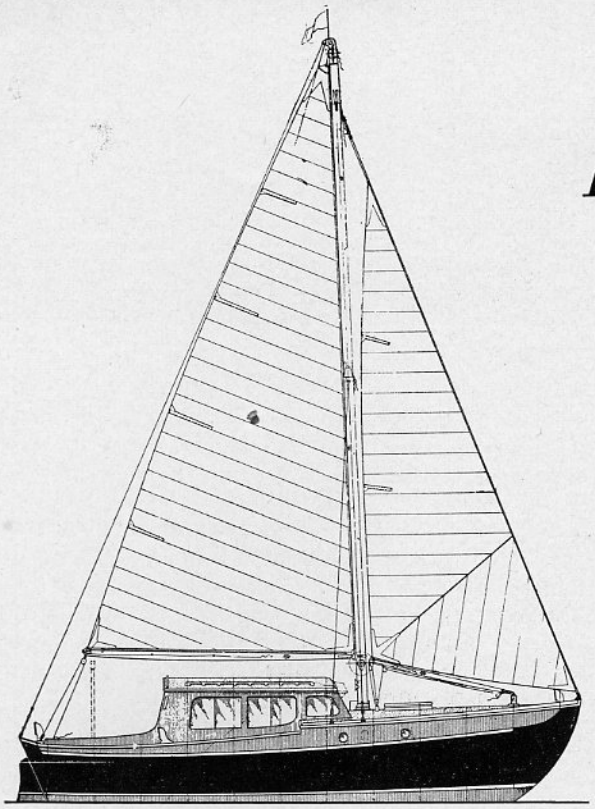


How To Build Matilda

By A. MASON

A Shoal Draft Motor Sailer with Accommodations for Four

L.O.A.	30′ 2″	Sail Area	435 sq. ft.
Beam	10′ 11″	Draft	3′ 0½″
L.W.L.	25′	Power	42 hp.

WHILE no single design can begin to meet the requirements of every yachtsman, yet the answer for many seems to be a small shoal draft motor sailer with an airy deckhouse and sleeping facilities for four in full size berths. Matilda is such a boat and we will review her advantages as seen from the standpoint of the cruising man.

A short study of Matilda's lines will reveal that the underbody bears no relation to her relatively bulky appearance above the waterline. There is little difference between her underbody and that of any other fast centerboard cruisr.

One of the greatest joys to any real cruising man is exploring new anchorages, so to him the advantages of shoal draft need no explanation. Those who have cruised the Florida Keys say three foot draft is the maximum permissible. There are many other spots in this country that offer equally delightful cruising if the boat draws little. In order to take advantage of these places it appears that a three foot loaded draft limit is the most desirable, together with a wide flat keel in the form of a long iron ballast casting that will give the most protection when going aground, as one does often when gunkholing.

