#### **BUILDING THE WOODEN BOAT**

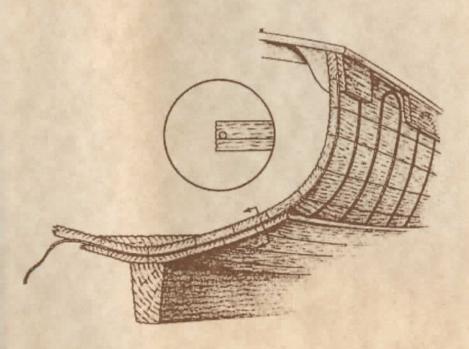
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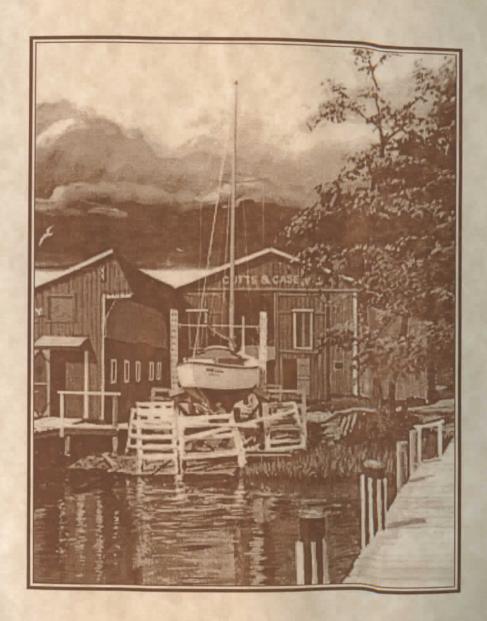
# The Cutts Patented Method

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#### FOR THE FIRST TIME...

A boatbuilding system offering simplified construction of the high-grade wooden yacht. THE CUTTS METHOD now presents a remarkable and exciting breakthrough in structure design allowing unlimited possibilities to the designers and builders of custom wooden yachts.





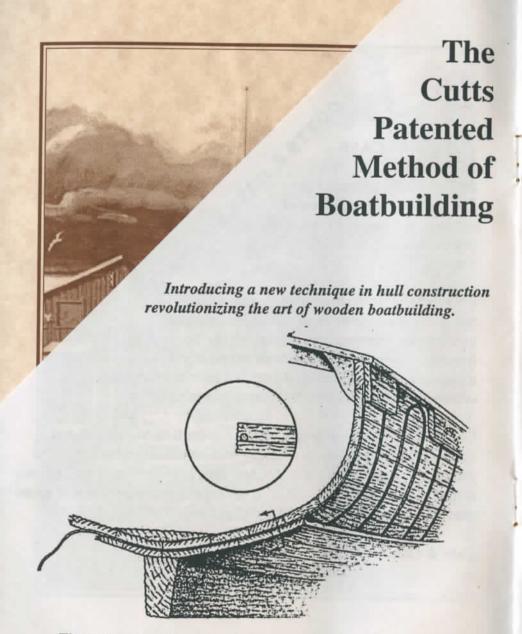
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CUTTS & CASE SHIDY ARD CUTTS & CASE SHIPYARD and it's staff, are fully dedicated to the innovative improvement of structure and design in beautiful, low maintenance and long lived wooden yachts.

CUTTS METHOD patented technologies and newly invented advances in solving ancient boat building problems have produced the modern frameless, composite hull, without seams, or corrosive metallics and with no loss of the desired interior room that occured with former frame and screw-fastened planking.

CUTTS METHOD composite yachts are built to be enjoyed and cherished for lifetimes of boating and ownership pleasure. The yachtsman owner of a Cutts & Case built boat can know that he may delight in the knowledge that he is the captain of the very best that can be produced by a fully committed and cognizant effort.

Cutts & Case Shipyard



Through state of the art techniques, methods, and materials, a new, time saving and cost efficient, wooden boat construction is now available using the Cutts Patent Method of boat building.

ADVANTACES OF THE CUTT In the Cutt's Method of building, a double planked skin is laid over a simple set of well spaced molds. Only planking thickness need be subtracted. Unlike the usual double planking procedure, the entire inner layer, which is slightly thicker than the outer, is planked up with the edges glued and the garboard glued over an inner keel or keelson plank. After this a veining groove is cut with a routing tool athwartships continuing from sheer to sheer right across the inner keel. Again, according to the design and several inches apart from the first groove, a second groove is cut and a third and so on for the full length of the boat as shown in the drawing on the previous page. An epoxy mix is laid in the grooves and a glue saturated specially manufactured and treated Kevlar cable is slipped into the groove. The cable slips easily into place and any glue that is displaced by the inserted Kevlar cable is simply squeegeed back over the cord leaving everything clean and finished. The glue is stronger then the wood, so careful fitting of tight seamed planks, as preferred in a good conventional planking job, is no longer necessary although reasonable care should be used.

Where the groove meets the stem rabbet, if a rabbet is used at all, a hole is drilled through the back-rabbet at the groove intersect and the epoxy saturated cord is sewn through the hole continuing back in the routed groove on the other side.

After the cords are set as described above, the second layer of planking is glued over the first. While the glue sets, the outer planks are held in place with staging nails or drywall screws driven right into the molds as with the first layer. These nails, or drywall screws are extracted as the glue sets and as found necessary as the second layer proceeds. Because there is only a single gluing, the time required to work with the glue is drastically reduced and the cleanup is minimal.

