

he is using optical diffraction to test the hypothesis, but has not reported conclusive results. It would seem from the above quotation, however, that some part of his reason for advancing the hypothesis in this form was due to a misinterpretation of δ_c . This quantity is not a reciprocal-lattice 'spacing' but a difference of reciprocal-lattice *coordinates*, and thus its reciprocal has no obvious physical interpretation in direct space, i.e. $360/\delta_c$ is not of the nature of a 'repeat distance'. It would therefore seem that there is no published evidence at the moment, of any kind, for believing (1) to hold.

Except in so far as (1) is accepted, no conclusions can be drawn about order from this discussion. It may

therefore be fairly said that nothing in this paper of Chayes' can add to our knowledge of the nature and extent of order in the intermediate plagioclase feldspars. That the paper may give rise to misunderstanding on the subject is the reason for this note.

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International Union of Crystallography

Report of Executive Committee for 1959

Introduction

Important events during the year under review were the two Symposia held in Leningrad, U.S.S.R., from 21 to 27 May, and the three Conferences in Stockholm, Sweden, from 9 to 12 June.

The Leningrad Symposia were held on the occasion of the 40th anniversary of the death of the great Russian crystallographer E. S. Fedorov; the Academy of Sciences of the U.S.S.R. had invited the Union to participate in this commemoration. The meetings were attended by more than eight hundred crystallographers and other scientists, mainly from the U.S.S.R., and in addition from fifteen other countries. The topics of the Symposia were 'Crystallochemical Analysis and Crystal Chemistry' and 'Electron Diffraction' respectively. Seventeen general lectures were given during five general sessions, and at sixteen section meetings eighty-eight papers of about twenty minutes each were presented. A more detailed report on the Leningrad Symposia, including a list of all speakers and the titles of their papers, has been published earlier in this journal (see *Acta Cryst.* (1959), **12**, 951). (See also *ICSU Review* (1960), **2**, 19).

The Commission on Crystallographic Apparatus organized the Conferences which by invitation of Karolinska Institutet were held in Stockholm. Attendance at these Conferences was limited to a relatively small number of invited speakers and participants actively working in the fields concerned, and consequently only about one hundred persons participated. A second difference from the usual arrangements was that much more time was reserved for the discussion of the papers and subjects. Further details about the meetings are given in the next section.

The Executive Committee wishes to express its sincere gratitude to the Russian and Swedish hosts for the great hospitality received in Leningrad and Stockholm, and to all who collaborated in the organization of the two series of meetings. Generous financial help received from UNESCO through ICSU enabled many participants to attend, and is gratefully acknowledged.

Great activities can also be reported in the field of publications. The size of *Acta Crystallographica* increased

from 909 pages in 1958 to 1067 pages in 1959, without any delay in the publication of the monthly issues. Two volumes of *Structure Reports* appeared in 1959, namely Vol. 14, the supplementary volume and cumulative index for 1940-1950, and Vol. 16 for 1952. Another great event was the appearance of Vol. II of the *International Tables for X-ray Crystallography*. Under the auspices of the Commission on Crystallographic Apparatus a second edition of the *Index of Crystallographic Supplies* was published.

The Executive Committee of the Union held its statutory intermediate meeting in Leningrad on 20, 21 and 22 May. The more important items of business were summarized in the above-mentioned report on the Leningrad Symposia. Other bodies meeting in 1959 were the Commissions on Crystallographic Data, on Electron Diffraction and on *Structure Reports* (in Leningrad in May), the Commission on Crystallographic Apparatus (in Stockholm in June), the Programme Committee for the Fifth International Congress (in England and in Leningrad), and the *ad-hoc* Committee on Computing Methods (in Paris in June).

In Table 1 the Adhering Bodies of the Union are listed along with the names and addresses of the Secretaries of the National Committees. In this list four prospective Adhering Bodies (for Argentina, Israel, Poland and New Zealand) are included; their applications for adherence will be presented to the Fifth General Assembly. The memberships of the National Committees for Crystallography are given at the end of this Report.

More details about the activities of the Commissions of the Union are given in the next section.

Work of the Commissions

Commission on Acta Crystallographica

The main event to report on is the change in Editorship. Prof. P. P. Ewald, who had served as Editor since the appearance of the journal in 1948, requested in 1958 to be released from his task by the end of 1959. At its meeting in Leningrad the Executive Committee appointed Prof. A. J. C. Wilson as Editor of the journal to succeed

