The 20-foot runabout was powered with a single 120-horse OMC outdrive. She had power to spare, giving fast-acceleration, high-speed cruise. The self-braced hull contains no extra stringers.

Tolly Serves Up

Tougher than a speeding bullet, this Pli-cor I-beam construction builds-in superb flotation, too

By JIM ROE / *PS Boating Editor*

This is the first time I've ever used a .38 Detective Special in a boat test. The boat wasn't a new armor-plated rumrunner, either. It was the new Pli-cor hull—an I-beam fiberglass-sandwich hull—built by Tollycraft at Kelso, Wash.

As we talked boats on the banks of the Columbia River, "Tolly" Tollefson told me that his hulls are so tough, they'll withstand the impact of a .38 bullet fired at close range. Naturally, I had to borrow a revolver, go out behind the Tollycraft plant, and blaze away at a piece of Pli-cor to see for myself.

At a range of 12 feet, I fired a 158-grain cartridge with a factory-load, Lubaloy bullet. The bullet penetrated the gelcoat and probed the tough outer layer of fiberglass roving, but that's as far as it got. It never got through the roving.

A pretty tough sandwich. It is. But Pli-cor's main purpose in life is not to serve as the receiving end of a shooting gallery. Tollycraft engineers are more interested in the high strength-to-weight ratio of Pli-cor, which enables them to build a tough fiberglass boat with a hull that contains its own built-in bracing. As you can see by the close-up photo of the interior, this hull is quite different from the normal fiberglass hull. It begins with the traditional outer gelcoat that supplies the smooth surface and contains the color. Next comes a thick layer of roving. All this is traditional enough.

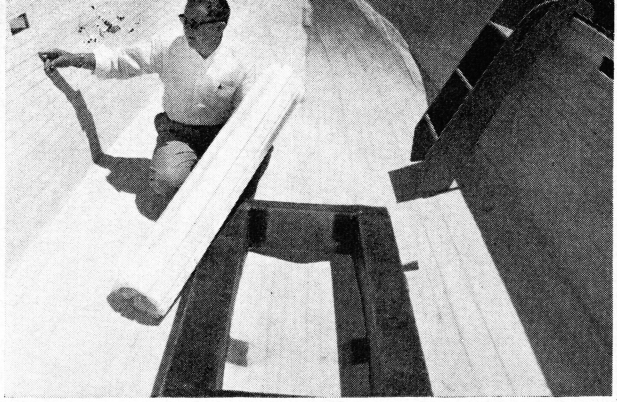
But the next layer is something different. Presewn foam mandrels are laid snug against the roving and bonded in

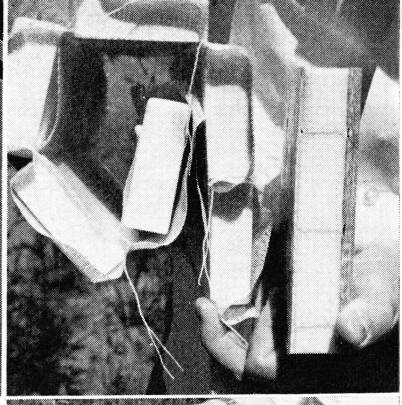
Continued

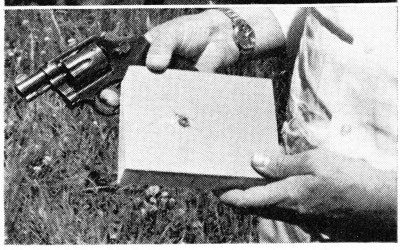
The 23-foot cabin cruiser got its power from a 185-horse OMC outdrive that's rated to handle up to 200 hp. Here, too, the Pli-cor hull supplies its own bracing, lowering total weight of the boat.

a "Sandwich" Hull

Unique assembly system lowers preassembled cabin and substructure onto motor-equipped hull.