#### ADVANTAGES OF THE CUTTS METHOD

Method far outweigh traditional methods of building boats. No longer are there problems with insufficient strength, breaking of ribs, seam caulking/leaking, butt blocks and electrolysis, to mention a few.

\*Compare the Advantages For Yourself\*

#### Superior Penetration and Gripping Strength

Because of the low surface tension of epoxy resins in the liquid state and the absorbing thirst quality of dry end grain lumber, the resin is pulled by capillary attraction into the end-grain of the wood, producing deep penetration that provides a mechanical bond to the lumber rather than mere surface adhesion. The super-high tenacity of the cord, so fixed, provides enormous strength reliability even in softer woods.

#### Superior Transverse Strength

The transverse strength of the hull can be exceedingly high. The Kevlar is, besides being unaffected by corrosion, many times the strength of steel. Material costs are less than other methods and the savings in weight is a great design advantage.

The hygroscopic nature of wood automatically pre-stresses the cords upon immersion in water. Wood is much stronger in the dry condition than when wet. The waterproof epoxy barrier between two planks preserves the dryness of the inner layer, and therefore retains the fullest strength possible. Moreover, the cords are installed in a way that keeps the hull planking system keyed together, eliminating longitudinal working of seam edges.

#### Superior Longitudinal Strength

The double planking, because it is layered in the lengthwise direction only, can develop the full longitudinal strength required of the hull tube rather than laying half the planking across the boat diagonally as in cold molding. Because the planking may be planed and sanded smooth without fear of cutting through thin layers of veneer, absolutely no fabric overlay is required.

# Elimination of Electrolysis

With the Cutts

Method the cord is completely
sealed in epoxy inside the planking
so the former electrolysis problems
caused by metallic fasteners in surface
contacts is eliminated. The hull is an inert
structure just as the fiberglass boat is inert. The
life of the Kevlar cords can be measured in hundreds, even thousands of years, because of its nonbiodegradable nature.

#### Elimination of Leaky Butt Blocks and Seams

The Cutts Method has produced a superior method of joining planks for repair work (longitudinally) thereby eliminating the traditional "Butt Block" and all the costly problems associated with the deterioration of them over time. Additionally, all boats constructed using the Cutts Method produce seamless hulls inside and out. The Cutts Method uses a unique method of filling seams that penetrated and bonds into the wood producing a perfect, seamless hull that eliminates caulking.

#### Lighter/Faster/Cleaner/Less Expensive

The Cutts Method will unequivocally produce a lighter, faster, cleaner and less expensive boat than construction using the traditional methods of boat building. The elimination of bulky, heavy oak framing, unnecessary metals and fastenings produce a lighter and faster craft. Smooth surfaces (inside and out) give you a clean uncluttered structure. Total construction and labor costs are greatly reduced through the elimination of unnecessary construction procedures and materials.

#### •All the Room of a Fiberglass Hull

With the elimination of bulky ribs, or framing, the **Cutts Method** produces a boat with as much (if not more) room than a fiberglass boat of comparable size and design. Furthermore, strategically placed structural bulkheads and structural built-in cabinetry help to produce an open, airy and spacious interior.

#### · Easy Repair

The hull is an inert structure just as the fiberglass boat is inert. If damaged, by accident, a built in collision mat is already in place and repairs are simple to make by cutting to the cord on each side of the fracture, and graving in a feathered inner piece, installing elongated cord loops, and feathering in a piece of outer planking.

# THE TRADITIONAL METHODS OF BOATBUILDING

\*These are the Facts- You be the Judge\*

#### The Traditional Method is Outdated

In the usual and most traditional boat building method, an infrastructure is built consisting of the keel, molds and ribbands or stringers over which frames or ribs, of oak, elm or laminations are bent and faired by careful shaving of bevels with planking thickness allowances made. The planking is carefully lined off, cut, and fitted as tightly as possible after opening the outboard edges to accept the caulking iron, and then screwed or riveted to the frames. After this, the seams are caulked, painted, and filled with a seaming compound. This method of boatbuilding is extremely time consuming and costly, and does nothing to eliminate potential leaky seams, butt blocks and electrolysis.

#### Cold Molding- Costly and Admittedly Incorrect

Cold molding is not only very costly but it is structurally faulty. The latest thinking, now supported, even by long and insistent advocates of the process admittedly contend that it is incorrect to plank layer upon layer of veneers glued at right angles to each other. Wood is almost perfectly stable in the longitudinal direction but lacks stability transversely. Therefore, the slight but continuous unnatural directions of hygroscopic movement work to break down the fraying surfaces of interior veneers as they roll unsympathetic surfaces against each other. This constant plywood warfare does not occur with the **Cutts Method** because all the swelling of the planking surfaces are in directional harmony with each other.

Additionally, veneers are very expensive when compared to the same finished dimensions of sawn lumber and when glued up, they are over twice the weight as well. The cost of the epoxy, with the other thickening agents, is \$80 or more a gallon, and most of it is swept up off the floor or inhaled as grinding dust and debris after applying and sanding layer upon layer of unstable laminates over an expensive basket-like throwaway mold that must be intricate enough to hold the very thin laminates fair to the shape required.

