No. 2    SEPTEMBER 1982

Contents
1. The Sixth BRAGG LECTURE - 27 and 28 October 1982
2. BCA NEWS
3. NOTICE to FOUNDER MEMBERS
4. DONATIONS to the BCA
5. BCA MEETING: ROYAL HOLLOWAY COLLEGE, 28-31 March 1983
6. CALL for CONTRIBUTIONS for the INDUSTRIAL SYMPOSIUM
7. LAGAVULIN for a LOGO!
8. JOINT IoP/BCA CRYSTALLOGRAPHY GROUP
9. INTERNATIONAL TABLES for CRYSTALLOGRAPHY
10. SERC TOOLS FOR CRYSTALLOGRAPHY: The network, microfilm recorder, graphics and packages.
11. MOLECULAR STRUCTURES AND DIMENSIONS
12. INTERNATIONAL SCHOOL of CRYSTALLOGRAPHY, ERICE, 21 March - 1 April 1983
13. SCHOOL on DIRECT METHODS & MACROMOLECULAR CRYSTALLOGRAPHY BUFFALO, 20-30 July 1983
14. MOLECULAR STRUCTURE & BIOLOGICAL ACTIVITY
15. THE SYMMETRY SOCIETY
16. RESEARCH ASSISTANT
17. CRYSTALLOGRAPHY NEWS
18. FORTHCOMING MEETINGS & COURSES
19. CRYSTAL RELATED ARTHROPATHIES, BRISTOL, 22-23 October 1982

and reply form.
THE SIXTH BRAGG LECTURE

Professor M.M. Woolfson
University of York
will lecture on
STRUCTURAL CRYSTALLOGRAPHY IN THE 1980's
at 5.30 p.m. on
Wednesday, 27 October
at the University of Manchester Institute of Science & Technology (UMIST) in the Renold Theatre
and at 5.30 p.m. on
Thursday, 28 October
at the University of Cambridge Chemical Laboratories, Lensfield Road.

The Bragg Lectures, founded in 1962, are given at intervals to commemorate the work of Sir William Bragg and his son, Sir Lawrence Bragg. Eminent crystallographers lecture on subjects of their own choice in the towns where the Braggs worked.

ADMISSION FREE WITHOUT TICKET

M. Moore, Royal Holloway College, Egham, Surrey
Although summer is traditionally a time when work activity slows down, a good deal has happened since the last issue of "Crystallography News". Here are a few of the more important items.

Firstly, the process of attaining charitable status, on which negotiations started in August 1981, was finally completed when the Charity Commission, in a letter dated 3rd June 1982, informed me that the BCA has been registered as a Charity under the Charities Act 1960. Our number in the Central Register of Charities is 284718. Although charitable status brings with it certain duties and restrictions, the advantages, both financial and in terms of stability, make it well worth while.

The programme of seeking aid for the BCA from Industry is now in full swing, and as another item in this issue shows is meeting with success. This despite the fact that in general the economic climate is difficult. The success of this programme is very fortunate, because sharply falling interest rates have meant that to generate a given investment income one needs a greater capital sum. This investment income will be vital to the financial stability of the Association especially in its early years, since most Joint Members (i.e., the majority of BCA) contribute to the finances of their Group but not directly to the BCA.

When one writes about the generosity of companies, however, one should not forget the generous acts of individuals. In particular, that one Founder Member has given the Association £500!

Preparations for the 1983 Spring Meeting are well in hand. The organising committee, with the local organiser Dr. Moreton Moore, first met in June. Programmes of the four Groups are taking shape, and the availability of invited speakers is being confirmed. An outline programme is given elsewhere in this issue. It promises to be a stimulating meeting and a worthy successor to Durham.

Finally, an item which is likely to concern most of us - radiation safety. I have been told informally that the long-awaited documents from the HSE are likely to be published by the HMSO quite soon. The Consultative Document on Ionising Radiation Regulations and Approved Codes in October, and the draft Guidance Notes on X-ray Optics in November. (I must emphasise that these dates are tentative). The BCA Council has accordingly set up a small committee under the chairmanship of Professor David Blow to be ready to consider the consultative document and to formulate a response in the three months which are available from the date of publication.
3. NOTICE TO FOUNDER MEMBERS

At the Durham Meeting an idea was put forward that the first page of the Association's Minute Book be reserved for the signatures of Founder Members. A number of those who became Founder Members at Durham have already signed this page, and all Founder Members who have not yet done so are invited to add their signatures.

