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MOVING AND TRUCKING BOATS
DESIGNER NIGEL IRENS
DEVELOPING A SCANTLINGS STANDARD
THE REBUILD OF A CLASSIC MOTORYACHT



NIGEL IRENS

JACQUES VAPILLON

High-performance multihulls, record-breaking power tri's, plus traditional sailing and cruising yachts—they are all part of the portfolio of this innovative designer/builder.

by Steven Callahan

No designer has ever dominated the multihull racecourse as Nigel Irens does today. In 1984, his 80' catamaran *Formule Tag*, one of the first pre-preg composite racers in the world, sailed an astounding 518 miles in 24 hours, a record that would last 10 years. In 1994, the same boat (by then a well-campaigned war horse), renamed *Enza New Zealand*, circumnavigated the globe in a record-setting 75 days. Before Irens, no designer had delivered three consecutive winners in the oldest of modern offshore adventure races—the Singlehanded Transatlantic Race, often called the OSTAR or CSTAR—but this race belonged to Irens in 1988, '92,

and '96. Moreover, no designer had ever swept a major international multihull race, either, until boats designed by Irens placed one-two-three in both the Singlehanded Transatlantic and Quebec-to-St.-Malo races in '96. In addition, Irens' creations have won: the Round Britain Race, the Trophée des Multicoques, the Grand Prix de Brest, the Route du Rhum, and half the UAP Round Europe Races (in '97 placing first, second, fourth, and fifth).

Still, Irens did not rest on the laurels of his *sailboat* winners. In 1988, his breakthrough 21.3m (70') power trimaran *iLAN Voyager* drove 1,568 miles without refueling to set a record

around Britain at an average speed of 21.5 knots while consuming just 2,000 liters of fuel. A decade later, the 35m (114.8') *Cable and Wireless Adventurer*—a larger version of Irens' *Voyager* design concept—rounded the globe in 74 days, 20 hours, and 58 minutes (despite making 15 "public relations party stops"), thereby beating the powerboat record of 84-plus days, set by the U.S. Navy nuclear submarine *Triton*.

Irens is no oceanic cowboy burning up the racecourse with bravado. He's soft-spoken and quick to credit others. He sees himself slowly evolving as a designer, freely adopting the wisdom of colleagues, and paying heed to



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Many are the high-performance multihulls of Nigel Irens. And many of those are not only successful (see the brief summary on page 88), they're remarkably durable. Given the speeds these boats sustain and the punishment they endure in offshore conditions, the fact that Irens' multis remain both competitive and intact for as long as they do is testament to Irens' deep understanding of the type—a technical knowledge he's gained as designer, builder, and, earlier in his career, as racer. Clockwise, from upper right, a gallery of shots of Irens raceboats in action: Fujicolor, Biscuits La Trinitaine, Region Haute Normandie, Banque Populaire, Corum Watches (ex-Region Haute Normandie,). In the last photo, the three boats nearest the camera are Banque Populaire, Fujicolor, and Corum Watches in the '97 Round Europe Race, won by Fujicolor. On the following page is a photo of the famed cat Formule Tag, which, as Enza, set a global circumnavigation record under sail in '94. Now 17 years old, Enza is undergoing modifications for yet another high-speed global circumnavigation: The Race in 2001.

failed experiments in the field. He tempers theoretical speed potential with the pragmatics of budgets and boatbuilding. In recent years, Irens' common sense has returned him to classic cruisers—very traditional-

looking monohulls in which he can sail up winding creeks with a few friends and a good bottle of wine.

The roots of his love for divergent boat types reach back to 1969. During three years of Boatyard Management

studies at the Southampton (England) College of Technology, Irens lived aboard a salty 22' gaff yawl as he learned carvel and cold-molded construction, and worked summers in surrounding yards. After graduation,

MULTIHULLS & MULTIPLE AWARDS



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- 1977** 18m (60') cruising trimaran *Promenade*. Built for the Caribbean charter trade and still active.
- 1980** 12m (40') racing trimaran *Gordano Goose*. Thirty-five thousand miles of racing and cruising, including six Atlantic crossings.
- 1982** 12m (40') racing trimaran *IT82*. Class winner of Round Britain Race in 1982.
- 1982** 15m (50') racing catamaran *Vital*. Placed third overall in Route du Rhum singlehanded St.-Malo-to-Guadeloupe Race.
- 1983** 24m (80') racing catamaran *Formule Tag*. Winner of 1985 Monaco-to-York Race. Holder of world record until 1994 for distance sailed in one day: 518 miles, average speed 21.6 knots.
- 1985** 18m (60') racing trimaran *Apricot*. Winner of 1985 Round Britain Race. Crewed by Nigel Irens and Tony Bullimore, who were jointly elected Yachtsmen of the Year at the 1985 London Boat Show.
- 1986** 23m (75') racing trimaran *Fleury Michon VIII*. First in Silk Cut Brighton-to-London Race. First overall in Route du Rhum singlehanded St.-Malo-to-Guadeloupe. Holder of west-to-east transatlantic sailing record, June 1987 to April 1988.
- 1987** 18m (60') racing trimarans *Fujicolor* and *Laiterie Mont St.-Michel*. *Fujicolor* winner of Grand Prix de Brest 1988.
- 1987** 12m (40') Formula 40 catamaran *Data General* second overall in F40 Championship. Sistership *Fleury Michon/Jenneau* placed third.
- 1988** 18m (60') racing trimaran *Fleury Michon IX*. Sistership to *Fujicolor*, winner of Carlsberg Single-Handed Transatlantic Race, beating record by six days. *Laiterie Mont St.-Michel* placed second.
- 1988** 12m (40') Formula 40 catamaran *Chaffoteau et Maury* second overall in F40 Championship.
- 1988** Awarded Silk Cut Award for design of Carlsberg Single-Handed Race winners and for work on power-driven iLAN *Voyager* concept.
- 1988** 21.3m (70') iLAN *Voyager* breaks Round Britain powerboat record with an average speed of 21 knots, completing a 1,455 nautical-mile trip with no fuel stops.
- 1990** 18m (60') racing trimaran *Fujicolor II* launched. Fourth place in Route du Rhum.
- 1991** *Fujicolor II* wins Trophée des Multicoques, and second place in UAP Round Europe Race.
- 1992** *Fujicolor II* wins Europe 1 Single-Handed Transatlantic Race.
- 1992** Awarded Royal Institution of Naval Architects' Small Craft Award for work on both power- and sailboat development.
- 1993** *Fujicolor II* wins UAP Round Europe Race.
- 1994** *Enza New Zealand* (ex-*Formule Tag*) wins Jules Verne Trophy for the fastest-ever circumnavigation of the world under sail.
- 1996** Europe 1 Single-Handed Race. First three places: *Fujicolor*, *Region Haute Normandie*, and *Biscuits La Trinitaine*.
- 1996** Quebec-to-St.-Malo Race. First three places: *Fujicolor*, *Banque Populaire*, and *Region Haute Normandie*.
- 1997** UAP Round Europe Race. First, second, fourth, and fifth places with *Fujicolor*, *Corum Watches*, *Banque Populaire*, and *Biscuits La Trinitaine*.
- 1998** 35m (115') power tri *Cable & Wireless Adventurer* establishes a new record for circumnavigating the globe under power.

