

HULLS

By Richard Sorokin

The shape of a boat's hull has changed greatly over the years. The first boats that were man powered were all displacement hull. They sat in the water, displacing the water and floated. They were slow and the shape of the hull had little bearing. Then along came sails and wind power. The boats began to move faster and the shape of the hull became more important. The shape of the hulls today are even more modified because of motor power and faster speeds.

Large vessels are usually still displacement hulls. Their bows are sharper and they have a porpoise like projection on the bow. This is quite recent and really makes a difference in the size of their wake. Remember the bigger the wake the more energy is wasted.

When we get down to smaller vessels we see more variation in hull design Deep "Vee" bows for cutting through the surf and flat stems for planing. With a flat bottom at the stem a boat can power up so that the water pressure raises the boat out of the water causing less drag by the water and a higher speed with less energy used. Small dinghy's almost all have planing hulls.

Motor catamarans with their double hulls use displacement type hulls. The twin hulls form an air pocket under the boat that gives it a lift and cushions the ride.

Most large sail boats are displacement hulls. Smaller dingy types do have planing hulls. Sunfish, Lasers, G, P,14's, Lightnings, all have planing hull, and there are many more. A Hobbie Cat has a very different hull. Hobbie, a west coast surfer, wanted a boat that could run up onto the beach. All sailboats up to that time had center boards to prevent side drift. With a center board you cannot ride up on the beach. If you look at a Hobbies hull you'll see the outer side is flat and the inside shape is round. This replaces the center board and you can ride it right up the beach.

When talking about hull shape sharp chimes are often discussed. Row boats have sharp chimes. The side goes straight down and makes a sharp angle with the bottom. Soft chimes are a more rounded bottom. There other hull shape is the skeg keel. Motor boats often have skeg keels. They are use full to dampen roll.

The America's Cup races are all about hull design. The ultimate speed of a sailing hull is around the square root of its length. A 25 foot sailboat can go about 5 knots, 49 footer around 7 knots and so on. The complete formula is very complicated but the square root puts you in the ballpark. The bigger the waterline length is the faster it can go.