

## 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).*

### Academy of Sciences of the USSR

The Second Conference on Crystal Chemistry, called by the N. S. Kurnakov Institute of General and Inorganic Chemistry of the Academy of Sciences of the USSR, will be held in Moscow at the end of 1956 or at the be-

ginning of 1957. Further information may be obtained from the Secretary of the Organising Committee (Dr T. S. Khodashova), Moscow, V-71, B. Kaluzhskaya, 31, Institut Obschei i Neorganicheskoi Khimii im. N. S. Kurnakova Akad. Nauk SSSR.

## International Union of Crystallography

### Symposium in Madrid, 2-6 April 1956

By invitation and under the patronage of the Consejo Superior de Investigaciones Científicas, a Symposium of the Union was held in Madrid, Spain, from 2 to 6 April 1956. The Symposium was devoted to 'Structures on a scale between the atomic and microscopic dimensions'. Concurrently with the Symposium, open as well as private meetings were held by the Commissions on Crystallographic Apparatus and on Crystallographic Teaching. The Executive Committee of the Union also met in Madrid in the same week, and so did the Commission on *International Tables*, the Sub-Committee on the Revision of Statutes and By-Laws, and the Programme Committee for the Fourth General Assembly and International Congress.

The warm thanks of the Union are due to UNESCO for its generous assistance towards the travelling expenses of invited participants in the Symposium, and of the members of Committees and Commissions which met in Madrid.

About 225 crystallographers and other scientists, and 100 accompanying members, from the following twenty-one countries registered for the Symposium: Australia, Austria, Belgium, Brazil, Canada, Chile, China, Denmark, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Union of Socialist Soviet Republics, United Kingdom, and United States of America. The Symposium was open to the members of the Third International Meeting on the Reactivity of Solids, which was held in Madrid at the same time.

Except for preparation of the scientific programme, all arrangements in connexion with the Symposium were in the hands of a Local Committee, the membership of which was as follows: A. DURÁN (President), L. Rivoir (Vice-President), M. Abbad (Secretary), S. García-Blanco and J. García-Vicente (Vice-Secretaries), J. L. Amorós, L. Brú, J. Cabrera and J. Doetsch (Members). The Union owes deep gratitude to this Committee for their invaluable work in organizing the meeting.

The Symposium was formally opened on 2 April by T. L. MIRANDA, Director General de Enseñanza Universitaria, who represented the Minister of National Education. A. DURÁN welcomed the members of the Symposium, and R. W. G. WYCKOFF gave a short address explaining the aims of the meeting.

The scientific programme was arranged by a Programme Committee, of which A. Guinier was Chairman. On the first two days fifteen general lectures were given on various electron-microscopic, X-ray and electron-diffraction studies of structures of the order of 100 Å. Special sessions were held during the last two days, and forty-eight contributions of about twenty minutes each were presented. The main topics were the following: imperfections in metals; irregularities in alloys; structures of high polymers, proteins and viruses; and different electron-diffraction studies. For further details of the scientific programme of the Symposium, and of the meetings of the Commissions on Crystallographic Apparatus and on Crystallographic Teaching, see below.

The Closing Session was held on 6 April and was presided over by the Minister of National Education, HIS EXCELLENCY J. RUBIO. Speeches were given by A. GUINIER, G. HÄGG and R. W. G. WYCKOFF, who summarized the results and the value of the meeting, and expressed the thanks of the Union to the organizers for their work and for the great hospitality received. A. DURÁN thanked all members of the Symposium for coming to Madrid, and the Symposium was formally closed by HIS EXCELLENCY J. RUBIO. At the gala dinner, held on the same night, an address was given by P. P. EWALD.

During the Symposium a small exhibition was held of crystallographic apparatus, of scientific publications, and of aids in the teaching of crystallography. Further, a visit was arranged to the Ciudad Universitaria on 6 April.

The programme of social events organized for the members of the Symposium included the following: a reception by the Consejo Superior de Investigaciones Científicas (2 April); a reception in the City Hall, and a night excursion through Madrid (3 April); an excursion to the Escorial, with a lunch in the hotel Felipe II (4 April); a family concert (5 April); a performance of Spanish folk dances, and a gala dinner at the hotel Wellington (6 April). In addition, a further programme of social events was arranged for the accompanying members; this included a fashion display, and visits to the Museo del Prado and the Fundación Generalísimo Franco.

After the Symposium, two six-day excursions were held, one to Andalucía and one to the Balearic Islands.

