bottom plank, about halfway between the keelson and the chine logs on each side of the boat. This batten is usually a plank and serves to prevent the bottom plank from warping or "cupping."

It will be seen from this general description of the construction of the scow that the aim is always utmost simplicity combined with great strength. The structure is designed as a whole to comply with this objective, and not in accordance with any theory of "good construction" or finish. Functionally, of course, there is no real excuse for designing or building a scow unless very low cost is the aim, for there are other types that are cheap and of shallow draft. But, as will be seen, this course was not held to in small sailing scows, and rather expensive V-bottomed and round-bottomed hulls of the scow type occurred in some localities.

The Garvey

The way to examine scow design, build, and rig is to discuss some examples of small American sailing scows that show details and that had typical qualities of the type. Among the small boats of this form, the New Jersey garveys were perhaps the best developed. This scow, unlike some types of local small boats, was built with some variety in appearance, model, proportion, and rig. This was due to the numerous uses of garveys and to the fact that these craft were built by a large number of builders throughout the eastern part of southern New Jersey. The range of the type extended along the coast, from the southern portion of Barnegat Bay to the Delaware, an area that included the counties of Ocean, Burlington, Atlantic, and Cape May. The center of this building, however, was at Tuckerton and its immediate vicinity. The garvey was also built inland, on the numerous creeks and streams running to the eastern bays.

The garvey varied a good deal in size, owing to the needs of the boat's employment. On inland waters the garveys were often large scows or pontoons, which could be used in the transport of farm produce and freight on narrow streams. Another class was used in fishing in the creeks and for tonging oysters close to home, or in clamming. These boats were commonly unrigged and form the class locally known as "rowing garveys." The most common size of

these craft was between 18 and 20 feet in length, about 4 feet beam at chines and 6 to 8 inches more beam at gunwale. The rowing garveys ordinarily had ends only 6 to 8 inches less in width than at amidships. The depth was usually small, 14 to 16 inches. The profile was often that of a river punt, with a nearly flat bottom fore and aft until close to the ends, where the bottom was brought up rather sharply to the "end-logs" or bow and stern transoms. There was much variation in the depth of the ends, 4 to 12 inches perhaps.

A few builders preferred a form that was not greatly unlike the hull shown by Chapman, but usually with less flare, sheer, and rocker. These rowing garveys were commonly fitted with a short deck at bow and stern and a rather wide covering board along each side, with a low coaming around the cockpit thus formed. This was not required by any desire for seaworthiness but to form working platforms for poling the boat in the shallows and when tonging or loading. The boats were usually fitted for two pairs of sweeps, using wooden tholes set on blocks on the covering boards. The boats usually had two or three thwarts as well. There were garveys both greater and shorter in length than the limits given as most common, and some of the river garveys are said to have been as long as 35 feet.

The second class of garvey was the "sailing garvey"; this covered a greater range in size than the first class. The smallest of these craft was the gunning skiff, from 12 to 14 feet in length, decked and usually fitted for rowing and sailing. These boats were commonly used in the marshes and narrow creeks, as the flat bottom could be easily poled or towed over the mud flats. For such work, the garvey skiff was often preferred to the famous Barnegat sneak box. Both boats were rather lightly built for this service, but the garvey skiff was the cheaper to build of the two.

The next class of sailing garveys was the bay fishing boats, used in tonging, clamming, and fishing. These were well-developed sailing scows, from about 16 to 17 feet long and one-masted, to 24 to 28 feet long and two-masted. There was still another, the boats from 28 to 32 feet in length, which were sometimes used in oyster dredging and for transportation. These large garveys were commonly gaff-mainsail sloops, having a single large jib and a short bow-

sprit. Some of these large garveys were built with V-bottoms at the end of the last century.

The smaller sailing garveys, one- and two-masted, were fitted with spritsails; the masts were rather short and the sprits quite long, so the heads of the sails were usually cut with some peak. Since the sails were not very large, the spars were light. The single-masted boats often had no boom, and the leech of the sail stood nearly upright. The two-masters seem to have employed booms almost entirely, and in their sails the heads were often short enough to rake the leech a good deal.

