

Starting with a Bare Hull

Text and photographs by Alasdair G.B. Wallace

Many people dream of building boats. But the number of incomplete and abandoned hulls languishing in back yards, vainly yearning for release from the land, suggests that not all such dreams are fulfilled. Lofting and building a hull, framing a wheelhouse, fitting cabinets, wiring instruments, installing fittings, and finishing the whole is a major undertaking that requires equal portions of single-minded devotion, persistence, and manual skill.

In 1991, Colin and Helen Ray, who live near Peterborough, Ontario, spent several months looking for the boat of their dreams. Seasoned sailors, initially they had thought in terms of a sailboat, since they had cruised the Great Lakes for several years in a Contessa 26 and an Alberg 29. Colin, a designer and builder of custom homes, had already built several wooden sailboats, including a GP 14 and a 22' Robert Tucker sloop. During their search for a used boat that would fill their needs and fall within their budget, the Rays initially considered purchasing a craft that was basically sound, one that only would require the kind of refitting and repairwork they could complete themselves. Such a boat, they quickly found, did not exist. Those that offered the necessary accommodation and fell within their budget required extensive work, the full extent of which, Colin knew from his construction experience, would not manifest itself until work was underway. On the other hand, those boats that required only a little work were beyond their means.

Ultimately, after a series of fruitless expeditions and computer searches,

Helen Ray (right) worked an extra semester as a teacher to help with materials costs, and then worked alongside her husband Colin (far right) finishing off their new boat.



Colin and Helen decided that they would undertake the challenge of building their own boat. This way, they would know from the outset what had to be done, and they could rest secure in the knowledge that the materials used were the best available and that each task had been completed carefully.

"Maintaining and operating the boat I build," Colin reasons, "will be much simpler if I have a complete knowledge of all facets of its construction and layout. When you buy a used boat, there's an element of the unknown. No matter how thorough the survey, you don't know the wiring and plumbing intricacies, the quality of those hidden fittings."

The Rays wanted their dream boat to embody seaworthiness for coastal cruising on the Eastern Seaboard and in the Caribbean; comfortable accommodations for two with the potential to accommodate up to four guests; generous counter space and storage in the galley; a bright, comfortable wheelhouse in which they would spend much of their time; a head with a sink and shower; a comfortable sitting area with a pull-out couch; a

The Rays purchased the bare hull of a 37' Spencer Lincoln-designed sportfisherman from Covey Island Boatworks, and with a total investment of 4,200 hours of their labor and about \$150,000 (Cdn.), they ended up with the boat of their dreams.

forward cabin with a large V-berth; and a strong, economical, and reliable power unit. Assessing their requirements, they realized that they would require a sailboat of at least 50' LOA. But building such a craft from the keel up, though not beyond Colin's ability, would have necessitated a great deal more time and labor than the Rays were willing to devote. As Colin notes, "Some people never get beyond the building; we wanted to cruise."

After much soul-searching and frustration, they decided to build a powerboat. With its greater beam and

*The Rays finish
off the powerboat
of their dreams*



high wheelhouse, a 38' hull would afford the same accommodation as a much larger sailboat. A powerboat's reduced draft would offer an independence of time and tide and the ability to explore inland waterways without the hassle of having to raise and lower a mast.

The Rays' final decision was to purchase and finish a bare hull. Time was a significant factor in making this decision. The Rays hoped to spend no more than 18 months completing the task, and constructing the hull themselves, they believed, would have added a year to the project.

The Rays had been aboard a 42' Joel White design, LADY JEANNE (see WB No. 37), and ultimately decided upon a similar design by Spencer Lincoln, which had long since proven its mettle fishing commercially off the coast of Nova Scotia. They purchased a 38' bare hull from John Steele of Covey Island Boatworks, Ltd., of Petite Rivière, Nova Scotia, and arranged to have it shipped by flatbed to their home. The hull would be strip-planked with 1 1/4" spruce and sheathed with 22-oz fiberglass cloth in WEST SYSTEM brand epoxy resin.

