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# SEAL

## A Yachts and Yachting Test Report

IN these days of the batch-, if not mass-produced small cruisers it is very seldom that anyone comes up with something which is not just a variation on the old theme. Most new models follow the current trend of hull shape, rig and accommodation layout and any student of the subject can predict with a fair degree of accuracy what new features, if any, are likely to be adopted by any one maker pursuing a particular line. By the time a choice has been made between twin, single or drop keel and open plan or compartmented layout, the changes that can be rung are severely limited. An exception to the general rule, however, is the Seal, designed by Angus Primrose for John Baker (Kenton Forge) Limited. The Seal is different, very different.

The Seal is a 21ft 9in overall sailing cruiser with four berths, an optional loo and a small galley. There the similarity with most other craft of her size ends. The effective cockpit area available for day sailing—which is what this size of boat spends most of its life doing—is comparable to that of a potential Admiral's Cup contender. This usable area is split level which means that the helmsman and competent and responsible members of the crew can work the boat from the cockpit whilst passengers and those of tender years who are less capable can amuse themselves safely in the lower area. The 'domestic' department can go about its tasks without being segregated from those enjoying themselves sailing the boat. The Seal will take the ground happily, can be taken so close to the shore that the crew can step overboard and walk up the beach and, despite all these bonus points in the family cruiser table, is an extremely satisfying and able performer. How is it managed?

The coachroof extends only about three and a half feet aft of the mast and the cockpit opening sweeps forward in a bold curve so that the aft half of what is normally the enclosed saloon is open and forms an extension to the cockpit. The lower cockpit, or saloon, is divided from the sailing cockpit by a bridge deck which carries the mainsheet horse. The single, ballasted keel can be raised within a case under the saloon table reducing the draught from 3ft 10in to 2ft. The rudder is hung on the transom and the rudder blade can be lifted. On a steeply shelving beach it is possible therefore to drop back to the shore on the anchor and to step over the stern on to dry land. We tested the Seal last year, sailing her first from the Exe to Dartmouth (there was little wind for sailing on this occasion but the mackerel fishing was good!), then, in a spanking breeze we beat from Dartmouth, round Start Point and into Salcombe where the boat was used for a few days as a family holiday cruiser in the role for which she was designed. We could not fault her general conception or handling characteristics.

John Baker has his yard at Kenton Forge on the west side of the Exe Estuary in Devon where he has made a name as the builder first of the Otter (previously Bubble) and later the very successful Michael Jackson-designed Lark. The Seal is the yard's first venture away from dinghies and, not surprisingly, they have quite a lot to learn about this size of boat. For this reason we have delayed testing the boat until recently, for she appeared first at the 1970 Earls Court Boat Show after she had already been subjected to some practical development. The boat we tested last year had, we thought, a number of shortcomings as far as detail work was concerned but in the latest version which appeared at this year's Show there are a number of definite improvements and many, though not all, of the shortcomings have been eliminated.

continued overleaf

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# SEAL

continued

**Hull and Construction**

There are four glassfibre mouldings —the hull, cockpit and deck, interior, and keel trunking. The deck moulding lips over the top of the hull moulding and a wooden gunwale rubber goes round the edge of the deck moulding. The hull is stiffened by the interior moulding, which forms the berth tops and fronts, and by a number of fore and aft stringers bonded to the hull moulding.

The round bilge hull is fairly beamy (7ft 9in), has a relatively fine entry with a firm turn of bilge amidships and wide, flat sections aft. There is a vestigial keel in the hull moulding providing a fairing to the parallel sided drop keel which is raked slightly aft. There is a fair amount of freeboard but this in no way gives the boat a top-heavy appearance, in fact by using a well-rounded coachroof both adequate interior headroom and pleasing appearance have been achieved. The only comment on appearance is that the hull could perhaps have been given slightly more sheer forward in way of the foredeck for, when viewed from either bow, the sheer appears to drop slightly. This is always a difficult area in which to achieve æsthetic harmony, for if the hull is given more sheer the bow can appear to cock up into the air when viewed from the beam. It is something which is best resolved in practice and most difficult to decide on the drawing board, but, of course, with a glassfibre boat there is little opportunity for alterations of this nature once the glassfibre moulds have been made.

