

International Union of Crystallography

First General Assembly and International Congress

By kind invitation of the American Society for X-ray and Electron Diffraction, the Crystallographic Society of America, and the authorities of Harvard University, the first General Assembly and International Congress of the Union was held at Harvard University, Cambridge, Mass., U.S.A. from 28 July to 3 August 1948. Formal meetings of the Assembly took place on 29 and 30 July and 3 August with P. P. EWALD as Chairman and R. C. EVANS as Secretary, and sessions of the Congress were held throughout the week. Some 310 crystallographers were in attendance and the following countries were represented: Belgium, Canada, France, Germany, India, Italy, Netherlands, Spain, Sweden, U.K., U.S.A. Warm thanks are due to the Chairman and other members of the U.S.A. National Committee for Crystallography, to the members of the staff of the Mineralogical Department of Harvard University, to the Secretaries of the American Society for X-ray and Electron Diffraction and of the Crystallographic Society of America for their invaluable assistance in organizing the meetings, and to Harvard University for the excellent accommodation put at the disposal of the Union. The foreign delegates were kindly entertained by their American colleagues and the thanks of the Union are also due to the following organizations whose generous help made this hospitality possible:

Aluminum Company of America.
 American Brass Company.
 American Cyanamid Company.
 Anonymous.
 Armour Research Foundation.
 Baker and Company, Inc.
 Bell Telephone Laboratories.
 Brush Development Company.
 Crystallographic Society of America.
 E. I. duPont de Nemours and Company.
 Eastman Kodak Company.
 General Electric X-Ray Corporation.
 Hercules Powder Company.
 Jones and Laughlin Steel Corporation.
 Linde Air Products Company.
 Machlett Laboratories.
 North American Philips Corporation.
 Norton Company.
 Philips Laboratories, Inc.
 Pittsburgh Corning Corporation.
 Radio Corporation of America.
 Saratoga Laboratories, Inc.
 Shell Development Company.
 Socony-Vacuum Laboratories.
 Texas Company.
 United Shoe Machinery Corporation.
 U.S. Steel Corporation of Delaware.

General Assembly

The following is a summary of the principal business transacted at the sessions of the General Assembly.

(1) *Statutes and By-Laws*

Statutes and By-Laws of the Union were adopted. These have already been printed in this journal (*Acta Cryst.* (1948), 1, 275).

(2) *Adhering Bodies*

Adhesion of the following countries was accepted:

U.K. on 9 October 1947 in Group VIII.
 U.S.A. on 7 April 1948 in Group VIII.
 Canada on 28 April 1948 in Group IV.
 Norway on 31 May 1948.

The group in which Norway adheres has not yet been made known.

(3) *Honorary President*

In recognition of his epoch-making experiment from which the modern development of crystallography has proceeded M. VON LAUE (Germany) was elected Honorary President of the Union.

(4) *Officers*

The following Officers were elected for the period to the second General Assembly:

President

SIR LAWRENCE BRAGG (U.K.)

Vice-Presidents

A. WESTGREN (SWEDEN)
 R. W. G. WYCKOFF (U.S.A.)

General Secretary

R. C. EVANS (U.K.)

Editor of Acta Crystallographica

P. P. EWALD (U.K.)

Ordinary members of Executive Committee

M. J. BUERGER (U.S.A.)
 A. L. PATTERSON (U.S.A.)
 J. WYART (France)

(5) *Structure Reports*

A report of the Provisional Commission on *Structure Reports* was adopted and a Commission on this subject was established.

It is proposed that the Reports should be divided into the following sections:

Section 1: Inorganic Materials;
 Section 2: Metals and Alloys;
 Section 3: Organic Structures.

This classification is, however, provisional and is subject to revision if later considered necessary. Sub-editors for the sections are proposed as follows:

Section 1: To be nominated later;
 Section 2: C. S. BARRETT (U.S.A.);
 Section 3: J. M. ROBERTSON (U.K.);

with A. J. C. WILSON (U.K.) as General Editor.

It is intended that the Reports should begin at some recent date, say 1 January 1947, but that the intervening

period since the cessation of the *Strukturbericht* should be covered simultaneously by a separate Report. Work on the collection of material for these Reports will begin shortly and publication will follow in due course. Subventions to meet part of the costs of editorial work and publication are gratefully acknowledged from UNESCO and from British and American Research Associations, industrial firms and other organizations.

(6) *International Tables*

A report of the Provisional Commission on *International Tables for Crystal Structure Determination* was adopted and a Commission on this subject was established. This Commission met during the Assembly and presented a further report which was also adopted.

It is proposed that the Tables should be issued in three volumes, as follows:

Vol. 1: Theory of Crystallographic Groups;

Vol. 2: Mathematical Tables not subject to revision;

Vol. 3: Physical and Crystallographic Tables subject to periodic revision.