he opened a sailing school in Bristol, but in 1975 was drawn away to work in a multihull yard, known for its big and rather boxy cruising trimarans. The yard owner, injured in a car accident in 1976, closed the yard, but Irens was able to continue there. While building a 60' charter tri. Irens' future appeared in the form of a Newick-designed 31' daysailing trimaran that had been salvaged from the mid-Atlantic.

In the 1960s and early '70s, many multihulls were designed on the backs of envelopes and then owner-built in backyards. It was a period marked by ambitious technical experiments, and some notable structural failures and capsize that captured worldwide press. By the mid-1970s, however, American designer Dick Newick and a handful of colleagues had created a collection of multihulls that held together in the roughest conditions, thereby ushering multihulls into a new era of seaworthiness and performance. Irens and friend Mark Pridie set off in their salvaged Newick tri and handily won their class in the 1978 Round Britain Race. "I started with my feet very much in the Newick camp," says Irens. "Dick was most generous and helpful." But Irens thought he could advance the structural elements of racing multihulls, which must handle enormous, complex loads generated by their big rigs and the hulls slamming across acres of bumpy seas.

In 1980 Irens debuted his own approach with the 40' tri *Gordano Goose*. She employed Newick-like hulls that were highly rockered and veed from bow to stern, but Irens' boat was more low-slung than Newick's. By reducing windage and lowering the sail plan, Irens aided stability. At the time, many multihulls suffered upwind under heavy load when their light hulls bent and headstays sagged. The curve of the *Goose's* turtleback cabin intersected rigging loads at the bow and stern and created a substantial compressive beam out of the deck. In a 24-hour Le Mans-style race in France, Irens spun the *Goose* around the course in first place, netting a sizable purse and the attention of all onlookers.

When Tony Bullimore asked for a new racer, Irens drew, in his words, "an honest 40-footer," similar in concept

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In 1998, the Irens-designed 115' (35m) power trimaran Cable & Wireless Adventurer broke the longstanding record for a global circumnavigation under power, previously held by the USS Triton, a nuclear submarine. C & W accomplished this almost leisurely, and with exceptional fuel economy; its achievement effectively dispels any doubts about the seaworthiness and efficiency of Irens' hullform. **Right**—C & W under construction at Vosper Thornycroft in Southampton, England.



ALLSPORT/UK

to the *Goose* but with substantially more volume. *IT82* (later *City of Birmingham*) proved quick enough to win her class in the 1982 Round Britain Race and 1984 OSTAR, but she would be Irens' last Newick-type tri. Things were changing. The French were transforming adventure racing into a professional sport with substantial corporate sponsorship and a full schedule of races. Their offwind (and often light-wind) courses gave catamarans a competitive edge. Simultaneously, demand for specialized raceboats remained so slim that the overhead to maintain a shop and full-time employees could spell ruin for the owner. And yet, perversely, growing professionalism in the sport demanded an end to backyard boatbuilding.

Irens says, "A big permanent shop might be nice, but a shop doesn't build a boat; *people* do." He wisely polished up his French, offered mobile, professional services, and reached out to the expertise of others. "My job is to come up with a strong concept for a design, and then orchestrate people with specialist skills so that the concept gets turned into a workable reality." He created a near-virtual boatbuilding company long before "networking" and "outsourcing" became business buzzwords. When the call arose, Irens

directed talented freelance boatbuilders and specialists like Martyn Smith, an aerospace engineer and multihull aficionado who'd sailed cats as far back as the 1950s. "I don't see a division between designing and building, given the budgets and level of technology we're aiming at," says Irens. "If we had the kind of money they have in the aircraft industry, the level of sophistication would become much higher, and we'd complete our analysis and preparation before construction begins. By comparison, boatbuilding demands a minuscule time frame and budget." Which is to say that racing-multihull designers of the day developed boats *during* the construction process.

