CO_3 groups are an integral part of the structure and control its optical properties (birefringence), but are to be considered as an 'impurity' that need not be related to the structure as a whole.

Furthermore, the explanation by Trautz makes no attempt to explain certain data of fundamental significance, aside from the question of the fourth tetrahedral oxygen. On the basis of his explanation there should be a fairly simple relation between the carbon dioxide content and the Ca/P ratio. We have shown (McConnell, 1960*b*) that this is not true. In addition, his explanation completely fails to indicate why the combined water should appreciably exceed that of hydroxyapatite, whereas our theory accounts for additional increments of water in two ways, one of which is $Ca^{\cdot\cdot}+3PO_4''' \equiv H_3O^{\cdot}+4CO_3''$. It is to be recalled that francolite, besides adequate fluorine to fill all of the F positions of fluorapatite, contains a significant amount of water that is retained above 300° C.

In an attempt to evaluate the data and discussion by Trautz, we conclude that his results suggest that the CO_3 groups which we have described as 'essentially perpendicular' to the basal plane may be somewhat inclined and may thereby alter the optical properties (birefringence) accordingly. To this extent the results of Trautz are not without interest. We regret, however, that Trautz somewhat befuddles other questions concerning the structure of carbonate apatites while considering their optical properties.

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The identity of erionite and offretite.

IN 1890, F. Gonnard[1] described a new zeolite, occurring very sparingly with much phillipsite in the basalt of Mt. Simiouse, Montbrison, Loire, France, as small hexagonal prisms with basal plane; it is uniaxial

[1] F. Gonnard, Compt. Rend. Acad. Sci. Paris, 1890, vol. 111, p. 1002; Bull. Soc. franç. Min., 1891, vol. 14, p. 60. Gonnard's analysis shows a distinct excess of Al_2O_3 over CaO and alkalis; it is possible that he failed to dehydrate SiO_2 completely (the analysis was made on a very small sample).

positive, density 2·13, and was named offretite after Prof. Offret of Lyons. Similar material (hexagonal crystals containing 51·6 % SiO_2, with K, Ca, and Al, but not completely analysed) was reported by V. Dürrfeld[1] from a basalt from the Palau Is., Caroline Group, and are probably to be referred to offretite.

In 1956 H. Strunz[2] examined crystals from a specimen of offretite from Mt. Simiouse, and found them to be phillipsite. He reported a density of 2·146, but no optical or morphological data for the crystals examined, and in view of the common occurrence of phillipsite at Mt. Simiouse and of Gonnard's data this identification cannot be accepted as evidence of the true nature of offretite.

We have therefore examined small hexagonal crystals detached from the British Museum specimen of offretite (B.M. 1908,368, from Mt. Simiouse); X-ray powder photographs are identical with those of erionite from Durkee, Oregon.

Erionite was first described by A. S. Eakle[3] in 1898, occurring as long fine fibres with opal in a rhyolite tuff; apart from optical determinations by E. S. Larsen,[4] two doubtful records from Maryland[5] and Idaho,[6] and an unpublished X-ray fibre photograph by F. A. Bannister,[7] no further study of this species appears to have been made until the detailed X-ray work of K. S. Deffeyes[8] and L. W. Staples and J. A. Gard.[9]

It is unfortunate that the identity of erionite and offretite was not recognized before Deffeyes, and Staples and Gard, published their structural studies, but the name offretite has clear priority, and it cannot be rejected on the grounds of an inadequate description.

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[1] V. Dürrfeld, Zeits. Kryst. Min., 1911, vol. 49, p. 200.

[2] H. Strunz, Neues Jahrb. Min., Monatsh., 1956, p. 250.

[3] A. S. Eakle, Amer. Journ. Sci., 1898, ser. 4, vol. 6, p. 66; Zeits. Kryst. Min., 1898, vol. 30, p. 176.

[4] E. S. Larsen, 1921, U.S. Geol. Surv. Bull. 679.

[5] J. Kepper, Rocks and Minerals, 1950, vol. 25, p. 314 [M.A. **11**–276].

[6] J. C. Reed, Trans. Amer. Geophys. Union, 1937, pt 1, p. 239.

[7] This photograph, distinct from those of all the commoner zeolites, is the basis for the statement by M. H. Hey (Chemical Index of Minerals, 1950, p. 156) that erionite is 'a well-defined and distinct species'. The British Museum powder data files did not then include offretite because of its rarity.

[8] K. S. Deffeyes, Amer. Min., 1959, vol. 44, p. 501 [M.A. **14**–412].

[9] L. W. Staples, Bull. Geol. Soc. Amer., 1957, vol. 68, p. 1847 [M.A. **14**–55]; L. W. Staples and J. A. Gard, Min. Mag., 1959, vol. 32, p. 261.