Construction would be taken as far as the installation of a small cuddy, a main bulkhead, and a Ford marine diesel complete with transmission and propeller shaft (see accompanying article which begins on page 63).

Since their own work on the hull would begin immediately on delivery in southern Ontario, and continue year round in temperatures varying from -30° to 90°F, much careful thought went into the construction of a framed shed attached to the front of the Rays' double garage.

A laminated plywood shell forms the wheelhouse exterior, which receives much of its strength from the interior settees, tables, and lockers that are epoxied to it, eggcrate-fashion.



Looking forward, the wheelhouse begins to show the results of Colin's hours at the drafting table followed by hours with his tools.

The 20 x 44' shed, of conventional 2 x 4 stud construction, was sheathed in 1/2" spruce plywood, given 4" of insulation in the walls and 6" in the roof, and heated with a 4-kw industrial heater that maintained a comfortable wintertime working temperature of 60°. The dimensions of the shed had been carefully calculated to permit clearance for scaffolding along each side of the hull and wide stairs at the transom to facilitate access with tools and materials. The height of the rafters was calculated so that a minimum of 2' clearance would be left between them and the highest point of the wheelhouse. A week after the building was erected, the owner of a passing schoolbus arranged to purchase the building after it had served its original purpose.

On a bleak December morning in

1991, the bare hull arrived from Nova Scotia and was off-loaded in the driveway. Despite extensive preparation and psychological readiness, the immensity of the venture loomed large for the Rays.

Fifty-seven years young, Colin had unofficially retired from his work in custom home building. He now set himself a flexible but demanding routine. He would work 40 hours a week on the hull, while Helen continued her job as a teacher for one semester after her "retirement" to help meet the considerable expense of materials. Thereafter, she would work side by side with Colin, completing most of the painstaking finish work—hours of sanding and rubbing down paint and varnish, making cushions and curtains, etc. Occasionally, when funds ran very low, Colin would undertake small construction jobs for clients. In this way, he would be able to afford materials of the finest quality for the boat.

Since this would be very much a joint venture to which husband and

wife would be committed physically and spiritually, the Rays decided to name their boat COHESSENCE, the essence of Colin and Helen. They liked, too, its implication of "cohesion" and "coalescence."

As a builder, Colin has a well-equipped workshop behind his home. It contains basic woodworking machinery—table saw, planer, bandsaw, router, and a full complement of hand tools—nothing exotic. Colin is emphatic that anybody with basic skills and a modicum of equipment can do as he has done. "You don't need a big workshop. The decisive factor," he states, "lies in the commitment and persistence that one brings to the task.

"The tool I used most frequently to trim material and to shape work once it was in place was the sabersaw. A portable electric plane was useful, too, for fairing the upper surfaces of the wheelhouse beams once they were installed." The only tool he added to his workshop was a complete set of socket wrenches for the mechanical work involved.

Believing long ago that one day he might build his own boat, Colin had acquired rough-cut boards of cherry, oak, mahogany, and cedar over the years, and had been air-drying them behind his workshop. Similarly, with ballast in mind, he had accumulated a large assortment of scrap lead. Early in the venture, Colin visited several marine suppliers and eventually established an attractive arrangement that resulted in substantial savings and prompt service from a Nova Scotia supplier.

The Rays had no formal drawings for the boat; Covey Island had supplied only an elevation drawing of a 35' version of the design, and it had a superstructure very different from that which the Rays had envisioned. Covey Island also supplied a short video of a finished hull, but this provided only general impressions and few specifics.

"I had never built a superstructure such as this before," Colin recalls. "It was of vital importance that I knew the requisite joints, the roof and sidewall scantlings. I needed inclines, specifications, details. But this bare hull was not a kit; there were no additional parts supplied beyond the hull and



The base of this settee, formed by interlocking slats, pulls out to form a double guest bed supported by hinged legs.



The backrests for the settee cushions pull out for access to storage bins.

engine. Everything else was 'extra.'