Table 1. *Adhering Bodies*

Country	Group*	Adhering Body	Secretary of National Committee
Argentina†	I	Consejo Nacional de Investigaciones Científicas y Técnicas	María Jiménez de Abeledo, Departamento de Física, Comisión Nacional de Energía Atómica, Av. del Libertador Gen. San Martín 8250, Buenos Aires
Australia	I	Australian Academy of Science	R. I. GARROD, Aeronautical Research Laboratories, Box 4331, G. P. O., Melbourne, Vic.
Austria	I	Österreichische Akademie der Wissenschaften	F. MACHATSCHKI, Mineralogisches Institut der Universität, Dr. Karl Luegerring 1, Vienna 1
Belgium	III	Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique	R. VAN TASSEL, Institut Royal des Sciences Naturelles de Belgique, Rue Vautier 31, Brussels
Brazil	I	Conselho Nacional de Pesquisas	E. TAVORA, Faculdade Nacional de Filosofia, Av. Pres. Antonio Carlos 40, Rio de Janeiro, D. F.
Canada	IV	National Research Council	W. H. BARNES, Division of Pure Physics, National Research Council, Ottawa 2, Ont.
Chile	I	National Committee for Crystallography	ISABEL GARAYCOCHEA, Centro de Investigaciones de Cristalografía, Universidad de Chile, Casilla 2777, Santiago
Czechoslovakia	I	Československá Akademie Věd	A. LÍNEK, Ústav Technické Fysiky, Československá Akademie Věd, Cukrovarnická 10, Prague 5
Denmark	I	Akademiet for de tekniske Videnskaber	E. KROGH ANDERSEN, Den Kgl. Veterinær- og Landbohøjskoles Kemiske Laboratorium, Bülowsvej 13, Copenhagen V
France	VII	Académie des Sciences (Institut de France)	H. CURIEN, Laboratoire de Minéralogie-Cristallographie à la Sorbonne, 1 Rue Victor-Cousin, Paris 5
Germany†	VIII†	Deutsche Mineralogische Gesellschaft	H. H. W. WITTE, Eduard Zintl Institut der Technischen Hochschule, Hochschulstrasse 4, Darmstadt
India	I	Ministry of Scientific Research and Cultural Affairs	The Secretary, Ministry of Scientific Research and Cultural Affairs (Scientific Research Division), Government of India, New Delhi
Israel‡	I	Israel Crystallographic Society	P. S. RUDMAN, Physics Department, Technion, Haifa
Italy	III	Consiglio Nazionale delle Ricerche	M. FORNASERI, Istituto di Geochimica, Università di Roma, Rome
Japan	IV	Science Council of Japan	T. WATANABÉ, Physics Department, Faculty of Science, Osaka University, Nakanoshima, Osaka
Netherlands	IV	Stichting voor Fundamenteel Onderzoek der Materie met Röntgen- en Elektronenstralen	G. D. RIECK, Technical University, Insulindelaan 2, Eindhoven.
New Zealand‡	I	The Royal Society of New Zealand	D. HALL, Chemistry Department, University of Auckland, Auckland
Norway	I	Det Norske Videnskaps-Akademi	I. OFTEDAL, Institutt for Geologi, Universitetet i Oslo, Blindern, Oslo
Poland‡	I	Polskiej Akademii Nauk	W. TRZEBIATOWSKI, Department of Chemistry, Politechnika Wroclawska, Wybrzeże Wyspiańskiego 27, Wrocław
Spain	IV	Consejo Superior de Investigaciones Científicas	J. L. AMORÓS, Departamento de Cristalografía, Consejo Superior de Investigaciones Científicas, P. Castellana 84, Madrid 6
Sweden	I	Kungliga Vetenskapsakademien	A. MAGNÉLI, Institutet för Organisk och Fysikalisk Kemi, Kungstensgatan 45, Stockholm Va
Switzerland	I	Société Suisse de Minéralogie et de Pétrographie	A. NIGGLI, Institut für Kristallographie und Petrographie der Eidg. Technische Hochschule, Sonneggstrasse 5, Zürich.
U.K.	VIII	The Royal Society	The Secretary of the British National Committee for Crystallography, The Royal Society, Burlington House, London W. 1
Union of South Africa	I	South African Council for Scientific and Industrial Research	F. H. HERBSTEIN, National Physical Research Laboratory, P.O. Box 395, Pretoria
U.S.A.	VIII	National Academy of Sciences—National Research Council	J. WASER, Department of Chemistry, California Institute of Technology, Pasadena, Calif.
U.S.S.R.	VIII	Academija Nauk U.S.S.R.	V. I. SIMONOV, Institute of Crystallography, Pyzhevsky per. 3, Moscow B-17

* See Statute 2.6 (*Acta Cryst.* (1957), 10, 727).

† The crystallographers of the German Federal Republic and the German Democratic Republic have agreed that they be represented in the Union by one Adhering Body, *viz.* the Deutsche Mineralogische Gesellschaft, and they have requested that their adhesion to the Union be changed from one in Group VI into one in Group VIII. This change in membership will be brought before the Fifth General Assembly for further action. (See also *Acta Cryst.* (1959), 12, 954).

‡ Membership not yet fully effective, the application will be presented to the Fifth General Assembly in August 1960 in accordance with Statute 2.5. (See also *Acta Cryst.* (1959), 12, 954).

Prof. Ewald. This was the result of lengthy deliberations, which had been going on for more than a year, since

simultaneously with this appointment a successor to Prof. Wilson as Editor of *Structure Reports* had to be

Table 2. *Survey of the contents of Acta Crystallographica*

Vol.	Year	Number of pages	Articles			Short Communications		
			Number	Number of pages	Average length	Number	Number of pages	Average length
7	1954	878	140	660	4.71	82	92	1.12
8	1955	872	143	747	5.22	95	97	1.02
9	1956	1048	173	915	5.29	91	87	0.96
10	1957	874	133	600	4.51	86	91	1.06
11	1958	909	152	790	5.20	73	82	1.12
12	1959	1067	181	926	5.12	93	103	1.11

nominated. The details of the taking over were discussed in several informal meetings in the course of the summer and autumn of 1959.