**Drop Keel and Rudder**

The drop keel can be raised quite easily with about 200 turns of a handle at the aft end of the keel casing. The handle is attached permanently and folds out of the way when not in use. It turns a jack-type screw mechanism and although lifting the keel can be slightly tedious if the job has to be done in a hurry, the good mechanical advantage and lack of friction is such that a five-year-old child can easily lift the 800lb keel. This is facilitated by the use of bearing blocks made of RCH 1000 heavy duty bearing plastic which are attached to the keel and slide in grooves moulded into the sides of the keel trunking. There is a Perspex inspection hatch in the side of the trunking so that it is possible to see the keel level.

The rudder has a lifting blade made of $\frac{1}{16}$in galvanised mild steel. This is raised by a Holt Allen block and tackle on the top of the tiller.

**Accommodation**

There is the usual two berth arrangement in the fo'c's'le and both berths are generously wide. A separate cushion drops between the berths on top of the board which covers the marine w.c. which is available as an extra. Sea cocks are provided with access in adjacent lockers. Above the w.c. is the forehatch which is moulded with unpigmented resin to give light. The hatch is on the light side and merely sits over the moulded coamings. It is secured by a couple of turn screws, one either side, but as there is no gasket a full watertight joint cannot be obtained. The brackets which take the turn screws are particularly lethal fittings, their forked ends sticking out either side of the hatch opening.

Another feature which we thought could be improved upon is the chain stowage—the chain locker is beneath the fo'c's'le berths and forward of the w.c. but there is no pipe from the deck to the locker so that water, seaweed and mud on the chain splashes on the berths as the chain is stowed.

The main bulkhead which divides the fo'c's'le from the saloon is rigid only at the sides and up to the level of the top of the table on the starboard side. To port there is a gangway which can be closed off by a door and the area between the table and the deck is closed off by a plywood hatch which is hinged under the deckhead and folds open into the saloon, where it is held by a catch under the deck. To starboard is a galley shelf which will take a two-burner stove and a small amount of stowage space for food and utensils whilst to port there is a hanging locker. A kingpost which supports the deck beneath the mast also acts as an anchorage point for the keel trunking on top of which is mounted the folding Formica-covered table.

Full length berths run from the main bulkhead to the bulkhead beneath the bridge deck at the aft end of the saloon. Open fronted shelves run above the berths either side; there is a hatch in the aft bulkhead to provide access to the area beneath the bridge deck and cockpit; and there is further stowage with top access beneath all the berths. The ply hatches which drop into indents moulded into the top of the saloon berths were a tight fit on the boat shown at Earls Court and would probably tend to jam when they get damp. The aft hatches in the saloon berths are provided with good waterways which drain into the bilge, for these hatches are in a part of the boat which could get wet from either spray or rain.

The bunk tops and fronts throughout the accommodation are provided by the one-piece interior moulding. The bulkhead, table, shelves and other trim is in mahogany or mahogany plywood and wooden floorboards are provided. The deckhead and sides are unlined but given a speckled grey paint finish which is quite attractive and covers up the inevitable roughness of the inside of the mouldings. The windows in the side of the coachroof in both the fo'c's'le and the saloon are set in alloy frames.

**Canopy or Hard Top?**

The cockpit extension into the saloon area can be covered in any one of three ways—with either a canopy, a tonneau cover or a hard top. The canopy (£49.00 extra) folds down flat on the coachroof forward of the cockpit opening, when raised it is, in effect, a canvas dog house. Half bulkheads are provided which are attached either side of the companion opening and drop boards fit between these to give a conventional companion arrangement. The top of the canopy extends aft of the bulkhead to provide protection from the elements when the companion is open.

A moulded glassfibre hard top can be supplied (£49.00 extra) and this uses the same half bulkhead and drop board arrangement as the canopy. Finally, for day sailing and occasional overnight use a tonneau cover is offered (£24.20 extra). This covers the saloon area back to the companion bulkhead.

**Cockpit**

The cockpit is deep and comfortable and provides a satisfactory degree of security for small children. There are large lockers either side with hatches in the cockpit seats.

