

since it tends to be poorly presented in the individual papers and much of it, in any case, is already accessible in translated periodicals.

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**Micron – The International Journal of Electron Microscopy, Electron Probe Micro-analysis and Associated Techniques.** Vol. 1 No. 1. Pp. xiii + 83; 1969. U.K. Structural Publications, Price. £2.10 each number.

The development of the transmission electron microscope alone is one of the triumphs of post war applied science. Later developments in electron optics such as the scanning electron microscope and the microprobe analyser confirm that the story is one of remarkable success. The appearance of the new quarterly journal *Micron* devoted entirely to the application of these instruments is evidence enough that they are now in widespread use in a number of different disciplines.

Judging any journal by reference to any one edition is always hazardous and the first edition of *Micron* is no exception. The editors have managed to include papers mentioning the use of all the instruments. Nevertheless, there is clearly a biological flavour in the choice of discipline; of the eight papers presented, five deal with problems in biological science, two with materials science, and one with the instruments themselves. Most of the papers are qualitative rather than quantitative, being written in the manner of an observer peering down a microscope reporting to someone who isn't. Certainly the journal is not intended for the theoretically inclined unless the search is for raw material.

One of the striking features is the large number of plates. In this first edition there are 83 pages of script and no less than 48 plates. Every laboratory using electron optical equipment will certainly have its favourite collection of micrographs and *Micron* seems destined to become their resting place. It is to

be hoped that the journal will not develop into a sort of scientific *Picture Post*. A series of plates giving progressively more detail of a leaf, without any depth of focus problem, is not without interest; the worry concerns the number of available leaves.

The production of the journal is good, being printed on fine quality gloss paper which gives a feeling that no expense has been spared. Anyone wishing to purchase a single personal copy will no doubt confirm this feeling on receipt of the bill for two guineas – sorry £ 2.10. Every plate is printed on just one side of a page, the reverse side being used to give brief details. Because of the large number of plates this does mean a lot of vacant space. An irritating point, particularly when reference is made to them in the text, is the gathering together of the plates at the end of each paper. The contents include the usual diet of a diary, book reviews, conference reports and a sprinkling of advertisements. The publishers are also offering a reader inquiry service for the latter. Justification for the international title is provided by an abstract of each paper in French and German.

If there is a demand for a non-mathematical journal capable of reproducing to high standards the sort of visual information that electron optical devices yield, then *Micron* should survive to become a permanent feature of the library shelf.

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**Principles of structural metallurgy.** By B. HARCOPOS. Pp. 146. London: Iliffe, 1963. Price £0.50.

This is a cheap student's edition of a book that was first published in 1963. The advantage of the book is that it contains forty-eight photomicrographs of the most common alloy structures with discussions on them. The rest of the book (the first half) contains standard material on phase diagrams, solidification, defects and mechanical properties *etc.* It is a good little book that could be used in introductory

courses that aim at a practical knowledge rather than a deeper understanding of the mechanisms that determine the mechanical properties of alloys.

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**An outline of crystal morphology.** By A. C. BISHOP. Pp. 314. London: Hutchinson, 1967. Price £1.50.

This modest work whose objective, according to the author, is 'to give an outline of the principles of crystal structure and then, on this foundation, to acquaint the reader with the more practical aspects of crystal morphology that he is likely to meet in an elementary university course,' consists of two parts: 1, *The Principles of Crystallography* (80 pages), and 2, *Systematic Crystallography* (207 pages). This book is essentially one on morphological crystallography, as the title indicates, but part 1 cannot be regarded as giving an adequate 'outline of the principles of crystal structure'. In chapter 1, *General Introduction to Crystallography*, the principal weakness is the inadequate discussion of the 14 Bravais lattices, symmetry, and the crystal systems. The symmetries of the space lattices are not dealt with, and so the restrictions upon the (non-translation) symmetry elements observed in crystals are not explained. Similarly, the fact that the 14 space lattices fall into seven symmetry groups cannot be correlated with the existence of the seven crystal systems. Initially (p. 22) the systems are defined only in terms of the shape of the 'lattice' (the term 'unit cell' is not used), although later in chapter 4 of part 2 (p. 100) the systems are defined in terms of characteristic symmetry.

In the rest of part 1, chapter 2 entitled *A Chemical View of Crystals*, gives a very elementary introduction to crystal chemistry including simple descriptions of some classical structures, but no real attempt is made by the author to relate the chemical characteristics of a crystal structure to the morphology of the crystal. In chapter 3, *Methods of Study*, the author discusses X-ray diffraction by crystals in six pages and then gives reasonably satisfactory descrip-

tions of stereographic and gnomonic projections. However, in relation to these projections, he uses only the polar angle, which he does not name and which he calls  $\theta$  instead of  $\rho$ , and he makes no reference to an azimuthal angle. The fuller description is of the stereographic projection rather than the gnomonic, and he uses the former throughout the rest of the book. The explanation of face intercepts and Miller indices is fairly satisfactory although the interrelationship between unit-cell dimensions, axial ratios, and Miller indices might be difficult for the beginner to understand from this treatment. Chapter 3 concludes with an explanation of how the stereographic projection of a crystal is drawn up with the aid of a Wulff net utilizing sets of interfacial angles taken in zones.