A survey of the last six volumes of *Acta Crystallographica* is given in Table 2. The figures in this table show that the average length of the papers was about the same in 1958 and 1959, and that the larger size of the last volume was due to an increase in the number of original contributions. Fortunately for the financing of the journal, the number of subscribers is still increasing from year to year, and amounted to 1740 by the end of 1959. The steady rise gives hope that it will continue, and that the saturation limit of 1800 subscribers expected at the foundation meeting in 1946 will soon be reached and exceeded. Some more propaganda for *Acta Crystallographica*, especially addressed to librarians, might be helpful.

Commission on Structure Reports

Two volumes of *Structure Reports* were published during the year. Vol. 14, the cumulative index for 1940-1950, was delayed from 1958, and has been described in the Report of Executive Committee for that year. Vol. 16 for 1952 appeared in December 1959, and is the largest single-year volume so far; with viii+651 pages it is eight pages longer than Vol. 13 for 1950, though it falls far short of the 779 pages of the two-year Vol. 11 for 1947-1948.

With effect from 1 January 1960 the main responsibility for the editing of the series has been taken over by Dr W. B. Pearson; Prof. A. J. C. Wilson remains responsible for Vol. 18 for 1954. Prof. N. C. Baenziger has expressed his wish to resign as Editor of the Metals section, and the Commission and the Executive Committee take this opportunity of thanking him for the great service he has rendered in preparing this section of Vols. 8, 9 and 13-16.

The Commission met in Leningrad on 26 May. As a result of discussions in the Commission and in the Executive Committee the prices of the earlier volumes have been revised, and reduced prices for individual crystallographers have been introduced. Means of reducing the time lag in preparation and publication were discussed.

Commission on International Tables

The sales of Vol. I as at 31 December 1959 stood at 2276, with 1683 copies in stock. Although the price was exceptionally low, the fact that there were no authors' royalties but only very small editorial expenses has enabled the present sales to cover the initial cost of printing. Future sales should show a small profit to the Union, which will help to pay for subsequent volumes.

Vol. II, which should have appeared in June 1959, was delayed for over three months by the British printing dispute, but an edition of 4000, half of which has been bound, is now published at £5.15.0 (one copy at £3.10.0 reduced price to individual crystallographers for their personal use only). Lists of *errata* in Vols. I and II are available to all purchasers; notice of *errata* not on these lists will be welcomed by the General Editor.

Vol. III will begin going to the press early in 1960.

Commission on Crystallographic Apparatus

Three international conferences dealing with (1) X-ray Wavelength Problems, (2) Precision Determination of Lattice Parameters, and (3) Counter Methods for Crystal-Structure Analysis, were held at Karolinska Institutet, Stockholm, Sweden, from 9 to 12 June 1959. An account of the Conferences and a list of the papers presented appeared in *Acta Crystallographica* (1959), **12**, 1054.

The first two conferences brought together for the first time specialists in the measurement and interpretation of X-ray wavelength data with those using the data in precision lattice-parameter work. Two problems were considered in the first conference: absolute and standard wavelengths, and the intensity distribution of X-ray lines.

The second conference brought lively discussions of methods and interpretation of data; a number of the papers have been edited and will appear in *Acta Crystallographica* together with an account of the international cooperative project in which 16 laboratories throughout the world participated. It was decided that further projects of this type should be taken up in the future only after the results of the first project had been properly evaluated by the participants and others interested in the problems. Both the X-ray spectroscopists and diffractionists were made aware of the necessity for better understanding of their mutual problems; collaborative work is being considered and some has been started. It is hoped that a similar joint conference can be held in a few years to review the progress in a field which clearly requires the joint efforts of scientists in different disciplines.

At the third conference papers were presented on various types of counter-tube instrumentation which are being developed for automatic measurements of intensities from single crystals; some of these papers will be published.

Two business meetings of the Commission were also held in Stockholm. A summary of the topics discussed can be found in the above-mentioned report on the conferences. Other subjects considered were miniature X-ray cameras, neutron-diffraction equipment, and cheap structure-factor calculators.

A second edition of the *Index of Crystallographic Supplies*, edited by Dr A. J. Rose, was published and distributed to nations adhering to the Union for free distribution to crystallographers within these nations (see *Acta Cryst.* (1960), **13**, 169). This 125-page book is greatly expanded over the first edition.

Commission on Crystallographic Data

During 1959 the Commission endeavoured to strengthen international collaboration on the systematic compilation of crystallographic data. An open meeting held in Leningrad in May gave an opportunity of discussing problems in documentation with Russian crystallographers and acquainting them with the work of various data-collecting organizations. As a result of this meeting the Commission has received data for over fifty compounds from the U.S.S.R. Arrangements are in hand for further exchange of information including the publication in the U.S.S.R. of an annual cumulative list of crystallographic papers. A considerable amount of material was also received from the Japanese National Commission formed last year.

The Commission has sponsored the preparation of Tables of Q ($1/d^2$) values (*Acta Cryst.* (1959), **12**, 421). During 1959 the first two volumes for $\text{CuK}\alpha_1$ and $\text{FeK}\alpha_1$ were published by Prof. P. M. de Wolff. The Secretary of the Commission has compiled a list of 'Sources of Crystallographic Data' and a 'Table of Selected Bond Distances' for limited circulation.