### Scientific Programme of the Symposium

At the Symposium the following papers were read and were followed by informal discussions:

#### General Lectures

- I. M. DAWSON. The electron-microscope study of long-chain compounds.
- M. DRECHSLER. Die Analyse von Kristallstufen und Versetzungen mit Feldemissionsmikroskopen.
- S. GOLDSZTAUB. Les méthodes interférentielles appliquées à l'étude de la croissance des cristaux.
- R. W. G. WYCKOFF. The electron microscopy of macromolecular crystals.
- A. L. G. REES. New developments in electron-diffraction studies.
- B. K. WEINSTEIN. Electronographic methods for studying crystalline structures.
- L. O. BROCKWAY. Study of minor phases in alloys by electron microscopy and diffraction.
- J. C. KENDREW, H. M. DINTZIS & P. J. PAULING. The use of X-ray single-crystal measurements to determine the shape of protein molecules.
- V. LUZZATI. Diffusion aux petits angles par des particules séparées.
- O. KRATKY. Morphology of solid macromolecular substances by means of X-ray methods.
- H. JAGODZINSKI. Röntgenbeugungs-problem der Guinier-Preston Zonen.
- R. DE P. DAUBENY. The sub-microscopic structure of 'Terylene'.
- W. W. HARRIS, F. L. BALL & A. T. GWATHMEY. The texture of oxide films formed on smooth faces of a single crystal of copper.
- R. CASTAING. Métallographie électronique à haute résolution sur coupes minces.
- J. J. TRILLAT. Étude des structures superficielles par diffraction électronique et bombardement ionique combinés.
- Special Sessions: Section I*
- C. S. BARRETT. Structures and imperfections in some metals at 5° K.
- L. GRAF. Wachstumsmechanismus verschiedener Wachstumsformen bei der Elektrokristallisation von Silber an Mikrokathoden.
- S. WEISSMANN. Quantitative study of the substructure of nickel and nickel alloys by a method combining X-ray microscopy and diffraction analysis.
- P. B. HIRSCH. Dislocation diffraction theory and experiments on tin whiskers.
- C. J. BALL. Subgrain boundaries in cold-worked metals.
- G. PFEFFERKORN. Zur elektronenmikroskopischen Untersuchung von Realbaustrukturen.
- H. RICHTER. Deutung der Struktur nichtkristalliner Stoffe durch Vergleich berechneter und experimenteller Atomverteilung.
- I. NITTA, T. WATANABE & I. TAGUCHI. Domain structure in aniline hydrobromide.
- R. HOSEMAN. Beugungsmikroskopie, eine neue Methode der Feinstrukturanalyse.
- V. GEROLD. Die Struktur der Guinier-Preston Zonen und ihr Zusammenhang mit der Kaltaushärtung.
- J. M. SILCOCK. G.-P. zones and  $\theta'$  in aged Al-Cu-Cd (In or Sn).
- H. NIEHRS. Über den vermutlichen Kontrast bei der elektronenmikroskopischen Abbildung von Atomen in Kristallgittern.
- R. GRAF. Quelques observations aux rayons X sur les phénomènes de précipitation dans l'alliage Al-Zn-Mg à 7% de Zn et 3% de Mg.
- A. H. LUTTS & H. LAMBOT. X-ray investigation of precipitation in Al-Mg-Ge.
- K. SCHUBERT. Metallic phases with long superstructure period.
- J. PLATEAU, G. POMEY & A. KOHN. Étude de la transformation d'aciers à 12% de manganese par conjugaison des méthodes de microscopie électronique et de diffraction des rayons X.
- A. KELLER. Morphology of crystallising polymers.
- B. BELBEOCH & A. GUINIER. Diffraction aux petits angles du polythène.
- J. J. POINT. Choix des échantillons et coordination des méthodes d'investigation de la structure submicroscopique du polyéthylène.
- J. L. AMORÓS & E. SAINZ-AMOR. Some particularities of the structure of amianthus.
- J. F. RADAVIDH. The formation of oxide films on stainless steels.
- R. DIAMOND. Structural changes during the carbonization of certain coals.
- W. MAY. Size and shape of sulphonate micelles in mineral oil.
- T. SUDO & H. TAKAHASHI. Halloysite particles with the shapes like 'chestnut-shell'.
- Special Sessions: Section II*
- D. L. CASPER, F. H. C. CRICK & J. D. WATSON. The molecular viruses considered as point-group crystals.
- A. KLUG. The Fourier transforms of the cubic point groups 23, 432 and 532.
- R. E. FRANKLIN, A. KLUG, J. T. FINCH & K. C. HOLMES. X-ray diffraction studies of the structure and morphology of tobacco mosaic virus.
- M. H. F. WILKINS & H. R. WILSON. X-ray diffraction and electron-microscope studies on the structure of the cell nucleus and nucleoproteins.
- W. E. SEEDS. Fourier transforms of helical structures, with special reference to the structure of deoxyribose nucleic acid.
- S. MCGAVIN, P. HARRISON & A. C. T. NORTH. The structure of collagen on the scale of low-angle X-ray diffraction and electron microscopy.
- G. N. RAMACHANDRAN. Structure and long-spacing of collagen.
- R. E. BURGE & J. T. RANDALL. The equivalence of X-ray and electron-microscope observations on collagen.
- A. OBERLIN & R. HOCART. Epitaxie par croissance, de monocristaux d'or sur le chlorure de sodium. Microscopie électronique et diffraction électronique.
- H. I. MATHEWS. The nature of orientated crystal growth of lateral and outward (dendritic) types.
- J. L. FARRANT & A. L. G. REES. The relation between electron interference and structure.
- R. E. BURGE. The application of electron diffraction to the determination of the structure of anhydrous and synthetic high polymers.
- N. D. LISGARTEN & M. BLACKMAN. The crystal structure of ice crystallites at low temperatures.

