



These equations have been established either by myself or other observers.

IX. "On the Theory of Parallels." By Lieut.-General T. PER-
RONET THOMPSON, F.R.S. Received August 4, 1862.

More than thirty published efforts, from Ptolemy downwards, attest the satisfaction with which the Theory of Parallels would be seen established without merging the difficulty into an axiom.

As many of these are certainly not elementary, it amounts to an admission that any knowledge on the subject would be acceptable, even though it left the necessity of beginning from the axiom with freshmen.

Believing that the generation of the straight line with the impossibility of two enclosing a space, and of the plane with the straight line joining any two points lying wholly in the surface, may be rigidly demonstrated from the property of the sphere, which Plato calls its "perfection," or the faculty of turning about its centre without change of place,—I am induced to submit whether some light may not be offered by the following :—

Place two equal circles in the same plane, and let a straight line rest upon them (spheres and a superincumbent plane might be taken, but it is conceived the other is easier). The centres remaining at rest, let the circles dilate as by inflation, preserving always the equality of the diameters to one another.

It would appear to be deducible from the Platonic property, that the motion of any point in the circumference during the inflation must be perpendicular to the circumference, and consequently at any instant to the straight line which touches the circumference. Also the touching point in that straight line is at any instant impelled in a direction perpendicular to the circumference and to the touching line; out of which it seems impossible that the points of contact in the circumference and in the touching line should ever separate; for that would imply a motion other than perpendicular in one or both.

If this was supposed allowed, it would follow from making the

circles grow less till they vanish, that the distance of the points of contact in the incumbent line was always equal to the distance of the centres. We should therefore be presented with rectilinear quadrilateral plane figures, of which, from the equality of opposite sides, and the angles at the two extremities being right angles, all the angles must be right angles. From which it would be an easy step to the proof that the angles of every rectilinear triangle are together equal to two right angles; and so the Theory of Parallels be entered by another door, and the twelfth axiom be a deduction instead of a groundwork.

It would be interesting if the Theory of Parallels should be proved traceable to Plato's property of the sphere.

X. "Letter to Professor STOKES, Sec. R.S., containing Observations made at Malta on a Planetary Nebula." By WILLIAM LASSELL, Esq., F.R.S.

Malta, 26th Sept. 1862.

MY DEAR SIR,—In directing my large equatoreal upon the well-known planetary nebula situated in $R\ 20^h\ 56^m\ N.P.D.\ 101^\circ\ 56'$ (1862), it has revealed so marvellous a conformation of this object that I cannot forbear to send you a drawing of it, with some description of its appearance. With comparatively low powers, *e. g.* 231



and 285, it appears at first sight as a vividly light-blue elliptic nebula, with a slight prolongation of the nebula, or a very faint star, at or near the ends of the transverse axis. In this aspect the nebula resembles in form the planet Saturn when the ring is seen nearly edgewise. Attentively viewing it with higher powers, magnifying respectively 760, 1060, and 1480 times, and under the most favourable circumstances which have presented themselves, I have discovered within the nebula a brilliant elliptic ring, extremely well defined, and apparently having no connexion with the surrounding nebula, which indeed has the appearance of a gaseous or gauze-like envelope, scarcely interfering with the sharpness of the ring, and only diminishing somewhat its brightness. This nebulous envelope extends a little further from