There is a large locker aft which held the 5hp Volvo Penta outboard we used and the 5 gallon fuel tank. The hatch design is similar to that used for the fore hatch—there is a raised 'coaming' round the opening and the hatch moulding is turned down at the edges and sits over the coaming. The aft hatch is a tight fit over this coaming and we found it difficult to remove, having to prise it off with a screwdriver on more than one occasion. There is no attempt to divide the cockpit lockers from each other and so something placed in the aft locker can easily find its way into one of the side lockers if the boat heels over. Worse still, there is nothing to stop items and smells from the aft locker moving right through the lockers under the fo'c's'le berths for there is no barrier or division—in fact we recovered from the saloon locker a fishing rod which had been placed in the aft locker! We think that this is a very bad feature of the boat and one which could easily be rectified. Battens or other divisions should be fitted in the cockpit lockers so that items stay in their respective compartments and these lockers should be sealed off from the accommodation stowage so that smells from fuel, engine and warps are kept in their rightful place.

In the latest Seals there are useful open fronted lockers built into the coamings either side at the forward end of the cockpit. These are provided with a drain hole which is designed to take to the bilge any water which finds its way into the locker, by way of a plastic tube. However we thought that the drain holes were on the small side and would easily become blocked with a match stick or piece of fluff.

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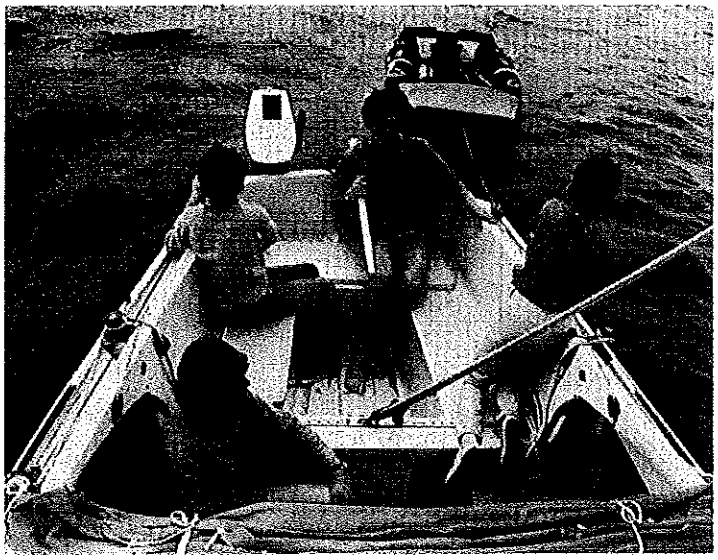
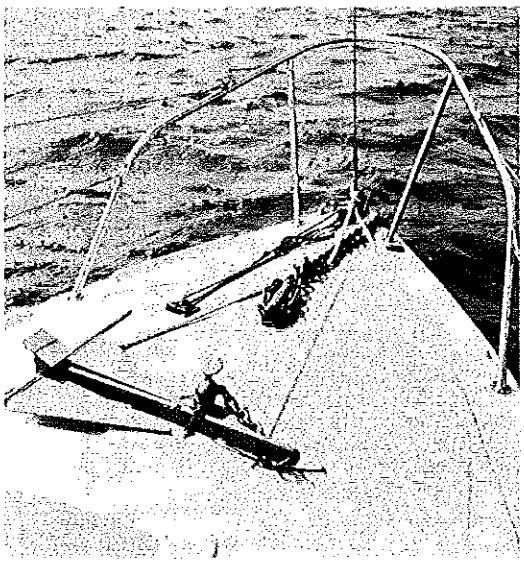
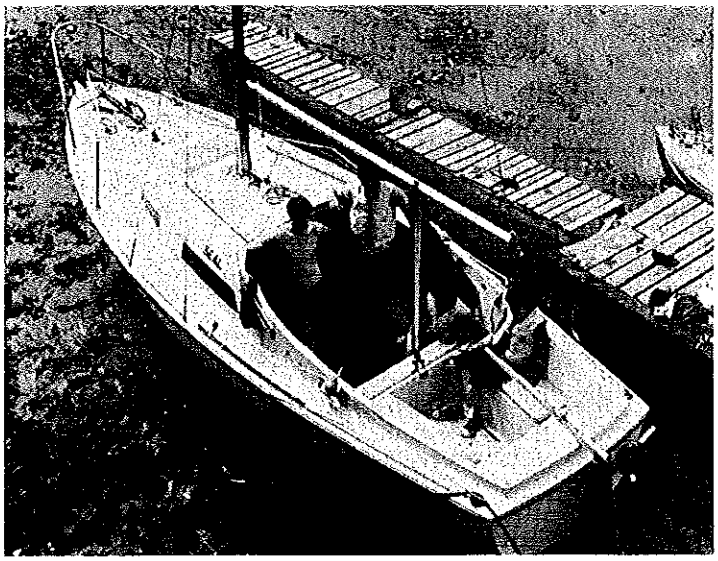