"An experienced yacht builder can fall back on proven methodology, whereas a novice requires basic details. My early experience with the Robert Tucker sloop, which came with a very detailed set of plans, and my extensive reading stood me in good stead. I knew many of these details, and my experience as a woodworker proved invaluable. Even so, I spent hours at the drafting board working out construction details and planning space with graph paper and cutouts." So precise was Colin's work, and so thorough his planning, that he made no modifications as work progressed.

Using battens to fair the lines and bracing from the wall studs of the shed to provide rigidity, Colin built a jig for laying up the plywood wheelhouse. The wheelhouse consists of two thicknesses of $\frac{3}{8}$ " plywood, the first of which was attached to the jig with finishing nails. A second skin was then epoxied inside the first with a half-sheet lap to form a single $\frac{3}{4}$ " plywood shell. Once the superstructure was complete, the finishing nails were pulled through when the jig was removed. An inner oak plate, lami-



nated from two 1×3 s, houses the ends of the laminated fir beams, above which were epoxied three thicknesses of $\frac{1}{4}$ " plywood for the roof.

The wheelhouse has no frames in the traditional sense. The laminated, epoxied monocoque shell is incredibly strong and gains further rigidity from the refrigerator, cabinet, benches, tables, counters, cupboards, and instrument console which are bonded to it. By April 4, 1992, the wheelhouse was complete, and decks and bulkheads had been installed.

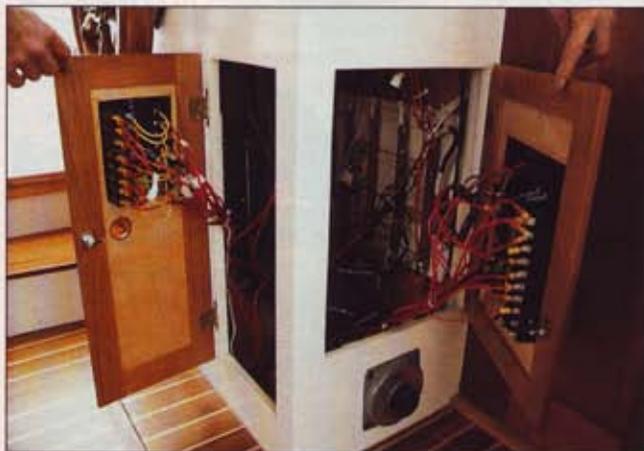
Colin became a master in the use of epoxy, using it in the construction of such disparate entities as a plywood fuel tank for the cabin heater and a custom-fitted bathtub. But so extensively did he use epoxy, that late

in COHESENCE's construction he developed an allergy to uncured resin.

Despite the wheelhouse's large size, the subtle angles and curves incorporated in the design ensure its structural integrity and aesthetic appeal. Windows echo the sheer, and the sliding doors at the helm and galley follow the curve of the rail. The finished two-tone paint scheme softens the house profile so that it rises gracefully from the sheer.

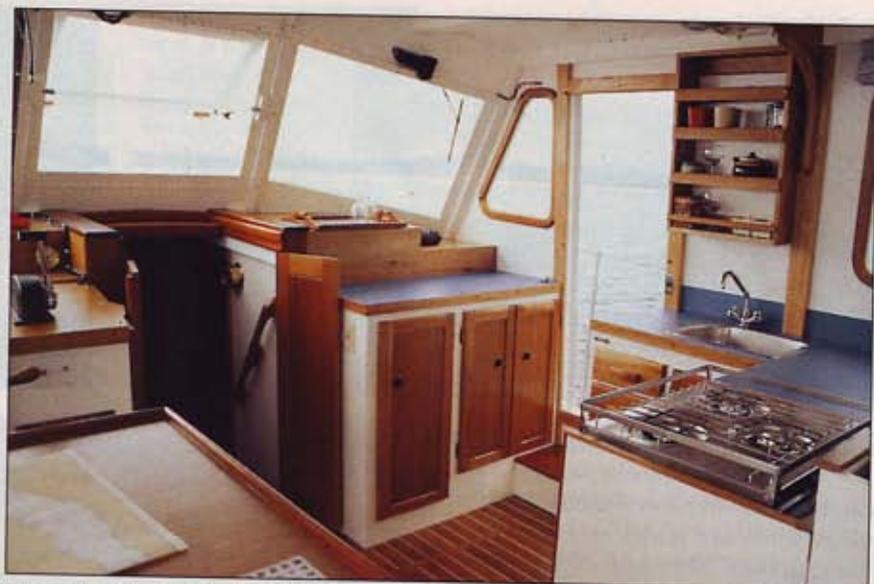
Colin's careful design and meticulous craftsmanship are evident throughout the boat: in the removable laminated window-frames, mahogany on the exterior, cherry on the interior; in the sliding dovetail slats of the pull-out couch; in the demountable lightning rod; in the flexible rubber flap that shrouds the vulnerable hinge area of the windscreen; in the steps that form the forward hatch to the engine compartment. The list is endless.