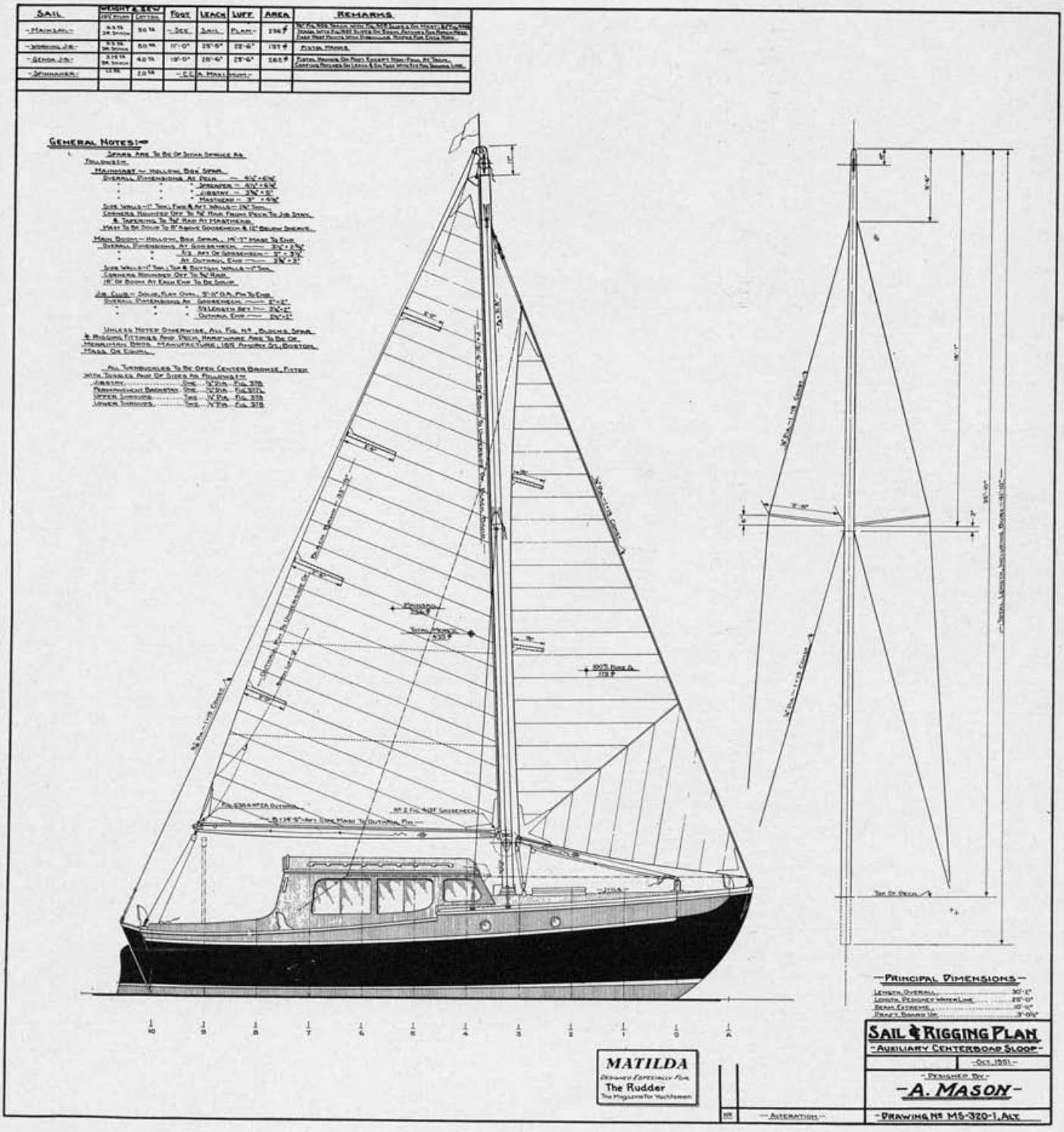
In cruising there are many occasions when a passage must be made in a cold drizzly rain over a flat sea without sufficient wind to fill the sails so that power must be used if any progress is to be made. Even ditch crawling on the inland waterways, especially against a cold head wind in a narrow channel, the old remedy of three fingers of rum never quite wards off the bite of the cold as one daydreams about the warmth and coziness inside a deckhouse. When under sail some provision should be made for steering from the cockpit, such as the portable tiller through the rudder head as shown. It is possible to rig up an additional cockpit steering wheel aft for those who desire it but this can become complicated on a small boat.

If we visualized the deckhouse of Matilda as about twelve or fifteen inches lower, there would be little to distinguish her from any sailboat of similar type. However by raising the deckhouse more space was available in the bilge for larger fuel and water tanks amidships, and also the centerboard could be housed completely below the deckhouse floor. A total of 90 gallons of gas and 100 gallons of water will effect a change in draft between light and loaded condition of about two inches, and will add to her stability while (being amidships) not affecting the trim. It is suggested that Matilda be launched and full equipment and stores stowed before the necessary inside ballast is added to bring her down to the designed draft and proper fore and aft trim. It is estimated that she will require about 1,500 pounds, but due to the great difference in the weight of materials used, this will vary.