(above) Looking into the cockpit from the coachroof with the canopy stowed. Larger sheet winches are now fitted and a floorboard is fitted above the ribs on the cockpit sole. (top right) The foredeck provides a good working area for sail changing and anchor work. A good size mooring cleat is fitted. (right) A view forward from the cockpit. A two-burner stove rests on the galley shelf between the saloon and the fo'c's'le—access is to port. The handle which operates the keel lifting jack can be seen at the aft end of the table; on the latest models this is fixed permanently but folds out of the way when not required. (bottom right) The canopy erected. On this boat the windows were screwed on from outside but they are now set in alloy frames. (below) A good view of the deck showing the vast cockpit area.



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# SEAL

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The cockpit sole is a piece of plywood finished in non-slip deck paint and is held off the bottom of the cockpit moulding by a number of ribs. This ensures that small amounts of water which will not drain away easily are kept out of contact with the crew's feet. There is one drain hole aft leading to a length of plastic tube which runs through the aft locker and is attached to a skin fitting at the bottom of the transom on the centreline.

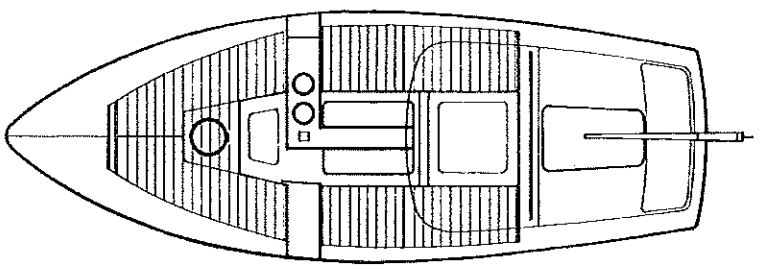
**Deck and Fittings**

There is a good working area on the foredeck and we found no difficulty in sail changing or anchor work. Fittings include a stemhead roller, fairleads, a chain pipe and a good size mooring cleat—the latter of bronze which though perfectly satisfactory, tended to mar the appearance of the boat as the majority of the metal work on deck is either of stainless steel or chrome finished.

The side decks are on the narrow side and we found movement forward rather difficult and in particular getting out of the deep cockpit on to the side deck especially when the canopy was raised. This is one of the inevitable results of compromise—the cockpit and opening above the saloon are wide which gives an enormous amount of space for so small a boat but it is paid for to a certain extent by difficulty in moving forward. Also, the stanchions and lifelines (fitted as an extra, £19.00) take care only of the foredeck — the top life line is secured at deck level to the main shroud plate—so there is no security outboard immediately after climbing out of the cockpit. The deep cockpit, as has already been said, instills confidence but we are sure that some people would prefer the added security of lifelines taken right aft. The stanchion sockets are bolted securely to the deck but the deck is stiffened insufficiently to prevent movement of the stanchions. The bow pulpit (£23.00 extra) is a good fitting and well secured. There are short mahogany grab rails either side on top of the coachroof.