COHESENCE's interior gleams with its brightwork. Helen devoted hours to the careful finishing of fir beams, grabrails, trim, doors, wheel, and a multitude of hatches; the impression of brightwork is lavish without being overwhelming. Helen applied and rubbed down five coats of paint before she was satisfied with the wheelhouse's glass-like finish.



Hinged doors allow ready access to control panels. Colin did the rough wiring, then an electrician friend set up the main panels and provided a detailed computer printout of the entire system.

An integral part of building a vessel such as COHESENCE is realizing one's own limitations. There were, for instance, facets of the construction for which the Rays wisely deemed it prudent to seek professional expertise. After Colin had roughed in the 800' of electrical wire during construction, the hook-up of the main panels and the fine-tuning were undertaken by



The angled chute at the foot of the forward V-berth gives access to the chain locker. There's a hanging locker and head to starboard, with a diesel-fuel heater to port. The roomy wheelhouse has a complete galley.

an electrician friend, who, when the electricians were all in order, supplied a detailed computer printout of the entire system.

Aluminum and stainless-steel welding were undertaken by local firms, and a local diesel mechanic provided the expertise in smoothing out initial difficulties with the new engine, tracing the overheating problem to an undersized heat exchanger and ironing out other minor problems. For instance, the alternator bore no specifications or nameplate, and the Rays had no idea whether it would suffice for their needs.

The original launching date for fall 1992 was put back to spring 1993 in order to ensure that all eventualities could be met. The Rays wanted COHESENCE to be fully completed before launching. The shed, however, had been removed in November, so COHESENCE was exposed to an Ontario winter during which work on the boat was largely curtailed. Colin, however, continued in his workshop on the extensive interior joinerwork and began building a pram. April '93 saw Colin completing COHESENCE's

A year and a half after the bare hull arrived in the Rays' driveway, COHESENCE was trailered to her launching. "I hated to finish work on her," reflected Colin.

electrical bonding system beneath a tarp, while a good friend, aware of Colin's allergy to epoxy, kindly completed work on the pram.

A year and a half after the bare hull was delivered to the Rays' driveway, COHESENCE was launched. Colin's records indicated that he worked on COHESENCE eight hours a day for 400 days, and Helen worked for 1,000 hours, for a total of approximately 4,200 hours, exclusive of planning and drafting. Through careful management, the Rays were able to stay within their budget of \$150,000 (Cdn.), of which two-thirds had been allotted to the hull and engine. The balance covered all construction materials and supplies, including full instrumentation, VHF, GPS, and radar. Their labor is today reflected in the insurance eval-

uation as equal to their initial investment in the hull and engine.

"COHESENCE had become so much a part of me," Colin states, "that, in a real sense, I hated to finish work on her. Unless you've made the commitment to such a venture, you can have no idea of the sense of pride and satisfaction that comes with living aboard and being the captain of your own vessel. Certainly, I'd build her again tomorrow."

"But I wouldn't want to be starting again with all that raw plywood," retorts Helen.

A month's shakedown cruise in Lake Huron proved COHESENCE's mettle, and the Rays and their boat are now ready for some serious cruising.

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