Work was continued on the collection of single-crystal data. The *Single Crystal Index* is being kept up to date and the manuscript of the next edition of the book is in an advanced state of preparation. The first edition of *Crystal Data* is now entirely sold out and there is good hope of the second edition being published during 1960.

The Chairman visited various members of the X-ray Powder Data File in the U.S.A. in August, and discussed means of increasing co-operation between the Commission and the A.S.T.M. Joint Committee.

Commission on Crystallographic Nomenclature

The Commission is considering standard names for crystallographic forms.

Commission on Crystallographic Teaching

Work of the Commission in collecting information about various aids to teaching such as films, structural models and stereoscopic views has been continued throughout 1959. Syllabuses of existing courses in various branches of crystallography are also being collected to assist those who are planning new courses.

The Commission is considering organizing the publication of monographs on subjects for which suitable textbooks are at present lacking. A list of books and periodicals of crystallographic interest was compiled for inclusion in the *Index of Crystallographic Supplies*.

Commission on Electron Diffraction

The 1959 sessions of the Commission were held in Leningrad on 22, 24 and 27 May in connection with the electron-diffraction symposium arranged jointly by the Commission and by its Russian member, Z. G. Pinsker, working through a local committee. The symposium was very successful in providing reports of uniformly high quality from

most of the active electron-diffraction research laboratories in the world and in the warm welcome accorded by the hosts to their visitors from abroad. The extensive application of electron-diffraction methods to structure determination of crystalline materials and the more intensive investigation of the problem of dynamic scattering are noteworthy.

The great activity in the electron-diffraction field seemed to justify another symposium at an early date, and approval was given by the Executive Committee to making preliminary arrangements for a symposium in Japan in September 1961. At the suggestion of the Japanese hosts it will be a joint symposium on electron and neutron diffraction scheduled in conjunction with a symposium on magnetism sponsored by the International Union of Pure and Applied Physics.

The tables of atomic scattering factors for electrons prepared by J. Ibers and B. K. Vainshtein were approved with slight modifications and submitted to the Editor of *International Tables*, Volume III.

The organization of the Commission has been considered, and a plan will be proposed at the Fifth General Assembly which will allow overlapping terms among the members without exceeding the limitation of three consecutive terms of office for any member.

Items under active consideration by the Commission include a compilation of electron-diffraction data from solids, technical standards for obtaining precision measurements of spacings and intensities, and the preparation of a monograph on the interpretation of electron-diffraction data from single crystals with special reference to the rôle of dynamic scattering.

Ad-hoc Committee on Apparatus and Technique Reports

The Committee submitted a lengthy memorandum to the Executive Committee for consideration at its Leningrad meetings. The main recommendations were that (a) review articles would be more useful than reports; (b) publication of groups of review articles in *Acta Crystallographica* would be preferable to independent publication; and (c) a special co-editor should be appointed to deal with the review articles. These recommendations met with general favour, except that more frequent publication of single articles under an appropriate heading was felt to be preferable to occasional, perhaps annual, groups.

The Executive Committee accepted in principle the publication of review articles, and authorized Dr W. Parrish to solicit them. Detailed arrangements concerning publication are to be considered at the Cambridge meetings of the Commission on *Acta Crystallographica* and of the Executive Committee. The Commission on Crystallographic Apparatus is discussing a list of subjects that ought to be reviewed.

Ad-hoc Committee on Computing Methods

The Committee had the opportunity of meeting for the first time during this year, and was able, as requested by the Executive Committee at its meeting in Leningrad, to consider the name, terms of reference and composition of the proposed new Commission. The Committee also discussed detailed aspects of the collection, digesting and redistribution of the information.

For the new Commission on Crystallographic Comput-

ing the following terms of reference are proposed. The Commission shall promote the collection and dissemination, on an international scale, of information relating to crystallographic computing, with special reference to general-purpose digital computers. The Commission may undertake any activity related to crystallographic computation.

Abstracting Board of the International Council of Scientific Unions

The ICSU Abstracting Board met in Konstanz, Germany, from 1 to 4 July. Very satisfactory reports of international cooperation in the abstracting of physics and chemistry were presented to the Board. The extension of the Board's work to abstracting in the biological sciences was formally approved and certain changes were made in the Statutes and By-Laws. These have the effect of increasing the size of the Executive Committee from 5 to 7 members, and make it clear that it is the right of the Observers appointed by the Unions to be present at meetings of both the Executive Committee and the General Assembly.

Commission on Macromolecules of the International Union of Pure and Applied Chemistry

The activities of this Commission have been confined in 1959 to the holding of the annual conference which took place at Wiesbaden, Germany, from 12 to 17 October. All aspects of polymer science were covered. From the crystallographer's point of view, the most interesting papers were those on the morphology of crystalline polymers. There have been some surprising discoveries which had led to very widespread interest in the subject, and to much discussion on the manner of crystal growth, the regular folding of long-chain molecules, and the interpretation of X-ray diffraction phenomena and other physical properties in terms of texture of ordered and disordered material.

