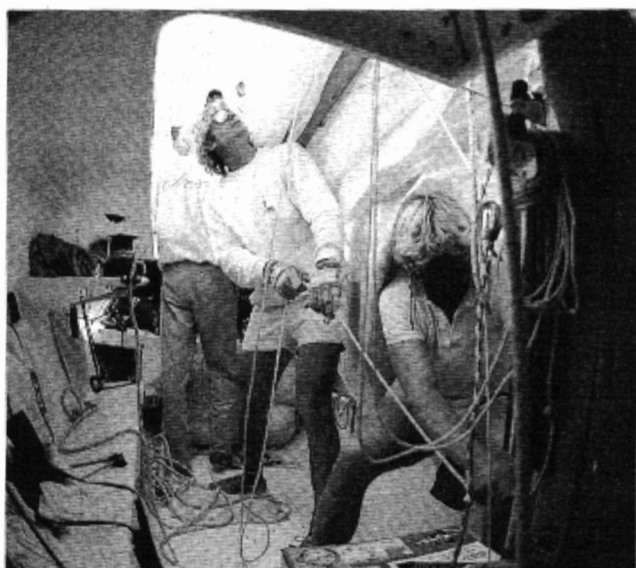


Photo: KOS

Below decks, the real work goes on.

difficult than on a Twelve because of the higher aspect ratio that the Rule allows. Ben Lexcen himself tried in 1984 on *Pacific Highway*, but the result was not successful and there have been many such failures.

Around this time, the writer was asked to develop a new Six Metre keel which would generate more upwind speed in a breeze. After tank tests of various types, including an *Australia II* form, the 1984 'upside-down' keel, with some 12% more stability, was tested in a season's racing on two boats with inconclusive results. This led to the testing of a variety of other, even more high-stability, keels. The conservative version of these was to become the basis of the keels for *Perdita*, and later *Battlecry* and *Blade* where, initially, the keel was used without wings. In 1987, the design was further modified for *St Kitts* and *Kirlo* with bronze wings being fitted. *Battlecry* and *Blade* did likewise and the result was a breakthrough. The boats were transformed with the latter two finishing just

behind *Kirlo* in a nail-biting British Championship. Various other craft immediately discarded their designed keels and adopted these new ones, with equally satisfactory results.

The benefits of these keels do not end with pure performance gains. Boats thus fitted are also noticeably better-mannered to sail; being less critical to mainsheet tension, which makes maintaining speed in gusty conditions far easier, with a deal less 'on/off' of the sheet or traveller.

The *Canard* keel – A wild card?

This keel, with its simple-looking foil and bulb arrangement was first model-tested by the writer in 1973. It was used beneficially on the Twelve Metre USA at Fremantle in 1986/8. In 1990, *Nivola* and *Scoundrel* fitted *Canard* keels and performed so impressively that the class began considering a control, but in 1991, the most successful World Cup boats were wing-keel types, so the control idea was dropped.

The case remains unproven, but the fact that level racing can be offered within one class for yachts of such radically different forms speaks volumes for its generally robust state and interest.

Other developments

Since 1989, along with the wing keel, the writer has provided all his Six Metre designs with a full-depth rudder of special laminar section. The enhancement to control that this achieves is remarkable, and everybody who sails with one is converted. It is hard to understand why all rudders are not of this type, other than for operational reasons. The saving in induced drag, even on an IOR type, is approximately equivalent to the fitting of a wing keel.

The Classics

Two factors in Six-Metre racing securely bracket the class off from most other forms of top-level yachting competition. The first is that practising is generally considered to be bad form, and the second is the way older boats, which can now be genuinely referred to as classic, can still race with the fleet and enjoy themselves.

The British Class Captain, Lt Col Tim Street, has gone out of his way to encourage the owners of pre-1965 boats to come to the Championships. This has paid off handsomely and there is now an active fleet of vintage Sixes in Britain, as there is in France and elsewhere. On occasion, these yachts can embarrass the new productions. Indeed, the lovely Boyd-designed *Thistle* (K72), owned and sailed by Tom Richardson, was very well up in the 1988/89 regattas. *Thistle's* performances in the Hamble Winter Series amongst the cruiser/racers have also been remarkable.

The spirit of Six-Metre racing seems to be summed up by *Kirlo's* experiences in the 1982 European Cup: she did not sail in 1982 before heading for Felixstowe and the ferry to Helsinki. After a week of acclimatisation and preparation the crew were on very good form and were rewarded by a regatta of the highest order with thirty-seven boats and a splendid variety of wind conditions in fine sailing waters.

After four races, Lawrie Smith and *Kirlo* were in control of the regatta, but made a bad error at the first mark in race five. Reaching in heavy air, *Kirlo's* headsail was ripped off the forestay by another yacht's quarter-wave and the latest Six, *Irene*, was allowed back into the Series. The final race was in light airs and from the preliminary signal Pelle Petterson attempted to sail Lawrie Smith down the fleet. Pelle and his band of blond Viking warriors was overtaken early on, but he had managed to inflict considerable damage and it was only on the last beat that *Kirlo* made up the necessary places to secure the championship. Down below, the crew were misled as to the drama taking place on the race course and as the yacht's situation grew more and more advantageous, the afterguard took increasingly wicked delight in keeping them 'in the dark'. It was only in the last hundred yards that they revealed the true state of the race and the Championship.

Cruising in Six Metres

'All the Classes built under the International Rule have shown that they can be converted to worthy cruisers, though possibly the Sixes provide rather hard lying.'

This report was included in *The Yachtsman's Annual 1948/9*. Despite this, many Sixes have been converted to cruisers. G A Weston sailed *Noroda* to the Baltic and was convinced 'there is no better way of seeing Northern Europe'.

After *Kurrewa VI* had competed in the 1984 OSTAR, she cruised the Caribbean and Venezuela, before resailing the Atlantic to Sweden. Her owner, Bruno Feyrenbach, wrote to me as follows:

'Dear Mr Howlett, Your boat is very wet, inside and out.' Bruno got across the Atlantic in a very impressive twenty-five days, the last few without a main halyard. She had been rechristened *Douche Champion* for the race in honour of her sponsor, so doubtless felt obliged to live up to her name although, other than being swept by the occasional wave, she apparently gives little cause for worry on the ocean.

Perhaps the final word on the Sixes, however, should come from Bob Bavier, helmsman of *Constellation*, the *America's Cup* defender in 1964.

'It is the kind of yacht that God would choose.'

Say no more. Ω



Photo: KOS