Part 2, *Systematic Crystallography*, is generally more satisfactory than part 1. It consists essentially of the traditional morphological descriptions of crystals taken by crystal class within the systems taken in the sequence tetragonal, or-

thorhombic, monoclinic, triclinic, cubic, and hexagonal and trigonal. In an introductory text such as this, the full Hermann-Mauguin class symbols ( $4/m 2/m 2/m$ ) are to be preferred to the shortened symbols ( $4/mmm$ ). Well executed drawings show for each class the symmetry elements, a stereogram of the symmetry, the individual crystal forms, and the forms and habits of some representative crystals. The representative crystal drawings would be enhanced by the inclusion of the reference axes (which are shown on the drawings of the individual forms). In the text, some explanation of the origin or meaning of unfamiliar crystal form names would be helpful to the beginning crystallographer. Each chapter dealing with one crystal system concludes with a detailed account of the procedure for drawing a stereographic projection of a crystal in that system, deducing its symmetry, deriving an axial ratio, and indexing the faces. These sections along with the last two chapters of the book, 12, *Stereographic Projections - Some Ad-*

*ditional Constructions*, and 13, *Crystal Drawing*, are perhaps the most valuable in the whole book. The main part of the text concludes with chapter 11, *Crystal Growth and Composite Crystals*, which includes a treatment of twinning appropriate to the scope of the book although the term 'twin law' is used only once.

*An Outline of Crystal Morphology* hardly does justice to the structural principles underlying crystal morphology, but it does give a reasonably satisfactory account of crystal morphology itself including the stereographic representation of crystals, and the drawing of crystal forms. It should be found useful by professional crystallographers with an interest in morphology, and by amateur crystallographers and mineralogists.

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## Meeting Reports

### Iber-American Group on Crystallography. Second Meeting, 8-17 June 1970.

#### *Background*

That the development of the different branches of science and technology should be closely entwined with the necessities and possibilities of each geopolitical area is at present an accepted fact. It is also accepted that this development demands that the teaching and research should be oriented accordingly to original strategies. The planning of these strategies, however, is not as obvious as it may appear and it becomes particularly difficult in those countries where there are not a great many scientists. There, the scientific research is carried on by small groups of scientists who, for the most part, have been trained in other countries with cultural, political and economic structures different from those of their own. While these groups maintain close relationships with foreign groups working in totally different environments, they tend to have little contact with those researchers working in surroundings similar to theirs. Evidently, this fact is a hindrance to the development of the adequate patterns and strategies to be followed in each particular environment, which otherwise ought to

develop from common and cooperative efforts of groups working in related areas of research under like difficulties.

In this sense, regional meetings appear as very important, since they bring into contact scientists from countries with similar conditions. The Iber-American countries provide an interesting example: the existing bonds among scientists, quite strong among these countries, are based more on the similarity of economic-political situations and cultural backgrounds than on the mere affinity of languages.

On the basis of these ideas, a small number of researchers decided to form an Iber-American Association in crystallography. The Association was constituted in the city of Cordoba, Argentina, during the 36th Congress of the Argentine Physical Society in 1960, which was attended by crystallographers of several Iber-American countries.

#### *Second meeting*

In August 1969, during the Eighth International Congress of Crystallography held in Stony Brook, the founders of the Iber-American branch met again and programmed a second meeting which took place in Buenos Aires during June 8-17, 1970. The chairman of the organizing committee was Professor E.

Galloni. The programming and organizing of this meeting took into special account the particular conditions of the participating countries. In this regard, one of the most important points to be considered was that in the Iber-American countries there are too few people working in each research area to permit the organization of a Congress devoted mainly to original papers; ordinarily, the few people working in a given area already will have had occasion to become aware of each other's new results. An analysis of the short and medium range possibilities of their respective areas was, instead, presented by several Iber-American specialists.

The meeting began with a general survey by Professor Julio Garrido from Spain. R. Bru (University of Madrid) and M. Ipohorski (Argentine Atomic Energy Commission) presented the latest achievements in and possibilities of electron microscopy. OI Wittke (University of Chile) did the same with lattice dynamics studies. A. Bonfiglioli (Argentine Atomic Energy Commission) analysed diffraction by imperfect crystals and E. Laredo (Venezuelan Institute of Scientific Research) presented a review of small angle X-ray scattering. L. Levy and P. Diodati (University of Buenos Aires) reviewed crystal growth tech-