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International Union of Crystallography

Fourth General Assembly and International Congress, 10-17 July 1957
Symposia, 18 and 19 July 1957
Montreal, Canada

General Information and Registration

A General Information Booklet with separate Registration Forms and Programme Questionnaires has been prepared. It is expected that copies will have been forwarded to the Secretaries of the National Committees (see *Acta Cryst.* (1956), 9, 692) for distribution in their countries before the present note appears in print. The booklet should be in the hands of individual crystallographers by 1 November 1956, or shortly thereafter (see *Acta Cryst.* (1956), 9, 619). Prospective delegates and members are requested to complete the registration form, and, if proposing to read a paper at the Congress or Symposia, to answer the programme questionnaire, as soon as possible after the booklet is received. The required number of copies of the registration form and programme questionnaire should then be forwarded according to the instructions on the forms. Care in following these instructions meticulously will greatly facilitate the work of the Local and Programme Committees.

Correspondence

Correspondence concerning the General Assembly and the formal business of the Union should be addressed to the General Secretary of the Union, Dr D. W. SMITS, Laboratorium voor Anorganische en Fysische Chemie, Bloemsingel 10, Groningen, The Netherlands.

General inquiries about the Montreal meetings should be addressed to the Chairman of the Local Committee, Dr W. H. BARNES, Division of Pure Physics, National Research Council, Ottawa 2, Ontario, Canada, in an envelope clearly marked 'Personal'.

Correspondence relating to the subject matter, abstracts, or text of papers to be presented at the Congress or Symposia should be addressed to the Chairman of the Programme Committee, Prof. W. N. LIPSCOMB, School of Chemistry, University of Minnesota, Minneapolis 14, Minn., U.S.A.

Additional copies of the general information booklet (with programme questionnaire and registration form) may be obtained by writing to the General Secretary of the Union, to any member of the Local Committee or of the Programme Committee, to the Secretary of any of the National Committees, or to any one of the following regional representatives:

- Dr W. H. TAYLOR, Cavendish Laboratory, Free School Lane, Cambridge, England.
Prof. G. S. ZHDANOV, Institute of Crystallography, Pyzevski 3, Moscow 17, USSR.
Prof. J. WYART, Laboratoire de Minéralogie à la Sorbonne, 1 rue Victor-Cousin, Paris 5, France.
Dr I. NITTA, Department of Chemistry, Osaka University, Nakanoshima, Japan.
Dr G. MENZER, Universitätsinstitut für Kristallographie und Mineralogie, Luisenstrasse 37/II, München 2, Germany.

Membership

Delegates to the General Assembly, which will be concerned with the formal business of the Union, will be nominated by the National Committees. Crystallographers throughout the world are cordially invited to attend the International Congress and the Symposia, and are urged to bring them to the notice of their colleagues so that attendance may be fully representative of crystallographic research in all countries. The Union unfortunately is not in a position to provide funds to assist delegates and members in meeting travelling expenses.

The membership fee will be \$10.00 (ten dollars) for crystallographers and \$5.00 (five dollars) for adult non-active members.

Programme of Congress

The programme of the Congress will consist of: (A) A special evening lecture; (B) Four general invited lectures; and (C) Contributed papers on the subjects listed below.

(A) By special invitation, the evening lecture will be given at the University of Montreal. Dr R. W. G. WYCKOFF, President of the Union, will speak on 'Electron Microscope Studies of Macromolecules'. He will be introduced by Prof. J. Wyart.

(B) Four general lectures will be given during the Congress as follows:

- (1) 'Proteins' by Dr D. CROWFOOT HODGKIN.
- (2) 'Imperfect Structures' by Dr P. B. HIRSCH.
- (3) 'Crystal Chemistry' by Prof. G. S. ZHDANOV.
- (4) 'Clay Minerals' by Dr G. W. BRINDLEY.

(C) Contributed papers on the following topics:

- (1) (i) Apparatus. (ii) Techniques and methods.
- (2) Recent progress in structure determination.
- (3) Minerals.
- (4) Clay minerals.
- (5) Metals and alloys.
- (6) Inorganic structures.
- (7) Organic structures.
- (8) Proteins and related compounds.
- (9) Fibrous structures.
- (10) Order-disorder phenomena.
- (11) Deformations and imperfections.
- (12) Liquids, liquid crystals, amorphous material, glasses.
- (13) Phase transformation, martensitic transitions, ferroelectrics, λ -point transitions.
- (14) Crystal growth.
- (15) Neutron diffraction.
- (16) Symmetry, morphology, twinning.
- (17) Teaching of crystallography.
- (18) Miscellaneous.