The deckhouse, like that of the average sedan cabin cruiser, is a wonderful spot for loafing and enjoying the sights of any anchorage even on the gray rainy days. The galley, in one corner, permits the cook to enjoy the changing scenes, besides being cooler and more companionable. Dinner in such surroundings is as pleasant as dining in the cockpit, with the great advantage of avoiding insects, assuming of course that all openings have been thoroughly screened. For those who still prefer their dinner in the cockpit, a portable cabin table can be made to use there also. To keep the boat cooler in warm climates it is desirable to have the cabin top and forward deck insulated with any of a number of efficient methods. The engine compartment should be sound insulated on the underside of the deck and the aft side of the forward engine room bulkhead with 1¼ inch BBB Acousti-Celotex, treated with a coat of glue sizing before painting. The deckhouse sides have been raked inboard considerably more than usual to eliminate the boxy appearance of the average large deckhouse and to permit easier access fore and aft along the side decks. The cockpit sides are vertical although they could be raked slightly outboard, but at the point where they meet the house sides, slightly aft of the engine ventilator, a wedge shaped block must be fitted. While the house sides are straight fore and aft to permit the use of horizontal sliding windows, vertical drop windows with suitable metal drip pocket pans could be satisfactorily fitted with some slight modifications of the joinerwork.

Although the transom berth in the deckhouse has a hinged back to form an upper and a lower berth for occasional guests, the deckhouse with its 6 feet 3 inch headroom is still the living room, the principal sleeping quarters being in the forward double stateroom which has 6 foot headroom with about 6 feet 5 inches under the closed forward hatch. Abundant storage space beneath the berths is provided for all the necessary equipment that a cruising boat seems to require. A large hanging locker opposite the toilet room may be divided into two smaller ones, for shore clothes and for boating duds. There is more hanging space at the aft end of the stateroom port berth.

In general the quarters are commodious for a boat whose dimensions are only 25 feet on the designed waterline, 30 feet 2 inches overall, and 3 foot draft with the board up. This is due primarily to her generous beam of 10 feet 11 inches and in roominess and comfort she is comparable to a motor cruiser of the same length. While her cockpit is over 6 feet long,



it may be necessary to shorten one side to provide stowage for the bottled gas tanks for the galley stove. Of course if this gas is used, the box must be as watertight as the cockpit and also must be a completely separate compartment having its own direct scuppers to the sea. Otherwise in case of a slow leak the heavier-than-air stove gas will settle down to the bilge through the engine hatch which may be open and a dangerous explosive condition created in the bilge. The fuel line to the stove should be kept out in the open and not be placed in any closed space of the hull until it reaches the stove, and even then it should be fitted with an approved packless shutoff valve at the stove connection for maximum safety. Of course the alcohol stove is preferred by many for its safety feature, but for continuous living aboard the bottled gas stove has its advantages. For similar reasons of safety the filler pipe for the fuel tanks should be located out in the covering board within reach from the cockpit alongside the deckhouse for ease in filling, which will not permit any overflowing fumes to drift into the cockpit and on to the bilge. Also for the same reason of safety the engine compartment should be fitted with exhaust blowers and ducts to the lowest point of the bilge as well as to the drip pan fitted under the engine to catch any dripping oil or grease. To avoid any possibility of confusion when filling the tanks it is suggested that the filler pipe deck plate for the water tanks be a different size from the fuel pipe and that it be located on the forward deck at the forward

inboard corner of the toilet room and arranged with a vent or overflow pipe goosenecked under the deck to drain into the washbasin.