The Minute Book will, of course, be available at our Spring Meeting at Royal Holloway College, and at all subsequent annual meetings. Alternatively, if you happen to be in the vicinity of Imperial College, you can get in touch with me and sign the book there. For the sake of historical record it would be good to inscribe all the signatures in due course.

May I also remind those of you who are thinking of becoming Founder Members that the time-limit for joining this category is the end of this year.

Andrzej Skapski
The following generous donations from Industry are gratefully acknowledged.

<table>
<thead>
<tr>
<th>Company</th>
<th>Amount</th>
</tr>
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<tr>
<td>Imperial Chemical Industries p.l.c.</td>
<td>£1000</td>
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<tr>
<td>British Petroleum Co.Ltd.</td>
<td>£500</td>
</tr>
<tr>
<td>Marconi Avionics Ltd</td>
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<tr>
<td>Philips Research Laboratories</td>
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<td>Roche Products Ltd</td>
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<tr>
<td>Smith, Kline &amp; French Research Ltd.</td>
<td>£500</td>
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<td>Unilever UK Central Resources Ltd.</td>
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<td>The Wellcome Foundation Ltd.</td>
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<td>Glaxo Group of Companies</td>
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<td>G.D. Searle &amp; Co.Ltd.</td>
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<tr>
<td>Wyeth Laboratories</td>
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<td>W &amp; C Spicer Ltd</td>
<td>£100</td>
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</tbody>
</table>

This second list records donations received in the period June-August 1982.

In addition the number of Founder Members has increased by 18, one of whom has most generously subscribed £500.

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The Easter meeting of the BCA will be held in William Crosland's magnificent château-like building of the Royal Holloway College, situated at Egham in Surrey: half an hour's journey by rail from Waterloo Station, and close to Heathrow Airport and the M3, M4 and M25 Motorways. The poster sessions will take place in the recently restored Picture Gallery, on the afternoons of Tuesday 29th and Wednesday 30th March.

The Conference will start with registration and buffet lunch on Monday 28th March. The first afternoon will be devoted to the Biological Structures Group, Tuesday morning to the Physical Crystallography Group, Wednesday morning to the Industrial Group and Thursday morning to the Chemical Crystallography Group. The Conference will end for most delegates after lunch on Maundy Thursday but some will want to stay on for the CAD-4 Users Meeting being organized by Michael Hursthouse. There will also be a reception, a plenary lecture and a conference dinner. Full details and registration forms will be included in the December issue of Crystallography News.
CALL FOR CONTRIBUTIONS

for the

INDUSTRIAL SYMPOSIUM

to be held during the

B.C.A. MEETING: ROYAL HOLLOWAY COLLEGE: 28-31 MARCH 1983

Contributions are requested on all aspects of Industrial/Applied Crystallography for:

(a) verbal presentation (20 mins) in the morning session, and/or
(b) in a form suitable for poster display

The invited speakers in the morning session will be:

Mr C Baxter: Rolls Royce Limited, Derby
Mr W A Gutteridge: Cement and Concrete Association, Slough

Provisional titles for both verbal and poster contributions are required by 22 October 1982, and abstracts by 21 January 1983. These should be sent to:

Mr G W Smith: B P Research Centre
Chertsey Road
Sunbury-on-Thames
Middlesex
TW16 7LN
When, just before the Durham Meeting, I had to order BCA notepaper, the problem arose of some identifying mark for the BCA. My first reaction was to have a simple BCA, at least in the interim. But, alas, we are not alone! A quick glance through the relevant compendia reveals that we jostle with the British Casino Association, British Car Auctions, British Chiropractors Association, to name but a few. So something more specific would be needed.

A coat of arms is rather splendid, but mightily expensive, and perhaps could be considered by our successors on the occasion of the BCA's 50th anniversary. But a logo is modern, neat and free!

A few words with some colleagues produced quite a number of very plausible logos (some of which are shown below), but rather than have the Secretary make this invidious decision we decided to do the thing more democratically and also to give crystallographers the chance to release their hidden artistic (?) talents.

So as a light-hearted aside from the serious business of the Spring Meeting, there will be a Logo Competition to choose a suitable sign for the BCA. There are still over 6 months to go, and further details will be released later, but in the meantime please start thinking and doodling.