Since it was often desirable to row these garveys, before cheap gasoline engines appeared, the proportion of beam to length in garvey hulls was usually small; the beam on the bottom was usually about one-fifth the over-all length. Such hulls had a limited range of stability under sail and the low spritsail rig was well suited for these narrow boats in waters subject to occasional violent squalls and gales. The jib was not particularly useful in these craft; it would be merely an additional sail located in an unhandy position and its gear would be much in the way in a working boat of the common sailing garvey size. About the beginning of the twentieth century, a few garveys were fitted with leg-of-muttons having sprit-booms, but these did not become popular. A few small garveys were also fitted with gaff sails; however, in the small working boats, this sail was not a real improvement over the spritsail, unless the boats were of such size that the sprit was heavy to handle. Hence, the large dredging garveys were commonly gaff sloops.

The spritsail has never been very popular with yachtsmen, for it is rarely a handsome sail. It is, however, a very efficient and safe sail for small craft. It requires such short, light spars that they may usually be struck and stowed in the boat. When loose-footed (without a boom), letting the sheet fly will instantly relieve the sail in a sudden squall. The sail may be quickly reduced by unshipping the sprit and letting the peak fly out to leeward. The peak may then be caught and secured to the luff, thus creating a crude triangular sail, about half the area of the original. The spritsail has been considered a better windward sail than the gaff sail, but on this point of sailing its set depends upon having the sprit well peaked, and

the foot, if loose-footed, very carefully sheeted. A spritsail cut square and long at the head, so that the sprit does not peak up much over 45 degrees to the mast, is a poor form of the sail when close-hauled.

The sail and rig used in the small garveys show that the Jerseymen understood the spritsail very well indeed. The one-masted, loose-footed sail usually had its leech almost vertical and the head was cut with much peak. There were one or two reefs in some sails. The sprit stood at a small angle to the mast; if there were reefs, the heel of the sprit was above the uppermost reef band when in place. The heel was supported by a rope formed into a figure eight, the large eye around the mast and the small eye over the shouldered heel of the sprit. To peak the sprit, the figure eight, or snotter, was shoved up on the mast, where it jammed. Sometimes, the snotter was served with marline to increase its life. Some fishermen had, in addition, a light single-part halyard, the standing end knotted to the crossing of the figure eight and the fall rove through a small block at the masthead and thence to deck; the belay usually was around the boom or the tack eyebolt if loose-footed. This halyard was used to raise the snotter and to hold it up—on the larger sails it really peaked the sprit and made it easy to slack off when caught in a squall. The usual jammed-snotter was sometimes impossible to slack down with the sail full of wind, particularly when the sail was fairly large. The head of the sprit, in any case, was shouldered or cleated so that it could engage a rope eye turned into the peak of the sail. The upper end of the sprit then stood a few inches, 4 to 6, above this eye when the sprit was peaked up.

The reason for the nearly vertical leech of the loose-footed spritsail was said to have been that this overcame the objection, in all such sails, of the clew coming forward in tacking. If there were a block on the clew of a loose-footed sail, cut with a raking leech as in, say, a leg-of-mutton, the block might strike the helmsman or crew in tacking, when the sail was flogging about in a fresh breeze. However, in a small spritsail garvey the clew block for the sheet was rarely used, the sheet being rove through a brass or wooden cringle there, to form a dumb sheave. The standing end of the sheet was usually an eye put over a pin in a thwart or in the stern-

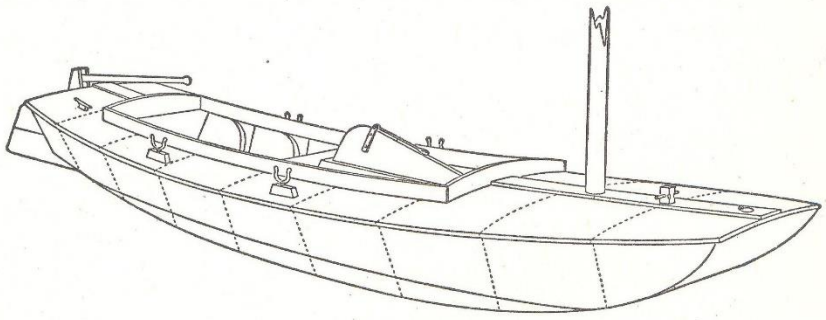
sheets; the fall held in the hand or passed over another pin. The whole sheet was usually shifted from side to side in tacking so that the foot of the sail stood at the right angle to the wind; such sails cannot be pinned down amidships, as the sail then takes a twist which is not at all desirable in windward sailing. Very few boats with the loose-footed spritsail used the traveler and mainsheet horse, it is claimed; pins that could be shifted in a thwart were thought better in sheeting the loose-footed spritsail correctly. This form of sail undoubtedly required as much care in sheeting as a jib does.