There is a mooring cleat on each quarter, bolted securely to the deck. Two good size sheet winches are fitted to brackets either side outboard of the coamings (£23.00 extra the pair) and spinnaker sheet blocks, when required, are fitted on top of the coamings aft. Clam cleats are provided for securing the sheets and these proved very satisfactory. The mainsheet horse is a length of 1in wide stainless steel track attached to the bridge deck with $\frac{3}{16}$in diameter stainless steel machine screws. We pulled the track away from the bridge deck on the boat we sailed

Seal's high aspect ratio sailplan is set on Proctor alloy spars. The mast is stepped in a tabernacle on the coachroof. Sail areas are: mainsail 121sq ft, cruising genoa 120sq ft, working jib 63sq ft, racing genoa 142sq ft, spinnaker 290sq ft. (below) The cockpit opening extends over the aft half of the saloon but this area can be covered by either a canopy, shown here, or a flat tonneau cover. The saloon table is fixed on top of the keel trunking: a handle at the aft end of the table operates the lifting jack.



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simply because the small nuts and washers pulled through the glassfibre moulding. On a track of this type the load of the mainsheet is spread over a very small area and is probably taken by only a couple of fastenings. We were assured at the Boat Show that the moulding of the bridge deck had been thickened up but feel that the only satisfactory answer here is to have a wood or metal backing piece beneath the bridge deck so that the load is spread over a much larger area.

**Rig**

The Seal has a relatively high aspect ratio, three-quarter sloop rig set on a deck-stepped Proctor mast which is supported by a forestay, main shrouds which are led well aft over a single pair of spreaders, and a pair of lower shrouds in way of the mast. On the Boat Show boat the shroud plates were at the wrong angle and held the rigging screws out of line with the shrouds—an owner taking delivery of a boat like this would be advised to bend the shroud plates into line. There is no backstay.

There are bolt rope grooves in both the mast and boom; the mainsheet is taken from the middle of the boom and a claw is provided if roller reefing (£11.80 extra) is fitted; there is also provision for a kicking strap. The halyards are of pre-stretched Terylene, and standing rigging of stainless steel. The mainsail luff is tensioned with a sliding gooseneck and the jib can be tensioned with either a tack tackle or a winch (both available as extras). No topping lift is provided which we found annoying when lowering the mainsail; in harbour stow the main halyard is used to hold the boom up.

**Engine**

The recommended outboard motors are the Volvo Penta 5hp and the Evinrude 6hp. We used the Volvo and found it produced adequate power for the job. The outboard clamps on to a balanced bracket (£15.00 extra) attached to the starboard side of the transom; the fuel tank is housed in the aft locker and the fuel pipe led to the engine through a dinghy-type inspection hatch in the aft coaming. There is room to fit an inboard engine under the bridge deck and a Brit 5hp petrol engine with Watermota reversing propeller is recommended.

**Handling**

The handling of the Seal has already been mentioned. In short, she is a dream. The helm is well balanced, and remains so whilst the boat heels; initial stability is not high but as soon as she heels she becomes very stiff and carries her sail well. It is always risky making direct comparisons with other boats when discussing performance because speed is affected by standards of tune and helmsmanship and by the effort made by the crew but even with a dirty bottom we had no difficulty in 'cleaning up' a variety of production cruisers up to 25ft overall when we met them on the Dart and at Salcombe.

Apart from considerations of sociability, the open saloon arrangement means that six or eight people can be carried without undue crowding and that the extra bodies have their weight in the centre of the boat and not piled into the cockpit and causing the bow to cock up in the air and the transom to drag. The saloon is a very comfortable position for 'passengers' and an ideal place for small children who can amuse themselves safely without the encumbrance of either lifejacket or safety harness.

When exploring the creeks of the Salcombe Estuary on a falling tide we found the lifting keel invaluable. We could sail until we touched the bottom, wind up the keel a few turns and sound our way round the next corner of the creek. Sailing single-handed it was possible to manoeuvre under either mainsail or jib alone. Under power the boat was very manœuvrable and would turn in her own length.

An appraisal of the sailing characteristics of a hull with the Seal keel and rudder configuration written by Lieutenant Colonel C.E.Bowden appears overleaf.