[And if you have been patiently waiting for what Lagavulin had to do with Logo, here is the answer. As a prize to the winner the Secretary offers a bottle of Lagavulin 12-year old malt whisky {and if you do not like whisky, I am sure some kind of a barter deal can be arranged}].

Andrzej Skapski
At the Annual General Meeting of the above group, which was held at Durham on April 7th, consideration was given to an alternative name for the group. It was felt that the present name was inappropriate for a joint group of the BCA. Many suggestions were made but that receiving majority support from the members present was "Physical Crystallography Group". This change of name has been agreed by the Council of the Institute of Physics. The final stage in effecting the change is for the members to authorise the appropriate changes in the constitution and rules of the group. An Extra-ordinary General Meeting will be held for this purpose on 25th November, 1982 at 2.00 pm in the Lecture Theatre, Geological Society, Burlington House, Piccadilly, London.

The committee for the period 1st October 1982 to 30th September 1983 will be as follows with the year in which membership ceases given in brackets.

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman</td>
<td>Professor M.M. Woolfson</td>
<td>1984</td>
</tr>
<tr>
<td>Vice-Chairman</td>
<td>Dr. B.T.M. Willis</td>
<td>1984</td>
</tr>
<tr>
<td>Hon. Secretary and Treasurer</td>
<td>Dr. R.H. Fenn</td>
<td>1983</td>
</tr>
<tr>
<td>Committee:</td>
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<tr>
<td></td>
<td>Dr. A.A. Balchin</td>
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</tr>
<tr>
<td></td>
<td>Dr. C. Dineen</td>
<td>1983</td>
</tr>
<tr>
<td></td>
<td>Dr. I.F. Ferguson</td>
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<td>Dr. A.M. Glazer (Coopted)</td>
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<td></td>
<td>Dr. J.G. Halfpenny</td>
<td>1985</td>
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<tr>
<td></td>
<td>Professor M. Hart (Coopted)</td>
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<td></td>
<td>Dr. J.R. Helliwell</td>
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<td>Professor A.J. Leadbetter</td>
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<td></td>
<td>Mr. P.B. McAllister</td>
<td>1985</td>
</tr>
<tr>
<td></td>
<td>Dr. R.W.H. Small (Coopted)</td>
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<td></td>
<td>Dr. A.J. Smith</td>
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INTERNATIONAL TABLES FOR CRYSTALLOGRAPHY


Cloth Dfl. 385,-/US $165.00/E 80.00 ISBN 90-277-1445-2

Individuals are entitled to purchase this volume at the reduced price of Dfl. 215,-/US $90.00/E 45.00. They should declare that the copy is for their personal use only and will not be put at the disposal of any library.

The Commission on International Tables of the International Union of Crystallography has, since 1973, been preparing the material for a totally revised and extended edition of the tables of symmetry groups. The results of these years of collaborative effort have led to the production of completely new tables on the 17 plane groups and 230 space groups, comprising about 630 printed pages. This work is complemented by a comprehensive introduction in which symmetry is discussed and the theory and use of the tables is described in detail.

Compiled by the foremost experts in the field of crystallographic symmetry, this book represents the only standard work on the subject and should be regarded as a yardstick by which all other publications may be judged. It is a vital work for all those concerned with the determination of crystal structures, and taking into account the clear and explanatory nature of the introduction, will provide an invaluable aid in the teaching of the subject.

Editorial Committee and Contributing Authors:


Copies are available from: D. Reidel Publishing Company P. O. Box 17 3300 AA Dordrecht Holland or 190 Old Derby Street Hingham, MA 02043 U.S.A.

All individual orders must be prepaid.
The SERC Network

In the 1960s crystallographers needing large computational power had to travel to the Atlas Computer and spend days away from home calculating their results with the aid of decks of punched cards or reels of paper tape.

During the 1970s, computer power increased, and remote workstations were set up so that the scientists could analyse their data without having to waste time in travelling to the computer site.

In July 1982 the SERC maintains two large computing facilities, At the Rutherford Appleton Laboratory (RAL), there are now an IBM 360/195, 3032, and 3081 used mainly for Nuclear Physics and Astronomy Board work. At the Daresbury Laboratory (DL), there is a NAS 7000 and a Cray 1 for Structure Board work. Originally workstations were merely remote card readers and lineprinters: terminals were added to enable users to edit their files interactively.

