is that of Le Père Fournier. A straight line AB (fig. 11) is drawn, which he takes to represent the moulded breadth of the ehip. A circle RANB, which has this line for the diameter, is then described ; and, bisecting A B in C, he draws the perpendicular CD, equal to the depth intended to be given to the vessel, which extends from the under part of the beam to the upper side of the keel. Through the point D he draws a line parallel to AB, and, making DG and DH each equal to half the flat of the floor, cqual also, if so determined, to one fourth of the whole breadth, he draws the verticals GE and HF equal to the rising of the floor. These may be assumed equal to the twenty-fourth, the eighteenth, or the twelfth part of GH. He then finds on GE, produced both ways to K and S, a point M, which he takes for the centre of an arc of a circle NE, that touches the first circle in some point N, and the straight line EF in E. Then with a point S assumed as a centre he describes the arc EO, which, touching the straight line EF or the arc NE in E, meets the side of the keel in O. He has thus ANEO for the form of half the section, and the other side is drawn in the same manner.

Bouguer corrects this method thus : He takes EK equal to the radius CA of the first circle, or equal to half the length of the beam, and having joined the points K and C by the straight line CK, if it be bisected in L, and LM be drawn perpendicular to it, the intersection of this per­pendicular with EK will be the centre M of the arc NE. For MC being equal to MK, and EK having been made equal to AC or to NC, it is evident that MN will be equal to ME, and consequently the arc of the circle described from the point M as a centre, and which will pass through the point E, will touch the first circle in N. To determine the other centre S, bisect the straight line EO, and from the point of bisection draw a perpendicular which will meet IG produced in the point S, which will be the centre of the arc EO. The arcs AQ and QR are described, the first round the point I as a centre with the radius IA ; the se­cond round any assumed centre with a radius equal to AL

Another method is for determining the midship sections of flat-floored ships. It was invented by M. de Palmi of Brest. A rectangle ABIL (fig. 12) is described, which has for its breadth the breadth of beam, and for its height the depth to the keel. At E and F, the extremities of the flat of the floor, the perpendiculars GE and HF are drawn equal to the rising. A line KE (fig. 13) equal to LG is assumed, and a' square described upon it ; two quadrants of circles AQE and AXE are inscribed in this square, and either arc AXE is divided into a certain number of equal parts, AV, VX, XY, YZ, *&c.* drawing from the points of division VO, XN, &c. perpen­dicular to the radius AK. The depth of the vessel to the rising of the floor is divided in­to the same number of equal parts ; and trans­ferring to level lines drawn through these last points of division O, N, &c. the distances OS, NR, MQ, &c. intercepted in fig. 13 be­tween the radius AK and the arc of the circle AQE, it only remains to pass a curve ASRQPE, in fig. 12, through the extremities of all the perpendiculars or ordinates OS, NR, &c. and the form of half the first section is obtained. ED may be formed by an arc of a circle touching the first curve E, and joining the side of the keel at D.

A third method, given by Bouguer, is for sharp ships. Form as before the rectangle ABIL (fig. 14), circumscrib­ing the part of the section below the main breadth AB; then the rising GE or HF of the midship-floor is taken equal to a fifth or a sixth part of the flat of the floor GH. The points E and F being determined, two portions of pa­rabolas AE and BF are described, A being the vertex and AC the axis of the one, and B the vertex and be the axis of the other. The flat of the floor is formed by two arcs of circles, the convexity of the upper arc being helow, and of the lower arc above. Having drawn from the point E, EK and EM perpendicular respectively to AL and AC, describe from a centre in AC produced indefinitely towards N, the semicircle MKN passing through the points K and Μ. Then AN will be the parameter of the parabola, which will serve to determine as many points in the curve as may be desired. If it be required to find a point in the vertical line FQ through which the curve will pass, it may be found by describing the semicircle NOP, and drawing from the point O, where the semicircle cuts AL, the horizontal line OQ, the point Q, the intersection of this line with PQ, will be a point in the parabola. In the same manner any num­ber of points may be found. In order that the first arc of