ON THE DOUBLE MODE OF GENERATION OF AN ELLIPSOID

By

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By Sir William R. Hamilton.

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Sir W. R. Hamilton communicated the following double mode of generation of an ellipsoid, which had been suggested to him by his quaternion formulæ.

Conceive two equal spheres to *slide* within two cylinders, in such a manner that the right line joining their centres may remain parallel to a fixed line; then the locus of the varying circle in which the two spheres intersect each other will be an *ellipsoid*, inscribed at once in both the cylinders, so as to touch one cylinder along one ellipse of contact, and the other cyclinder of revolution along another such ellipse.

And the *same* ellipsoid may also be generated as the locus of *another* varying circle, which shall be the intersection *of another pair of equal spheres*, sliding within the same pair of cylinders, but having their line of centres constantly parallel to another fixed line. Every ellipsoid can be generated by the above double mode of generation.