The state of the art at the time was perfect for a guy like Irens, who could employ his boatbuilding and seagoing experiences to temper conceptual design improvements. He'd seen brilliant designs fail due to poor construction. Simplicity refined, he knew, usually outperformed theoretical brilliance badly executed. "As designer and builder it's my job to give the customer something that sails as fast as possible for as little money as possible," says Irens. "It's important that we don't indulge our own fantasies at the owners' expense. If you're considering an experiment that increases costs 20% or 30%, you have

to be sure that you'd not be better off simply making the boat bigger, or doing something equally simple."

For legendary sailor Mike Birch, Irens produced two catamarans that proved to be economical as well as competitive. A cat's identical hulls require just one hull mold, but Irens kept the topsides of Birch's 50-footer flat so they could be built as panels on a table, thus requiring only a hull-bottom mold. "With Birch's *Vital* we built a downwind boat and make no apologies for it," says Irens. "She did okay except to windward, when the lack of stiffness in her rig hurt, and her large waterplane area and volume forward caused her to bounce around on every wave—although downwind that gave her a lot of reserve buoyancy."

Formule Tag, bankrolled for Birch by an international company that sold jets made by Canada Air, was not fettered by budget. Says Irens, "The PR folks figured that if Canada Air had the technology to build an airplane, then clearly they had the technology to build a boat. But the similarity ended with wanting to build a light, strong structure. When they asked, 'How long do we have?' and I replied, 'We need to start construction in three weeks,' they reacted with shocked horror, understandably insulted by us bandying about the term 'high-tech.' " Nevertheless, *Tags* simple design was

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significantly enhanced by her then-advanced construction. Notes Irens, "Canada Air lent us Dr. Bob Fewes, who specialized in composites, became a good friend, and was invaluable to the project. He used a lot of computer time to evaluate the structure." The company built huge ovens for curing the pre-preg carbon fiber hulls and beams. Today, after 17 years of racing, *Tag* appears as strong as ever, although Irens jokes that she proves that carbon shrinks over time, as now he has trouble squeezing through bulkhead openings that were so easy to negotiate in his younger years.

The popularity of very fast yet costly and hard-to-handle 80-footers was brief. In 1984, Irens foresaw an era of grand prix-style inshore and offshore races in which competitors would amass points each season, and which would encourage well-rounded boats sorted by overall-length classes, with 60' being the practical maximum. Since length restrictions rationalized more money for technical refinement, Irens returned to the trimaran—a

category of design that offered a stiffer rigging platform, greater ultimate stability, and superior maneuverability as it tacked around its main hull.

Multihulls had long revealed the importance of dynamics in design. One could easily see how a boat's sails create substantial dynamic loads that can help dampen pitching, even though they also increase displacement. For example, around 1981, John Shuttleworth had calculated that the "down force" from a 60-footer's sails with the boat heeled 20° added 1.5 tons to her dynamic displacement. To prevent cartwheeling over the leeward float, designers by the early 1980s had already added considerable volume to the floats' forward sections. Sail forces then remained balanced by the ama's center of buoyancy, which moved toward the forward cross-arm as it depressed. Swept bows also kept the noses clear. Upwind, though, these boats tended to rock back on their lower-volume, pinched, main-hull sterns

and highly tapered double-ended amas, which increased windage forward and altered hull dynamics. When hard-pressed, the after portions of even the "full buoyancy" floats—displacing 100% to 120% of the boat's static weight—frequently would submerge, adding drag from decks and connective beams.

Although beam fairings helped reduce drag when these members slashed through the sea, Irens had become more impressed with the design approach of Phil Morrison, whose 1982 tri *Umapro Jardin* (ex-*Exmouth Challenge*) claimed line honors in the '84 singlehanded transatlantic. Many designers considered her the closest-winded trimaran ever built. She matched a fine, narrow-nosed main hull to transom-ended, voluminous floats that could displace about 180% of the boat's weight. Their decks almost always remained well above water. Irens saw, however, that *Umapro's* strip-planked hull could be stiffened using composites. Soon Irens was sculpting the composite trimaran *Apricot* for racer Tony Bulli-

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more, while Irens' friend and fellow designer Adrian Thompson created the trimaran *Paragon*. [For a detailed account of the designs of Adrian Thompson, see PBB No. 62, page 46—Ed.]

Both Irens and Thompson employed high-buoyancy floats featuring large volume forward and aft, and capped by rounded decks that minimize resistance and easily shed water. "Thompson's *Paragon* was faster," admits Irens. "She was wider and the sails were more up to date, but she turned out to be less reliable [her beams suffered problems], so we made hay while the sun shined with a slightly more conservative boat/Irens' restrained approach rewarded him and client-shipmate Bullimore with a 1985 Round Britain win and the Yachting Journalists Association's Yachtsmen of the Year award.

Multihulls were maturing, but Irens saw room for improvement. With characteristic foresight he recognized the potential of wing spars, though he speculated that the huge wings on some French racers of the day would be



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The 60' (18m) racing tri *Apricot*. The boat's moderate-chord, carbon wing mast, an innovative feature when new in the mid-1980s, was a factor in her 1985 win of the Round Britain Race, for which Irens served as crew.

too heavy and carry too much solid-sail area to remain safe offshore in heavy airs. This turned out to be the case, so Irens continued to develop moderate-chord carbon wings, such as the one on *Apricot*. Meanwhile, the Formula 40 class was being dominated by "square" trimarans sporting 40' beams. These were, in essence, catamarans with a main hull stuck in the middle to handle the rig loads, and on which to pivot the boat during

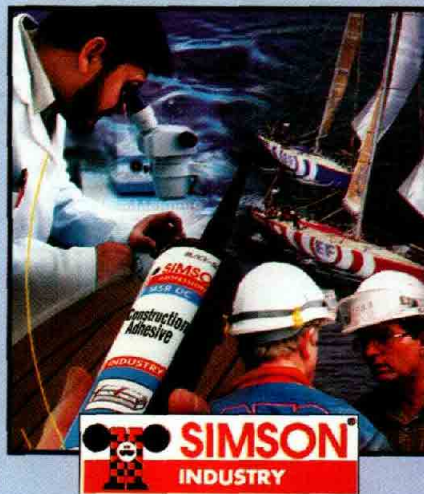
tacks. Even in light breezes, the crews flew the main hulls, so 200%-buoyancy amas carried their own rudders and steering stations.

