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6,9-Dimethoxy-2,13-diaza[4]paracyclo[4](3,5)pyridinophane-1,14-dione, $C_{19}H_{21}N_3O_4$, and 19-Benzyl-16,19-dihydro-2,13-diaza[4]paracyclo[4](3,5)pyridinophane-1,14-dione, $C_{24}H_{25}N_3O_2$: erratum.

By A. M. VAN HERK, K. GOUBITZ, A. R. OVERBEEK and C. H. STAM, *Laboratory for Crystallography, University of Amsterdam, Nieuwe Achtergracht* 166, 1018 *WV Amsterdam, The Netherlands*

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Abstract

An error of technical editing is corrected. In the title of the paper by van Herk, Goubitz, Overbeek & Stam [*Acta Cryst.* (1982). B**38**, 490–494] the second compound is described as a 1,4-dione. It is a 1,14-dione, as indicated in the title of this erratum.

All relevant information is given in the *Abstract*.

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Structure Reports

Volume 46A of *Structure Reports* has recently been published. It covers the literature for metals and inorganic compounds for 1980 (464 pages) and costs 153 Netherlands guilders for subscribers with standing orders. The full price for individual copies is 180 guilders but personal subscribers may buy a copy for their own use at 90 guilders. Orders for these publications may be placed direct with the publisher, D. Reidel Publishing Company, PO Box 17, 3300 AA Dordrecht, The Netherlands, or with any bookseller. Trade orders should be sent to Reidel.

Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.

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The architecture of solids. By G. E. BACON. Pp. viii + 140. London: Taylor & Francis, 1981. Price £5·50.

This is No. 58 in the Wykeham Science Series of books, which, according to the cover '. . . are pitched . . . at the level of a student on a first year university course'.

The presentation is orthodox, reminiscent of Pauling's *Nature of the Chemical Bond* or Evans's *Introduction to Crystal Chemistry*, in that it relates atomic structure and electronegativity to crystal structure.

The first chapter is devoted to crystal form and habit. It is debatable whether this was a wise decision in so short a book as this (Pauling and Evans manage quite well without it) but once the decision is made, the exposition should be as clear as possible. Professor Bacon does not introduce morphology by use of face normals (this would overcome the vagaries of face development and allow a straightforward treatment of symmetry) and his treatment is accordingly very hard to follow. It is not helped by an almost complete absence of definitions in the text. There is a *Glossary of Terms* at the back of the book but the reader is not anywhere directed to it. On p. 21 we are told that an inversion axis '. . . consists of rotation through $1/n$th of a revolution followed by inversion through a centre'. (Inversion is nowhere defined.) The explanation of 'centre of symmetry' in the *Glossary* does not mention inversion and, as it stands, could equally well apply to a plane of symmetry. Neither symmetry elements nor operations are explained and lattice points are not mentioned. There is certainly no shortage of diagrams in this first chapter, Fig. 1.6 illustrating no less than 41 typical crystal forms and occupying two and a half pages. Illustrations of habit abound and there are even photographs of mineral crystals for comparison. Although a crystallographer would spot the connection, the undergraduate reader would be hard put to it to reconcile the drawing of the cubo-octahedron, Fig. 1.4(*a*), with the photograph, Fig. 1.1(*c*), meant to exemplify it, since one has four-sided faces and the other does not. The author makes no reference to H. S. Lipson's *Crystals and X-rays* in the same series which covers a certain amount of the same ground much more clearly.

Parts of the text are reasonably well presented and, on the whole, the diagrams are good (especially in the last two chapters on disorder and magnetic structures). However, the book is marred by all too frequent blemishes: unsupportable

generalizations, badly executed diagrams, errors of fact. For example, Fig. 4.6, the electron density section through the (100) plane of sodium chloride, looks as if it has been drawn free-hand. Not one of the ions has anything like fourfold symmetry and the inner density of the sodium ions is elliptical. This is inexcusable when good examples are available, such as in McKie and McKie's *Crystalline Solids*. On the facing page the diagram for sodium chloride would strike the unbiased observer as monoclinic, as would that of copper, Fig. 4.8.