The boomed spritsail was easier to sheet, of course, and the small sails of most garveys required only a thimble on the boom, or, at most, a small block. The garvey sailor rarely used more than one block on the sheet; only on large boats were two employed as a rule. The spritsail was commonly laced to the mast; this was the usual spiral lacing, which passed through small metal rings or thimbles seized square to the luff-roping at each grommet in the sail. The eye of the rings or thimbles was thus up-and-down, and this is said to have prevented the lacing from jamming in hoisting or lowering the sail. When a boom was used it was commonly laced to the foot of the sail with spiral lacing; in rare cases the boom was a sprit to which the sail was not laced, but this may have been an attempt to adapt the leg-of-mutton's sprit-boom to the spritsail. Old fishermen claim that the garvey spritsail was heavily reinforced with patching, particularly at tack, throat, and peak. Loose-footed sails had, in addition, a large patch, with reinforcing carried up a few feet on the leech, at the clew. The sails are reported to have been of rather light material, drill being much used.

The construction of the garveys was rather typical of all scows: the sides were first formed and sprung over molds and transom and end-block in an upside-down position, and then the bottom was put in place. A local practice was to use marline along the chines instead of the more usual wicking, placed before the bottom boards were secured. The marline was considered more certain and lasting in obtaining a tight chine. Great care was taken to make the inside of the bottom seams tight, and so no caulking was used between bottom boards. There are indications in some old boats that the inside seam was driven up until the wood crushed slightly, which insured continual tightness after swelling once took place. This prac-

tice was possible with the white cedar used in these hulls. The sides, of the same lumber, were quite thick, and the edge-bolts were usually not much over 12 inches apart on centers.

The chines were usually in long lengths pieced up at the bow, but the block style, set in between frames, seems to be increasingly common in power-garveys and is now the popular construction in the Maryland power-garveys. The bottom planks are nailed both to the side planks and to the chine logs. Boat nails are used throughout the boat; the heads are well set and puttied. The keelson is no more than a batten in most boats; in the way of the centerboard



New Jersey Sailing Garvey, Small Type

case it is thicker and wider than elsewhere. This is sometimes accomplished by shaping the keelson out of thick stock but more commonly by piecing the timber out of two or more pieces of stock of varying scantlings. Side battens, between keelson and chine logs, are not employed owing to the properties of the white cedar.

The decking is rather heavy and in many garveys is quite conventional and is laid over a few deck beams of very moderate camber, which may be carried to the extreme ends of the hull. At Tuckerton, however, an unusual plan is very common: the covering board is set at a crown or bevel for the full length of the cockpit coamings. The ends of the coamings and the covering boards are supported by end-coamings formed like a deck beam, reaching across the hull, and shaped to fit these longitudinal members. Afore and abaft the ends of the cockpit, the deck is not only flat but the deck planks are laid athwartships. This feature may be seen in some of the plans and is used in modern power-garveys as well as

in the old sailing craft. The framing and general construction employed in the garvey require strong thwarts to hold the flare of the sides, for the covering boards are not heavy enough to do this unaided. The latter are usually supported by side frames on edge, forming brackets or gussets.

In a few old boats having frames on the flat, a few small knees support the covering boards. Hence, before the molds were removed from the hull to allow decking, two or three heavy thwarts were put in, according to the length of the hull, resting on short riser pieces nailed to the inside of the side planks between the frames at the required height. The thwarts held the sides apart and helped the hull retain both sheer and fore-and-aft camber in the bottom.

When some sailing garveys were converted to power, the thwarts were removed and then the sides fell in, losing the flare, sheer, and the rocker in the bottom. Power-garveys have followed this change in model and trend toward wall-sided and straight-sheered hulls. The lack of thwarts or bulkheads amidships would make it very difficult to obtain much flare in the power-garveys without some change or addition in structure, such as the incorporation of the heavy transverse frame, or strongback, used on the Chesapeake in dead-rise construction. In recent years the V-bottom has appeared in garveys, and the resulting changes in construction methods have restored some of the flare once used in the sailing craft, with a corresponding improvement in appearance.