Now working with French yards, Irens began refining all these elements with a series of 1988 trimarans for the hottest sailors, including Philippe Poupon and Mike Birch. As these men cleaned up the circuit both around the cans and offshore, they drew Irens to the end of a race in

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Right— Built in 1988, the 70' (21m) iLAN Voyager was the test platform that proved the concept of Irens' power trimaran hullform. She broke the Round Britain powerboat record on her first attempt.

Facing page—Two views of the 60' (18m) Fujicolor, built 10 years ago and still a strong contender on the multihull racing circuit; she won every grand prix race in '98.



Dakar, Senegal, where he was seduced by a dugout with an outboard.

It was there in Senegal that Irens took a ride at 17 knots in a skinny pirogue powered by a mere 15-hp outboard. At the same time, his old racing mate, Mark Pridie, was skippering an offshore-oil supply boat and wishing for a more easily driven vessel. Irens figured a narrow hull would slip through the water more smoothly than a planing hull would bounce over it, so his striking 70' iLAN Voyager was

born. Tiny teardrop floats provided plenty of stability to her racing-trimaran-style main hull. She proved very fuel-efficient and seakindly, but *Voyager* never attracted clients. Although she and his sailing trimarans won Irens the Royal Institute of Naval Architects' Small Craft Award in 1992, *Voyager* was judged by her length rather than volume. She seemed quite big for her meager accommodations for six. Her style appeared to lack the load-carrying ability required by ferries and the luxury demanded by

cruisers. Despite the fact that she currently serves as an offshore ferry in the Cabo Verde Islands, and that other designers have since adopted the idea of slim, wave-piercing hulls for numerous powerboat applications, Irens would not return to the concept for the better part of a decade.

Instead, in 1990 he launched *Fujicolor II* for Birch, followed by a series of near-sisterships that soon dominated the Open 60 class and have remained competitive to this day. *Fujicolor* still rules regattas. She's

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been through a few masts and lots of sails, but the only major change to the boat has been to angle her center-board aft. "Definitely, things have leveled out in the last 10 years," Irens admits. "Certainly, a boat built in 1980 would have provided no contest to her when she was new." It is an interesting irony that multihull raceboats now retain longer shelf lives than their monohull counterparts. In fact, Tony Bullimore has even bought *Tag* for The Race, a nonstop dash around the world, scheduled to begin

December 31, 2000. For this event, Irens plans to peel off *Tag's* deck, jack apart the bow, and lengthen the boat from her current 92' to 100'. Because her beam will remain the same, to add power and "nail the boat down to the water" in a blow, says Irens, he'll add water ballast.

Longevity in his trimarans is a result of Irens having found "a good compromise" for balancing the different demands of inshore and offshore racing. "Very tubular outer hulls with no rocker tend to be better for regattas

but not so good in waves," he says. "What I began doing with *Fuji* was to place the volume higher up. We end up with veed sections and a bit more rocker than some of the competition, but when our boats lean back they pick up that power, and downwind the reserve volume aft doesn't push their bows down." Overall, with designs nearly square and with float volumes in the 250% range, Irens has managed to satisfy the sometimes competing criteria of light weight, maneuverability, and maximum power



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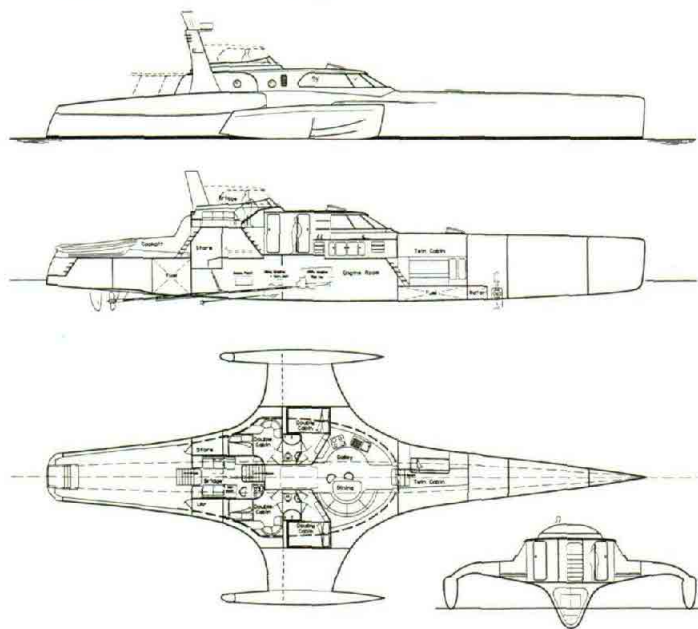
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~Capt. Iam A. Newman



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The Irens design office, betting on the viability of its power-tri concept in different sectors of the marine marketplace, has developed drawings that show these boats in a variety of applications. The T30 (30.5m, or 100') above, for example, can be configured as either a long-range yacht or a moderate-sized passenger ferry. At 153.5m (503'), the T150 (**facing page**) is the largest vessel in the proposed series; she is a fast (30 knots) commercial transport.

for heavier airs, and to allow big rigs to improve light-air performance.