Further, clamping is a very messy business with thousands of staples shot through unruly thin veneers using sticky glue guns only to be pulled out after each application. Grinding to a fair shape must be accomplished after each layer is applied, over and over again. Experience shows that voids are left and veneers are constantly ground through where the fairing is not perfect or edges stay lifted to be ground off in fairing the surfaces of each thin layer.

The end result is a product that is excessively expensive and structurally incorrect.

A step by step comparison of the Cutts Patented Method vs. traditional methods reveals these conclusions:

#### The Cutts method eliminates:

- · High costs of construction
- · Leaky seams & butt blocks
- Longitudinal planking movement
- Electrolysis
- Excessive weight of building materials
- Lengthy construction time
- Excessive waste of materials

#### WOOD VS. FIBERGLASS

Contrary to popular belief, fiberglass is absolutely not the "Miracle Product" it was thought to be years ago! Fiberglass hulls require as much, if not more, maintenance than wood boats. Recent studies show that water actually penetrates through fiberglass, freezing in winter and eventually delaminating the multilayer cores. Now, it is recommended that all fiberglass boats have long haul out periods for reduction of osmotic penetration.

Here are the facts - You be the judge...

# MAINTENANCE

Boats built with the **Cutts Method** never need caulking and can be cosmetically maintained quickly and easily with a light sanding and painting. Fiberglass is subject to blistering and delamination, producing a pH acid causing deterioration of the structural material. In fact, it is now suggested that fiberglass boats should not be stored in the water for long periods of time.

# COST

A custom designed and built boat using the **Cutts Method** is less expensive than the same custom designed boat built in fiberglass. When building a custom wooden boat, the **Cutts Method** is easier, quicker, less wasteful and messy and therefore, more cost efficient.

# BEAUTY/WARMTH

The beauty of a wood boat, naturally finished in sparkling varnish or brilliant paint, is incomparable to any other product on the market. Wood boats are comfortably inviting, they insulate against heat, cold and noise, and they better absorb engine and other unwanted vibrations. The fiberglass boats are plain, almost sterile-looking. Colored fiberglass fades rapidly, and over time, almost always needs to be painted.



A Cutts Method boat is stronger for its weight than those built of other methods. Light weight translates into higher hull speeds, better ballast ratios, lower materials cost and easier building. The structural design advantages allow strength requirements. Cord spacing, groove and cord dimensions and attachment techniques combine to produce beautiful and artistic structures, each part in compatible function with the rest. A Cutts Method boat has no blisters, no dry-out problems, no pH acid production between glass lay-up voids and no gel-coat crazing. If yours is a fiberglass boat, you will face these problems eventually. With the Cutts Method there is no hull electrolysis, no continuous use problem, no acids, voids or crazing.

# REPAIR

Repairing a Cutts-built boat is simple, quick and does not require additional boat building skills to do the work. The finished repair is undetectable and is far less expensive than repairing fiberglass. Fiberglass repairs almost always need to be done by and expert, are costly, messy and seldom match the original boat.

# RELIABILITY OF WOOD BUILT BOATS

Wood boats have a proven track record. Many wood yachts built in the 1920's and 1930's are still cruising today. Woods such as cedar, teak, etc. last much longer if metallics are eliminated and correct structural design is adhered to. A Cutts-built boat is constructed to eliminate leakage, decay and electrolysis. Fiberglass boats have only been around for a relatively short time, and are already delaminating, blistering, oxidizing and continuously producing spider cracks in gel coats which eventually deteriorate the finish.

#### REPAIR OF OLDER WOOD BOATS

#### •FRAMING

The Cutts Method of Kevlar cording will reinforce an old hull so as to eliminate the costly process of rib replacement. In boats with typical bilge frames, breakage in these areas are much more easily reinforced by the Cutts's Method than in any other way. Cords are inlaid externally so as to be undetectable when finished. Literally hundreds of thousands of pounds of transverse tensile strength may be added to old boats making them ready for useful service once again.

#### **•BUTT BLOCKS & SEAMS**

The Cutts Method has devised a unique way to eliminate leaky butts and seams in older wood boats. Butt blocks are replaced through a special innovative "double planking" process. This, in combination with Kevlar Cording, produces a hull that is virtually seamless and water tight.

#### **OTHER REPAIRS**

Many other innovative ways to save and actually improve older boats are available at the CUTTS & CASE boatyard. From boatbuilding to cabinet making; fabricating to finishing - no job is impossible.

Woodwork • Fiberglass • Cabinet • Design • Machine Shop • Welding • Forging • Casting • Spar Making • Special Fittings

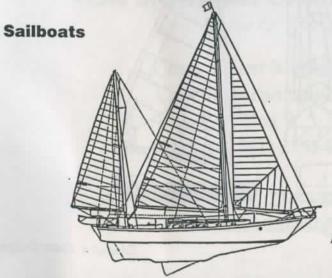
#### About the designer: Edmund A. Cutts

Edmund A. Cutts is no newcomer to the business of boatbuilding and yacht design. Over a long and impressive career he has accrued an abundance of knowledge and firsthand experience that sets him apart in his profession. His boats are beautiful in form and function whether heaving sailing auxiliaries, fast power boats or even small rowing boats for fun and exercise. He has done them all and built them in his own shops where carefully monitored work produces a medley of specially designed and custom built boats.

