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D:*C-friedo-B'*:*A'-neo*-Gammacer-9(11)-ene: erratum. By HELMUT W. SCHMALLE and OTTO H. JARCHOW. *Mineralogisch-Petrographisches Institut der Universität Hamburg, Grindelallee* 48, *D*-2000 *Hamburg* 13, *Federal Republic of Germany* and BJÖRN M. HAUSEN, *Universitäts-Hautklinik Hamburg Eppendorf, Martinistrasse* 52, *D*-2000 *Hamburg* 20, *Federal Republic of Germany*

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Abstract

There is a typographical error in the *Abstract* of the paper by Schmalle, Jarchow & Hausen [*Acta Cryst.* (1980). B**36**, 2450–2453]. The correct value of the cell constant b is 10·751 (7) Å.

All relevant information is given in the *Abstract*.

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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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Atlas of molecular structures in biology. Vol. 2. Haemoglobin and myoglobin. By G. FERMI and M. F. PERUTZ. Pp. vi + 104. Oxford Univ. Press, 1981. Price £20.00.

The amount of structural information about a particular protein can be very large, and is usually scattered over numerous publications over a period of many years (more than two decades for hemoglobin and myoglobin). Furthermore, conventional journals are frequently poorly equipped for the representation of three-dimensional data, Hence, D. C. Phillips and F. M. Richards initiated the publication of a series of atlases. The first publication concerned itself with the relatively small ribonuclease molecule [Richards & Wyckoff (1973). *Ribonuclease-S*. Oxford Univ. Press]. It was an original and useful experiment in various representations of a three-dimensional complex structure. The present volume is an extension of this approach to the far more complex oligomeric hemoglobin molecule. The *Atlas* is well bound with connected wire loops in order to permit the pages to fall easily onto a flat viewing surface. About half of the material is text and tables while the other half is figures. The principal three-dimensional representations are red–green stereo diagrams (a pair of filters is supplied with the book). These diagrams can show large surfaces in three dimensions as their size is not limited by normal eye separation. Furthermore, viewing is unaccompanied by eye strain as is usual with conventional left–right stereo diagrams. The major technical problem is the difficulty of finding a suitable blue-green ink to match with the green eye filter, causing a faint blue image in the vicinity of the three-dimensional image. The diagrams in the Fermi and Perutz *Atlas* are no exception. Furthermore, some of the diagrams have been printed rather faintly (*e.g.* D2 and D3) causing a different kind of eye strain. However, the diagrams in this book, which are drawn with meticulous care for detail and clarity, are far superior to the usual journal representations and, short of a model, the best available method for illustrating a very complex molecule.

The *Atlas* is divided into two parts. The first, written by Giulio Fermi, is a true atlas. The text explains easily and clearly the differences between the relaxed, R (liganded hemes) and tensed, T (unliganded) states of hemoglobin. The alteration of the quaternary structure between the R and T states controls the function of hemoglobin. In contrast, myoglobin, a monomer, can only have a single state. In hemoglobin, the four active subunits (two α and two β chains) communicate with each other by altering the association between subunits. The approximately 0·4 Å movement of the iron in and out of the plane of the heme group causes small alterations in the subunit tertiary structures which are amplified onto a large 18° rotation of the $\alpha_1\beta_1$ dimer relative to the $\alpha_2\beta_2$ dimer. Hence, the study of the heme interactions with the globin and the subunit interactions are central to an understanding of how hemoglobin works. The subunit interactions in hemoglobin are shown in tabular form (Figs. 8, 9) for both the R and T states and are illustrated with side chains (D18–D27). One wonders why the authors did not experiment with some 'space-filling' views to augment the study of subunit interactions. The heme environments are illustrated for the met (liganded) and deoxy (unliganded) forms of myoglobin and the α and β chains of hemoglobin. The species used for illustration are sperm whale for myoglobin and primarily human adult deoxyhemoglobin and horse methemoglobin. No diagrams are provided showing the superposition of these structures on each other, but the differences are carefully described in the text and in tables. In addition, there is a