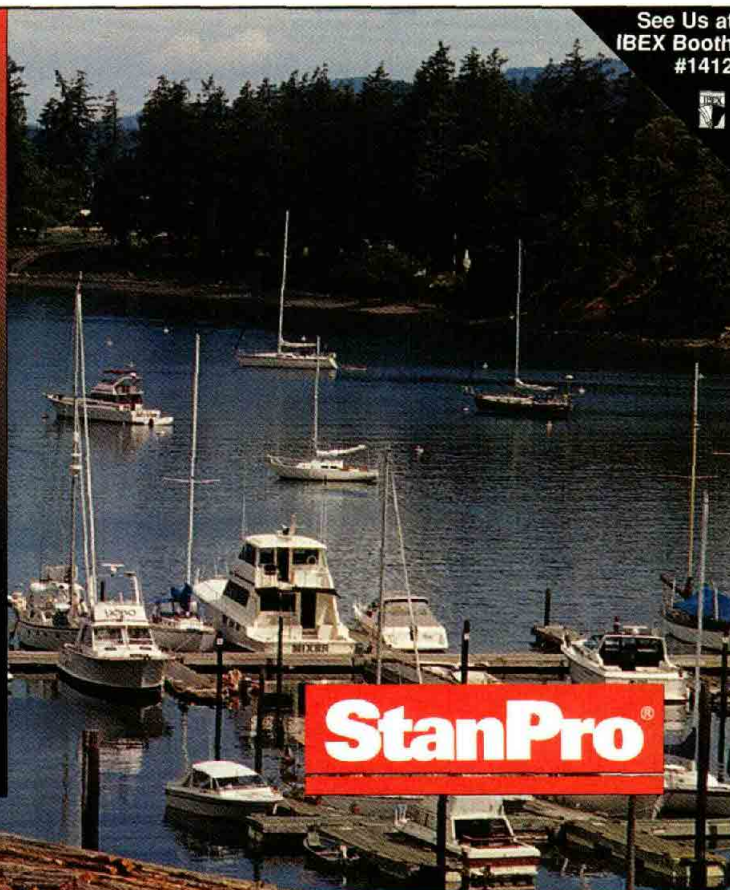
As multihull designs have "stabilized," winning races has increasingly rested on technical refinement, especially in rigs. "Apri-cot's sails would now seem crude," says Irens. "In those days, we worried about tearing the leech, so it was massively reinforced. Unfortunately, the harder you pulled down on the clew, the more it compressed the battens and the fuller the sail got, which is not what you want. Beginning in the late 1980s, though, sailcloths began to handle higher loads while retaining their shape. Today, the panels radiate out from the clew into the sail, and the bits out of the back are 'cantilevered,' as it were."

For his wing spars, Irens tries to "stick to something reasonable"—a meter of chord, say, for a 60m mast. The spar's "sail area" equals roughly 10% of the total. "We've been using section thicknesses of about 35%, whereas other designers have chosen thicknesses of up to 50%. There was



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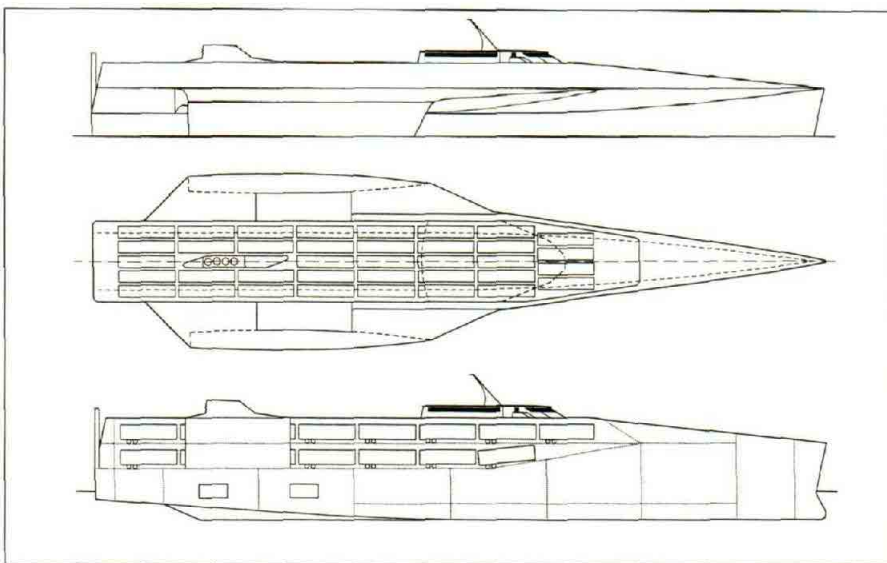
a craze for 'chimney masts' a few years ago, which were essentially round. That shape may be more ideal structurally, but it certainly wasn't ideal aerodynamically." Besides, Irens notes, high-modulus carbon construction "allows the thing to just stand there without your having to worry about it."

Composite rigging, too, has lightened rigs. "We favor Kevlar for standing rigging," Irens says. "Recently, we've done away with rigging-screws and gone to lacings." Besides being lighter, such examples of "soft technology" are more in keeping with the composite chainplates worn by many contemporary mutihulls. Although always seeking simplicity and now eliminating spreaders wherever possible, Irens remains reserved about unstayed spars. "The problem is, a trimaran with its huge width invites you to tie something to it. So why would you build all this redundant structure into an unstayed mast?"