So impressed by Cutt's work and designs, Jon Wilson, owner and chief-editor of WoodenBoat magazine, wrote in his editorial:

"...when I told him I was a small-boat builder in search of kindred souls, he smiled (tolerantly) and welcomed me in. It was Ed Cutts. I discovered immediately that I was not talking with an every day boatyard/marina operator; indeed, I got the feeling (fast) that I had met up with my first real genius...Ed pulled out beautiful drawings of beautiful boats, he pointed out full models and half models, showed me pictures, and spoke reverently of the mentors in his life. More to the point, for me, was the fact that it all had to do with wood. In an industry full of businesses trying to distance themselves from wooden boats, here was a man inventing new ways of putting together, developing a system for which he would be awarded patents... He showed me how his frame/keel bolting system worked, and talked about his particular variations on plank-on-frame and strip-plank construction. On the boats afloat, he elaborated upon his philosophies regarding such elements as cockpit design, interior and exterior joinerwork design and construction, and his standards of finish...I like to believe that Ed Cutts is one of those individuals who, by his example, caused WoodenBoat to be born. His commitment to wood's potential seems to be without limit; he continues to be challenged by it. For all of us who care about traditional wood construction brought forward into the future, his work is an inspiration" (WoodenBoat #78, 1987).

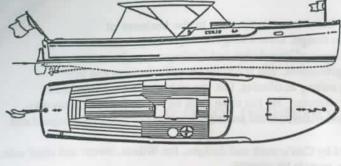
#### **Selected Custom Yacht Designs**

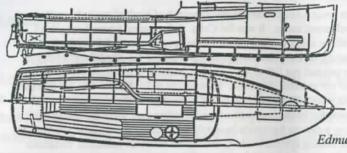


"Spellbound" 43' LOD 47' LOA

Edmund A. Cutts: Designer

# Power Boats

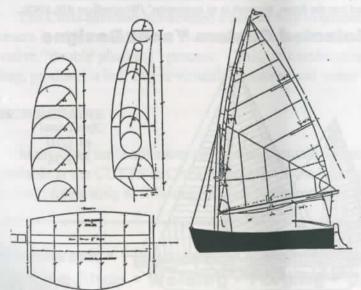




27' LOA Edmund A. Cutts: Designer

"Curio"

#### Small Craft - Row & Sail



Edmund A. Cutts: Designer

#### Licensing

For those interested in using methods in this booklet for repairing, building, or designing:

A reasonable licensing fee will be charged for the use of the **Cutts**Method of boatbuilding on a per boat basis. With such a contract, we will, without any assumption of liable responsibility, be glad to avail ourselves in an informational advisory capacity.

#### Design Service

As yacht designers of considerable experience in the construction of all types of boats we can also make a design or redesign service available to you using this method.

#### Materials

The best required materials for use in the **Cutts Method** will soon be obtainable, along with a book describing the work in detail. These things are in progress.

#### FOR MORE INFORMATION:

write to:

Cutts Patent Method Cascut Corporation P.O. Box 9 Oxford, MD 21654

Phone: (410) 226-5416 FAX#: (410) 226-5035

# ABETTER WOODEN



Chuck out your clumsy oak frames and corrosive fastening, forget your expensive veneers and moulded planking; the Cutts Method is here. Using Kevlar fibre inserted into the structure of the hull, an American boatbuilder has devised an innovative new method of building boats. Lila Line reports

n American yacht designer and builder of wooden boats has introduced a new technique of hull construction that many predict will revolutionise the craft of wooden boatbuilding. Edmund A Cutts, aged 67, of the Cutts & Case Shipyard in Oxford, Maryland, has a long history of maritime traditions. He has developed a method that enables the boatbuilder to forego the use of frames, rivets, fastenings, caulking, and other materials normally used to keep a hull together. Widely admired for his turn of the century craftsmanship, Ed has patented the technique he calls the Cutts Method.

The concept is surprisingly simple, and Ed is convinced that boats built by his method and combined with sound craftsmanship will require no more maintenance than the average glassfibre vessel and could last well beyond 100 years. Like most builders of wooden boats, he was frustrated by cracked seams, eroding screws, and space stealing structure. "I'm an innovator, anything I find hard to do, I think, 'My God, there's got to be a better way'," says Ed. He had long dreamed of making a better type of wooden boat. He knew that if not built well and maintained constantly, seams on wooden boats leak and require recaulking, bronze screws in time disintegrate in salt water, weakening the boat's structure, and he claims most frame breaks occur during building. All these problems show up sooner or later even in the best built boats.

Ed's method of building offers unlimited possibilities to designers and builders of custom boats. The technique furnishes the highest strength, lowest weight, and a significant reduction in labour over traditional methods of boatbuilding. The method has been used for several years, and has been granted patents covering its use for any type of structure — yachts, aircraft, and architectural framework.

The procedure involves the use of cords of Kevlar synthetic fibre, processed specially for this method. Kevlar was developed by the DuPont Company of Wilmington, Delaware, for use in space age rocket hardware, and has the tremendous strength properties now required for Army helmets, flack jackets and reinforced aircraft parts. By weight, Kevlar has 11 times the strength of steel, is ordinarily non-biodegradable and has a half life of over 2,000 years. Hulls built by the Cutts Method are produced without metals of any kind and are therefore electrically inert. According to Ed, the metallics are among the weakest areas of a boat. The super high tensile cords totally eliminate the need for the usual wooden boat framework. When correctly designed with proper structural cabinetwork and bulkheading, the structure in function is quite similar to its glassfibre counterparts and is lightweight

Above: The hull of the 27-foot runabout Curio, built using the Cutts Method. The Keolar strips have been inserted into the first layer of planking and the second layer is being fitted. Temporary fastenings are removed and the holes filled with epoxy.