The centerboard of the garveys was quite large and, when raised, stood well above the gunwale. The shape was rather standardized when pivoted: the forward end of the board was about the case height; the after end stood about twice as high with a strong rake to the trailing edge of the board and the after case log. The dagger board, used only in gunning skiffs, was the curved pattern that brought the lower portion abaft the slot when lowered. The centerboard case was supported by at least one thwart, placed at either the fore or after end of the case, as the builder fancied. The pivot pin, in pivoted boards, was often made of hardwood, and either a lanyard or a metal lifting handle was used to work the board. The metal lifting handle, when used, could be lowered to rest on top of the raised board, as it was pivoted close to the top of the centerboard.

The handle was V-shaped to jamb in the case when the board was all the way down; this kept the board from rising unless grounding occurred. The lanyard appears to have been more common. The metal lifting handle was, however, a rather standardized fitting in small working centerboarders, from about 1880 to 1905, all along the Atlantic Coast.

The single leeboard was also used and lasted to within memory of living fishermen and builders, say into the 1890's. This was the simple board slung by a small rope grommet or lanyard over a pair of thole pins. The board was held to the side by the common iron rack placed horizontally, low on the side of the hull and long enough to permit the leeboard to cant upward and aft when it struck bottom. To make the board stand upright and not cant with the flare, it often had a narrow wooden bar nailed on its inboard side, deep enough to keep the board at the desired perpendicular. The leeboard was usually to starboard, and no lifting lanyard was used.

The rudder was hung outboard on small sailing garveys and inboard on larger craft (a length of 20 feet was the usual division point). In the old boats the rudderpost was of wood, and, with the inboard installation, there was a wooden rudder trunk between bottom and deck. The rudder was then also secured by a set of pintles and gudgeons to a strong skeg, which usually reached as far forward as the after end of the centerboard slot. Later, the rudderstock was made of iron and the rudder trunk became an iron pipe threaded into the bottom plank and wedged at the deck. The heel of the rudderstock was then supported by a simple iron heelstrap low on the skeg. The rudder blade was angular in profile, and the "balance" type does not appear to have been used. The boats steered with a short tiller, having a fitting to take the head of the rudderstock.

Traditionally, the garvey is said to be the oldest form of boat used in South Jersey and, indeed, its physical characteristics give some support to the claim. However, no pictorial or documentary evidence is apparently available to support the tradition, so it must be accepted with reservations. Even the development of the type cannot be traced; only the form and variations existing in the last seventy years at most are known.

Figure 17 shows a one-masted garvey of the old type, with in-

board rudder and wooden rudder case. The age of the boat cannot be determined; she was either a very old boat reaching back into the 1880's or one built in some isolated community at a later date. The hull-form shows a pontoonlike shape and is not unlike the form used in large scow sloops. The run is rather long, however, and the lines indicate a good sailer and (for its length, 19′ 3″, and beam, 5′ 4″) a good carrier. This appears to have been a type of garvey, once popular south of Barnegat, that has now been replaced by a hull that is sledlike in profile, rather than scowlike.

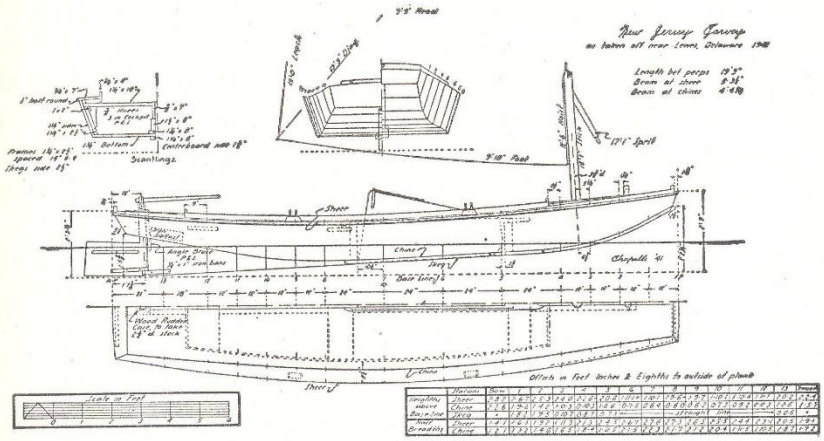


Fig. 17. Old style of New Jersey garvey.