Despite 50 ton-meters of righting moment, Irens' Open 60s reach full power and begin flying a hull in 13 knots true wind, when they'll do

16 knots upwind. Off the wind, they'll reach 30, but displacement has limited their upper speed. In fact, *Apricot* weighed just 5.5 tons whereas Open 60s today weigh about 6. Greater beam, rig height, and float volume have not only increased surface area but also demanded stronger and heavier connectives. And, notes Irens, rigs have grown

to optimize light-air performance. "You need bigger 'weapons' underwater to counteract the forces. In the old days, the board protruded maybe three-quarters of a meter [2'1/2"]. Now you've got four meters out with only one meter in, and six-meter boards are on the way, so the structure you need to contain all that is pretty high."



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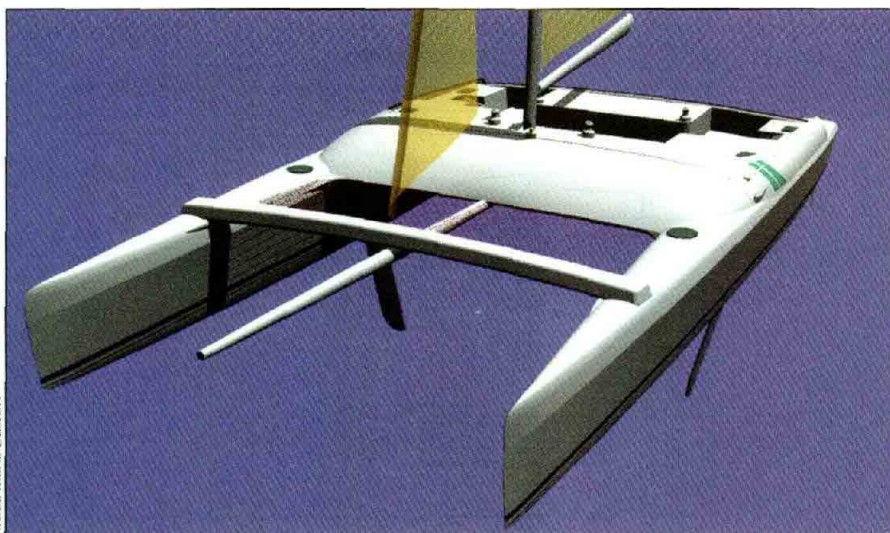
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This sleek, spacecraft-like, performance cruiser is being built in Brazil of carbon pre-preg construction. The 20m (65.6') cat, conceived as a fast, beachable day-sailer, is nevertheless capable of ocean passagemaking. Double cabins in each hull provide accommodations for six. Twin 36-hp Yanmars supply auxiliary power.

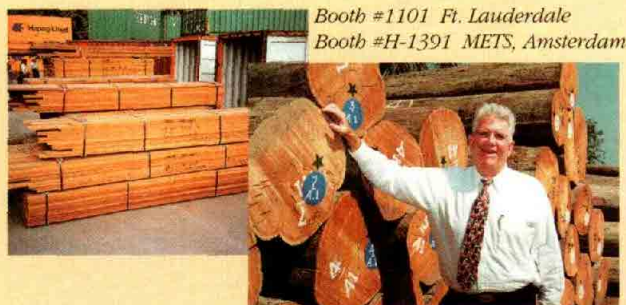
Irens builds fairly thick boards over spines of "top hats glued back to back," though he prefers a lower-modulus carbon. "If you can avoid deflections in a spar," he says, "you

can avoid compression failures. But in a straight bending situation like a centerboard, high-modulus fiber attracts spike loads, and it's spike loads that break things."

The loads on these structures can be immense: on an Open 60, for example, mast compression exceeds 20 tons; mainsheet tension, 10; the cap shrouds, 8. Irens' boats have not totally escaped failure. The bow of one circa-1988 boat broke off after suffering a mysterious tensile failure in the keel, and the bow of one of *Apricot's* floats also snapped. "That was pretty common in those days," confesses Irens. "One problem in engineering composite structures is maintaining the stability of members subject to high compressive loads. The float bow-failures are a case in point: Even though there was potentially enough unidirectional material in the side of the hull to resist the plan-view bending forces—failure still occurred because the sandwich panels forming the topsides simply delaminated under load on the compression side.

"In recent years," he continues, "we have locally replaced the foam core in that area with an aramid honeycomb core, which seems to do the trick. It's able to hang onto the skins bonded to it."

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In sharp contrast to the advanced appearance of Irens' multihulls, are his very traditional-looking monohulls. But unlike the old gaffers on which they're based, these new boats take advantage of modern material technologies. Launched in July 1998, Eleanor Mary is a 51-footer in Irens' Westernman series, beautifully built of wood/epoxy by Nova Scotia's Covey Island Boatworks.



Irens believes a new generation of racers may yet emerge. "We want to edge back a bit from extreme beam," he says. "Only the leeward beam is loaded, so the windward one is doing

absolutely nothing. It's available to carry water ballast. Maybe you can take 300 kilos out of the boat's structure and replace that with 300 kilos of water, which you sail without 90% of the time."

Since the 1980s, when some foilers showed flashes of brilliance, Irens also considered using lifting foils—"but at lower speeds," he says, "before the short high-drag float lifts. The

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float and the foil have historically slowed the boat and created turning moment, which produced helm-balance problems. You only got predictable lift at high speed. The problem was, if you added area for low speeds, you got too much drag at high speeds."