(a) Duration of papers

Most papers will be allocated either fifteen minutes or seven minutes depending on how extensive the results appear from the abstract. A few papers from larger laboratories may be allowed twenty minutes when several related investigations are being reported in a single contribution.

(b) Selection and limitation of contributed papers

The Programme Committee anticipates such a large number of papers that some attention has been given to possible ways of limiting the papers to those of maximum interest to the Congress.

- (i) The research should not have been published before June 1957, but as far as possible completed or reasonably completed work should be presented.
- (ii) In general, papers should be presented by one of the authors but for special reasons it may be permissible for a deputy to do so (see (v) below, for example).
- (iii) If an author or co-author presents more than one paper, he must indicate his priority preference in case it becomes necessary for the Programme Committee to restrict the total number of papers at the Congress.
- (iv) Consideration will be given to the grouping of papers on the same topic from a single laboratory into a single contribution. In such a case more time than average will be allocated for this contribution.
- (v)(a) The Rapporteur system, in which one person presents a group of closely related papers from different laboratories, may be attempted in one or a few sessions as an experiment.
- (v)(b) Papers may be accepted by title with the full abstract to appear in the programme but read by title only, if so decided by the Programme Committee. Time, however, will be allowed for discussion of papers in both (v)(a) and (v)(b).
- (vi) Authors will be encouraged to reserve more routine parts of their papers for publication in the abstract, and to present verbally, in the available time, only important points of interest; for this reason the Programme Committee will welcome long abstracts.

(c) Languages

The Programme Committee has approved the use of the following languages in the Technical Sessions: English, French, German, Russian.

Programme of Symposia

Two symposia will be held: (1) on physical techniques of crystallographic interest, other than X-ray, electron or neutron diffraction, with emphasis on paramagnetic and nuclear magnetic resonance; and (2) on electron-diffraction studies of solids and gases. Contributed papers to these symposia are welcome; titles and abstracts should be sent to the symposia organizers listed below. Each symposium will be about one and one-quarter days, with no simultaneous sessions.

Symposium 1: 'Physical Techniques'

The organizer for this symposium is Prof. G. A. JEFFREY, Department of Chemistry, University of Pittsburgh, Pittsburgh 13, Pa., U.S.A. There will be a general introductory lecture by Dr C. J. GORTER, which will be followed by papers which emphasize aspects of paramagnetic resonance and nuclear magnetic resonance of crystallographic interest. Contributed papers on other physical and theoretical techniques will be welcome and will be included in this symposium.

Symposium 2: 'Electron Diffraction'

The chief organizer of this symposium is Dr J. M. COWLEY, C.S.I.R.O., Melbourne, Australia, with the assistance of Prof. Z. G. PINSKER, Institute of Crystallography, Academy of Sciences, Moscow, USSR, as the organizer for the Soviet Union, and Dr S. MIYAKE, Department of Physics, Institute of Technology, Tokyo, Japan, as organizer for Japan. The introductory lecture will be given by Prof. Z. G. PINSKER.

In addition to the new developments in electron diffraction by solids, it is hoped that there will be contributed papers on studies of gases; for example, new developments in the failure of the Born approximation, studies of vibration amplitudes, and precision studies with the use of patterns taken at high angles of scattering.

Abstracts

It is expected that full abstracts of all communications will be available for distribution in advance of the opening date of the Congress. It is probable that they will be published in *Acta Crystallographica* after the Congress.

Congress Headquarters

Headquarters for the Congress will be in the Physical Sciences Centre, McGill University, Sherbrooke Street West, Montreal, where members will register upon arrival. Registration will open at 9:00 a.m. on Tuesday, 9 July 1957.

Through the co-operation of the Post Office Department, postal services will be available in the Physical Sciences Centre. Mail which members expect to receive during the period of the Congress and Symposia may be addressed c/o International Union of Crystallography, Physical Sciences Centre, McGill University, Montreal, Quebec, Canada. The cable address will be CRYSTALCON.

The American Express Company will provide a travel office at the Congress Headquarters which will be open from 9:00 a.m. to 3:00 p.m. on 9 and 10 July 1957, and from 9:00 a.m. to 11:00 a.m. on other days, except Saturday and Sunday. This office will have banking facilities on 9 and 10 July only.

