parabola. e is the tangent of the inclination of the tangent from the foot of the directrix. Other properties compared with the parabola. Relation $p^2 = a^2 \cos^2 a + b^2 \sin^2 a$ for perpendicular from centre on tangent; thence locus of intersection of perpendicular tangents.

General comparison of ellipse, parabola, hyperbola.

The eccentric angle; $x = a \cos \theta$; $y = b \sin \theta$. Locus of a point obtained by measuring $\frac{a+b}{2}$ at an inclination θ and then $\pm \frac{a-b}{2}$ at $-\theta$

Diameters investigated analytically as for parabola (alternative with § 187.) Conjugate diameters as the projections of two perpendicular diameters of the auxiliary circle; hence the properties of conjugate diameters and the equation to the ellipse referred to them (instead of § 198.)

$a'^2 + b'^2$ constant; $pb' = ab$.

Length of Normal $= \frac{bb'}{a}$; $\cos \psi = \frac{p}{r} = \frac{p'}{r} = \frac{p+p'}{2a'} = \frac{b}{b'}$

$PG.\ PG' = b'^2 = rr'$ and other properties.

Radius of curvature (as for parabola) $= \frac{b'^3}{ab} = \frac{N}{\cos^2\psi} = \frac{N^3}{SL^2}$; thence construction of points on the evolute.

To construct the foci of an ellipse, given the axes; also to construct directrices and latus rectum.

Given an ellipse, to find the centre and axis.

Given either axis and one point, to describe the ellipse.

To construct an ellipse, given a pair of conjugate diameters.

If any tangent meet two conjugate diameters, the rectangle contained by its segments is equal to the square of the parallel semi-diameter; thence, given a pair of conjugate diameters, to construct the axes,

Hyperbola; Chapters XI, XII, omitting proof of equation referred to conjugate diameters § 252, also § 262-63; 265.

Notes as for the ellipse wherever practicable. Equation and properties deduced from the definition $r - r' = 2a$. Substitution of $-b^2$ for b^2 or $-a^2$ for a^2 in the equation to the ellipse. The same substitution in the case of properties involving b^2; geometrical meaning of the negative sign in each case. Diameters as for ellipse (alternative with 236.)

Asymptotes. The conjugate hyperbola. The equation $(a^2y^2 - b^2x^2)^2 = a^4b^4$. The four foci equidistant from the centre.