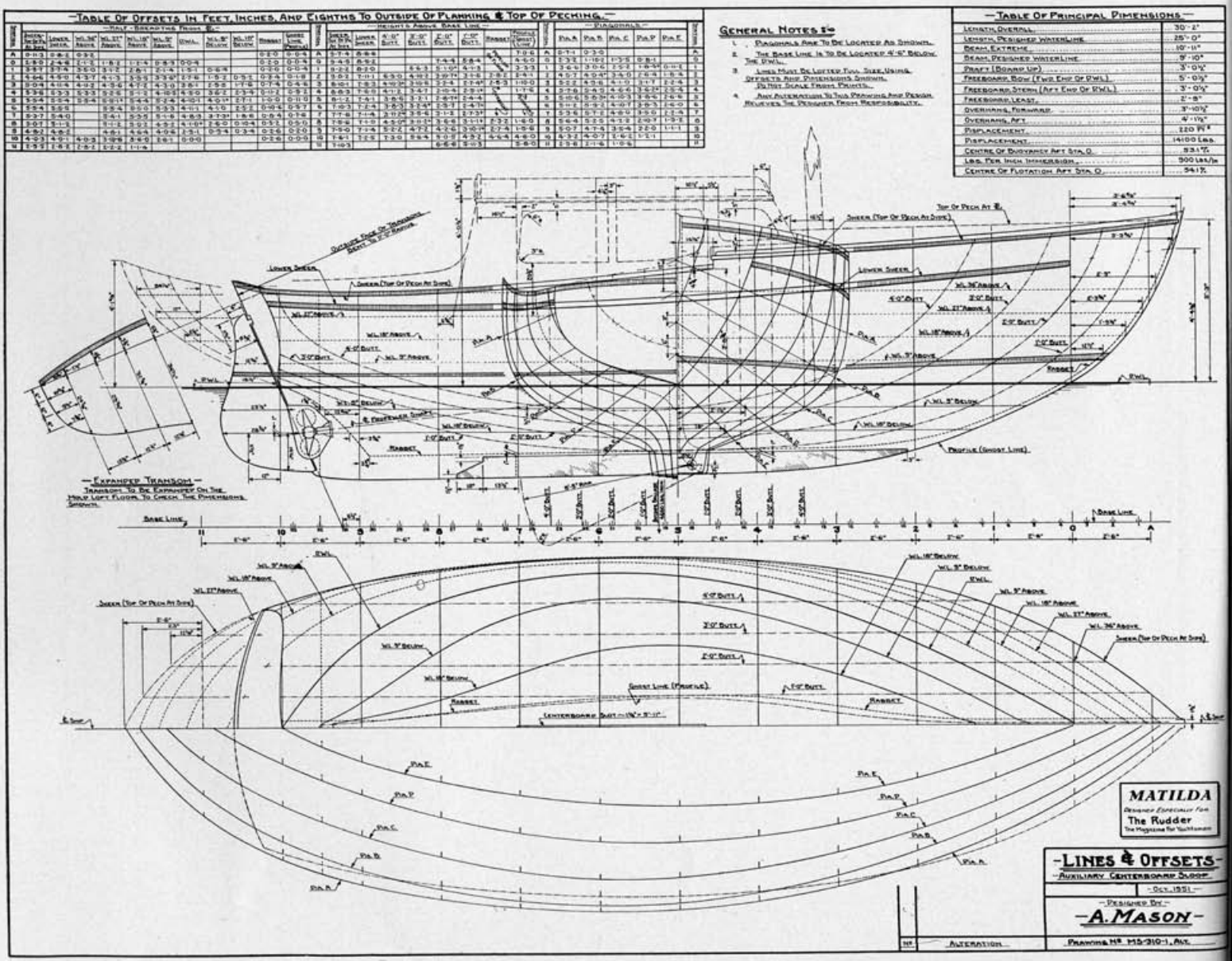
While a wood centerboard case is shown which should be lined with metal, it might be more desirable to fabricate a metal centerboard case of welded steel plate and provide the necessary flanges for attaching it to the floors, cabin sole beams and to the wood keel. Also it is suggested that the sides and ends should run through the wood and ballast keels to eliminate all possibility of teredos getting into bare spots in the keel. Some provision should be made to join the iron keel and the bottom of the centerboard case by brazing and permanent welded chafing strips should be fitted to take all wear inside the centerboard case.

We have mentioned Matilda's advantages but none of her faults, such as her lack of dinghy stowage. One might say, with only three foot draft why carry a dinghy? The answer is simple. There will be times when she will go aground, and then an anchor and line may have to be run out to kedge off. A dinghy can be towed if one's tastes run to a heavy flat bottom affair for clamming when cruising close to home. When making a long cruise towing a dinghy can be a nuisance. The easiest solution would be to rig up davits of wood knees or pipe and carry the dinghy across the stern, Chesapeake fashion. This limits the dinghy to about seven and a half feet, which is the size of many available stock prams in kit form.

Many other details are matters of personal choice, such as the arrangements in the galley, engine controls at the inside steering position, equipment, additional shelves and lockers below decks, and so on.

