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The errors in the measurement of intensities from X-ray photographs.

By J. W. JEFFERY, *Crystallography Department, Birkbeck College, University of London, England*

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Attention is drawn to the θ-dependence of errors due to absorption.

Monahan, Schiffer & Schiffer (1967) state that the most reasonable estimate of errors in intensity measurements is that 'the fractional error in each determination is constant'.

This is true only for crystals of low absorption. Reference to Fig. 4 of Jeffery & Rose (1964) shows that, for near-spherical crystals, the proportional error is independent of θ only up to $\mu r = 0{\cdot}4$ and that at $\mu r = 3$ the error for reflexions in the forward direction is roughly three times that in the back-reflexion region.

The example of fluoromalic acid, quoted by Monahan *et al.*, probably comes in the low absorption category, but serious errors could arise from ignoring the θ-dependence in more highly absorbing crystals.

References

JEFFERY, J. W. & ROSE, K. M. (1964). *Acta Cryst.* **17**, 343.
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The crystal and molecular structure of D(+)-barium uridine-5′-phosphate.

By ELI SHEFTER and K. N. TRUEBLOOD, *Department of Chemistry, University of California, Los Angeles, California* 90024, *U.S.A.*

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A correction to *Acta Cryst.* (1965) **18**, 1067.

In Table 1 of the article under the above title (Shefter & Trueblood, 1965), the atom in line 7 [below O(III) and above C(5′)] should be O(5′), not O(2′). [Correct O(2′) is given later in the table.]

Reference

SHEFTER, E. & TRUEBLOOD, K. N. (1965). *Acta Cryst.* **18**, 1067.

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A four-dimensional view of some cubic lattices.

By P. T. DAVIES, *'Shell' Research Ltd, Thornton Research Centre, P.O. Box* 1, *Chester, England*

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The face-centred cubic lattice and the diamond 'lattice' can be regarded as derived from a four-dimensional simple hyper-cubic lattice.

The treatment of the face-centred cubic (f.c.c.) lattice outlined below is analogous to the well-known description of the plane hexagonal lattice as a section on the plane (111) of the simple cubic lattice. For this two-dimensional lattice we use, not a pair of integers, but a set of three integers, i, j, k satisfying $i+j+k=0$ to represent a lattice point. This idea is widely used in crystallography in the form of the Miller–Bravais 4-indices for crystals of the hexagonal system, where it has the advantage over a 3-index description of not obscuring the symmetry of the lattice. Frank (1965) has emphasized the usefulness of regarding the Miller–Bravais indices in terms of a four-dimensional model.

For the f.c.c. lattice we start from the simple hyper-cubic lattice (I) given by the set of four integers i, j, k, l, and consider the section (II) defined by $i+j+k+l=0$. The form of the resulting three-dimensional structure is apparent when we rotate the axes by the transformation

$$w=\tfrac{1}{2}(i+j+k+l) \quad y=\tfrac{1}{2}(i+j-k-l)$$
$$x=\tfrac{1}{2}(i-j+k-l) \quad z=\tfrac{1}{2}(-i+j+k-l)$$

Then for the section II, the coordinates w, x, y, z take the form $0, i+k, i+j, j+k$; thus the coordinates x, y, z have $x+y+z$ even and form a f.c.c. lattice with a cube edge of length 2 units.

The construction is extended to the diamond 'lattice' by adding to the f.c.c. lattice additional points constructed as follows: take those points of I lying in the section (III) defined by $i+j+k+l=-1$, and project them onto section II along the direction $[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{1}{2}]$, *i.e.* parallel to the w axis. In this way a second f.c.c. lattice is obtained, displaced through $x,y,z=\frac{1}{2},\frac{1}{2},\frac{1}{2}$ from the first, and the two lattices together give the diamond 'lattice'.

To gain some familiarity with this representation, one may consider simple features of the lattices such as the number of nearest neighbours. In the f.c.c. lattice we find a nearest neighbour of a point i, j, k, l by adding $+1$ to one index and -1 to another, the changes in two indices being necessary to avoid leaving the section II. There are twelve ways of doing this. In the diamond 'lattice' a point from section II (III) has as nearest neighbours four points from