**Conclusions**

We were able to give the Seal a far more rigorous trial than we can usually give the boats we test and thus we really discovered her faults. We have reported these in detail because they are the few points which in our opinion mar what we consider to be an outstanding boat. The Seal is a day sailer *par excellence*—bags of room, high performance, sound construction, a single keel boat with a beaching capability. There is nothing that we could discover basically wrong with the boat—just a few niggles which we hope will be eliminated in future boats but which any owner with a slightly practical turn of mind could rectify for himself. We enjoyed sailing the Seal both at sea and with a young family and would have no hesitation in using the boat again both offshore and for estuary day sailing.

**Price**

The basic price for a Seal is £1,145 but the builders are offering the boat for a 'sail away' price of £1,307, this includes a mainsail and cruising jib, deck fittings, anchor and warp, pulpit, four-berth and two cockpit seat cushions and the canopy. Apart from those extras mentioned in the report, other useful items are: Waterloo flush toilet £49.00, folding table £12.20, beaching legs £12.00 and antifouling £21.00. The Volvo Penta 5hp outboard with generator is £124 whilst the Evinrude 6hp with forward, neutral and reverse gears is £190. No price is yet available for the Brit inboard installation.

Demonstrations can be arranged with the builders either in Devon on the Exe estuary or at Bosham in Chichester Harbour.

Off the beach at Salcombe — Seal lies happily at anchor with her keel raised in a couple of feet of water. Note the balanced bracket which takes the 5hp Volvo Penta outboard.

**SEAL**

**Designer:** Angus Primrose

**Builder:** John Baker (Kenton Forge) Ltd.

**Loa:** 21ft 9in (6.63m)

**Lwl:** 18ft 0in (5.49m)

**Beam:** 7ft 9in (2.36m)

**Displacement:** 2400lbs (1100kg)

**Draught:** keel up 2ft 0in (0.61m) down 3ft 10in (1.17m)

**Berths:** four

**Hull:** round bilge, drop keel

**Sail Areas:** main 121sq ft (11.3m²) genoa 120sq ft (11.2m²) working 63sq ft (5.9m²) spinnaker 290sq ft (27m²).

**Auxiliary:** Outboard 5hp or 6hp or 5hp Brit Inboard.

**Supplier:** John Baker (Kenton Forge) Ltd., Kenton, Exeter, Devon.

**Basic Price:** including main, jib, deck fittings, anchor, pulpit, etc. £1,307 ex engine.

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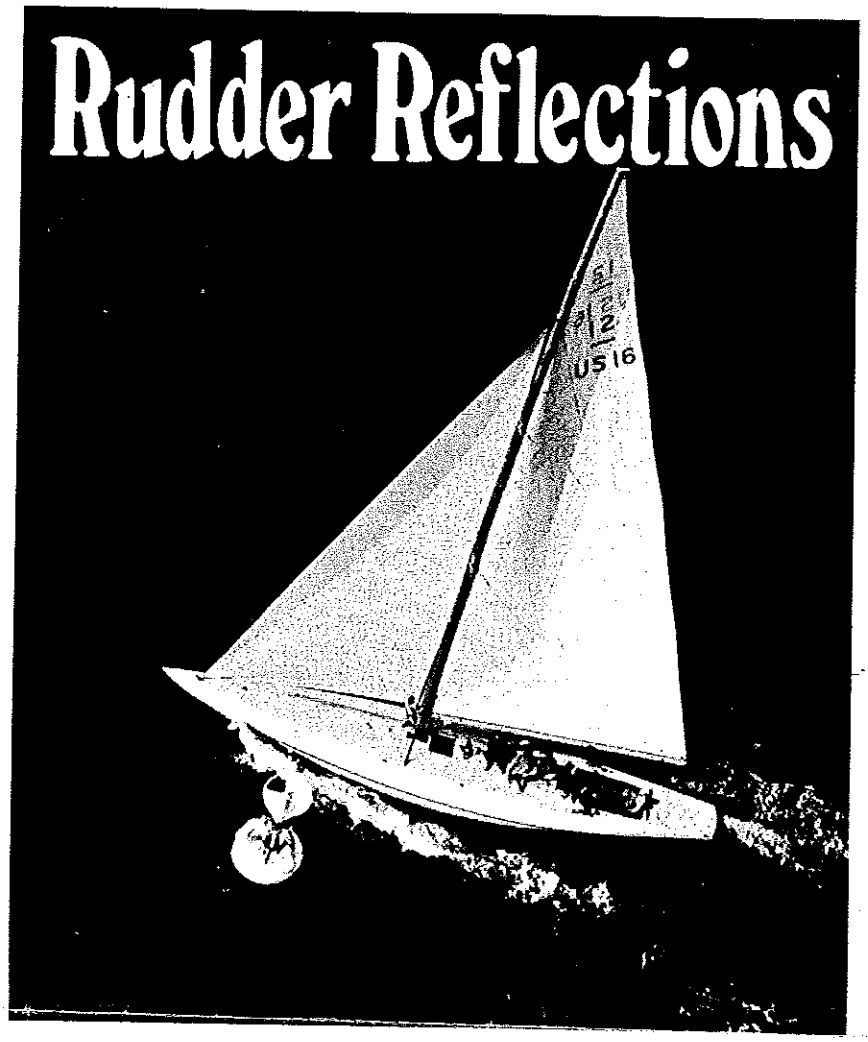
# Random