Figure 18 represents the more modern hull and shows a small fishing garvey whose hulk was measured in the fall of 1950. This is a rather narrow boat, 18′ 4¾″ in length and only 4′ 9″ beam at the gunwale. Narrow garveys of this class were handy craft for working alongshore and in the marsh streams where it was necessary to row, pole, paddle, and sail. The narrow beam did not permit a large sail area, and so the rig is proportionately smaller than in the garvey shown previously. Small beam was popular with fishermen, before the days of the cheap gasoline engine, because in many localities it was necessary to row the boats long distances when calms occurred. On much of the Atlantic Coast the summer mornings are calm, then a southwest wind may come up and last until late afternoon, when another calm period usually occurs. The ex-

act time the calms would begin and end could not be gauged accurately, and so it was not unusual for a fisherman to row his sailboat out and home again. The stiffness of the flat-bottomed hull

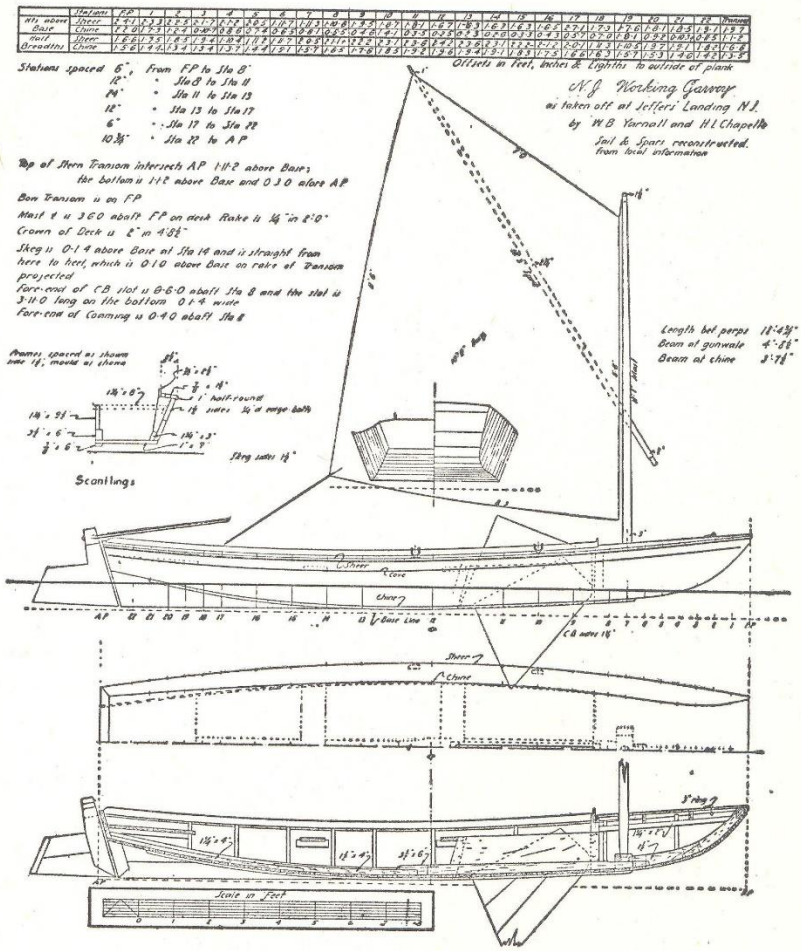
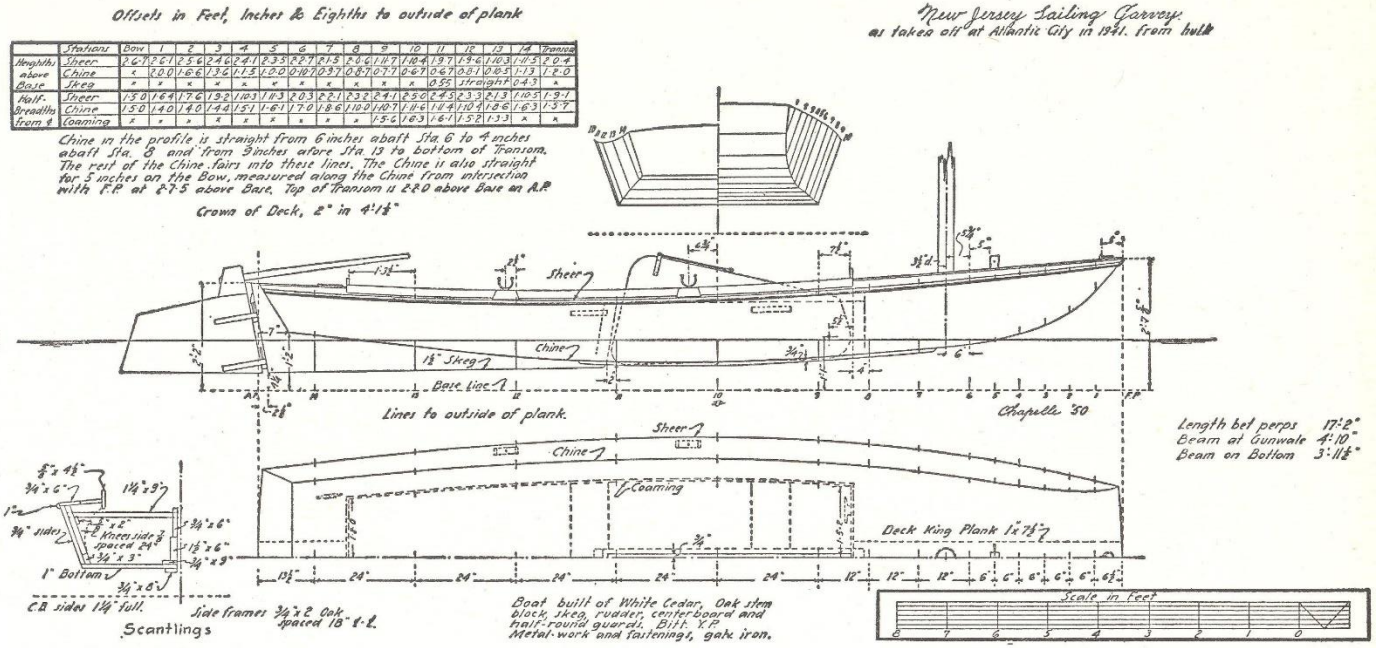