Right: A hull in progress, showing the first layer of planking with grooves cut into it and Kevlar strips inserted. Note

the tight fit of the seams.

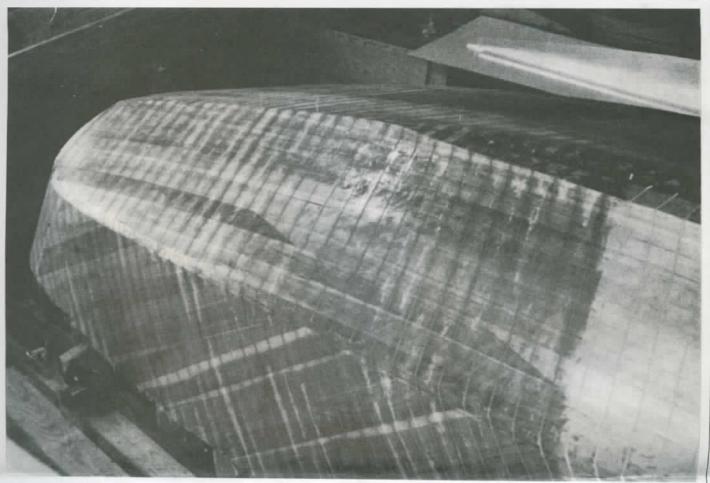
Opposite page. Top: The stern of the skipjack-inspired Hummingbird showing the first layer of planking, with the Kevlar epoxied into place at right angles to the planking.

Bottom: A cutaway section of a Cutts hull from a promotional leaflet.



REPRINTED FROM: "CLASSIC BOAT"

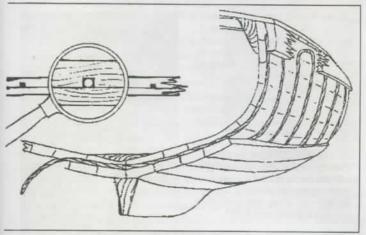
LONDON U.K. AUGUST, 1994



with long life expectancy. This and the comparatively low cost are what makes the great difference. No more blisters or osmosis, or delamination in cold and freezing climates.

With neither plug nor mould required, the method lends itself perfectly to prototype and custom one-off production providing obvious reductions in required skills and labour. There is also saving in the amount of wood needed. Ordinary mill size timber is used rather than expensive laminates, and only one application of glue is necessary to achieve the total thickness of the planking, making the method ideal for home build projects and suitable for even very large vessels.

The technique, like all good inventions, is simplicity itself. Strakes of planking are laid over a simple set of moulds from which only the planking thickness has been subtracted. The



method differs from normal double planking technique in that the inner layer of planks are thicker than the outer layer, and they are fitted and glued together along their edges, with the garboard is glued over an inner keel or keelson plank. A groove is then cut with a routing tool, running continuously across the hull girth and the inner keel. This groove is repeated as many times as the design specifications require, spaced a few inches apart and at right angles to the planking strakes. The Kevlar cords are epoxied into these glue-primed grooves, slipping into place like a 'greased eel', and any surplus glue squeegied back over the cord.

The second layer of planking is epoxied over the first, held in place by plaster wall screws which are discarded when the glue has cured. If a rabbet is used at all, a hole is drilled through at the groove intersect and the chord is sewn through the hole continuing down the groove on the other side. Having no wooden frames, the cords hidden between the layers hold the planking so snugly that Ed describes the result as a 'seamless' wooden boat.

In traditional double skin construction methods, the common practice has always been to stagger the planking so that the seams on the inner skin lie in the centres of the planks on the outer skin. With modern epoxies this technique is not wholly necessary. To achieve the same effect as staggering, and to ensure maximum strength, the inner strakes can be laid at an angle of five to ten degrees fore and aft. Because the planking lies generally in a lengthways direction only. There is no need for a layer of fabric in between the skins as with the cold-moulding method, and the outer skin may be planed and sanded smooth without any fear of breaking through a layer of thin veneer.

Once the epoxy has been absorbed into the end grain of the wood, it produces a bond so secure that when tested to destruction the cord, which is similar in strength to stainless steel rigging

DITCHESTON

#### A NEW WORLD INNOVATOR

The shipyard of A Cutts, in what is now Kittery, Maine, was founded in 1646 by John Cutts, whose family has been traced to Stratford-upon-Avon in England. It is thought to have been the earliest shipyard in the New World. Generations later, Ed Cutts' father was still in the woodworking business, making light carriages, caskets, fancy woodwork and stairways for mansions on the Gold Coast of New York. Ed was born in the Queens borough of New York City, and began his boatbuilding career sailing cardboard boats along flooded curbings, catching them before they hit the sewer drain!



One day Ed happened to be in Marblehead, Massachusetts, where L Francis Herreshoff lived. He stopped in to see the yacht designer and was greeted cordially. That meeting began a long friendship and association that lasted until Herreshoff's death some 28 years later.

