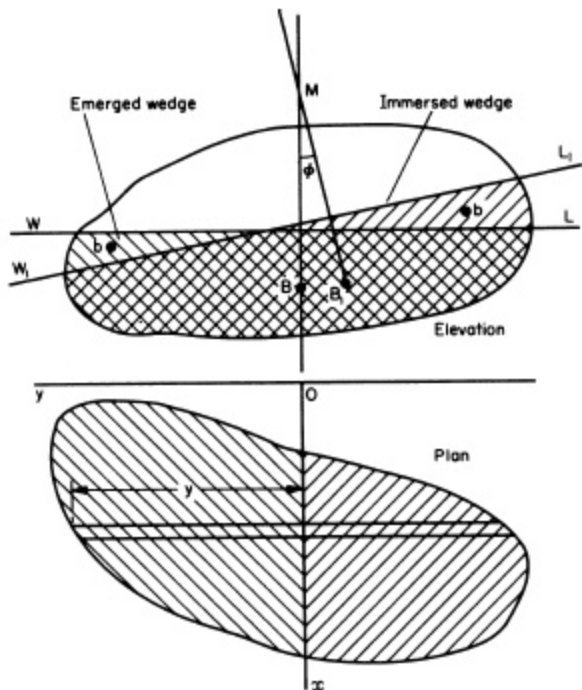


METACENTRE

Consider any body floating upright and freely at waterline WL, whose centre of buoyancy is at B. Let the body now be rotated through a small angle in the plane of the paper without altering the volume of displacement (it is more convenient to draw if the body is assumed fixed and the waterline rotated to W_1L_1). The centre of buoyancy for this new immersed shape is at B_1 . Lines through B and B_1



normal to their respective waterlines intersect at M which is known as the *metacentre* since it appears as if the body rotates about it for small angles of rotation. The *metacentre* is the point of intersection of the normal to a slightly inclined waterplane of a body, rotated without change of displacement, through the centre of buoyancy pertaining to that waterplane and the vertical plane through the centre of buoyancy pertaining to the upright condition. The term metacentre is reserved for small inclinations from an upright condition. The point of intersection of normals through the centres of buoyancy pertaining to successive waterplanes of a body rotated infinitesimally at any angle of inclination without change of displacement, is called the *pro-metacentre*.