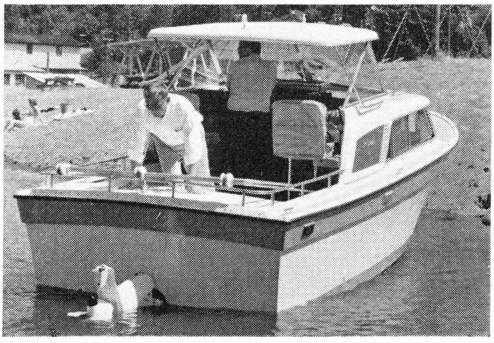


How the Plio-cor hull is built up

Snug against the roving, planks of foam four feet long pocketed in fiberglass are laid over hull (in place and in roll, above; close-up, above right) and bonded on with resin. Result: a hull of I-beam type. Only motor-mounting stringers are installed. Further coats of fiberglass finish interior and form a hull so tough, protruding bullet seen in piece of hull at lower right was unable to pass all the way through it.

with resin. These mandrels—a series of four-foot-long planks of buoyant material—are sewn into pockets of fiberglass. Thus, when they are bonded in with resin, each glass pocket serves to form a solid fiberglass I-beam. Bonded to the heavy roving of the outer hull, and reinforced with extra layers of fiberglass inside the hull, the effect is a rigidly braced hull with a series of fiberglass I-beams running longitudinally throughout the length of the boat. Also, the foam, now an integral part of the hull, supplies important flotation capability and serves as sound- and impact-absorbing material.

Before the resin hardens, a plastic-film bag is spread over the surface and sealed around the edges of the mold. Pressure is then applied by drawing a vacuum with a vacuum pump. The mold is placed in a heat-curing oven, while under pressure, for curing—a matter of hours. Thus vacuum-molded and heat-cured, the familiar resin odor is eliminated. And the high-density foam material also holds condensation to a minimum.



Nosing right onto sandy beach was no problem—the power tilt lifts OMC outdrive in the water at a 75-degree angle. Although 23-footer has most comforts of bigger boats, it is still trailable.

The resulting hull is said to be lighter than fiberglass hulls of comparable strength, and needs fewer external braces within it. In fact, the only bracing added inside the Tollycraft hulls is that which serves as engine mounts and as a base for cockpit and cabin assemblies. To further add to the hull's strength, a 50-50 resin-glass ratio is used. This is a higher percentage of glass than is used in some boats. And the strength of a hull is in the glass, not the resin, say Tollycraft engineers. Also, to give the gelcoat a long life free from crazing, isotholic resins are used instead of the more common orthotholic.

Like a lid on a jar. I was particularly intrigued by Tollycraft's unusual and tricky method for assembling the deck, cabin, and all the built-in wiring and equipment. All below-deck equipment is "hung" under the lifted cabin and deck where workmen can get at them easily. Then the finished assembly is hoisted off its dolly and lowered onto the hull and motor assembly—like a lid on a jar.

[*Continued on page 193*]

Tolly Serves Up a "Sandwich" Hull

[*Continued from page 110*]

Four to choose from. Using the new Pli-cor technique, Tollycraft makes runabouts and cabin cruisers, in lengths of 17, 20, 23, and 27 feet. The first three are powered by OMC outdrives. The 27-footers are powered by twin or single Chrysler inboard engines.

Two boats were waiting for us at a dock in the river. One was a 20-foot runabout powered by a 120-hp. OMC outdrive; the other, a 23-foot cabin cruiser powered by a 185-hp. OMC outdrive.

We took off into the waters of the Columbia to see how these hulls performed. Due to a heavy snow melt in the Cascade Range, the mighty Columbia River was even more impressive than usual. Running fast and some 15 feet higher than its normal level, it was carrying a heavy load of debris from the wild country upriver. As we pushed the throttles forward, it was good to remember the toughness of the hulls beneath us.

Both of these hulls have the same basic configuration: an 18-degree deep V at the transom, with four longitudinal stabilizers. Speed and maneuverability were all one might expect of an adequately powered deep-V hull. Both boats were exceptionally quiet in operation. This was due partly to the sound-deadening qualities of the hull, and partly to the rubber-suspension mounting system of the OMC outdrive engines. And, even though both power units were freshly installed, with zero hours running time when we began our test, they performed perfectly at full throttle, idle, and in acceleration.

We nosed up on a sandy beach on the Oregon side of the Columbia, utilizing all of the 75-degree electric-power tilt of the outdrive unit. There was nothing to it. We simply drove the 23-foot cruiser right onto the beach, with the outdrive lifting during the final moments. When we were ready to go, we lowered it again slightly and powered ourselves off with nary a shove or a wet foot.

We successfully avoided all the deadheads floating down the Columbia, so the .38 bullet remained our only genuine test of the toughness of the Pli-cor hull. However, I'm convinced Tolly's tough sandwich is a comforting thing to have between yourself and the water. PS

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