Francis Herreshoff recommended him to Boris Lauer-Leonardi, then editor of Rudder magazine, telling him that Ed's models were the best that had ever been brought to him for evaluation. Lauer-Leonardi ordered a boat built from his designs and followed up by ordering two more designs; one power and one sail.

In the meantime, John Case had told Ed that he had always wanted to own a boatyard. When Case learned there was one for sale in Oxford, Maryland, he contacted him. "As soon as we saw

Above: An idyllic scene on the Chescapeake. Ed bought the yard in 1965 and has lived there ever since. Right: Amid a set of moulds set up for a 65-foot motor boat, Ed Cutls reveals his secret ingredient. Far right: Pool trials... A 14-foot rowing boat built using the Cutts Method.



it, we fell in love with it, it was such a beautiful place, the sway-back building shed, the little old cottage, just the whole thing. It was run down badly, everything was falling apart, but it was a layout of exactly what we thought of as our kind of paradise. We still

love it," explains Ed. The house they occupy is the oldest in Oxford, a small 'English' cottage, circa 1668.

Ed and John Case bought the shipyard in 1965. In 1988, Ed bought his partner out, though the yard still carries the two names. It now employs up to 15 workers. Maggie Cutts has always kept the books, and both of their sons, Eddy Jr and Ron, are in business with their father. A daughter, Linda lives on the Chesapeake's western shore.

Ed's office is a land based houseboat moved to Cutts & Case

Shipyard 66 years ago by its founder, Ralph Wiley, also a New Yorker. Wiley lived aboard the houseboat in the nearby creek before bringing it ashore. Later, he bought Byberry House, the oldest house in town and had it moved to its present site.

Ed and Maggie Cutts have lived in the house for 30 years. Reminders of Ed's love for wooden boat building are everywhere. Walking into the living room is like walking into the cabin of one of the boats the shipyard is so famous for building. Polished half models of Ed's designs cover the walls under the carved beams and hanging knees of the ceiling itself. A dining room cabinet came from Nat Herreshoff's steel racing schooner lugomar which once stopped at the shipyard for repairs. She is best remembered for the season of 1904 when she did so well racing in English and German waters that the Kaiser ordered a large schooner for himself from Herreshoff.

It's the first Sunday after Christmas. As Canada geese honk greetings before landing on the creek, swans and ducks feed in the shallows in front of a large expanse of windows in the office. Bent over a designer's desk, Ed is sketching a pen and ink section of a boat that a man fom Norfolk, Virginia, is building using the Cutts Method.

"A gentleman came in and wanted to know if we could design a boat for him," says Ed. "He turned out to be a heart surgeon who wanted to build this boat himself. When he visited the shipyard, he brought a sketch of a skipjack with a note that read, 'An example of a classic boat that I don't like, pretty sail plan, but the hull lacks grace. Sheer too straight... bowsprit should have graceful curve, but doesn't'. So I designed the boat with that in mind."

The boat he designed is a yacht with a diesel engine, hollow spars, and lightweight construction that allows a 60 per cent bal-



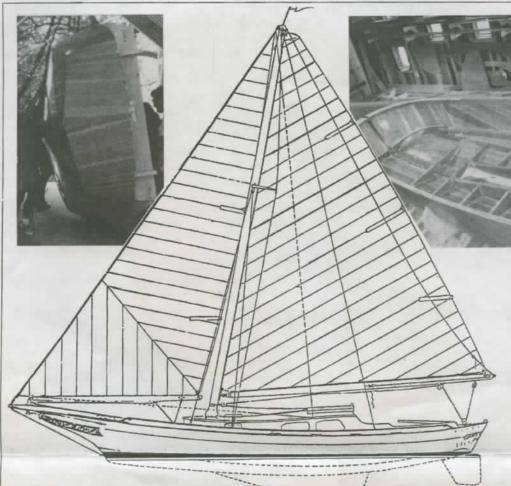
last-weight ratio. When Ed suggested the builder construct the boat by the Cutts Method and showed him the advantages, the doctor immediately agreed. "We had another boat being built elsewhere that I could show him. It was a power boat, but the same size as the sailboat he wanted. He ordered the design and began building Humminghird."

Ed visited the boatbuilder to note his progress. "He had just turned the boat right-side-up.

He had previously built a boat by the conventional process, but says he prefers the new method."

"Some of his doctor cronies come by to help occasionally. He's got a knee bone specialist, an eyeball doctor, and a nasal passages man, and betwixt and between them, they jolly him up a bit, helping with the physical stuff, like moving the 3,500 pound (1,587kg) ballast keel underneath it and hoisting it up in place," says Ed.

Ed realizes that the wooden boat may never again challenge the mass production of glassfibre boats, but is convinced his new technology will help the wooden boat make a comeback.