Matilda is sloop rigged with an easily handled sail plan, mast height above the waterline being well below the fifty foot limit of the fixed bridges on the waterway route across Florida as well as of many other places. When the sails are not used every weekend it would be easier to keep them stowed dry and clean in sailbags since sails furled on the spars even with good sail covers require periodic airing whether used or not. Actually it is faster and more convenient to bend the sails on and off the spars than to properly furl them and put on the sail covers each time. While some prefer a ketch rig for this type of boat it means much more work and expense. They think a mizzen is nice to hang onto, which is questionable as it occupies too much valuable space in the cockpit and requires a more costly and complicated split type awning for those lazy days at anchor. In general a mizzen on this design would be more of a nuisance than an advantage. However the mizzen would permit setting a mizzen staysail which would be a good

(*Continued on page* 86)



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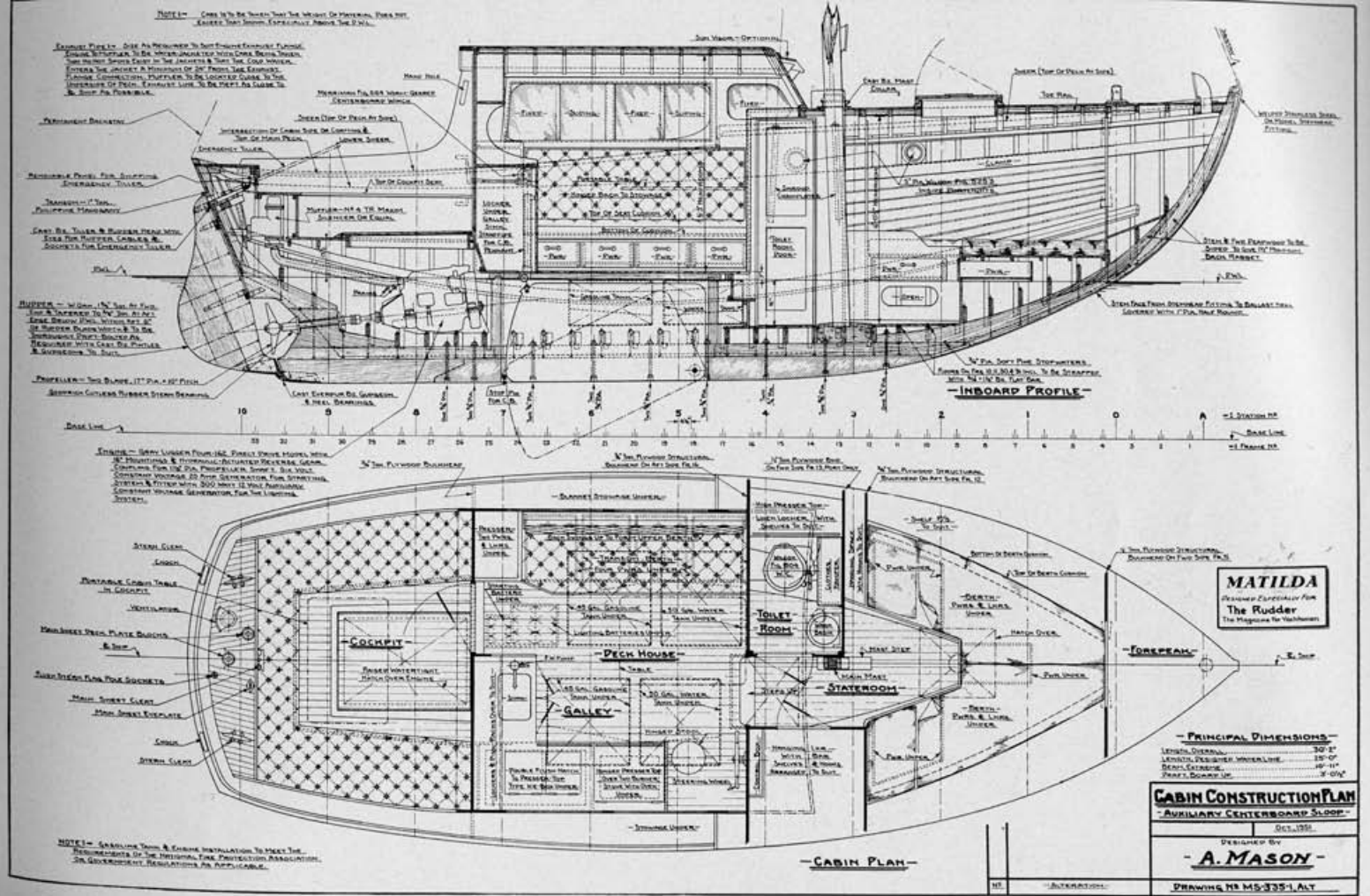
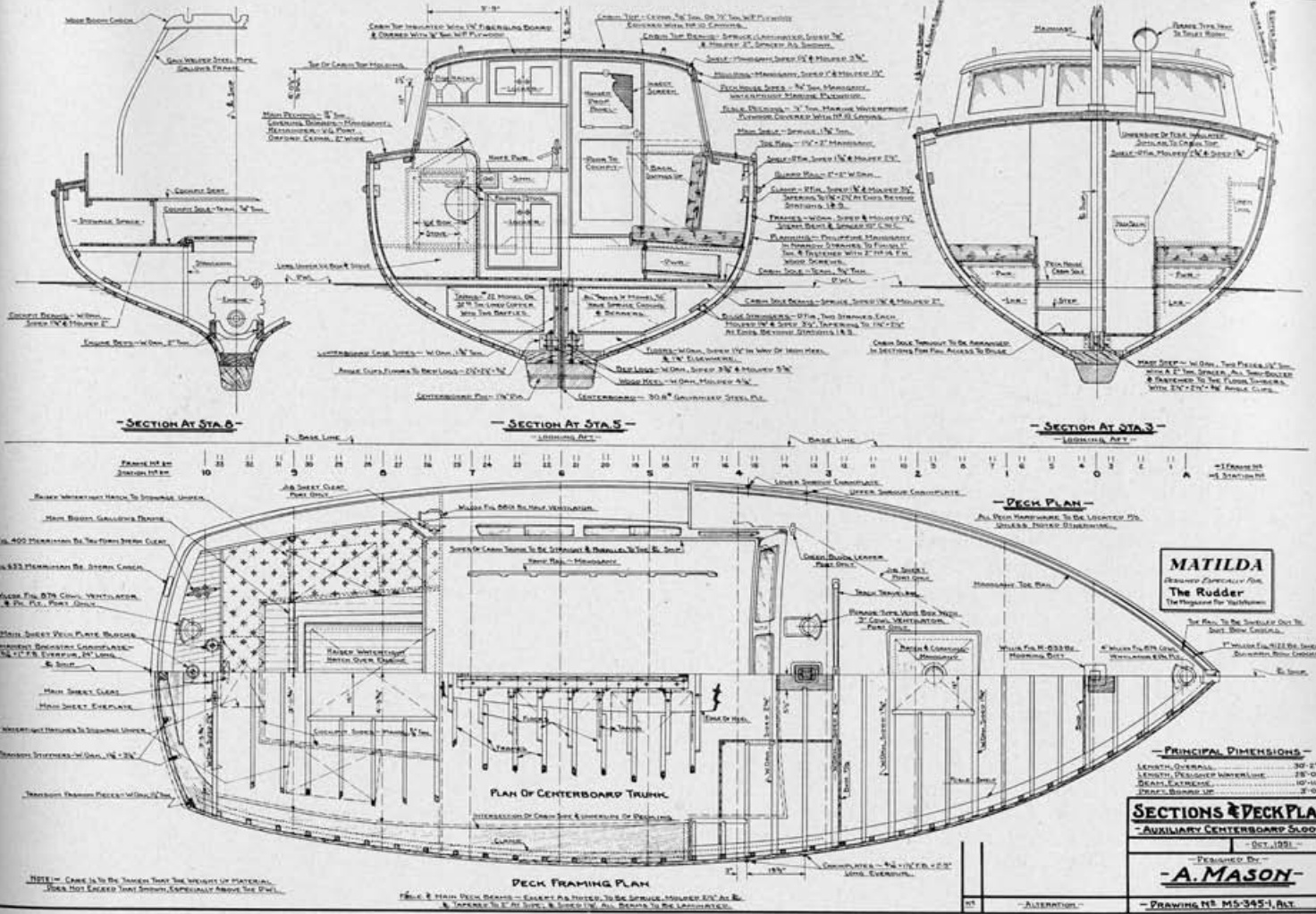