During the 1980s these workstations are being upgraded and the central computers linked to the packet-switching minicomputer network set up by the Engineering Board. Better display terminals allow users to complete many of their data processing tasks locally, with only the largest 'number crunching' jobs submitted via the network to the central sites.

There are now about 100 U.K. institutions linked to our central computers as well as overseas laboratories in Geneva (CERN) and Hamburg (DESY).

The network provides better facilities for
(a) Data capture
(b) Pre/post processing
(c) Batch job submission to central number crunchers
(d) Information retrieval from databases
(e) File transfer for easier sharing of programs and data
(f) Access to the FR80 microfilm recorder

Databases

Several databases are available on the network. Some of interest to crystallographers are

- CSSR (Crystal Structure Search and Retrieval)
- Brookhaven Protein Databank
- JCPDS (Joint Committee for Powder Diffraction Standards)
- Crystal Structures database collected by the Cambridge Crystallographic Data Centre

The atomic co-ordinate holdings of the Brookhaven databank have been available at DL for several years: recently some of the structure factor data has been added.

JCPDS is also mounted at DL, where a 'minifile' containing just the data of interest to a particular user can be extracted and stored for future reference. One convenient way to do this is to make a microfiche using the FR80 microfilm recorder at RAL. (See Fig. 3)

FR80 Microfilm Recorder

This recorder makes computer output directly on microfilm. It consists of a controlling computer, several magnetic tape drives for input, and a high precision cathode ray tube for output. The tube has an optically flat surface coated with a white phosphor. Diagrams drawn on the surface are recorded on film by means of lens systems and cameras.

The four cameras are 16mm film, 35mm film, 12inch wide hardcopy paper and 105mm film for microfiche, normally run at 48X reduction. A colour filter system allows direct production of colour film. The electron beam intensity is variable to make grey scale images with 256 density levels. The plotting area is divided into a square raster of 16384 addressable points.

Special circuitry draws long vectors and outputs text using 'hardware characters' at high speeds (up to 10,000 a second)

Data Compilation work at RAL

Early in 1976 we were asked by the Data Compilation Committee of the Science Board to undertake a feasibility study to find out whether the FR80 could be used to solve the printing problems associated with the publications of the Cambridge Crystallographic Data Centre. They had just published volume AI of the series 'Molecular Structures and Dimensions'. Its pages contain several parts which are difficult for conventional phototypesetters to handle. There are Greek letters, chemical formulae, (e.g. a hydroxyxmalic acid C_3H_4O_5) stereo pair diagrams and chemical structure diagrams.

The ever-increasing numbers of measured structures made the previously used manual methods of pasting together the separate pieces no longer practical. After more than a year of programming, the first book was made in 1977. We have now prepared the camera-ready copy for their last 6 annual volumes, and the Index Volume (II). Fig 1 shows part of 3 of the 7 different types of index printed in the latest volume. There is a
simple typeface for the Compound Name Index, a more complex one using bold and italics for the main bibliography and an index of diagrams.

Diagrams from PLUT078

We also worked on the problems associated with other parts of their publications such as the Al volume. The stereo pairs were previously been drawn by the Cambridge program PLUT078, so it was adapted to use the FR80. (see Fig 2 for examples). It was also mounted on the GEC minicomputers of the SERC Interactive Computing Facility, so that staff at Cambridge can use it to decide from which direction the structures should be drawn, and the file of drawing instructions later sent over the network to the FR80.

**Stereo Viewer.** The diagrams can either be drawn on hardcopy paper (as in Fig. 2) or sent directly to 35mm film in the format which fits the cheap 'Open University' stereo viewer. These facilities are available to all our users on the network, not just to Cambridge.

**Structure Diagrams**

These were a more difficult problem, since they had been hand drawn for the Al volume, and we had not previously attempted to mix diagrams and technical text in one page by computer program. We defined a format to transfer diagrams from Cambridge to RAL on magnetic tape. Various different ways of combining the text and diagrams were evaluated, and one finally chosen for volume 13 (see Fig 1) The 220 pages containing 3500 diagrams were sent to the printer in April, and the book published in July 82.