Fig. 18. Small working garvey showing construction and the one-sail rig once very popular.

was sufficient in the narrow models to give much stability, and there is evidence that the narrow-beamed boats were better sailers than wide hulls of this model.

Figure 19 is the plan of a somewhat better-finished sailing garvey,



	Stations	Bow	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Transom
Heights above Base	Sheer	2·6·7	2·6·1	2·5·6	2·4·6	2·4·1	2·3·3	2·2·7	2·1·3	2·0·6	1·11·7	1·10·4	1·9·7	1·9·6	1·10·3	1·11·5	2·0·4
	Chine	"	2·0·0	1·6·6	1·3·6	1·1·3	1·0·0	0·10·7	0·9·7	0·8·7	0·7·7	0·6·7	0·6·7	0·8·1	0·10·5	1·1·3	1·2·0
	Skeg	"	"	"	"	"	"	"	"	"	"	"	0·5·5	straight	0·4·3	"	
Half-Breadths from ℄	Sheer	1·5·0	1·6·4	1·7·6	1·9·2	1·10·3	1·11·3	2·0·3	2·2·1	2·3·2	2·4·1	2·5·0	2·4·5	2·3·3	2·1·3	1·10·5	1·9·1
	Chine	1·5·0	1·4·0	1·4·0	1·4·4	1·5·1	1·6·1	1·7·0	1·8·6	1·10·0	1·10·7	1·11·6	1·11·4	1·10·4	1·8·6	1·6·3	1·3·7
	Coaming	"	"	"	"	"	"	"	"	"	1·3·6	1·6·3	1·6·1	1·5·2	1·3·3	"	"

Fig. 19. Single-sail garvey of about 1906.