Editors for these volumes are proposed as follows:

Vol. 1: N. F. M. HENRY (U.K.);

Vol. 2: A. L. PATTERSON (U.S.A.);

Vol. 3: C. H. MACGILLAVRY (Netherlands).

It is intended that the Tables should be so planned as to be of the maximum practical usefulness in the determination of crystal structures, primarily by X-ray methods, but that their value in teaching should also be kept in mind. For the latter purpose it may be possible to arrange for certain sections to be supplied independently as separates. The Tables will be written in English but a glossary of terms in other languages will be included.

Preparation of the material for the Tables is now in hand under the supervision of the several editors, and negotiations with possible publishers are in progress.

(7) *Crystallographic Data*

A Commission on Crystallographic Data was established to promote the collection and publication of crystallographic data and to co-operate with other bodies working in the same field.

(8) *Crystallographic Apparatus*

A Commission on Crystallographic Apparatus was established to collect and disseminate information on apparatus, models, etc., to recommend desirable design features of apparatus, to co-ordinate the needs of crystallographers, and to sponsor the preparation and production of charts, figure fields, etc.

(9) *Crystallographic Nomenclature*

A Commission on Crystallographic Nomenclature was established.

(10) *Membership*

The following is the membership of the various Commissions:

Commission on Acta Crystallographica

Chairman: P. P. EWALD, The Queen's University, Belfast, Northern Ireland

Other members: R. C. EVANS (U.K.)
I. FANKUCHEN (U.S.A.)
J. WYART (France)

Commission on Structure Reports

Chairman: A. J. C. WILSON, Physics Department, University College, Cardiff, Wales

Other members: C. S. BARRETT (U.S.A.)
J. D. BERNAL (U.K.)
P. P. EWALD (U.K.)
J. M. ROBERTSON (U.K.)
J. WYART (France)
R. W. G. WYCKOFF (U.S.A.)

Commission on International Tables

Chairman: K. LONSDALE, Chemistry Department, University College, London W.C. 1, England

Other members: M. J. BUERGER (U.S.A.)
N. F. M. HENRY (U.K.)
C. H. MACGILLAVRY (Netherlands)
A. L. PATTERSON (U.S.A.)

Commission on Crystallographic Data

Chairman: F. W. MATTHEWS, Canadian Industries Ltd., McMasterville, Quebec, Canada

Other members: D. HODGKIN (U.K.)
H. W. RINN (U.S.A.)
A. J. C. WILSON (U.K.)

Commission on Crystallographic Apparatus

Chairman: I. FANKUCHEN, Polytechnic Institute of Brooklyn, 99 Livingston St., Brooklyn 2, N.Y., U.S.A.

Other members: W. H. BARNES (Canada)
M. J. BUERGER (U.S.A.)
E. G. COX (U.K.)
H. P. ROOKSBY (U.K.)

Commission on Nomenclature

(Members to be nominated by Adhering Bodies)

In accordance with By-Law 15 these Commissions are given full freedom in arranging their internal structure and work, and are free to co-opt further members. Crystallographers interested in the activities of any of these Commissions are cordially invited to make contact with the appropriate Chairman.

(11) *Commission on Macromolecules*

C. W. BUNN (U.K.) was elected to represent the Union on the Commission on Macromolecules of the International Union of Chemistry.

(12) *Unit Contribution*

The unit contribution (Statute 10) was fixed as the gold equivalent of 60 U.S.A. dollars.

(13) *Auditors*

Messrs SLATER, DOMINY and SWANN, Cambridge, England, were appointed auditors to the Union.

(14) *Second General Assembly*

It was decided to hold the second General Assembly in Europe in the summer of 1951.

International Congress

(1) The principal business of the Congress was conducted in a number of morning and afternoon sessions at each of which short papers on related topics were read. At each session the presentation of the papers was followed by an informal discussion. The contributions to the several sessions were:

Instruments and Measurement

- L. ALEXANDER & H. P. KLUG. Basic Aspects of X-ray Absorption in the Quantitative Diffraction Analysis of Powder Mixtures.
 Z. W. WILCHINSKY. Effect of Crystal and Particle Size on Powder Diffraction Intensities.
 W. PARRISH & E. A. HAMACHER. Geiger Counter Spectrometer.
 J. RANTFL. XRD-3 Unit and the SPG X-ray Detector.
 H. W. PICKETT. SBG Spectrogoniometer and the SPG X-ray Spectrometer.
 S. H. BAUER. An Evaluation of Quantitative Procedures for the Estimation of Intensities of Diffracted Electrons.
 L. S. BIRKS. Crystal Counters.
 K. BANERJEE. Method for Studying Extremely Low-Angle Scattering of Monochromatic X-rays.
 H. P. ROOKSBY. Practice of X-ray Diffraction in an Electrical Research Laboratory.
 J. N. KELLAR & P. B. HIRSCH. A Micro-beam X-ray Technique.
 R. J. BAILLY. Infra-red Microscope.