**Simulation of Images**

We have also attempted to simulate photographic images using our computers and the FR80. Fig 3 shows a simulated electron microscope image of Wollastonite and some powder diffraction patterns. Fig 4 shows a shaded molecule. Such images can be made quickly by overprinting on a conventional lineprinter, but then they need thick paper, and are often large and cumbersome to handle. The FR80 produces much higher quality suitable for publications. There are probably many other uses of this technique which we have not tried so far, e.g. simulation of surface defects of crystalline materials.

**Graphics Kernel System (GKS)**

After several years of international discussions (aided by RAL staff) this graphics system has recently been adopted as a Draft International Standard by ISO TC97/SC5. GKS is intended to be a portable low-level system, on top of which the user builds a particular application. It is not a molecular graphics system like FRDO, or BILDER. It is more like the GINO-F system currently used on the SERC minicomputer network.

There is an associated international effort trying to define a standard metafile format. Pictures written on magnetic media in this format would be easily recreated by any site running a GKS system, even if they did not have the particular application program which originally created it. The format should enable SERC users to send completed pictures more easily around the network and to the FR80.

Version 6.2 of GKS was implemented on the VAX computers of the SERC's Astronomy Board STARLINK network. Work is in progress to implement version 7.2 on the RAL computers.

**The Future**

We are trying to bring simple-to-use molecular drawing packages within reach of most of the UK research community by mounting them on the SERC network. We already have PLUT078. A. M. Lesk's program CPKPL0T (See Fig 4) is being adapted for the FR80 and the GEC minicomputers. We will try to mount the programs on the single-user computers (e.g. PERQs) as they become available, if there is enough user demand. Donations of further programs, and suggestions for improvements or additional programs are always welcome.

We are also eager to find new uses for our graphical equipment, and happy to discuss possible projects with our users at any time.

For further information on any of these topics contact


Telephone (0235) Abingdon 21900 Ext. 6397

31 July 1982
Aluminium

- Aluminium dimethyl-bis(2,2'-bipyridine)-cobalt(iii) tetraethyl-aluminium, J Organomet. Chem. 174, 89, 1979
- Aluminium dichloro-4,4-dichloro-1,3-bis(trimethylsilyl)-1,3-di-2-phosphonio-4-aluminate-cyclobutane, J Organomet. Chem. 174, 89, 1979

ANILINES

- Aniline, C6H5NH2, J. Am. Chem. Soc. 91, 1969

Phenols and Ethers


17 Phenols and Ethers


Partial pages from annual bibliography "Molecular Structures and Dimensions" Diagrams were added for Vol 13 published July 82
Some of the diagrams obtainable from the FR80 using PLUTO78
[Max no of atoms 400]
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Examples of simulated images made with the FRSO. The lower one is an electron microscope image; the upper one, two attempts for each line.
Heme Group as displayed on a Sigma terminal on a GEC4090 computer (Figure produced using programs from the molecular computer graphics system developed by Mr. D.Richardson in the laboratory of Dr.P. Pauling (University College London) modified by A.M.Lesk (while a visitor at the MRC Laboratory of Molecular Biology, Cambridge) [Max no of atoms 2400]
The International Union of Crystallography and the Cambridge Crystallographic Data Centre announce the publication of the latest volume in this series: Volume 13, entitled *Bibliography 1980-81, Organic and Organometallic Crystal Structures*. This volume contains references to 3610 structure determinations published during this period.

Volume 13 sees the introduction of the new Chemical Diagram Index. Chemical diagrams for virtually all compounds referenced in the book are included in the new 218 page index.

The price of the new volume is 135 Netherlands guilders. Copies are available from the publishers: D. Reidel Publishing Company, P.O. Box 17, 3300 AA Dordrecht, The Netherlands. Orders may also be placed with Polycrystal Book Service, P.O. Box 11567, Pittsburgh, Pennsylvania 15238, U.S.A. To ensure speedy receipt of new volumes readers are advised to make use of the standing order service. Information about personal purchase reductions and standing orders may be obtained from the publishers.

O. Kennard
The 9th Course, X-Ray Crystallography and Drug Action: Current Perspectives will be held at Erice-Trapani, Sicily from 21 March to 1 April, 1983.

The topics will be: introductory X-ray crystallography, crystal forces, host-guest complexes, drug-receptor binding forces, receptors, drugs and nucleic acids, $\alpha$-helix dipole and electrostatic interactions, dihydrofolate reductase inhibitors, haemoglobin, prealbumin hormone complexes, influenza virus haemagglutinin, rigid drug analogues, folic acid, polypeptide hormones, steroids, benzomorphans, benzodiazepines, antibiotics, neuromuscular blockers, chemotherapeutic agents, drug conformation, drug development, molecular modeling, conformational analysis, and computers in drug design.