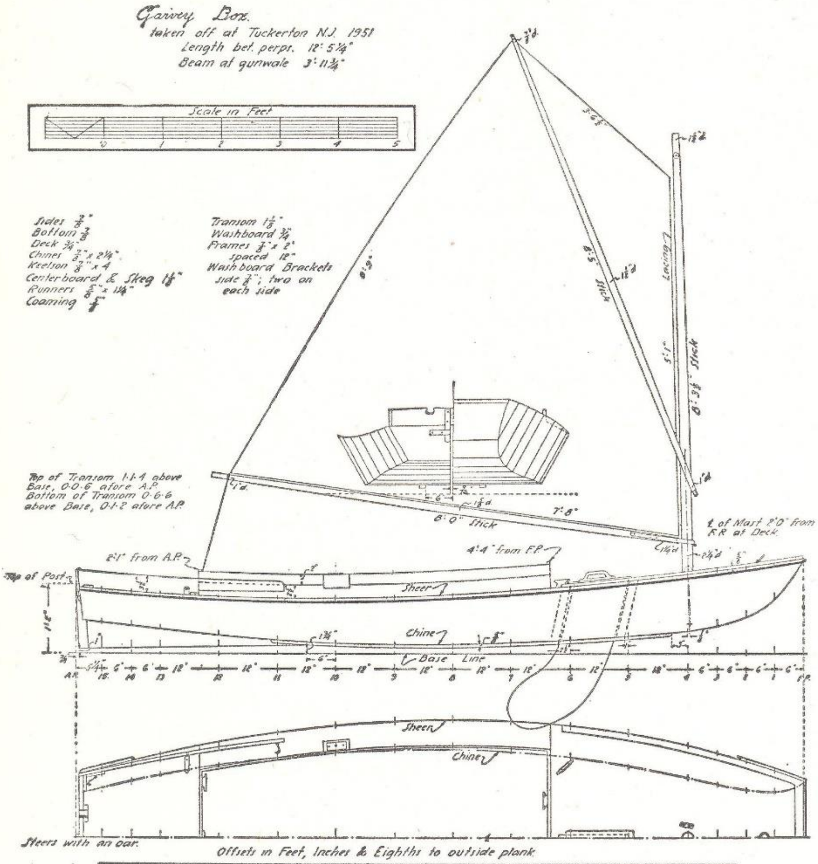
17′ 2″ long and 4′ 10½″ beam on deck. This boat was one of a class of sailing garveys that were sufficiently developed to attract the attention of some yachtsmen. Early in this century, an attempt was made to introduce this type into the pleasure fleet. It failed, however, because of prejudice against the flat-bottomed, square-ended hull, and only a few of the yacht type were ever built. The boat shown is apparently a working boat, but her design and relatively light construction indicate she was built on the yacht model, if not for yachting purposes.

Pleasure boats of this form had leg-of-mutton sails and sprit-booms. Garveys on this model were very fast sailers and under right conditions would plane, as would many flat-bottomed, working sailboats. The elements of design in this garvey model are sound for a low-cost, fast-sailing boat.

Figure 20 shows the lines of a gunning garvey built near Tuckerton. This is the smallest of the sailing garveys and was a competitor to the famed sneak box and served somewhat the same purposes. The gunning garvey, however, was not as seaworthy as the sneak box and was less well known. This form of garvey was well suited for gunning in the marshes and could be poled or hauled over the mud more easily than the sneak box. The garvey type is therefore still in use (and many retain sail and dagger board), for the boat is cheaply and easily built. The peculiar deck construction of the Tuckerton garveys is shown in this boat; the flat decks must have been convenient for stowing decoys. The chief objection to this boat as a gunning skiff would be her noisiness in open water, and she was therefore less suited to open waters than the sneak box. The example shown was reputed to be a boat of superior qualities under sail.

The most common garvey in the fishing business on the South Jersey shore was the two-master, and the most popular size was from 24 to 26 feet in length. Figure 21 shows the plans of one of these boats, made from measurements of an old sailing garvey at Tuckerton and from additional information obtained from builders still alive there and from fishermen who had owned such craft. The boat measured was 26′ 0″ long, 6′ 5″ beam on deck, and 5′ 3″ on the bottom. The profile of the hull, as can be seen, is much like the smaller sled-type shown earlier, and the boat is an easily driven

scow that would sail fast. The rig, which was popular among American fishermen all along the northern half of the Atlantic Coast, is the two-masted spritsail type, in which the foremast was taller and



	Stations	Bow	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Transom
Heights above Base	Sheer	1-7-2	1-6-4	1-5-5	1-4-7	1-3-2+	1-2-6	1-1-6-	1-0-6	0-11-7	0-11-4	0-11-2	0-11-3	0-11-5	1-0-2	1-0-5	1-1-0+	1-1-4
	Chine	1-6-4	0-11-0	0-7-4	0-5-5	0-4-5	0-3-4	2-0-6+	0-2-2	0-1-7	0-1-7	0-2-1	0-2-6	0-3-6	0-5-0	0-5-5	0-6-3	0-6-6
Half Breadths	Sheer	0-11-4	1-1-5	1-3-3	1-5-1	1-6-5+	1-9-1	1-10-6	1-11-5	1-11-7	1-11-3	1-10-6	1-9-2	1-7-3	1-5-0	1-3-5	1-2-1	1-1-2
	Chine	0-11-1	0-9-2	0-9-5	0-10-6	1-0-1	1-2-5	1-4-3	1-5-3	1-5-7	1-5-7	1-5-2	1-4-2	1-2-6	1-0-6	0-11-4	0-10-1	0-9-1+

Fig. 20. Old garvey box, substitute for a sneak box.

the foresail larger than the main; a rig and spar plan that might be described, for the lack of a better name, as a "cat-ketch." The rig was particularly popular in half-decked boats, as we shall see.