-INBOARD PROFILE-
-CABIN PLAN-
-COCKPIT-
-DECK HOUSE-
-GALLEY-
-TOILET ROOM-
-STATEROOM-
-FOREPEAK-
MATILDA
DESIGNED ESPECIALLY FOR
The Rudder
The Magazine for Yachtsmen
-PRINCIPAL DIMENSIONS-
LENGTH, OVERALL 30'-3"
LENGTH, DESIGNED WATER LINE 25'-0"
BEAM, EXTREME 10'-11"
DRAFT, BOARD UP 3'-0½"
CABIN CONSTRUCTION PLAN
-AUXILIARY CENTERBOARD SLOOP-
OCT. 1936
DESIGNED BY
-A. MASON-
DRAWING NO MS-335-1, ALT
NO. ALTERATION


SECTION AT STA. 8
SECTION AT STA. 5
LOOKING AFT
SECTION AT STA. 3
LOOKING AFT
BASE LINE
DECK PLAN
ALL DECK HARDWARE TO BE LOCATED PO. UNLESS NOTED OTHERWISE.
PLAN OF CENTERBOARD TRUNK
DECK FRAMING PLAN
MATILDA
DESIGNED ESPECIALLY FOR
The Rudder
The Magazine for Yachtsmen
PRINCIPAL DIMENSIONS
LENGTH, OVERALL ..... 30'-2"
LENGTH, DESIGNED WATERLINE ..... 28'-0"
BEAM, EXTREME ..... 10'-11"
DRAFT, BOARD UP ..... 3'-0"
SECTIONS & DECK PLAN
AUXILIARY CENTERBOARD SLOOP
OCT. 1951
DESIGNED BY
A. MASON
DRAWING NO. MS-345-1, ALT.
ALTERATION

HOW TO BUILD MATILDA *(Continued from page 34)*

sail for reaching and for those restless souls who are always fussing about, setting this sail and that. For them the ketch rig would be ideal, but the sloop rig will be preferred by those who like easy sailing. While the additional windage of the deckhouse and higher freeboard may be somewhat detrimental to her performance to windward, off the wind she will be good and no doubt surprising to those accustomed to thinking only in terms of the modern cruising boat.

While the sails are usually considered the principal source of motive power of even a cruising sailboat, the auxiliary engine is equally important in this boat. The most suitable engine is the Gray Marine Four-162 Direct Drive Lugger Model developing 42 horsepower at 1,800 revolutions, which is the smallest engine that has a hydraulically activated reverse gear and is capable of driving this boat at better than seven knots. An auxiliary twelve volt generator, belt driven off the main engine, should be installed for charging the lighting batteries, which should always be on a separate circuit from the engine electrical system. Thus if the light batteries are run down from too much use there will always be a good possibility that the main engine can be started to recharge them. This system is quite common and is much cheaper and more satisfactory than installing a small water cooled generator which is always prone to give trouble when urgently needed. The latter method becomes necessary if the electric loads are heavy, but on a small boat this is very unusual. However when wiring the boat it would be desirable to install a separate 110 volt wiring system for connecting to shore current and to have a minimum of one light in each compartment and possibly one or two outlets in the galley or deckhouse and the toilet room, so that when tied up in a marina and living aboard for any period of time shore current can be used and the batteries saved. Even this can be modified by hooking a rectifier into the wiring system to keep the batteries charged and to supply current to the regular ship's lighting system. The engine should be run occasionally to keep it in good condition as it is true that marine engines in pleasure craft sometimes deteriorate more from lack of use than from wear.

The construction of Matilda is relatively normal for a boat of this type. Likewise since all basic information is shown on the plans, general written specifications become unnecessary. Many things not fully covered on the plans are standard items or subject to the personal choice of the builder. We suggest any standard work, such as Chapelle's *Boat Building* or Steward's *Small Boat Construction* for detailed building instruction.

No offsets have been given for the intersection of the cabin sides and the top of deck since this should be carefully developed on the mold loft floor as it is rather difficult to do on a small scale drawing with sufficient accuracy. When lofting the lines it is important to carry out the stern to its natural termination to avoid any possibility of a hard spot developing just forward of the transom, so often noticeable on short ended boats whose lines have never been fully faired out.

