Eighth Meeting, Friday, June 14th, 1895.

JOHN M'COWAN, Esq., M.A., D.Sc., President, in the Chair.

A Summary of the Theory of the Refraction of their approximately Axial Pencils through a Series of Media bounded by coaxial Spherical Surfaces, with Applications to a Photographic Triplet, &c.

By PROFESSOR CHRYSTAL.

[*The Paper will be published in the next Volume.*]

On a Diophantine Equation.

By R. F. DAVIS, M.A.

In the consideration of Question 12612 appearing in the *Educational Times* for January of this year, proposed by the Rev. Dr. Haughton, F.R.S., of Trinity College, Dublin, the following Diophantine Equation suggests itself:

What values of x make $8x^3 - 8x + 16 = \square$?

Since it may be written $8x(x^2 - 1) + 16 = \square$ it is obvious that $x = 0, \pm 1$ are solutions. Also that $x = 2$ is a solution. Moreover $x = -\dfrac{3}{2}$ when substituted gives $-27 + 12 + 16 = 1$ and is therefore a solution,—marking approximately a limit to the negative root.

I. Put $8x^3 - 8x + 16 = (px^2 + x - 4)^2$; then after reduction and division by x^2, we have

$$p^1x^2 - 2x(4 - p) + 1 - 8p = 0 \quad \ldots \quad \ldots \quad \ldots \quad (A)$$

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