Travel

The American Express Company has been appointed by the Local Committee to act as official travel agents, and all American Express offices and correspondents throughout the world are prepared to receive registration forms, fees, and deposits, and to make travel bookings for those desiring to attend the Congress.

In view of the great demand for travel services in North America at the time of the Congress it is strongly recommended that Congress participants make immediate arrangements for their transportation.

Living Accommodation

Provisional reservation of rooms in Montreal has already been made. These will be allotted in the order of receipt of the registration forms which accompany the general information booklet. Because accommodation in Montreal hotels and motels is much in demand during the summer months it is strongly recommended that these forms be sent to the nearest American Express office or correspondent as early as possible, and not later than 15 February 1957, to ensure the accommodation desired.

Excursions

An excursion of general interest to an important section of the St. Lawrence Seaway Development is being arranged for the afternoon of Saturday, 13 July 1957, and a day's outing by steamer on the St. Lawrence River is being organized for Sunday, 14 July 1957. Three trips of mineralogical and geological interest will be available

for the period following the Congress. Further details are given in the general information booklet.

Exhibition

It is planned to arrange an exhibition of apparatus and books of crystallographic interest at the Congress Headquarters. Manufacturers and publishers wishing to receive detailed information should write to Dr A. O. McINTOSH, Central Research Laboratory, Canadian Industries Limited, McMasterville, Quebec, Canada.

Free space will be made available for a display of experimental devices, charts, models, and other non-commercial items of interest to the Congress. Details of this exhibit may be obtained from the Chairman of the Commission on Crystallographic Apparatus, Prof. A. GUINIER, Conservatoire National des Arts et Métiers, 292 rue Saint-Martin, Paris 3, France.

Programme for Non-active Registrants

Several interesting tours and short excursions are being arranged for non-active members during the technical sessions of the Congress. Details and tickets will be available at the time of registration in Montreal.

Book Reviews

Works intended for notice in this column should be sent direct to the Editor (P. P. Ewald, Polytechnic Institute of Brooklyn, 99 Livingston Street, Brooklyn 1, N.Y., U.S.A.). As far as practicable books will be reviewed in a country different from that of publication.

Dynamical Theory of Crystal Lattices. By M. BORN and K. HUANG. Pp. viii+420 with 28 figs. Oxford: Clarendon Press (Geoffrey Cumberlege). 1954. Price 50s.

This book has an outstanding value because of its coordinated account of the work by Born and his collaborators on the theory of crystals. The last comprehensive review of their work was the article by Born & Maria Göppert Mayer, which appeared in 1933. Since then many important contributions have been made. The aim of the book is to deduce the macroscopic behaviour of crystals from their microscopic properties, the latter being described in the general case by the potential energy corresponding to small displacements of the atomic nuclei from the lattice points and by the parameters characterizing the behaviour of the atoms under the influence of electromagnetic fields. As a rule, the quantum mechanical treatment of the system of nuclei and electrons is applied only in order to justify those principles. Being basic to the theory given in this book, the adiabatic approximation is thoroughly discussed. In this approximation the motion of the electrons is treated as if the nuclei were at rest and a corresponding potential energy for their motion existed. For similar reasons, a treatment is given of the behaviour of molecular systems under the action of electromagnetic fields for long wavelengths. In the theory of optical phenomena, the case of X-rays is accordingly omitted. Because of the special behaviour of electrons in metals, which requires methods of their own

and makes the validity of the adiabatic approximation questionable, the theory of metals is excluded. The scope of the book is further confined to crystals without imperfections. Likewise, surface phenomena are excluded.

The theory given in the book originated in several papers from 1912 and 1913 by Born and Th. von Karman where the mathematical foundation of the theory of the vibrations of simple crystal lattices was given together with its application to the problem of the specific heat of crystals. In these papers the so called periodic boundary condition was also introduced. These two principles form basic features of the present book and have there been worked out and applied in a general and systematic way.

The book consists of two parts called 'Elementary theories' and 'General theories', respectively. The first part gives an easily readable account of the elementary aspects of crystal forces and binding energies, elastic and thermal properties, infra-red vibrations, and also of the stability of lattice structures. The repulsive overlap forces acting between pairs of atoms in the crystal are discussed on the basis of the Thomas-Fermi statistical model and are also, as in the older theories, introduced as power or exponential functions of the interatomic distances. The aspects of the distribution function for the vibrational frequencies specifically connected with the lattice structure are discussed with reference to Blackman's investigations. The theory of the elasticity and stability of lattice structures is based on the special assumption of central two-body forces.