All materials and manufactured articles used in the construction should be of the best grade. All wood should be sound select stock, free from sap, bad knots, shakes, checks or other defects and of the type shown on the plans or the nearest possible equivalent. The planking should be close grained, firm, rift sawn stock. All wood must be properly seasoned except as noted below and of a kind and quality suited for the use intended, dressed on all sides and edges to the finished dimensions given. All oak must be dense hard white oak, particular care being taken to avoid the use of red oak in any place. The white oak used for the bent frames and the keel frame need not be thoroughly seasoned, but must be free and clear from large knots and sapwood. It may be difficult to obtain a satisfactory timber for the wood keel in a single width as required, and so may become necessary to scarph side pieces to obtain the necessary width. However extreme care should be taken to soft-wood spline the joints and set these up with Cawking composition since it would be very difficult to repair any future leaks.

The castings with exception of the iron ballast keel should be Everdur or manganese bronze with a tensile strength not less than 60,000 pounds per square inch except as noted. Not many things are more disconcerting when looking over a nice job of boat building than to see an unpainted galvanized cleat and a bronze chock together on a varnished deck or rail. All steel should be hot dipped galvanized, using zinc of at least ninety-eight per cent purity except for the threaded fastenings which should be galvanized by the electrolytic process in order to insure clean threads.

As to fastenings, all holes in the outside surfaces are to be counterbored and filled with wood plugs of the same wood, set it white lead or heavy orange shellac to suit. Care is to be taken that all bolt fastenings are arranged so as to facilitate subsequent tightening of nuts, large size washers being used to provide effective bearing surfaces for the fastenings. Blind or plugged bolt heads should be of the so called fin-type head having small sharpened webs under the bolt heads to prevent the bolts turning at a future time when the fastening is being tightened. In all cases bolts shall be a drive fit to insure against leakage and to provide maximum strength. Tapered drills carefully selected to suit the screw size in question should be used for all screw fastenings.

FIRE PREVENTION *(Continued from page 39)*

effort. Size and weight should be considered when such types are to be installed aboard. They begin with the two pound, which is about the size of the standard carbon tetrachloride extinguisher, and progress through the four, five, ten and fifteen pounds and up. Personally I do not recommend the two pound size. It is easy to handle, I agree, but the capacity is not sufficient for a fire of any duration though it might be adequate for a fast flash fire. The four or five pound sizes are much more practical, not too heavy to be operated by the average person and with enough staying power to be of some consequence. Practically all later models are equipped with a pistol or trigger grip as against earlier models which had a cutter type handle which had to be turned, thereby cutting the disc. The advantage of the pistol type is that you can give the fire a short blast or just enough to obliterate it and still have ample left, whereas with the disc type you lose all the contents of the cylinder each time it was used.

Better still, automatic systems are being used increasingly. The automatic type, Kidde's latest contribution to safety at sea, detects and extinguishes fires at their beginning, automatically, quickly and cleanly. Fire in the compartment protected causes a heat detector to operate the automatic operating head. The operating head snaps into action and releases the gas, which under the heavy pressure will find its way into every corner and pocket.

When a carbon dioxide cylinder has been discharged, whether partially or fully, it must be recharged and naturally this should be done promptly.

Recharging, which can only be done by authorized representatives of the Kidde Company, calls for special equipment and quite a little skill and care. The important thing, and this I would like to impress upon all who require the service, is that certain rules and regulations must be observed. It is an ICC regulation that all CO_2 cylinders or extinguishers which have been discharged cannot be recharged if a period of five years has elapsed since the cylinder was last hydrostatically tested. The date is stamped prominently on each cylinder. Also insurance companies request that extinguishers be tested (for weight) at least once each year.

Recharging does not cost a great deal and the difference between the five and ten pound cylinders is small. The two pound cylinders are hard to fill and the leeway of two ounces is too close a tolerance as the throb of the transfer pump will sometimes make the needle on the scale fluctuate at least that much. If the automatic type has been discharged the automatic head must be tested (with a manometer) and reset.

People buy boats to have fun, but if they want to be really carefree they should give some thought to their fire fighting equipment.