Commission on Solid-State Physics of the International Union of Pure and Applied Physics

Since the formation of this Commission in 1952, the Union of Crystallography used to have three representatives on it. These representatives were, however, not consulted about the sudden complete reorganization of the Commission in 1957, neither have they formally been informed of the new structure nor of any activities since that time. At its meeting in Leningrad the Executive Committee discussed this regrettable situation but decided that for the time being no action be taken.

International Council of Scientific Unions

The Union was represented by the President and the General Secretary at the 11th meeting of the ICSU Executive Board which was held at The Hague, Netherlands, from 30 September to 3 October. Apart from the routine business various topics of great importance were discussed. The establishment of an ICSU Financial Trust was approved, and the Board authorized the Bureau to solicit funds for this Trust which should be used exclusively for scientific purposes, and not for administrative expenses. The Board further approved a set of draft rules, and the composition of the new inter-Union com-

mittee for co-operation between geophysics and related sciences (to be named the Comité International de Géophysique); the draft charter of COSPAR, the Committee on Space Research; and the establishment of a Joint Commission between IUPAC and IUPAP on Atomic Masses. Another important item discussed was the co-operation with UNESCO, and it was felt that annual conferences between the senior Officers of ICSU and UNESCO could further the existing co-operation, and in particular extend it to questions of scientific policy and planning. The Director of the Natural Sciences Department of UNESCO, Prof. V. Kovda, who was present at the meeting, very much welcomed this suggestion.

Finances

The audited accounts of the Union for the year 1959 are published at the end of this Report. The amounts are expressed in Netherlands Guilders, the following rates of exchange having been used: £1 = \$2.80 = f.10.64; \$1 = f.3.80 = Fr.Fr. 494 = Sw.Cr. 5.17 = D.Cr. 6.87.

A comparison of the *Acta Crystallographica* account for 1959 with the one for 1958 shows a decrease in the excess of income over expenditure from f.25,544 in 1958 to f.7176 in 1959. It should be noted that the publication of the Decennial Index formed an incidental expenditure of f.4324 in 1958 so that the actual difference between the two years is even higher. The lower profit in 1959 was mainly due to the increase in the publication expenses caused by the increased size of the annual volume, but in addition there were a further rise in the printers' charges, an increase in the publishers' commission on sales from 10 to 12½%, and an increase in the editorial expenditure.

Fortunately the number of subscribers to the journal is steadily increasing, and also the income from the sale of back numbers was higher in 1959 than in 1958. Part of the increase in the expenditure could therefore be met by the increase in the income, even if the smaller net yield of the advertisements and the fact that in 1959 no subventions were received are taken into account.

The possibility of further increases in the expenditure, which may lead to deficits during the next years, should be considered. Drastic measures against slight annual deficits in the near future are, however, not urgently needed because the accumulated balance of the *Acta Crystallographica* account, amounting to f.149,731 at the end of 1959, forms a safe reserve.

The *Structure Reports* account for 1959 shows a deficit of f.30,800 which made the accumulated balance decrease from f.75,506 to f.44,706. It should be noted, however, that for this publication the annual accounts do not give a good picture of the situation because unsold copies of *Structure Reports* do not appear as an asset in the accounts. So the cost of printing Vols. 14 and 16 was charged against the 1959 account, but no income from sales of copies of Vol. 16, which appeared by the end of 1959, was received in that year.

A better picture of the *Structure Reports* account can be obtained by examining expenditure and income for each individual volume. Such an examination shows a satisfactory financial situation, and, except for the older volumes, it appears that the total cost of each volume is recovered within a period of three to five years after its appearance. The policy of making the publication self-

supporting had, however, led to selling prices at a level which prevented most individuals from buying copies for their personal use. The Executive Committee therefore decided to introduce reduced prices for *bona-fide* crystallographers in countries adhering to the Union; at the same time the prices of the older volumes were adjusted.

Also the *International Tables* account for 1959 shows an excess of expenditure over income because the heavy publication expenses of Vol. II were charged against this account whereas the greater part of the income from sales of copies of this volume will be received in the next years. The account shows, however, the satisfactory fact that almost half of the printing cost of Vol. II was already recovered during the few months after its appearance. A comparison of the 1958 and 1959 accounts further shows an increase in the sales of copies of Vol. I; the appearance of Vol. II apparently stimulated these sales.

The accumulated balance of the *International Tables* account amounted to f.46,847 at the end of 1959. This reserve will be needed for the publication of Vol. III, part of which is already in the printing stage.

The General Fund account for 1959 shows an excess of income over expenditure of f.8851, and the accumulated balance of the General Fund increased to f.77,984 at the end of the year. The main expenses charged to the General Fund in 1959 were those in connection with the meetings held in Leningrad and Stockholm. The greater part of these expenses was met by subventions received from UNESCO for international meetings and symposia.

In comparison with 1958, the administrative expenditure was almost f.4000 higher in 1959, which was mainly due to an adjustment of the honorarium of the General Secretary. The total administrative expenditure could, however, be fully covered by the income from investments and interest on banking and deposit accounts; these sources yielded almost f.10,600 in 1959.

