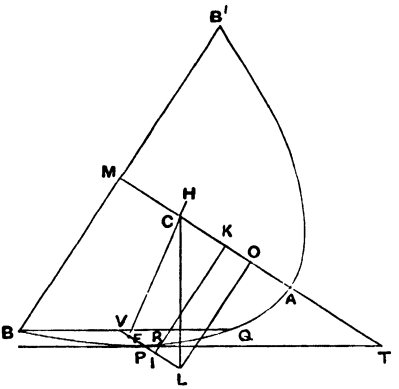
Then, since $CO = \frac{1}{2}p$, CL must be perpendicular to PT and therefore to the surface of the fluid.

And the forces acting on the immersed portion of the paraboloid and the portion above the surface act respectively upwards and downwards along lines through F and H parallel to CL.

Hence the paraboloid cannot remain in the position in which B just touches the surface, but must turn in the direction of increasing the angle PTM.

The proof is the same in the case where the point I is not on VP but on VP produced, as in the second figure*.



[With the notation used on p. 266, if the base BB' touch the surface of the fluid at B, we have

$$BM = BV \sin\theta + PN,$$

and, by the property of the parabola,

$$BV^2 = (p + 4AN)\,PV$$
$$= pk(1 + \cot^2\theta).$$

Therefore $$\sqrt{ph} = \sqrt{pk} + \frac{p}{2}\cot\theta.$$

To obtain the result of the proposition, we have to eliminate k between this equation and

$$x' - x = \cos\theta\left\{\frac{p}{4}(\cot^2\theta + 2) - \frac{2}{3}(h - k)\right\}.$$

* It is curious that the figures given by Torelli, Nizze and Heiberg are all incorrect, as they all make the point which I have called I lie on BQ instead of VP produced.