# Rudder Reflections

by Lt. Col. C. E. Bowden




TWO personal experiences may reinforce and add to certain points raised by Jack Knights in his intriguing article Rudders and Where to Hang Them, published in the December 18th issue of Yachts and Yachting.

Not long ago I sailed a Seal, one of the Angus Primrose designed cruisers. The point of quoting this particular boat is that it has a rudder hung over the stern in accordance with the modern trend, but this rudder is allied to a rectangular shape retractable keel of sound, symmetrical section with the leading edge parallel to the trailing edge. This is an unusual feature to conventional keelboat eyes, more used to the highly swept back leading edge Delta type keel profile. The keel in the Seal is only very slightly swept back but ballasted in the usual manner at the foot.

I found the boat's sailing qualities so attractive for its type that I was prompted to consider why this was so, particularly in view of some experiments I had made in the past using a similar keel and rudder configuration but with an added fairing between the two hydrofoil surfaces as an anti-separation device to straighten out the water flow aft.

There was a pleasant gusty wind when I sailed the Seal. Although I would have liked a much longer sail this gusty wind emphasised how well and easily the boat could be made to work the more useful gusts, whilst sailing at a close angle to the wind with an adequate water speed, and at the vital low angles of heel — a combination that produces a good measured 'speed made good to windward' or Vmg. Unfortunately the boat was not instrumented but from previous experience of measuring the performance of a number of well known keelboats, I felt that this boat would have measured an excellent Vmg for its type had it been instrumented. This is contrary to the performance obtained from some small cruisers which can have a rather painful sailing performance which is particularly noticeable by someone used to sailing racing classes. Incidentally the boat could be spun on a sixpence rather like a good dinghy and gathered way on the new tack at once.

Apart from the hull's pleasing lines and the rig, it appeared to me that there were two main features involved which produced the boat's stimulating windward handling characteristics which require small rudder movement in gusty weather.

The first factor concerns the rudder and confirms Jack Knights' theories regarding the advantages of a narrow, high aspect ratio rectangular shape rudder of symmetrical section hung right aft. This is the position where it has the maximum leverage and requires the minimum of wetted surface area. Model racing yachts with vane steering gear—and therefore a limited amount of power to operate the rudder — have had the rudder right aft behind a skeg for years, as have light aircraft where light control is required. Such a rudder exerts a powerful but smooth action with low drag at small angles of attack. With the symmetrical type section there is a very small movement of the centre of pressure as the rudder changes its angle of attack when operating at the lower angles used in efficient windward sailing. This is one of the reasons that the Seal steers easily with little rudder movement and minimum of 'worrying' of the boat as it is worked to the more useful gusts close to the wind. It has always struck me that the worst possible place for a rudder is attached directly behind the modern short keel which is in favour today. When sailing downwind there is likely to be indeterminate directional stability in difficult conditions and seas.

**(Reprinted from the first page of an article by Lt. Col. C. E. Bowden, which appeared in Yachts and Yachting, 26 February, 1971)**

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