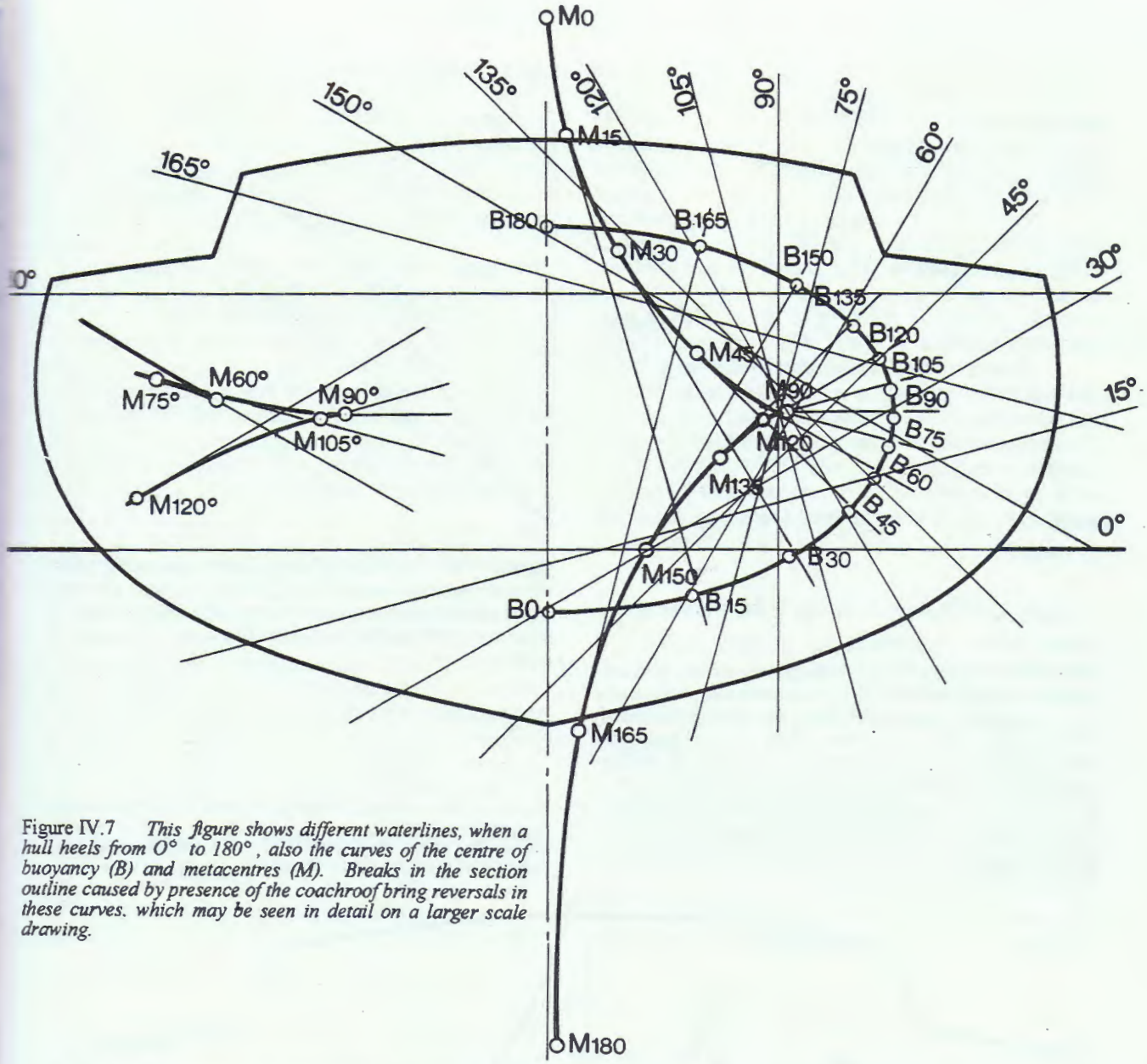

Figure IV.7 *This figure shows different waterlines, when a hull heels from O° to 180°, also the curves of the centre of buoyancy (B) and metacentres (M). Breaks in the section outline caused by presence of the coachroof bring reversals in these curves. which may be seen in detail on a larger scale drawing.*

It is also interesting to trace the Z curve, which is the projection of the foot of the perpendicular from the centre of gravity on to the verticals through the heeled centres of buoyancy; these perpendiculars correspond to righting levers. (Fig. IV.10)

This curve has two interesting characteristics, the first being the point of tangency with the metacentric curve, which indicates very exactly the heeling angle corresponding to the maximum righting couple. The second is the angle of the tangent from point G; this is perpendicular to the tangent which corresponds to the reversal point, and indicates the angle of statical capsize. (Fig. IV.8)

6 Curve of statical stability and angle of vanishing stability

The real stability of a boat is best shown by a stability curve, namely a graph which shows the righting arm or righting moment at all angles of heel.

Either $\overline{GZ}$ can be considered alone, or the product of G x $\overline{GZ}$ which come to the same thing because G is a constant.

The graph is traced by plotting the abscissae and ordinates that match the angles of heel and the values of G x $\overline{GZ}$ (fig. IV.11).

The boat is stable while the curve is rising, and every increase in heeling moment can be matched by an equal increase in righting moment.

At a certain limiting angle of heel, θ_1, righting moment reaches its maximum value, after which it decreases, no longer being able to counter an increase in heeling moment. However, if heeling moment then decreases, the boat will return to her initial position because righting moment is still posi-