Alloy Phase Structures

- W. H. ZACHARIASEN. Structures of the Phases in the System U-Si.
 R. E. RUNDLE. Bridge Bonds in Metallic Hydrides.
 A. J. BRADLEY. The Fe-Ni-Al Alloys.
 D. A. OLIVER. The Technical Importance of the Sigma Fe-Cr Phase.
 K. H. JACK. Recent Work on Interstitial Fe-C-N Alloys.
 A. M. B. DOUGLAS. Structure of Co_2Al_3 .

Proteins and Related Substances

- R. S. BEAR. The Large Unit Cells of Protein Fibers.
 J. DONOHUE, K. N. TRUEBLOOD & R. B. COREY. Studies of Amino Acids.
 E. W. HUGHES & W. J. MOORE. The Crystal Structure of Glycylglycine.
 K. J. PALMER. X-ray Diffraction Study of Lysozyme Chloride.
 D. WRINCH. Protein Structure in the Light of Pseudo-symmetry and Twinning.

Organic Structures

- S. C. ABRAHAMS. Crystal Structure of Para-nitraniline.
 D. HODGKIN. Recent Work on Complex Organic Compounds.
 J. M. BROOMHEAD, C. J. B. CLEWS & W. COCHRAN. Structures of Pyrimidines and Purines.
 H. M. POWELL. Some Ordered and Disordered Structures of Crystalline Molecular Compounds.
 A. F. WELLS. The Structural Principles in certain Hydrogen-Bonded Crystals.
 G. GOLDSCHMIDT. The Structure of Isatin.
 J. D. MCCULLOUGH, J. BRYDEN & R. MARSH. Structures of Some Organo-Selenium Compounds.
 G. L. CLARK. Structures of Branched Chain Compounds and Fractionated Micro-crystalline Waxes.

Inorganic and Mineral Structures

- F. A. BANNISTER. Recent Work on Mineral Structures.
 W. E. COLE, O. WEISZ & H. SORUM. Recent Work on Feldspar Structures.
 L. G. PERRY. Synthesis of Ore Minerals.
 M. A. PEACOCK. Abnormal Crystallography in some Metallic Minerals.
 H. P. ROOKSBY. The Structure of Nickel Oxide at Sub-normal and Elevated Temperatures.
 M. E. STRAUMANIS. Some Further Examples of Ideal Structures of Crystals.
 I. NITTA, K. SAKURAI & U. TOMIIE. The Crystal Structure of Hydrazonium Sulfate.
 T. WATANABE, Y. SAITO, R. SHIONO & M. ATOJI. The Crystal Structures of Tervalent Thallium Complexes.

Ferro-Electrics

- E. ARMSTRONG WOOD. Twinning in Barium Titanate.
 H. F. KAY & R. G. RHODES. Optical and X-ray Examination of BaTiO_3 and Related Structures.
 B. T. MATTHIAS & G. C. DANIELSON. Single Domain Barium Titanate Crystals.
 P. W. FORSBERG. Formation of Domains in Barium Titanate.
 I. NITTA, R. KIRIYAMA & M. HAISA. The Dielectric Properties and X-ray Investigations of Mixed Crystals of Potassium and Ammonium Dihydrogen Phosphates.

Random and Deformed Structures

- T. L. RICHARDS. X-ray Examination of the Structure of Cold-Rolled and Annealed Copper and Brass.
 B. AVERBACH & B. E. WARREN. Effect of Cold Work in Metals on the Powder Pattern Intensities.
 H. EKSTEIN. X-ray Diffraction by Bent Crystals.
 J. N. KELLAR, P. B. HIRSCH & R. C. EVANS. The Effect of Surface Treatment on the Texture of Crystalline Materials.
 H. LIPSON. Study of the Alloy AuCu_3 .
 J. W. FITZWILLIAM. Local Order in Some Binary Alloy Systems.
 K. BANERJEE. Sharp Extra Spots on Laue Photographs.
 A. J. C. WILSON. Calculations of the Line Profile of Reflections from Random Layer Lattices.
 W. H. ZACHARIASEN. Diffraction in Disordered Crystals: Structure of Uranyl Fluoride.
 W. F. BRADLEY. Randomness in Layer Structures.

