subtended at the aluminium atom, which is in accordance with a suggestion made by Brown (1957)*.

Phillips (1953–54) suggested that the composition of the α-phase should be represented by $Fe(Cu_{0.04}Al_{0.96})_6$ and reasoned that the copper atoms were most likely to enter the $Al_2$ atomic sites. The measurements of composition reported above indicate strongly that the copper only replaces aluminium, though to a slightly greater extent than expected by Phillips; the corresponding formula is $Fe(Cu_{0.044}Al_{0.956})_6$. The $Al_2$ sites would appear to be the most favourable positions for copper atoms in view of the short bond length to the T.M. neighbour. In the non-centrosymmetric structures, the site with the shorter T.M. bond would be preferred, but complete ordering of the copper atoms on one rather than the other of the $Al_{2,4}$ sites might not take place with ordinary annealing times.

If all the copper atoms were ordered on one 8-fold aluminium site, a difference of 16% between the height of these 'Al' peaks in the electron density maps and those of the $Al_1$ and $Al_3$ atoms would be expected. The $Al_2$ site is the only one which is situated on a positive peak in the final $(F_o-F_c)$ maps, but the effect shown is much less than 16% and is probably not significant.

No attempt has been made to detect electron transfer in this structure [Black (1955) and Taylor (1954)], and the uncertainty about the composition makes this alloy unsuitable as a subject for further investigation using a counter diffractometer.

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* Brown (1957) has noted that the occurrence of short T.M.–Al bonds in this type of compound is nearly always associated with the Al atom being joined to two T.M. atoms with a T.M.–Al–T.M. inter-bond angle approaching 180°. The bonds increase in length with decreasing inter-bond angle and the angle subtended at an Al atom by two T.M. atoms at a given distance is greater for manganese than for cobalt. Brown has suggested that iron would be intermediate between manganese and cobalt in this respect.

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## Short Communications

*Contributions intended for publication under this heading should be expressly so marked; they should not exceed about* 1000 *words; they should be forwarded in the usual way to the appropriate Co-editor; they will be published as speedily as possible. Publication will be quicker if the contributions are without illustrations.*

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### The unit cell and space group of $MgGeO_3$.

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Synthetic $MgGeO_3$ used for this determination was prepared by heating a stoichiometric oxide mixture at 1220 °C. for 2 days. Several X-ray photographs have been taken using Cu $K\alpha$ and Fe $K\alpha$ radiation. Rotation and Weissenberg photographs have shown the unit cell to be orthorhombic with dimensions:

$$a=18{\cdot}649\pm0{\cdot}007,\ b=8{\cdot}902\pm0{\cdot}005,\ c=5{\cdot}332\pm0{\cdot}005\ \text{Å}\,.$$

The systematic absences observed are those of the space group $D_{2h}^{15}$–*Pbca*. The measured crystal density is 4·31 g.cm.$^{-3}$, giving 16 formula units per unit cell. The calculated density is 4·320 g.cm.$^{-3}$.

No further work on this compound is contemplated.