the limit of observation for Mo $K\alpha$ radiation, at which value the f considered becomes negligibly small. If, however, the series are sharply terminated the effect under discussion may be masked. Single-atom peaks are then less sharp and are also surrounded by diffraction ripples; peaks due to unresolved atoms are correspondingly more complicated. Such diffraction effects become more serious as the level of the projection is increased since the value of f at which the series are terminated becomes an increasingly large fraction of the maximum value.

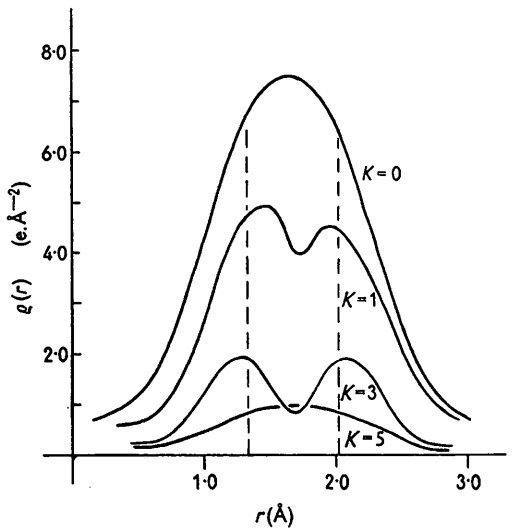

Fig. 2. Profiles of peaks due to two carbon atoms in generalized projections of acridine III. Atomic positions are indicated by broken lines.

The variation in the termination-of-the-series errors, apparent in Fig. 2, has been remarked upon by Clews & Cochran (1949). If the atoms are resolved, however, such errors can be corrected by the use of Fourier techniques (e.g. Booth, 1946) which are not so readily applicable when the atoms are unresolved. The increased resolution in upper-level generalized projections may, therefore, be useful. It must be noticed, however, that similar increases in resolution can be obtained in the zero-level projection by the use of suitable sharpening functions and, furthermore, that the resolution available by this means will be better in the zero-level than in upper-level projections because higher-order reflexions generally will be observed.* The accuracy with which the atomic positions can be determined, being dependent on the peak curvatures and hence on the peak heights, also will be greatest for the zero-level projection.

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* I am indebted to a referee for this observation.

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The intermetallic phase $NpBe_{13}$.

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(*Received* 23 *October* 1953 *and in revised form* 17 *November* 1953)

Neptunium–beryllium alloys have been prepared by the reduction of neptunium fluoride with powdered beryllium metal in vacuum at 1100–1200° C. At these temperatures the beryllium fluoride product readily distilled, leaving a fluoride-free alloy.

X-ray diffraction patterns, taken with Cu $K\alpha$ radiation (λ = 1·5418 Å) on a 14·3 cm. powder camera, showed that only one intermediate phase exists between the limits α-Np and Be at room temperature. This phase has a composition approximating to $NpBe_{13}$, and was not melted by heating to 1400° C. The alloy produced at the latter temperature was crystalline and loosely sintered. The compound is face-centred cubic, with X-ray reflections comparable in intensity to those from UBe_{13}. The lattice constant decreases from 10·266 ± 0·001 Å on the Be-rich side to 10·256 ± 0·001 Å on the Np-rich side, indicating some small range of solid solubility.

The compound UBe_{13} has been found to be isomorphous with $NaZn_{13}$ and is described by the space group O_h^6–$Fm3c$ (Baenziger & Rundle, 1949). The parameter values for $NaZn_{13}$ reported by Zintl & Hauche (1937) have been refined by Shoemaker, Marsh, Ewing & Pauling (1952). These refined parameters, y = 0·1806 and z = 0·1192, were used in fixing the atom positions (Fig. 1)

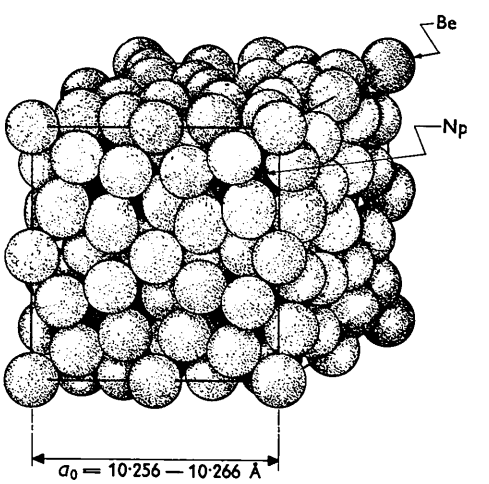

Fig. 1. The $NpBe_{13}$ unit cell.

and in calculating the interatomic distances in the $NpBe_{13}$ unit cell (Table 1).