Still, Irens suggests that "a very small and strong foil that comes into play only at about 15 knots might push the top end of the performance envelope" of a lengthy float. After 15 years he's once again following Dick Newick, who has long deployed simple, asymmetrical dagger-foils in his floats. For Irens' *Biscuits La Trinitaine*, however, a tri launched last summer, Irens placed the main centerboard fairly far aft and the foil ("auxiliary board") forward of the foremost beam. "The plan," he says, "was to attain balance by putting more or less of those two appendages down. In reality, the boat has not been easy to steer. I think Dick was right: It does appear that you can gain a lot from a really big daggerboard just ahead of the mast and inclined

aft, and a foil that's not too far forward in the outer hull and used with discretion for reducing wetted surface at high speed." Even on *Trinitaine*, Irens has witnessed the potential. "We were testing the foil upwind when the boat wasn't going very fast and were disappointed. But when reaching, we put it down and immediately went from 19.5 knots to 22.5."

Irens isn't through with power tris, either. In 1998 *Cable & Wireless* validated the *iLAN Voyager* concept and earned Irens the Royal Yachting Association's Special Award for Innovation. Still, Irens says *C&W's* record "is in some ways artificial in absolute terms, since an average modern container ship could accomplish the voyage in less time. What was important, though, was that *Cable & Wireless* demonstrated how well a small trimaran of only 45 tons displacement can deal with such a challenge."

Unlike *Voyager*, *C&W* offers enough volume for full accommodations for 16. During the record run, her twin

Cummins 6CTA8.3-M diesels burned 6.9 liters of fuel per nautical mile while driving the vessel up to 22 knots (3.9 liters at 14.5 knots—she used just over 100 tons to circle the world). The Irens office has designed a wide number of applications based on the successful *Voyager/C&W* concept, ranging from yachts to small ferries to ships.

Although *C&W* was molded of vinyl ester, E-glass, Airex, and Divinycell, Irens has designed all of the large versions in more shipyard-friendly aluminum. "Constructing a monohull sounds easy to shipbuilders," says Daniel Davy, head of the powerboat projects in Irens' office. "Catamarans sound a lot more complicated and trimarans more complicated yet. We need to convince owners and builders not to think of this type of boat as a trimaran. It's more like a conventionally framed monohull that happens to have a couple of little wings and hulls stuck on the sides—'training wheels,' if you like. Don't worry about them. We can engineer them. We can make them work."

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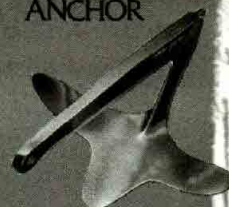


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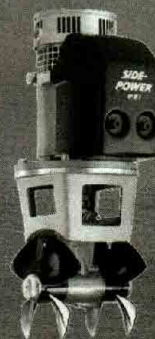


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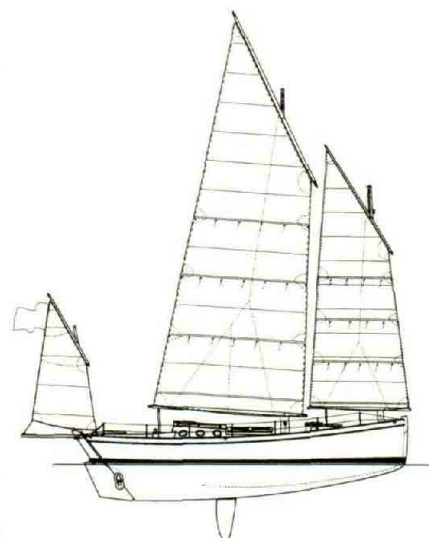


Davy adds, "This particular approach separates resistance from stability concerns. You make a monohull a certain shape to keep it from falling over, which isn't necessarily good for minimizing resistance. A minimal-resistance narrow hull would fall over, so you put floats on it." Or join it to another. "Well, power cats have been around a long time, and they do offer more accommodation per length, but they are less comfortable than trimarans because they're too stiff. People have tried to reduce the waterplane area or submerge T-foils to change the ride, but on a trimaran, within the limits of floodable stability-required, you can make the floats longer or shorter or move them in or out, and engineer a stability factor to be exactly what you want. For a given load, a cat is a lot shorter. But if you're willing to put the volume into one longer hull, then you can operate at a lower speed-to-length ratio."

At speeds of 30 to 40 knots in a *Voyager*-type tri, Irens claims a theoretical 20% to 25% fuel-efficiency ad-

vantage over cats. Even so, he believes this style of boat best suits a niche: "If you want to cross a small lake, then a catamaran is a good deal. A trimaran

is more expensive to build for a given volume, but it's a much better *sea* boat. In addition, most conventional boats are efficient at only one speed,



The lovely 22'(6.7m) Romilly (**left**) is a smaller sister to a 29-footer Irens designed for himself and named Roxane. Both models are now being series-built by Bridgend Boat Co. in Plymouth, England. Roanna (**right**), an 11.4 m (37.4') lugsail schooner, is under construction at Nick Hallam's shop in Totnes. Her hull is wood-epoxy strip construction, while the deck and superstructure are of foam-cored composites.

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but these boats are efficient over a wide range of speeds and are not limited to hull speeds."

On C&W, Irens employed short, stepped-hydroplane floats nearly amidships. Davy says that "regarding debates about where and how big the floats should be, there's no right answer yet, and probably won't be for a long time. Float length depends mostly on commercial requirements for damage stability—two-compartment flood-

ability while maintaining stability requires longer floats.

"We also consider our floats in two parts," Davy continues. "The forward, planing part handles small angles of roll. At larger angles, the after part, a buoyancy tank, comes into effect." Longitudinal deployment of the floats would vary to suit various beams and the wave forms generated by the hulls. C&W's bow waves meet and neatly slip between the hulls. But,

says Davy, "For ships operating at different speed-to-length ratios, many people think you want to put the floats very far aft." The Irens office envisions docking by backing up to piers and loading either onto the stern of the main hull or the wing.

