geologists to do this, since so many of the world's stratigraphical terms originated in this country.

At New Delhi in December, both the Luxembourg recommendations themselves and the slight modifications of them proposed by the Mediterranean Mesozoic Committee, will be presented to the Stratigraphic Commission. It is hoped that firm rulings will then emerge on the subdivisions of the Jurassic and that these will lead the way for other parts of the stratigraphical column. It is also particularly to be hoped that all British Jurassic specialists, and especially those official bodies concerned with stratigraphy, will then accept and follow these rulings in spite of any temporary inconvenience, unfamiliarity or personal disagreement about arbitrary limits.

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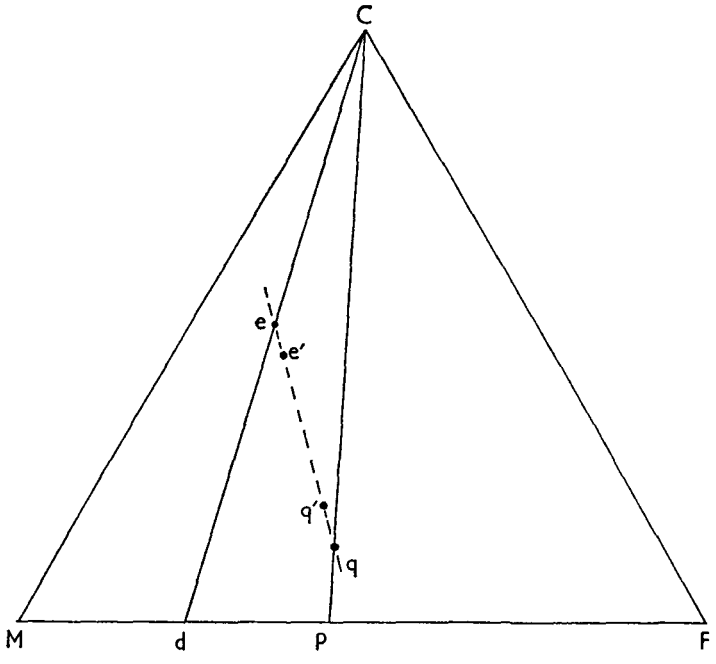
NON-EQUIVALENCE OF DISTRIBUTION COEFFICIENTS AND TIE-LINES OF COEXISTING PYROXENES

SIR,—Further to some previously published words of caution on the use of distribution coefficients to express the partition of iron and magnesium between coexisting pyroxenes (O'Hara and Mercy, 1963, pp. 305–310) I wish to draw attention to an error which is gaining ground in the literature.

Bartholomé (1961) presents two figures allegedly representing tie-line orientations for coexisting pyroxenes having particular values of K_t, the distribution coefficient ($= 1/K_D$ where K_D is the distribution coefficient calculated by Kretz, 1961) with the implication that these figures are unique solutions for particular values of K_t. Bartholomé writes that " consideration is given only to the iron-magnesium ratio in the mineral involved, the calcium content being disregarded ". As will be demonstrated below, calcium content cannot be disregarded, and an assumption has to be made about the calcium contents before the diagrams can be drawn. These figures, together with their implication of a unique solution are reproduced uncritically by Collee (1962, p. 71) and the same result is accepted by Oosterom (1962, p. 263).

Text-fig. 1 is the refutation of the hypothesis that tie-lines in the Ca–Mg–Fe projection and distribution coefficients are the same thing.

All points on *Cd* have a constant ratio of Mg/Fe. Similarly, all points on *Cp* have a different but constant ratio of Mg/Fe. Consequently for *any* pair of points in the projection such as *e*, representing a clinopyroxene composition, and *q*, representing a calcium-poor pyroxene composition, the distribution coefficient $K_t = \left(\frac{Mg}{Fe}\right)_e \cdot \left(\frac{Fe}{Mg}\right)_q = \frac{dF}{Md} \cdot \frac{Mp}{pF} =$ a constant, k, for *any* point *e* on *Cd* paired with *any* point *q* on *Cp*. Hence there is no unique solution for the tie-line orientation and position of a coexisting pyroxene pair within this diagram *unless* the Ca/Ca+Mg+Fe ratio of *both* pyroxenes is assumed. Conversely the calcium distribution between coexisting pyroxenes is a potent factor in affecting the distribution coefficients—consider for instance the effect



TEXT-FIG. 1.

of impure separations of phases e and q, having bulk compositions e^1 and q^1, for which the tie-line orientation and position is the same as for e–q, but whose distribution coefficient will be closer to unity.

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