

	18FT. BOAT.	13FT. BOAT.
Room.....	14ft. 9in.	10ft. 6in.
diameter.....	2in.	1¾in.
Yard.....	10ft. 6in.	7ft. 7in.
diameter.....	1¾in.	1½in.
Foot of sail.....	14ft.	10ft. 1in.
Luff.....	9ft. 6in.	6ft. 10½in.
Head.....	9ft. 9in.	7ft.
Lecch.....	19ft.	13ft. 8in.
Tack to peak.....	18ft. 6in.	13ft. 4in.
Clew to throat	16ft. 6in.	11ft. 11in.
Area.....	155sq. ft.	80sq. ft.

The dimensions of the main and mizen rigs are:

	18FT. BOAT.		13FT. BOAT.	
	Main. Ft. In.	Mizen. Ft. In.	Main. Ft. In.	Mizen. Ft. In.
Main, from stem.....	2 00	17 00	1 06	12 03
above deck.....	12 06	7 00	9 00	5 00
diameter at deck...	0 03	0 02	0 02¼	0 01½
Boomkin, outboard.....	..	1 09	..	1 03
Boom.....	12 02	6 06	8 10	4 09
diameter.....	0 0¼	0 01½	0 01¼	0 01
Yard.....	9 06	5 03	7 03	3 10
diameter.....	0 01¼	0 01	0 01½	0 00¾
Foot.....	11 06	6 00	8 04	4 04
Luff.....	6 06	3 06	4 09	2 07
Head.....	9 00	4 09	6 06	3 06
Lecch.....	14 06	7 07	10 06	5 06
Tack to peak.....	15 00	8 00	10 10	5 09
Clew to throat.....	12 06	6 06	9 00	4 09
Area.....	90sq.ft.	26sq.ft.	49sq.ft.	14sq.ft.

The drawings show the size of sails when stretched on the spars after a little use. They must be cut a little smaller than this in making, and after a season they will have stretched to the full size of the spars shown.

PLATE XLIV.—THE DELAWARE RIVER DUCKER.

Along the Delaware these boats are much used for rowing and sailing generally, gunning and fishing, but especially for redbird shooting in the marshes below Philadelphia. The flat floor allows them to be poled far up on the

marshes where there is more mud than water, and they are often propelled by a long pole with three prongs on the lower end, for poling on muddy bottoms. There is no fixed thwart, but a movable box is used, so that the gunner may sit in the fore end and his assistant may use the pole in the after end; the latter may sit forward and row while the gunner occupies the after seat; or the boat may be backed down by the oarsman in the after seat, the gunner sitting on the box in the bow. Both ends of the boat are exactly alike, the only difference being in the seat, rowlocks and coaming.

The dimensions are: Length, 15ft.; beam, 3ft. 10in.; depth, 13in.; sheer, 8in. The stem and stern are sided $1\frac{1}{2}$ in., keel sided 6in. amidships and moulded 1in.; planking, $\frac{3}{8}$ in.; timbers, $\frac{3}{4}$ in. \times $\frac{5}{16}$ in.; deck, $\frac{3}{8}$ in.; flooring, $\frac{1}{2}$ in.

TABLE OF OFFSETS—DELAWARE RIVER DUCKER.

Stations.	Deck Height.	HALF-BREADTHS.				
		Deck.	12in.	9in.	6in.	3in.
1.....	21 ²	0 ²
2.....	18 ⁴	10	7 ⁶	6 ¹	4 ²	1 ⁶
3.....	15 ²	18 ²	16 ⁶	15	12	7 ⁶
4.....	13 ⁵	22	21 ⁵	20	17 ⁴	13
⊗.....	13	23	23	21 ⁶	19 ⁴	15 ³
6.....	13 ⁵	22	21 ⁵	20	17 ⁴	13
7.....	15 ²	18 ²	16 ⁶	15	12	7 ⁶
8.....	18 ⁴	10	7 ⁶	6 ¹	4 ²	1 ⁶
9.....	21 ²	0 ²

The stations are spaced 2ft. apart, measuring each way from midship section, and the waterlines are 3in. apart.

Along the bottom of keel are two wooden runners, A A, $\frac{3}{4}$ in. \times $\frac{3}{8}$ in. and shod with half-round iron. It will be noticed that the stem and stern each project the same distance

below the planking, and the runners shown by dotted lines in the breadth plan project forward of the stem and aft of the stern, as at A A, B B. The floor boards are screwed to two battens, which are on top of them, so as to allow the boards to lie close to the bottom of the boat. They form one piece only, that may be easily lifted out. The brass rowlocks are accurately turned and fitted, with long shanks, so as to be nearly noiseless. The side decks are supported by three iron knees on each side.

The ducker carries one boom and gaff sail; the usual area for a boat of this size being 112sq. ft., the racing rig running up to 150sq. ft. The smaller sail would have 15ft. on foot, 7ft. 6in. luff, 16ft. 6in. leech, and 7ft. 6in. head, the mast being stepped 2ft. from stem.

PLATES XLV. AND XLVI.—DELAWARE RIVER TUCKUP.

The Delaware River in the vicinity of Philadelphia is the home of three special classes of sailing boats, the hiker, the tuckup and the ducker, all three being peculiar to the locality and used so far as we know on no other waters than the middle Delaware and lower Schuylkill. All are cat rigged, but differ in size, the hiker being the largest, a small half open catboat, with about 4ft. 8in. beam for 15ft. length, same proportion for larger sizes; the tuckup being a few inches narrower and not quite so deep, both with square sterns, while the ducker is a double-ended shooting skiff, also fitted for sailing. The plans show a very good example of the present fourth class tuckup, the *Priscilla*, built in 1887 for Mr. Edward Stanley, of Bridgeport, Pa., by James Wignall, of Philadelphia. The lines were carefully plotted from offsets taken by Mr. E. A. Leopold, of Norristown, Pa., the boat being enrolled in the Montgomery Sailing Club of that place and sailing in all the races. The peculiar name "tuckup" is derived from the fact that in building the flat keel is not carried out straight from the stem to sternpost, along the finely dotted line B, as would be the