resulting parabola is parallel to the two parallel asymptotes.

An extension to space of three dimensions is easy; thus the analogue to the first theorem gives

The three paraboloids contained in the family $S + \lambda S' = 0$ *are all real, if either of the quadrics* S, S' *is an ellipsoid.* So too, we find :

If the two quadrics S, S' are hyperboloids, two of the paraboloids will be imaginary if (and only if) two cones with a common vertex, parallel to their asymptotic cones, intersect in *two* real generators.

There are five possibilities when two (or three) of the paraboloids coincide; without enumerating them all, it may be noted that when S or S' is an ellipsoid, the coincidence implies degeneration of the paraboloids. All the other cases may be obtained by suitable interpretations of Weierstrass's algebra ("Zur Theorie der bilinearen und quadratischen Formen," *Monatsberichte d. k. Akad. z. Berlin*, 1868; Werke, volume 2, page 19).

Slightly digressing from the line of thought just indicated, and reverting to Huntington and Whittemore's paper, I note that their result, that the eccentricity is wholly indeterminate (*l. c.*, page 123), *suffices* to specify the conics considered by them. For, in orthogonal cartesians, the eccentricity is determined by the ratio $(a+b)^2/(ab-h^2)$, which is only indeterminate if

$$ab - h^2 = 0, \quad a + b = 0,$$

i. e., if

$$b = -a, \quad h = \pm ia,$$

and then the conic reduces to

$$a(x \pm iy)^2 + \text{linear terms} = 0.$$

QUEEN'S COLLEGE, GALWAY,
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A SECOND DEFINITION OF A GROUP.

BY DR. E. V. HUNTINGTON.

(Read before the American Mathematical Society, April 26, 1902.)

THE following note contains a definition of a group expressed in four independent postulates, suggested by the definition given in W. Burnside's Theory of Groups of Finite Order (1897). The definition presented by the writer at the February meeting contained three independent