The lecturers are: F. Arcamone, Farmitalia, Milan, Italy; V. Austel, Thomae, Biberach, W. Germany, FRG; C. R. Beddell, Wellcome Laboratories, UK; J. Bernstein, Ben-Gurion University, Israel; C. Blake, University of Oxford, UK; T. L. Blundell, University of London, UK; M. Brufani, University of Rome, Italy; A. Camerman, University of Washington, USA; S. F. Campbell, Pfizer Research, Kent, UK; C. De Ranter, University of Leuven, Belgium; W. Duax, USA; P. Goodfor, University of Oxford, UK; D. R. H. Gourley, E. Virginia Medical School, USA; P. Gund, Merck, Sharp and Dohme, USA; T. A. Hamor, University of Birmingham, UK; W. Hol, University of Groningen, The Netherlands; A. S. Horn, University of Groningen, The Netherlands; P. A. Kollman, University of California, USA; G. Marshall, Washington University, USA; H. Merz, Boehringer Ingelheim, FRG; S. Neidle, University of London, UK; G. Richards, University of Oxford, UK; D. Savage, Organon, UK; J. Tollenaere, Janssen, Belgium; K. N. Trueblood, University of California, USA; and I. A. Wilson, Harvard University, USA.

Contact: Professor Alan S. Horn
Laboratorium voor Farmaceutische en Analytische Chemie
A. Deusinglaan 2
9713 AW Groningen, The Netherlands

with a copy to: L. Riva di Sanseverino
Executive Secretary
International School of Crystallography
Piazza Porta San Donato 1
40127 Bologna, Italy

The closing date for applications is November 20, 1982.
A ten day school dealing with recent advances in the theory and application of direct methods of crystal structure determination, with a special emphasis on the application of direct methods to macromolecular structure determination will be held July 20-30, 1983, in Buffalo, New York. It is sponsored by the Medical Foundation of Buffalo, Inc., Research Laboratories.

The school will be devoted to theoretical advances and practical applications of direct methods of crystal structure determination, with a special emphasis on the integration of the direct methods philosophy with existing techniques of macromolecular crystallography. By bringing together students and lecturers interested or expert in one or both of these fields, we hope to inform the participants of the potential importance of recent developments and to stimulate interest and further work in this emerging field. The meeting will have the format of a workshop; there will be oral presentations as well as a heavy emphasis on tutorial sessions. Participants are encouraged to bring data sets with them, and time will be available for hands-on computing.

For further information contact: Dr. Jane F. Griffin
Medical Foundation of Buffalo, Inc.
73 High Street
Buffalo, New York 14203

MOLECULAR STRUCTURE AND BIOLOGICAL ACTIVITY

Jane F. Griffin, Ph.D., and William L. Duax, Ph.D., Editors
Medical Foundation of Buffalo, Inc., Buffalo, NY

This volume represents the proceedings of a meeting held in honor of David Harker, Buffalo, New York, August 26-28, 1981, as a satellite meeting of the IUCr Meeting in Ottawa, Canada.


1982 450 pages 0-444-00751 $75.00

Dfl. 175.00/$81.50 outside North America
Anyone interested in the activities of the Symmetry Society should contact Mike Stanford at Birkbeck College. Besides the inherent beauty of symmetry, the Society is interested in the fun and fascination of the subject. Past speakers at meetings have been Dr David Singmaster on Rubik's Magic Cube and Professor Stewart Robertson on Symmetry Classification of Convex Polyhedra.

Biophysics Section - Department of Physics, Imperial College

RESEARCH ASSISTANTSHIP IN MOLECULAR GRAPHICS

A one-year post-doctoral Research Assistantship (SERC-funded, Range IB) is available for an experienced computer programmer. The work includes development of displays of molecular structure and electron density for macromolecules using a PERQ computer and raster display, taking data from the SERC distributed computing network. A compatible pen-plotter system and colour display are also to be established.

Applicants should have appropriate background in computing, X-ray crystallography or molecular biology. An extension of the appointment will be possible if further Research Council support can be obtained.