A complete list of such blemishes would be too long for this review but here are a few of the more blatant examples: p. 3, '... practically the whole of solid matter is crystalline', and the angle between crystal faces is called a 'solid angle'; Fig. 3.8 does not contain the points *A*,*B*,*C*,*D* referred to in the text; p. 78, graphite is said to be obtained 'by burning some organic material chemical'; p. 98, ClO_4^- is referred to as the chlorate ion; p. 110, a solid containing 1 p.p.m. impurity is said to contain '10^{23} impurities per cubic meter'; the *Glossary*, p. 134, on *Unit Cell*: 'Generally the smallest is chosen'. (The student reader may wonder why this 'generalization' seems largely inapplicable to the examples given in the book itself, most of whose cells are non-primitive.)

The chapter on disorder contains 'neutron diffraction patterns' of vitreous silica and of crystalline $NH_4H_2PO_4$. This comparison is made obscure by the fact that no explanation is offered as to the difference in diffraction effects between single crystals on the one hand and crystal powders or amorphous materials on the other. Moreover, why compare such disparate samples? Surely a comparison of the diffraction (neutron or X-ray) from, say, amorphous silica and powdered quartz would have been far more telling?

Although this little book has some good material in it, it is a disappointment. With clearer exposition and better production it could have been very good.

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Cordination chemistry reivews: Vol. 34. Main group chemistry review, 1979, edited by D. B. SOWERBY, pp. viii + 467; **Vol. 35. Transition-metal chemistry review, 1979, Part A,** pp. 268 and **Vol. 37. Transition-metal chemistry review, 1979, Part B,** pp. 339, edited by C. D. GARNER & K. R. SEDDON. Elsevier, 1981. Price: Dfl 210 for Vol. 34, and Dfl 210 for Vols 35 and 37 together.

These three volumes are aimed to provide a reasonably comprehensive coverage of literature on the coordination chemistry of the main-group elements that appeared in 1979 and of *d* transition elements that appeared during late 1978 and 1979.

Vol. 34 is the second of the annual reviews of the chemistry of the main-group elements, published in *Coordination Chemistry Reviews*. In comparison with the 1978 volume, the current volume shows greater activity during 1979 in the chemistry of the elements of Groups III and V. Topics described in detail are preparative techniques, spectroscopic and structural properties, and reaction chemistry.

Vols 35 and 37 aim to provide a complete review of the coordination chemistry of all the *d* transition elements. Of these, Vol. 35 treats the coordination chemistry of Fe, Ru, Os, Co, Rh, Ir, Pd, Pt, Cu, Ag and Au, while Vol. 37 covers Sc, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Tc, Re, Ni, Zn, Cd and Hg. Developments in the coordination chemistry of these transition elements and current topics, inclusive of metal carbonyls, metal-to-metal bonds, metal-atom clusters, transition-metal compounds with bonds to hydrogen and carbon, and biological systems, are described in detail.

There are some inconsistencies of presentation in the three volumes, and abbreviation of the ligands is not necessarily consistent with IUPAC rules. However, these reviews will be of great value: for example, on the coordination chemistry of Mo, which has been extensively studied in recent years, the reports appear in many different journals; if researchers wish to know about the coordination chemistry of Mo, they must read a vast number of research papers appearing in many journals – a tremendously time-consuming task; fortunately, as these review volumes have been organized element by element, and a wide range of the information that appeared in the period is summarized compactly, researchers can fulfil such requirements without much labour. Consequently, these three volumes serve as an extensively useful bibliography for researchers in the fields of chemistry and materials science.

At the present time it is well known that X-ray and neutron diffraction methods have been widely utilized in the study of inorganic chemistry. Without the popularization of X-ray crystallography, inorganic chemistry would never have seen such a dramatic development in recent years. X-ray crystallography is now indispensable for the characterization of compounds and has provided a sound basis for the studies of model systems for oxygen carriers, Jahn–Teller systems for Cu^{II} complexes, metal chelates of macrocyclic compounds, crown ethers, and cryptates, *etc.*, described in these volumes.

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Structure and bonding. Vol. 44. Metal complexes. Edited by M. J. CLARKE *et al.* Pp. 202. Berlin, Heidelberg, New York: Springer-Verlag, 1981. Price DM 96.00, US $50.40.

This volume of the irregularly published series *Structure and Bonding* comprises two articles on structural aspects of metal complexes. The first is a summary of *Crystallographic Studies of Transition Metal Hydride Complexes* by Ray-