A summary of the General Fund over the three-year period 1957-1959 shows that the accumulated balance increased by f.23,304 during this period, whereas at the Fourth General Assembly a deficit of £1212 (f.12,896) was expected. The main differences are a much larger income from investments and interest than anticipated in 1957, a larger amount of UNESCO subventions and a smaller expenditure in connection with the Montreal meetings. A more detailed comparison will be given in the financial report for presentation to the Fifth General Assembly.

Most of the explanations given in the Annual Report for 1958 for items appearing on the Balance Sheet are still valid, and for the sake of brevity are not repeated. (See *Acta Cryst.* (1959), 12, 615).

Membership of Committees, Commissions and other bodies

During the year no changes occurred in the membership of the Committees, Commissions and other bodies of the Union. The names are listed in the Report on the Fourth General Assembly and International Congress (see *Acta Cryst.* (1957), 10, 721), and in two additional notes at the end of the Reports for 1957 and 1958 (see *Acta Cryst.* (1958), 11, 571; (1959), 12, 615).

Membership of National Committees

The following membership lists have been received from the Secretaries of the National Committees for Crystallography:

Argentina

E. E. GALLONI (Chairman), V. ANGELELLI, L. BECKA, D. BEDLIVY, M. BUTSCHOWSKI, F. GONZALEZ BONORINO, M. JIMÉNEZ DE ABELEDO, R. LEVITUS, E. LINARES, J. A. McMILLAN, E. I. MORTOLA, J. OLSACHER, R. J. POLJAK, M. A. RODRIGUEZ DE BENYACAR, W. C. STOLL, J. F. VILLAR FABRE.

Australia

R. I. GARROD (Convener), W. BOAS, J. S. BOWLES, C. J. BIRKETT CLEWS, J. McANDREW, A. McL. MATHIESON, N. K. NORRISH, A. L. G. REES.

Austria

H. HERITSCH, O. KRATKY, F. MACHATSCHKI, H. NOWOTNY, A. PREISINGER.

Belgium

G. A. HOMÈS (Chairman), W. DEKEYSER (Vice-Chairman), S. AMELINCKX, H. A. L. BRASSEUR, H. BUTTGEBACH, M.-E. DENAEYER, R. E. DE STRYCKER, O. E. GOCHÉ, A. HACQUAERT, H. J. LAMBOT, S. G. LEFEBVRE, J. MÉLON, P. C. E. MICHOT, J. THOREAU, J. TIMMERMANS, J. TOUSSAINT, M. VAN MEERSSCHE, R. VAN TASSEL.

Brazil

No up-to-date membership list has been received.

Canada

W. H. BARNES (Chairman), L. G. BERRY, R. L. CUNNINGHAM, F. W. MATTHEWS.

Chile

N. JOEL (Chairman), F. G. CANEPA, H. FLORES-WILLIAMS, I. GARAYCOCHEA, E. GRÜNBAUM, A. KELLER, G. MUELLER, J. MUÑOZ-CRISTI, R. VERA-MEJE.

Czechoslovakia

J. NOVÁK (Chairman), S. ĎUROVIČ, J. ECKSTEIN, F. HANIC, J. KAŠPAR, A. KOCHANOVSKÁ, A. LÍNEK, M. ROZSÍVAL, J. SEKANINA, J. ŠMÍD, M. ZIKMUND.

Denmark

A. TOVBORG JENSEN (Chairman), E. KROGH ANDERSEN, R. W. ASMUSSEN, H. CLAUSEN, H. HØJGAARD JENSEN, B. JERSLEV-LUND, A. NOE-NYGAARD, Sv. E. RASMUSSEN.

France

M. MATHIEU (Chairman), E. BERTAUT and J. D. H. DONNAY (Vice-Chairmen), Y. CAUCHOIS, P. CHATELAIN, Ch. CRUSSARD, H. CURIEN, J. DESPUJOLS, J. FRIEDEL, R. GAY, S. GOLDSZTAUB, E. GRISON, A. GUINIER, A. HERPIN, R. HOCART, J. LAVAL, V. LUZZATI, J. MERING, P. PERIO, Th. PETITPAS, A. J. ROSE, C. STORA, J. J. TRILLAT, J. WYART.

Germany (both States)

F. H. LAVES (Chairman), K. BOLL-DORNBERGER (Vice-Chairman), R. BRILL, H. JAGODZINSKY, W. KLEBER, F.

LIEBAU, H. O'DANIEL, H. A. RAETHER, G. E. R. SCHULZE,
E. THILO, H. WITTE.

India

A National Committee has not yet been set up in India.

Israel

E. ALEXANDER (Chairman), L. HELLER, P. S. RUDMAN.

Italy

E. ONORATO (Chairman), S. BEZZI, G. CAROBBI, M.
FENOGLIO, M. FORNASERI, F. FUMI, G. GIACOMELLO, A.
GHIZZETTI.

Japan

T. FUJIWARA (Chairman), G. HONJO, T. ITO, J. KAKI-
NOKI, R. KIRIYAMA, S. KAYA, S. MIYAKE, Y. MORINO,
T. NAGAMIYA, Z. NISHIYAMA, I. NITTA, S. OGAWA, K.
OSAKI, R. SADANAGA, G. SHINODA, T. SUDO, S. TAKAGI,
K. TANAKA, R. UYEDA, T. WATANABÉ.

