(1938) method for eliminating instrumental line width, the broadening could be very well accounted for by assuming the particles to be hexagonal prisms, 60 Å high, with an 85 Å base.

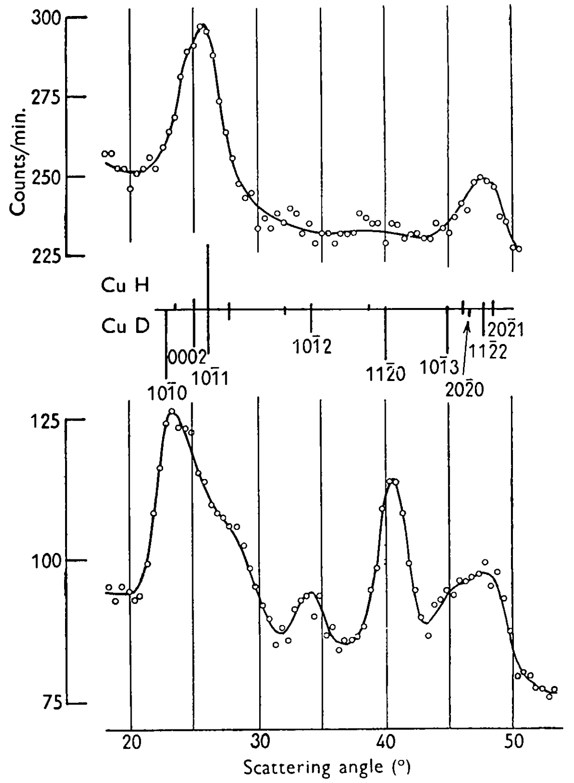

Fig. 1. Diffracted neutron intensities for CuH and CuD.

The temperature factor was found to be high, $\exp -4{\cdot}06\,(\sin\theta/\lambda)^2$ in the structure factor.

Neutron work

Neutrons were obtained from the Kjeller reactor running at 250 kW. A lead single-crystal monochromator was used, set for 1·00 Å. The data were recorded on an automatic goniometer, which will be described elsewhere. Counts were taken over 20 min. at intervals of 0·5° scattering angle.

For the hydride, a flat cell of 8 mm. = 0·62 g.cm.$^{-1}$ was used in transmission. Because only a small amount of deuteride was available, it was placed in a cylindrical container of 1 cm. diameter.

The observed counting rates are shown in Fig. 1. Intensities calculated for the wurtzite arrangement, i.e.

$$\text{Cu at } 0, 0, 0;\ \tfrac{1}{3}, \tfrac{2}{3}, \tfrac{1}{2},\ \text{H at } 0, 0, \tfrac{3}{8};\ \tfrac{1}{3}, \tfrac{2}{3}, \tfrac{7}{8},$$

are also shown. The small, unmarked intensities are those due to Cu and Cu_2O. Although there is considerable overlapping, especially where peaks of high l are involved, the general agreement leaves no doubt that the wurtzite structure is correct.

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The unit-cell dimensions and space group of 1,1′-diethyl-2,2′-pyridocyanine iodine.

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The crystals used in this study were obtained from a sample prepared by Mr G. S. Levinson, using the method of Brooker & Keyes (1935), and had been crystallized from aqueous solution. Although most of the crystals were multiply twinned or poorly formed, a few suitable for single-crystal X-ray photographs were found. These were small needles, bounded on the sides by prominent 110 and $1\bar{1}0$ and small 100 faces, and on the ends by 001 faces. The crystals are deep orange in color and under the polarizing microscope show distinct pleochroism, the color varying from yellow to deep red, with the direction of maximum absorption in the 010 plane approximately −35° from the *c* axis.

Oscillation, rotation, equi-inclination Weissenberg and precession photographs were taken, using Cu $K\alpha$ radiation. The cell dimensions were determined from the rotation and zero-level Weissenberg photographs, the camera radius of 57·074 mm. having been determined by calibration with sodium chloride.

The dimensions of the monoclinic unit cell were found to be:

$$a_0 = 11{\cdot}94 \pm 0{\cdot}01,\ b_0 = 10{\cdot}66 \pm 0{\cdot}02,\ c_0 = 12{\cdot}97 \pm 0{\cdot}02\ \text{Å},\quad \beta = 114{\cdot}6 \pm 0{\cdot}1^\circ.$$

Systematic extinctions were found for hkl reflections with $h+k$ odd and for $h0l$ reflections with l odd. The space group must then be either Cc–C_s^4 or $C2/c$–C_{2h}^6. The observed density of 1·557 g.cm.$^{-3}$ agrees well with the density of 1·567 g.cm.$^{-3}$ calculated on the basis of four formula units per unit cell.

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