

PERIODIC ORBITS

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of CAMBRIDGE.§ 1. *Introduction.*

The existing methods of treating the Problem of the three Bodies are only applicable to the determination, by approximation, of the path of the third body when the attraction of the first largely preponderates over that of the second. A general solution of the problem is accordingly not to be obtained by these methods.

In the Lunar and Planetary theories it has always been found necessary to specify the motion of the perturbed body by reference to a standard curve or intermediate orbit, of which the properties are fully known. The degree of success attained by any of these methods has always depended on the aptness of the chosen intermediate orbit for the object in view. It is probable that future efforts will resemble their precursors in the use of standard curves of reference.

Mr G. W. HILL's papers on the Lunar Theory¹ mark an epoch in the history of the subject. His substitution of the Variational Curve for the ellipse as the intermediate orbit is not only of primary importance in the Lunar Theory itself, but has pointed the way towards new fields of research.

The variational curve may be described as the distortion of the moon's circular orbit by the solar attraction. It is one of that class

¹ American Journal of Mathematics, Vol. I pp. 5—29, 129—147, 245—260 and Acta Mathematica, T. 8 pp. 1—36.

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