Netherlands

E. H. WIEBENGA (Chairman), A. E. VAN ARKEL, P. B.
BRAUN, W. G. BURGERS, J. M. BIJVOET, W. F. DE JONG,
J. J. DE LANGE, C. H. MACGILLAVRY, J. L. OOSTERHOFF,
W. G. PERDOK, J. A. PRINS, G. D. RIECK, D. W. SMITS,
R. WESTRIK, P. M. DE WOLFF.

New Zealand

G. G. C. CLARIDGE, D. S. COOMBS, D. HALL, R. NIMMO,
B. R. PENFOLD, W. A. RUNCIMAN, W. A. WATTERS.

Norway

O. HASSEL (Chairman), TOM. F. W. BARTH, O. C. A.
BASTIANSSEN, H. K. HARALDSEN, O. HASSEL, I. W. OFTE-
DAL.

Poland

W. TRZEBIATOWSKI (Chairman), L. CHROBAK, A. ŁASZKIE-
WICZ.

Spain

J. CABRERA (Chairman), J. L. AMORÓS, L. BRÚ, A. HOYOS
DE CASTRO, L. MIRAVILLES, L. RIVOIR.

Sweden

G. HÄGG (Chairman), F. E. WICKMAN (Vice-Chairman),
G. BORELIUS, C. BROSSET, H. VON ECKERMANN, S. VON
FRIESEN, S. GAVELIN, A. HADDING, S. HJELMQVIST, J. O.
LINDE, A. MAGNÉLI, E. S. NORIN, A. ÖLANDER, P. QUEN-
SEL, L. G. SILLÉN, I. WALLER, A. WESTGREN.

Switzerland

ED. WENK (Chairman), M. VUAGNAT (Vice-Chairman), E.
DAL VESCO, F. H. LAVES, H. MAYOR, A. NIGGLI, E.
NIGGLI, A. SPICHER, M. WEIBEL.

U.K.

DAVE KATHLEEN LONSDALE (Chairman), N. P. ALLEN,
K. W. ANDREWS, SIR LAWRENCE BRAGG, G. F. CLARING-
BULL, E. G. COX, SIR WILLIAM HODGE, DOROTHY M. C.
HODGKIN, D. C. MARTIN, M. PERUTZ, H. M. POWELL,
J. T. RANDALL, J. M. ROBERTSON, W. H. TAYLOR, H. G.
THORNTON, A. J. C. WILSON.

Union of South Africa

R. W. JAMES (Chairman), J. N. VAN NIEKERK (Vice-
Chairman), H. B. DYER, F. H. HERBSTEIN.

U.S.A.

B. E. WARREN (Chairman), R. RUNDLE (Vice-Chairman),
M. J. BUERGER, J. D. H. DONNAY, J. DONOHUE, H. T.
EVANS Jr., P. P. EWALD, I. FANKUCHEN, D. HARKER,
E. W. HUGHES, G. A. JEFFREY, W. C. KOEHLER, D.
McLACHLAN Jr., B. O'BRIEN, A. L. PATTERSON, D. P.
SHOEMAKER, K. N. TRUEBLOOD, J. WASER, E. A. WOOD,
R. W. G. WYCKOFF, W. H. ZACHARIASEN.

U.S.S.R.

N. V. BELOV (Chairman), C. B. BOKY, A. I. KITAYGOROD-
SKY, Z. G. PINSKER, I. I. SHAFRANOVSKY, N. N. SHEFTAL,
A. V. SHUBNIKOV, V. I. SIMONOV, M. M. UMANSKY, B. K.
VAINSHTEIN, G. S. ZHDANOV.

Acta Cryst. (1960). 13, 572

International Union of Crystallography

Acta Crystallographica Account for the year ended 31 December 1959

Netherlands Guilders

Netherlands Guilders

Publication Expenses:					
Printing and Binding, Vol. 12, 1959	(D. Cr. 198,685-66)	109,898-91	Subscriptions to Vol. 12, 1959	(D. Cr. 257,855-22)	142,627-34
Distribution and Postage	(D. Cr. 20,712-18)	11,456-52	Sale of Single Copies	(D. Cr. 126-00)	69-69
Editorial Expenses:		121,355-43	Sale of Back Numbers	(D. Cr. 47,048-81)	26,024-09
Editorial Honoraria and Secretarial Assistance		23,987-38			168,721-12
Office Rent, Postages, Telephone, Stationery, Printing		2,102-44	Less Publisher's Commission on Sales	(D. Cr. 38,128-75)	21,090-14
Depreciation of Office Equipment		110-00			147,630-98
Cost of Advertisements	(D. Cr. 3,259-78)	26,199-82	Income from Advertisements		10,617-61
		1,803-08	Less Advertising Agent's Commission		1,714-19
		7,176-07			8,903-42
<i>Excess of Income over Expenditure carried to Balance Sheet</i>		<u><u>f. 156,534-40</u></u>			<u><u>f. 156,534-40</u></u>