Lacking a jib, this sail plan was handy and flexible in balance and so could be worked single-handed. The rig was well in the boat, and the small spars and masts could be readily unshipped even in

rough water. The drawing also shows the flat fore and after decks of the Tuckerton build that has been described. There is no need of a lengthy description of this boat, since the plan is quite complete.

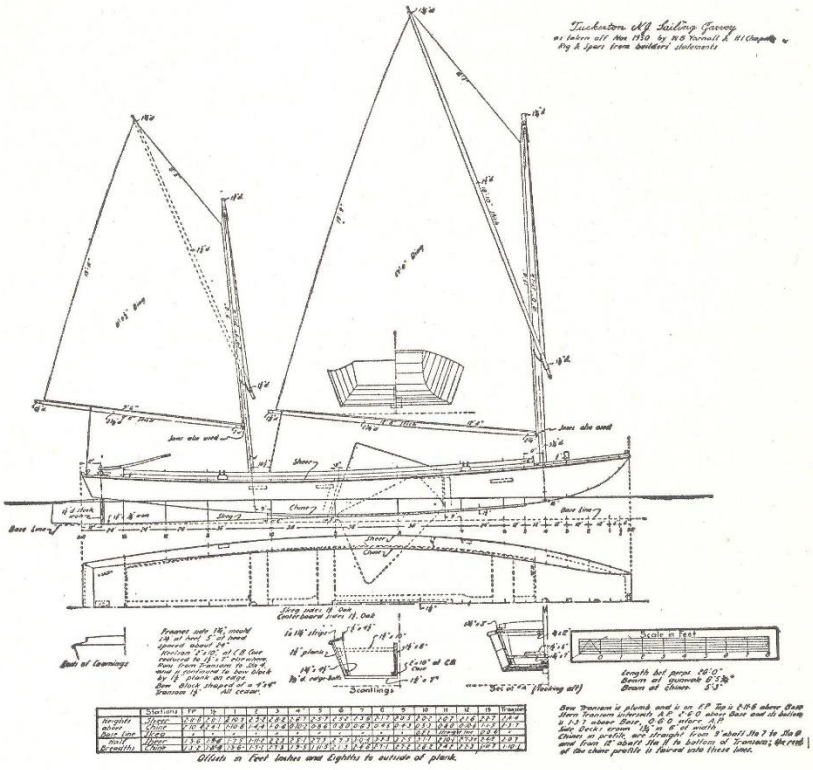


Fig. 21. Typical New Jersey sailing garvey, two-masted rig, showing flat decks afore and abaft cockpit, as built at Tuckerton, New Jersey.

Such boats were usually built by rule of thumb, without models or plans. This example could be reproduced, as could the others, by the usual projection and expansion of the sides to obtain their shape, since the sections show parallel lines in the body plans. This would allow the usual garvey setup and building practices to be followed, without stocks being required. Incidentally, a boat of this approximate size and model cost $50 in 1900, complete except for sails.

There was apparently no standard scheme of painting the garveys; most of them had white topsides and gray or brown decks; the interior was gray and the bottom copper red. One practice is still followed in some power-garveys: the top of the copper, under the bow overhang, is not straight across but is swept up from each chine in circular arcs to the centerline of the hull so that at this point the copper is 3 or 4 inches higher than at the chines. This seems to have no practical advantage and is probably just decoration.

With the introduction of power, the garvey type of hull has spread southward across the Delaware and is now the local type as far south as Chincoteague Bay, Accomac County, Virginia, a little to the northward of the entrance to the Chesapeake. In addition to the V-bottom, these garveys often have shallow tunnel sterns. Fishermen in these garveys seem to have no hesitation in working outside the bay in the open Atlantic, and the boats are said to get into trouble rarely. There are numerous attempts to "beautify" the power-garvey by carrying up the V-bottom all the way to the foredeck and by making the bow narrow, but on the whole the low-cost construction methods are closely adhered to wherever the garvey is built. Except for gunning skiffs, there appear to be no sailing garveys alive in New Jersey.