Top left: Having planked up the boat upside, Dr Chile Crisler and friends turn it over for fitting out. Above: Inside Hummingbird. Kevlar cords have been used to reinforce the keel and floors. With no frames to rest on, the engine bearers are epoxied directly onto the hull. The centreboard case is built of glassfibre. Left: A profile view of Hummingbird, showing her skipjack roots. With the centreboard raised, her hull draws just

26in (660mm). Below: Dr Crile Crisler fitting Kevlar strentheners over a solid timber floor.

wire, will destruct still leaving the resin bonded join intact. The tremendous gripping power of the epoxy means a line of Kevlar can formed from several sections of the material rather than having to use a continuous strip, running from sheer to sheer, for each 'frame'

In small boats, such as the launch and a Chesapeake hybrid skipjack built by the yard using the Cutts Method, each cord has a tensile strength of about 6,000lb (2,718kg) per cord per side. With cords spaced at approximately 3in (75mm), a skin with ten-

sile strength of over 1,000,000lb (453,000kg) per side may be expected. This, with the stiffness of a solid timber skin of over 3/4in (19mm) thick, produces a hull skin weight of less than 1lb 8oz per square foot (3.3kg/0.1m<sup>2</sup>).

A test machine at Ed's yard holds over 2,000lb (906kg) of tension on a small cord that is imbedded in 2in (50mm) of soft cedar. It has been in tension for over eight years being observed for creep, which would allow the tensions to lessen. But upon plucking it, like a harp string, it still emits the same middle C note that it did eight years before!

For the past 15 years or more, Ed has been perfecting his building technique in his small shipyard in Maryland. His first use of his innovation was for some of the structure of the 43ft (13.11m) sloop Jeannie, which was ordered by Thomas Wellman, an Ohio attorney. The boat was launched in the spring of 1981. Moulton Farhnam, a former editor of a popular boating magazine wrote,

"...she is a work of art, a jewel among boats. Wherever your eye rests it is delighted. Typical of the care lavished in fabricating Jeannie's 12 tons is her horizontal steering wheel. It is from a piece of rare Peruvian wood that was growing before the birth of Christ... built by Ed himself as a gift for the boat."

The Cutts Method was also employed in building a 14ft (4.27m) rowing boat. This experimental craft, owned by a New York Yacht Club member, remains as tight as the day she was built over 13 years ago by Ed's son, Ed Cutts Jr. Remarkably, the hull suffered absolutely no ill effects even after having been left in the water for a year, accumulating inches of barnacles on its otherwise smooth bottom.

"When we design hull structures, we do so with much experience that has been gained in the building of scores of vessels, and over a thousand opportunities to have scrutinised the problems of boats brought here from near and far for rejuvenation," Ed says. "By now we know ahead of time what causes the problems and we avoid those things." As well as sending customers detailed plans of his designs, Ed sometimes supplies full-sized plywood moulds to ensure the final boat is fair.

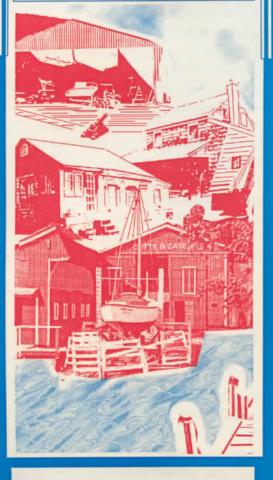
When the yard completes the 65ft (19.81m) commuter boat now under construction at Cutts & Case, it will be an impressive demonstration of the Cutts building method. If Ed has his way, we may be witnessing the dawn of a new era of boatbuilding.

The Cutts Patent Method, Cutts & Case Shipyard, PO Box 9, Oxford, Maryland 21654, USA.

Any comments on the above article, or any other in the magazine, should be sent to the editor at the address shown on page 2.

"WHERE NEPTUNE'S DARLINGS GATHER"





Cutts & Case Shipyard P.O. Box 9 Oxford, MD 21654 (410) 226-5416

#### Yacht Building



Cutts & Case is primarily a designing and building firm with long experience in prototypes and one-off production of boats that meet the particular requirements of the client. Everything from a rowing exercise boat to designs for a high-speed one-hundredfifty passenger excursion boat for the Caspian Sea has been produced here, handsome and efficient boats for any intended purpose. Yacht building and yacht design at Cutts & Case is it's most consuming effort as it continues to originate new and innovative strategies for the production of lighter and stronger, longer-lived vessels with the potential of lasting for even a hundred years or more without re-work and rebuild, without osmotic problems, delaminations or blister degradation. Cutts & Case knows it's business like no other. It is this knowledge that produces beautiful products, superior structure, lighter, faster and stronger shapes, and efficiency in aquatic transportation.

Cutts & Case can renew it, in the least expensive manner conducive with every consideration for absolute permanence in the rework. Diagnostic trouble shooting along with clear solutions for otherwise irritating boat problems are correctly solved with simple, thorough efficiency.

# Haul-out Services

Haul-out services are provided for whatever the work requirement is. For simple fixes we can haul the boat and quickly return it for use. We are yachtsmen too, and we are aware of the problems of delay during the boating season. Cutts & Case is one of the few yards on the Chesapeake Bay that, in addition to our other haul out equipment, has a marine railway capable of accommodating boats up to 65 feet.

# 3

### Repair



a n d

Cutts & Case Shipyard has carefully serviced, rebuilt and restored many of the grand and beautiful older yachts some of the newer ones too, because our work in Glass-Fiber and other textile methods, with their attendant skills, is well understood and mastered.

Great or small, whatever the extent of needed repair work,



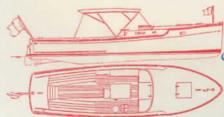
## Yacht Designing



Beauty, speed, simplicity and a long life are the qualities that join to make a connoisseur's yacht a pleasure for a lifetime.