Structure Reports Account for the year ended 31 December 1959

Publication Expenses:				
Printing and Binding Volume 14	8,938-80		Sale of Copies of Vol. 8	3,598-50
Printing and Binding Volume 16	25,900-50	34,539-30	Sale of Copies of Vol. 9	2,781-00
Editorial Expenses:			Sale of Copies of Vol. 10	1,544-48
Editorial Honoraria, Abstractors' and Assistants' Salaries	25,336-96		Sale of Copies of Vol. 11	1,865-95
Subscriptions to Journals, Photocopies	474-95		Sale of Copies of Vol. 12	1,635-16
Stationery, Postages and Sundries	484-61		Sale of Copies of Vol. 13	2,797-00
Travelling Expenses	1,455-02		Sale of Copies of Vol. 14	17,786-50
Depreciation of Office Equipment	80-00	27,831-54	Sale of Copies of Vol. 15	7,551-25
			Less Publisher's Commission on Sales	39,559-84
				7,989-63
				31,570-21
			<i>Excess of Expenditure over Income carried to Balance Sheet</i>	<u><u>f. 62,370-84</u></u>
				<u><u>f. 62,370-84</u></u>

International Tables Account for the year ended 31 December 1959

	<i>Netherlands Guilders</i>	<i>Netherlands Guilders</i>
Publication Expenses:		
Printing and Binding Volume II	81,604.46	12,341.87
		47,071.89
		59,413.76
Editorial Expenses:		
Computational work for Volume III	3,057.51	9,805.02
Stationery, Postages, Photocopies and Sundries	141.38	147.32
Travelling Expenses	46.11	
	3,245.00	9,952.34
	<u>f. 84,849.46</u>	<u>49,461.42</u>
		35,388.04
		<u>f. 84,849.46</u>
		<i>Excess of Expenditure over Income carried to Balance Sheet</i>

General Fund Account for the year ended 31 December 1959

Subscription to I. C. S. U. (2% of subscriptions received from Adhering Bodies in 1958)	467.25	20,900.00
Administrative Expenses:		
Honorarium General Secretary and Secretarial Assistance	7,660.83	22,800.00
Auditors' Fees	744.80	
Postages, Stationery, Printing and Sundries	1,268.60	
Bank Charges and Differences on Exchange	126.71	
Expenses in Connection with Leningrad Symposia:	9,800.94	43,700.00
Travelling Grants to Invited Participants	30,258.40	23,487.67
Other Expenses	176.75	
Expenses in Connection with Stockholm Conferences:	30,435.15	3,722.88
Travelling Grants to Invited Participants	19,105.33	6,875.78
Secretarial Assistance, Printing of Reprints and other Expenses	2,800.79	
Incidental Travelling Expenses of Officers	21,906.12	
	2,744.04	
Expenses of Commissions:		
Commission on Crystallographic Apparatus	3,139.56	
Commission on Crystallographic Data	442.09	
	3,581.65	
<i>Excess of Income over Expenditure carried to Balance Sheet</i>	<u>8,851.18</u>	
	<u>f. 77,786.33</u>	<u>f. 77,786.33</u>

Balance Sheet as at 31 December 1959

<i>Liabilities</i>		<i>Assets</i>
Sundry Creditors:		
Administrative Expenses	1,343.61	
<i>Acta Crystallographica</i> Editorial Expenses	501.76	
Travelling expenses Leningrad Symposium, not yet settled	505.80	76,085.52
Balance of Funds for Fourth General Assembly and International Congress, destined for travel grants to Canadian Crystallographers	2,351.17	3,165.86
<i>Acta Crystallographica</i> Account:		302.71
Balance as at 1 January 1959	142,554.98	86,695.59
Add Excess of Income over Expenditure for the year to date	7,176.07	60,961.01
<i>Structure Reports</i> Account:		13,391.73
Balance as at 1 January 1959	75,506.39	240,602.42
Less Excess of Expenditure over Income for the year to date	30,800.63	328.18
<i>International Tables</i> Account:		1,444.34
Balance as at 1 January 1959	82,234.73	381.98
Less Excess of Expenditure over Income for the year to date	35,388.04	86.94
General Publications Fund:		2,241.44
Balance as at 1 January 1959	86,485.99	5,520.91
General Fund:		11,889.33
Balance as at 1 January 1959	69,133.04	27,030.26
Add Excess of Income over Expenditure for the year to date	8,851.18	44,440.50
	77,984.22	2,744.89
	46,846.69	122,920.00
	86,485.99	1,438.47
	69,133.04	124,358.47
	8,851.18	1,910.00
	77,984.22	190.00
	46,846.69	1,720.00
	86,485.99	<i>pro memoria</i>
	69,133.04	<i>f. 416,107.72</i>
	8,851.18	<i>f. 416,107.72</i>

* The investments are valued at par to avoid the necessity of accounting for differences in their quotations each year, and as so far no investments have been sold before they were due for redemption. The quotations as at 31 December 1959 were as follows:

4½% Conversion Stock 1962	... 100½	4½% Noorwegen 1955 90
3% Nederlandsch Indië 1937	... 96	4% Unie van Zuid Afrika 1955...	84

We declare that the above Balance Sheet as at 31 December 1959, and the attached *Acta Crystallographica* Account, *Structure Reports* Account, *International Tables* Account and *General Fund* Account, exhibit a true and correct view of the affairs of the International Union of Crystallography.

Groningen, Netherlands, Ubbo Emmiusingel 75. 6 April 1960

Signed: VAN DIEN, VAN UDEN & Co. Accountants