Table 1. *Interatomic distances in* $NpBe_{13}$

Atom	Neighbour	No. of neighbours	Distance (Å)
Be_I (0, 0, 0)	Be_{II} $(0, y, z)$	12	2·22
Be_{II} $(0, y, z)$	Be_{II} $(0, z, \frac{1}{2}-y)$	2	2·15
	Be_I (0, 0, 0)	1	2·22
	Be_{II} $(z, \frac{1}{2}-y, 0)$	2	2·24
	Be_{II} $(z, 0, y)$	4	2·31
	Be_{II} $(0, y, \bar{z})$	1	2·45
	Np $(\frac{1}{4}, \frac{1}{4}, \frac{1}{4})$	2	2·98
Np $(\frac{1}{4}, \frac{1}{4}, \frac{1}{4})$	Be_{II} $(0, y, z)$	24	2·98

The observed contraction of $NpBe_{13}$ on the Np-rich side is somewhat surprising, since the Np atom is about 35% larger than the Be atom. However, a similar phenomenon has been observed by Bradley & Taylor (1937) for the Al-rich side of the phase NiAl, i.e. the lattice spacing decreases rapidly with an increasing aluminum ratio. This effect is attributed to the generation of nickel vacancies in the lattice as the aluminum ratio increases. A similar defect structure, Be-deficient, may exist in Np-rich $NpBe_{13}$.

The neptunium used in the investigation was supplied by the Argonne National Laboratory, Lemont, Illinois. Mr R. R. Boucher assisted in the preparation of the X-ray samples.

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Notes and News

Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. Copy should be sent direct to the British Co-editor (R. C. Evans, Crystallographic Laboratory, Cavendish Laboratory, Cambridge, England).

Publications of the Geological Society of America

The Geological Society of America announces that it has reprinted its Special Paper No. 33, *Numerical Structure Factor Tables (Crystal Structure and X-ray Diffraction)* by M. J. Buerger. The price is $1·50.

The Society also announces that it has in press extensive tables of crystal data to be published as *Memoir 60*. Part I (systematic), by W. Nowacki, gives all substances crystallizing in each of the 219 distinguishable groups. Part II (determinative), by J. D. H. Donnay *et al.*, permits a crystal to be identified from its cell dimensions and space group. Formula index and name index serve as a guide to the literature. The Donnay–Harker *Tables of Space-Group Criteria* are reprinted in an appendix. The work is expected to comprise over 750 pages and the price is estimated to be about $5·00. Crystallographers wishing to be notified when the book is available are asked to register their names with the Society (419 West 117 Street, New York 27, New York, U.S.A.).

Publications of the American Crystallographic Association

The American Crystallographic Association announces the publication of Monograph No. 3, *The Solution of the Phase Problem. I. The Centrosymmetric Crystal*, by H. Hauptman and J. Karle. The price is $1·50. Orders should be placed with Mr A. Rae duBell, The Letter Shop, Inc., 222 West Eighth Street, Wilmington, Delaware, U.S.A., and remittances should be made payable to the American Crystallographic Association.

International Instrument Congress and Exposition

The Instrument Society of America announces that an International Instrument Congress and Exposition will be held in Philadelphia from 14 to 24 September 1954 to mark the Tenth Anniversary of the Society. Further particulars may be obtained from the Manager of the First International Instrument Congress and Exposition, 921 Ridge Avenue, Pittsburgh 12, Pennsylvania, U.S.A.

Acta Crystallographica

The U.S.A. and Canadian members of the American Crystallographic Association have voted to increase their dues by $3·00 annually and to donate the proceeds to the Union for the support of *Acta Crystallographica*. This most generous action, which will yield approximately $2,000 (£715) a year, is a great encouragement to the editors in their difficult task of dealing with the constantly growing amount of material reaching them, while trying to keep the price of the journal within reach of individual subscribers. *Acta Crystallographica* has enjoyed very large subventions in the past and may need them in the future to cope with the steadily expanding crystallographic production; crystallographers throughout the world owe a deep debt of gratitude to their American and Canadian colleagues for this generous support.

International Union of Crystallography

Messrs Sandoz A. G. of Basle, Switzerland, have offered to the Union a generous donation of Swiss fr. 500 (approximately £41) for each of the years 1954–6, as a contribution towards the expenses of *Acta Crystallographica*.