- R. PEPINSKY. Periodic Lattice Distortions.
 L. A. SIEGEL. Molecular Rotation in NaNO_3 and NaCN .
 J. J. LANDER. Polymorphism and Anion Rotational Oscillation of Alkaline Earth Carbonates.
 T. NAGAMIYA & T. MATSUHARA. The Rotation of CN Radicals and the Phase Transition in NaCN and KCN .
 I. NITTA, T. WATANABE & T. ODA. X-ray Investigations on Some Plastic Crystals.
 I. NITTA, T. WATANABE & I. TAGUCHI. The Structure Irregularities in the Crystal of Aniline Hydrobromide.

Morphology, Habit, Twinning, Synthesis

- J. D. H. DONNAY. Significance of the Space Group Deduced from Crystal Morphology.
 J. GARRIDO. Pseudosymmetry and the Donnay-Harker Law.
 D. HALE. Growth of Synthetic Quartz Crystals.
 W. PARRISH. Detwinning Quartz.
 W. A. WOOSTER, N. WOOSTER & L. A. THOMAS. Growth and Twinning of Quartz.
 D. MCLACHLAN, JR & R. H. WOOLEY. A Motion Picture Demonstration of Thermal Action upon Models of Atomic Aggregates during Crystal Growth.
 C. J. CALBICK. Electron Micrograph Study of External Form of Crystals of Carbonyl Nickel.
 I. WALLER. Bond Energy and Elasticity Constants in Ion Lattices of the NaCl Type.
 C. V. RAMAN. Relation between the Crystal Forms of Diamond and their Internal Birefringence Patterns.
 G. N. RAMACHANDRAN. A Theory of Thermal Variation of the Refractive Indices of Crystals.
 W. C. McCRONE. Boundary Migration.
 A. J. REIS. New Methods of Morphological Analysis and their Application to Phenomena of Crystal Synthesis.

New Developments in Structure Determination

- P. J. G. DE VOS, C. J. B. CLEWS & W. COCHRAN. Aids to Analysis of Crystal Structure.
 R. PEPINSKY. Electronic Computations for Crystal Structure Analysis.

- J. S. KASPER. Phases of Fourier Coefficients from X-ray Data.
 A. D. BOOTH. Relation between the Fourier Method and Steepest Descents.
 A. L. PATTERSON. Ambiguities in the Diffraction Analysis of Structure.
 C. H. MACGILLAVRY. On Patterson Transforms of Fiber Diagrams.
 C. HERMANN. Some Principles and Results of Multi-dimensional Lattice Theory.

Supplementary Papers

- R. FAIVRE. Symmetry Considerations Applied to Debye-Scherrer Patterns.
 E. ONORATO. Struttura della Cobaltite.
 A. BELLANCA. La Struttura dell' Eritrosiderite.
 M. FORNASERI. Struttura della Teepelite.
 G. CAROBBI. Isomorphism of Sr^{2+} with Hg^{2+} .

(2) In addition to the above papers the following lecture reviews were given:

- J. D. BERNAL. Recent British Work on the Structure of Crystalline Proteins.
 R. W. G. WYCKOFF. Electron Microscope Study of the Structure of Crystals.
 C. G. SHULL. Recent Progress in Neutron Diffraction.

(3) At a banquet held on 2 August 1948 P. P. EWALD and M. VON LAUE gave informal addresses on the early history of X-ray crystallography.

(4) Throughout the period of the Congress there was an exhibition of American and British books, apparatus and other equipment of crystallographic interest. Opportunity was also provided for visits to the Departments of Harvard University and of the Massachusetts Institute of Technology, and to a number of industrial organizations in the Cambridge district. On 1 August 1948 a picnic was held on Ipswich Beach.

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).

International Union of Crystallography

Notice of adhesion, dated 16 October 1948, has been received from Czechoslovakia through the Czechoslovak National Research Council. The Adhering Bodies are now:

Canada;
 Czechoslovakia;
 Norway;
 United Kingdom;
 United States of America.

Diamond Research Laboratory

An illustrated brochure describing the work of the Diamond Research Laboratory, recently established in Johannesburg to assist all branches of the international diamond industry, has been received from Industrial

Distributors (1946) Ltd., 44 Main Street, Johannesburg, South Africa. Facilities are available at the Laboratory both for investigations on the immediate practical problems of the industry and for long-term theoretical researches. An Industrial Diamond Information Bureau, with offices at St Andrew's House, 32-34 Holborn Viaduct, London E.C. 1, England, has also been established to publish a monthly *Bibliography of Industrial Diamond Applications*. This periodical and other technical literature may be had gratis by scientific institutions and users of industrial diamonds.

Acta Crystallographica

The Title-page, Table of Contents and Index of Vol. 1 of *Acta Crystallographica* will be published as a loose insert in Part 1 of Vol. 2.