sets of conjugate diameters of Q.

Again if we join the vertices of any triangle from (ii) to the centre of Q, we get a set of three mutually perpendicular lines.

COROLLARY 1. *C passes through the three principal axes of Q.* For e passes through A, B, C which are the traces of principal axes.

COROLLARY 2. *If P is the central plane of which p is the trace then the normal to P at the center and the diameter of which P is the diametral plane lie on 'C.'*

From the definition it can be proved that the pole of p w.r.t. any conic of the family $q+\lambda\Omega=0$ lies on e. As the pole of p w.r.t. Ω is the trace of any normal to P, the normal at the center lies on C. Again the pole of p w.r.t. q, which must lie on e, is the trace of the diameter D of which P is the diametral plane. Hence D must lie on C.

MATHEMATICAL NOTES

EDITED BY F. A. FICKEN, University of Tennessee

Material for this department should be sent to F. A. Ficken, University of Tennessee, Knoxville 16, Tenn.

ELEMENTARY PROOF THAT *e* IS IRRATIONAL

L. L. PENNISI, University of Illinois

The following variation on the usual proof of the irrationality of e is perhaps slightly simpler. Suppose that e is rational, say $e=a/b$. Then

$$b/a = e^{-1} = \sum_{n=0}^{\infty} (-1)^n/n!,$$

and multiplication by $(-1)^{a+1}a!$ and transposition of terms gives

$$(-1)^{a+1}\left\{b(a-1)! - \sum_{n=0}^{a} (-1)^n a!/n!\right\} = \frac{1}{(a+1)} - \frac{1}{(a+1)(a+2)} + \frac{1}{(a+1)(a+2)(a+3)} - \cdots.$$

The right side has a value between 0 and 1 since the alternating series clearly converges to a value between its first term and the sum of its first two terms. But the left side is an integer, so we have a contradiction.