From a beginning concept sketch to the finished product, the artistry of this beautiful is at your disposal. Whether it be

> designing a rowing dinky, a sailing or power yacht or a custom interior, Cutts & Case can produce a completely satisfying result.



#### Patented Cord Construction

Wooden yachts are the longest lasting of all, but the problems that eventually confronted the older ones have now been eliminated by a

new system of building, called "Cutts Method." With the invention of this patented technique, the complete elimination of all metals in the composite hull structure is accomplished. "The

Cutts Method" involves the internal circular winding of extraordinarily strong, nonbiodegradable Kevlar cords that produce an electrically inert structure with the internal room of fiberglass hulls. The elimination of heavy, bulky ribs produces seamless electrolysis-free vessels, meant to last a hundred years and more. Such a yacht costs no more than a quality plastic boat, but provides important advantages besides longevity, like higher ballast ratios in sail or better power-toweight numbers in power boats with no blistering or osmotic PH migration. No more delamination failure or Gel Coat removal. The advantages become obvious when accurate comparisons are made.

Call and ask for our brochure describing this patented method. Better yet, visit us at our yard for an on sight explanation.



#### Winter Storage

Cutts & Case has been storing boats without damage for seventy years. We can store her wet in our naturally-protected Southfacing basin or we can haul her dry in a safe yard. Cutts & Case also has the facilities to dry store your boat

> under shed, fully protected from all the elements. Spars can also be stored out of the weather. The watchful eyes of concerned people

living on the Cutts & Case property assure you of the finest security.



#### Dockage

All main slips at Cutts & Case are considerably cooler than most, because the yard and basin faces South. These slips are also protected from the North winds in winter. South facing slips at Cutts & Case are fully the length of each boat, allowing the boat owner to step aboard his boat with a package in both hands. Each single slip is fifty-five to sixty feet long, with a deepwater (12 ft.) end-slip of over one hundred feet in length. New slips have recently been added. Transients are always welcome



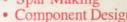
#### Other Services



- Painting / Varnishing
   Fiberglass Repair
  - · Engine / Electrica
    - Spar Making



Metal Work



# Cutts & Case Shipyard



## An Oxford Point of Interest

Cutts & Case Shipyard is, as some have described it, an American Nautical

Treasure, because it continues to produce and replicate a diversity of the highest standard of quality work, equal to and in many ways surpassing, the beautiful turn-of-the-century artisanship of former times.

New patented methods and space-age materials and techniques, along with an extensive and sustained knowledge of the past, combine at Cutts & Case to make today's modern wooden yacht a long-enduring and trouble-free realization. To connoisseurs of high-standard workmanship and innovative seagoing structural engineering, an appreciation of these dedicated efforts continues into an approaching twenty-first century, with the knowledge that the work of inspired expressionism will always be of cherished value. Whether it is the artistic design of Celini-like patterns for making special castings of bronze and aluminum or hand-made engine parts carefully turned, milled and fabricated to exacting specifications, special weldments, or finest yacht furniture, cabinetry or carefully

fitted planking, the yard has the capability to produce everything from even special sets of otherwise unobtainable ignition points, to full sized engines, produced from the drawings to the finished product right here in this rather unpretentious facility, where through the years we have accomplished all these things.

A sincere dedication to the work, by a family steadily and similarly engrossed for over four hundred fifty years, in America and England, is what it is about. Through a seventy year history involving the lovely colonial town of Oxford Maryland, this yard continues to address itself to the in-house preservation and support of all the trades that perennialize the

very important classical work of the nautical past, while embracing the most modern building methods. Cutts & Case has taken this mission very seriously, and has

accomplished what we believe no other yard can claim.



#### Historical Points of Interest at Cutts & Case Shipyard



Byeberry, the oldest house in Oxford, was long-standing in 1695, but the earlier exact date of its build is not known. Two other very old houses



"Anderton," the first house in what was then Trappe, but now part of Easton, and Martingham" in St. Michaels. These three very early houses are duplicates, leading to the

speculation that Byeberry's date of build was Circa 1668.

Calico - A house with a story:

Although Calico is a pre-revolutionary house, it is a hundred years newer than the Byeberry, the other

old house on the property.

In Calico, earliest work was done to genetically improve the weight of Benjamin Franklin's nominee for the National Emblem, the All-American Turkey. When



Roosevelt was in the White House, he

carved a Thanksgiving bird that made headlines everywhere for its huge size, somewhere around forty pounds. The turkey came from the "Green Gobbler" strain patent, scientifically developed in this tiny, poor man's laboratory. The two Taylor brothers who did this early genetic work became wealthy over night, abondoning Calico and buying large tracts of land east of Easton, where they relaxed into a more leisurely style of life, althought turkeys were never far from their hearts. As for the White House Thanksgiving dinner, it was said that up until that time, it was the biggest turkey ever in the White House. But history shows there have certainly been much larger ones since.

The Ark is a guest house down at the water's edge that was once a Long Island South Shore House Boat. It was old when brought here in 1929. It has been a house of refuge for some interesting

> people who were aware that it was a quiet hide-out, further from a road than any other Old Oxford house. Jimmy Cagney stayed here, as did Burl Ives,

Alfred Isenstead, the Rosenfelds, Winston Groom (Forest Gump author),

Starling Burgess and many others too numerous to name. The total price paid for all three houses together was two hundred fifty dollars, or eighty-three dollars and thirty-three cents each.