Designing experimental speedsters has never dulled Nigel Irens' nostalgia for his 22' gaffer. For 16 years he has sketched traditional craft to reclaim the joy of cruising—while still exploiting modern technology. "One of the nice things about designing a cruising boat is that it's timeless," he says. "Even in England, where the marinas are all filling up and it looks like chaos, if you head off into the countryside in a shallow-draft boat, you can be on your own."

In 1993 he launched a 29-footer, *Roxane*, that featured a long shallow keel with an iron centerboard, giving her a minimum draft of 2'6". He used unstayed carbon masts to aid stability and to ease stepping them. The boat's light composite hull and cored deck also facilitate towing. Owners of this design have had to settle for sitting headroom, but her low cabin offers nice aesthetics and reasonable accommodations—except aboard the open-boat version that he created for the Outward Bound program. Since 1972, Irens had often worked with Nick Hallam, who helped Irens design and produce *Romilly*, a 22' sistership.

On the other side of "The Pond," Covey Island Boatworks (Petite Riviere, Nova Scotia) began building 40' and 51' Irens-designed pilot cutters inspired by circumnavigator Tom Cunliffe, who wanted a modern adaptation to replace his original. Retaining traditional styling, Irens' boats benefit from lightweight composite-sheathed strip planking, which permits an increase in ballast from 30% to 50%. The ballast is lead hung externally, improving stability and allowing a larger rig. Even the rig features lighter, hollow spars—and the gaff is carbon. Irens feels, however, that "these boats have an important historical context," so he's now turned over most of the traditional work at his office to "a real student of the subject," his colleague Edward Burnett.

Irens thinks many hopeful long-distance cruisers "have made a wrong turn. They've chosen roller-furling

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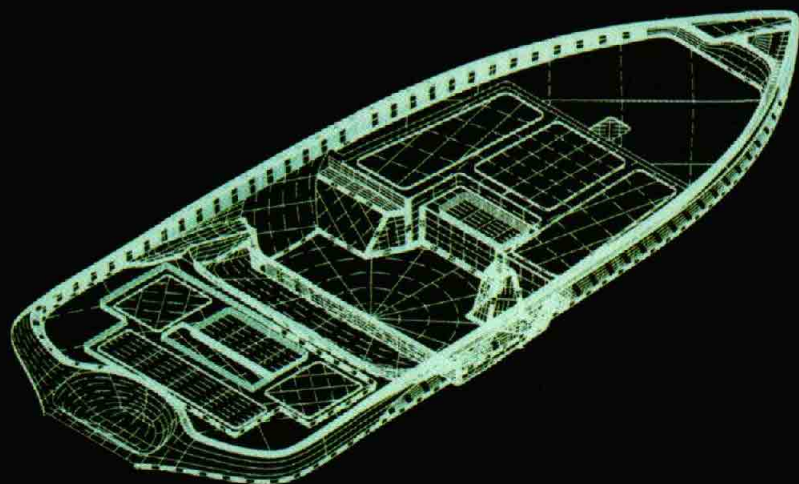
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jibs, in-mast mainsail furling, and all the rest for easy handling, but these are terribly dependent on spare-part support and service, which requires sophisticated communications. A more 'organic' boat based on traditional principles you can fix yourself. Plus it's fun." Irens adds that "the ketch or yawl is the way to go. It still can be gaff-rigged, but I like simplicity and I think, no matter where you're sailing, shallow draft is great; it's where

the fun is, really. It seems ironic that the more costly and bigger boat you own, the fewer nice places you can go."

Multihulls might seem an obvious answer to this problem, but, says Irens, "I've never been a fan of floating caravans [RV's], and despite what they may say on Day One, most people can't accept simplicity. For years designers have agonized over how to make a multihull look nice while providing

headroom. Jeanneau (Les Herbieres, France) quite simply said one day: 'Screw all that. They want four bedrooms and a saloon in 42'? Let's give it to them."

Irens, though, can't bring himself to design such things. "There's nothing wrong with a really basic boat, like a Wharram catamaran, say, that looks good and can be built with minimal money. But you need real money to go upwind. It buys you a centerboard arrangement and high-aspect sails and a rig that isn't too heavy." A 20m (65.6') cruising cat from Irens' board for a Brazilian client will enjoy all the perks that come with money, including carbon construction and high-performance boards, rig, and hulls, yet the boat will sleep just six. "But," he adds, "another solution is of course to power upwind."

Traditional-appearing monohulls that still permit technical innovation are likely to figure into Irens' future designs. Recently he re-joined forces with Nick Hallam and co-designed *Roanna*, a saucy-sheered 37' cruiser that provides standing headroom under a low-slung coach roof, yet can still slide into skinny water, thanks to her high-lift centerboard. Three unstayed carbon masts make up *Roanna's*, unusual lugsail schooner rig. All but the 95-kilo (209 lbs) mainmast can be unstepped by hand (the foremast weighs just 40 kilos, or 88 lbs). Nigel Irens, connoisseur of speed, hopes to produce more such cruisers. "Sailing a fast trimaran is special and quite exciting," he says. "People wonder why I would enjoy sailing *Roxane*, but what they don't understand is that a boat that moves well and is nice to steer is a pleasurable experience. Pleasure isn't measured in knots. There are a million great qualities a boat can have without being that fast."

After a moment's hesitation, he adds, "At the same time, though, I wouldn't want to sail a real dog."

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About the Author—A multihull sailor with many offshore passages to his credit, Steve Callahan has designed and built a number of these boats. He wrote a short text on multihull design while working at the Yacht Design Institute 20 years ago.



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