- H. WILMAN. The mechanism of deformation of crystals by torsion; and some new results on rotational disorientation in epitaxial crystal growth.
- L. O. BROCKWAY & M. WASSERMAN. The structure and photosensitivity of condensed films of lead sulfide.
- H. BAERSCH & F. CATALINA. Anwendung eines Elektronenfilters auf Elektronenbeugungsdiagramme des Glimmers und des Anthracens: Kikuchi-linien und diffuse Flecken.
- J. W. MENTER. Fine structure of crystals with large molecules, as revealed by the electron microscope.
- J. NUTTING. The limitations of electron metallography.
- R. J. BIRD, G. ROONEY & R. W. WILSON. Electron microscopy of commercial greases.
- J. A. GARD. Parallel striations in electron micrographs of overlapping crystals.
- S. M. CLARK & J. LBALL. The structure of bone.
- D. R. KREGER. New lamellate orientations of cellulose-I in cell walls of filamentous algae.
- A. CAMUÑAS. Differentiation of microscopic structures with optical emission spectra.
- S. G. LEFEBRE. Techniques destinées à la mesure précise par diffraction de rayons X, des orientations dans les fibres.

#### Commission on Crystallographic Apparatus

The Commission organized two open sessions at which the following twelve contributions on newly developed techniques and apparatus were presented:

- W. PARRISH & T. R. KOHLER. The use of counter tubes in X-ray analysis.
- M. J. BUERGER. New single-crystal counter-tube technique.
- B. L. HENKE. Small-angle diffraction with long wavelengths.
- D. P. RILEY. Some factors in the design of microfocuss and semi-microfocuss X-ray tubes.
- M. LOCQUIN. Le contraste de phase et le contraste interchromatique en microscopie électronique.
- J. MONTES & M. ABBAD. Electrical machine for performing some calculations which occur in the determination of crystal structures.
- P. M. DE WOLFF, K. LOWITZSCH & W. PARRISH. Application of focusing monochromators to X-ray diffractometry.
- R. GRIFFOUL, R. RABILLON & A. GUINIER. Comparaison des montages par réflexion et par transmission sur diffractomètre.
- D. A. G. BROAD. Performance of a new crystallographic rotating-anode X-ray tube.
- A. L. MACKAY. Miniature moving-film X-ray cameras.
- O. KRATKY. New method for producing X-ray small-angle diagrams free of slit-scattering.
- L. BRÚ. Sur quelques avantages que présente l'application de la méthode des différences vectorielles, en utilisant les diagrammes tridimensionnels de Patterson.

All but one of the members of the Commission were present at its private meetings, at which the different activities of the Commission were discussed. Among the topics were the publication of a list of manufacturers and suppliers of crystallographic apparatus; the publication of review articles on various subjects; and the experimental comparison of methods for the precise determination of lattice parameters.

#### Commission on Crystallographic Teaching

In conjunction with the Symposium, nine open sessions were held on the teaching of crystallography. The excellent organization of the Local Committee in Madrid greatly facilitated the work of the Commission. This was the first occasion on which international discussions had been held on this subject.

At the open sessions the following papers were read and discussed:

- J. D. BERNAL. The history and present status of crystallographic teaching.
- J. DOETSCH. Crystallographic teaching in Spain.
- N. V. Belov. Crystallographic teaching at Moscow University.
- J. D. H. DONNAY. Geometrical aspects of crystallographic teaching.
- A. F. WELLS. Teaching crystal chemistry.
- E. W. HUGHES. Mathematical aspects of crystallographic teaching.
- A. V. SHUBNIKOV. Lecture demonstrations in crystal physics.
- A. MAGNÉLI. Teaching crystallography to non-crystallographers.
- H. J. GRENVILLE-WELLS. Books for teaching.

The Commission itself held three private meetings. All seventeen members, representing thirteen countries, were present, except that two of the American members were represented by a substitute. Preparations were made for continuing the work thus begun and for stimulating discussion of teaching problems within each separate country. The dependence of some of the problems on the organizational framework of the institutions concerned makes it important to have national and local discussions, as well as to exchange ideas and information between countries. The Commission regards the exchange of the information which it is collecting from the various parts of the world as one of its chief functions.

In order that the chief papers presented in Madrid may be widely available, the Commission intends to publish them, and an announcement will be made in *Acta Crystallographica* concerning this. Arrangements have been made for publications of other articles concerned with crystallographic teaching, and the Commission would be glad to receive articles of this kind. These should be sent to the Secretary of the Commission on Crystallographic Teaching, Dr H. J. Grenville-Wells, Department of Chemistry, University College, Gower Street, London W. C. 1, England.