

weaker and absent reflections, however, were very sensitive to order and the determination was based on these, particularly on the planes of lower indices. While errors might be introduced by assuming the FeCr atomic coordinates for FeMo, these errors are minimized by giving far more weight to the low-angle reflections, and our final arrangement for these in particular, seemed conclusive.

The crude ordering scheme suggested by Bergmann & Shoemaker (1954) for FeMo, which was based on atomic-number parameters (again assuming the FeCr coordinates), allots the positions *A*, *B* and *E* to molybdenum. This scheme gives quite good agreement for the stronger

lines but shows many discrepancies among the weaker and missing reflections as indicated in the calculated intensities ( $I_{ABE}$ ) for the lower-angle reflections in Table 1.

It is significant that the 'hole' sizes of the *A* and *D* sites are the smallest, as indicated by the mean interatomic distances associated with these sites, and are occupied by the smaller Fe atoms, while the remaining sites are considerably larger and occupied mainly by the larger Mo atoms. If atomic size is a major factor in the distribution of atoms in this phase, it might be expected that the *B* site, which is the largest, would consist wholly of Mo atoms. The intensity agreement obtained by filling all the *B* site with Mo atoms, and dividing the rest of the Mo atoms equally among the *C* and *E* sites is almost but not quite as good as that suggested. Further refinements on the distribution were attempted, maintaining Mo atoms only in the *B* site, but it proved impossible to obtain any better agreement. However, it does appear from these results that the relative atom sizes of the  $\sigma$  components is important in deciding the ordering of this phase.

The ordering scheme adopted is also in general agreement with that suggested for  $\sigma$  phases by Kasper & Waterstrat (1956), where the *A* and *D* sites are occupied by elements to the right of Mn in the periodic table, the *B* site by elements to the left and the *C* and *E* sites by a mixture of the two.

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Table 2. *Interatomic distances for each kind of atom*

<i>A-B</i> 4	2.748 Å	<i>B-A</i> 2	2.748 Å
<i>A-D</i> 4	2.489	<i>B-B</i> 1	2.656
<i>A-E</i> 4	2.667	<i>B-C</i> 2	2.529
Mean value	2.635	<i>B-D</i> 4	2.847
		<i>B-E</i> 4	2.972
		<i>B-E</i> 2	3.064
		Mean value	2.841
<i>C-B</i> 1	2.529 Å	<i>D-A</i> 1	2.489 Å
<i>C-C</i> 1	2.519	<i>D-B</i> 2	2.847
<i>C-C</i> 4	2.994	<i>D-C</i> 1	2.579
<i>C-D</i> 1	2.606	<i>D-C</i> 1	2.606
<i>C-D</i> 1	2.579	<i>D-C</i> 2	2.608
<i>C-D</i> 2	2.608	<i>D-D</i> 1	2.597
<i>C-E</i> 2	2.905	<i>D-E</i> 2	2.672
<i>C-E</i> 2	2.898	<i>D-E</i> 2	2.681
Mean value	2.788	Mean value	2.657
		<i>E-A</i> 1	2.667 Å
		<i>E-B</i> 1	3.064
		<i>E-B</i> 2	2.972
		<i>E-C</i> 2	2.905
		<i>E-C</i> 2	2.898
		<i>E-D</i> 2	2.672
		<i>E-D</i> 2	2.681
		<i>E-E</i> 1	2.426
		<i>E-E</i> 1	2.387
Mean value	2.771		

### Notes and News

*Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. The notes (in duplicate) should be sent to the General Secretary of the International Union of Crystallography (D. W. Smits, Mathematisch Instituut, University of Groningen, Reithdiepskade 4, Groningen, The Netherlands).*

#### Crystal Data (Determinative Tables)

A second edition of *Crystal Data*, by J. D. H. Donnay, G. Donnay, E. G. Cox, O. Kennard, and M. V. King, will be published as Monograph No. 5 of the American Crystallographic Association. The size of the book will be

about 1200 pages; its price has been set at \$20.00. The expected date of publication is 1 April 1963. Until the appearance of the book, copies can be ordered at a special reduced pre-publication price of \$15.00 per copy. These orders should be sent to Polycrystal Book Service, G.P.O. Box 620, Brooklyn 1, N.Y., U.S.A.