Please apply as soon as possible to Prof. D.M. Blow, FRS, who can provide further information.
Applications are invited for an SERC supported Post Doctoral Research Assistantship to work on studies of phonon spectra using x-ray diffraction techniques. The project is funded for two years and involves working mainly at King's College but also at the Daresbury Laboratory of SERC using the UK Storage Ring Source of synchrotron radiation.

The post is available immediately. Salary on the standard 1A scale starting at £7925 including London Allowance.

Further particulars are available from:
Professor M Hart Department of Physics, King's College
Strand London WC2R 2LS

CRYSTALLOGRAPHY NEWS

Camera-ready copy for the December issue should reach the Editor by November 20 : Dr Moreton Moore, Department of Physics, Royal Holloway College, Egham, Surrey, TW20 OEX. Telephone: Egham 35351 extension 36. Telex: 935504.
FORTHCOMING MEETINGS (M) AND COURSES (C) Additional to those listed in the June issue

1982

20 October
Tailoring of Crystal Growth (M)
Grand Hotel, Manchester
Dr M J Cliff, ICI Pharmaceuticals Division, Macclesfield Works, Cheshire, SK10 2NA

22-23 Oct.
Crystal Related Arthropathies (M)
Bristol Polytechnic
Dr Paul Dieppe, Dept of Medicine
Bristol Royal Infirmary, Bristol, BS2 8HW
(see this issue)

10-12 November
40th Annual Pittsburgh Diffraction Conference:
(1) Liquid crystals, (2) phases in macromolecular structure analysis (M), Pittsburgh.
Prof. C D Stout, Dept of Crystallography,
Univ. of Pittsburgh PA 15260, USA

20-22 December
Solid State Physics Conference: Phase transitions; calculations of atomic arrangements, lattice vibrations & magnetism; quasi 2-D semiconductors; IR & Raman spectroscopy (M).
Bedford College, London
Dr M Lea, Physics Dept, Bedford College
Regent's Park, London, NW1 4NS

1983

5-11 January
Imaging and Microanalysis with High Spatial Resolution (C)
Arizona State University.
The Secretary, HREM Facility, Center for Solid State Science, Arizona State University, Tempe, AZ 85287, USA

18 March - 1 April
International School on Materials Science & Solar Energy (C) Cairo and Alexandria
Prof. S Arafa, Science & Engineering Dept
The American University in Cairo,
113 Kasr El-Aini Street, Cairo, Egypt.

21-23 March
Microscopy of Semiconducting Materials (M)
St Catherine's College, Oxford
Dr A G Cullis, RSRE, St Andrew's Road, Malvern,
Worcs, WR14 3PS

21 March - 1 April
X-ray crystallography & drug action: current perspectives. (C)
Erice, Sicily.
L. Riva di Sanseverino, Piazza Porta San Donato 1
40127 Bologna, Italy (see this issue)
11-13 April  Proterozoic 83 (M) 
Lusaka, Zambia
The Organizing Secretary, Proterozoic 83
Geological Society of Zambia, P O Box 50135
Lusaka, Zambia.

13-15 April  Molecular Graphics Society Annual Meeting (M)
Dr Andy Morffew, IBM UK Scientific Centre,
Athenstan House, St Clement Street, Winchester,
Hants. SO23 9DR

17-22 April  Scanning Electron Microscopy 1983 (C)
Dearborn, Michigan, USA
Dr. Om Johari, SEM, Inc., P O Box 66507,
AMF O'Hare (Chicago), IL60666, USA

18-22 April  Intermag (M)
Philadelphia, Pennsylvania
Dr W Doyle, Sperry Univac, P O Box 500,
Blue Bell, Pennsylvania, 19424, USA

17-19 May  21st Meeting of the European High Pressure Research
Group (M)
Copenhagen, Denmark
Dr B Andersen, Chemical Lab. IV,
H.C. Ørsted Inst., Universitetsparken 5,
DK-2100 Copenhagen, Denmark.

31 May -
2 June  4th International Conf. on CVD
Eindhoven, Netherlands
G. Verspui, Philips Centre for Technology,
Building SAQ,
5600 MD Eindhoven, The Netherlands.

21-30 June  5th Summer School on Computing Techniques in
Physics (C)
Bechyně Castle, Czechoslovakia
Dr J Badrchal, Institute of Physics, ČSAV,
Na Slovance 2, 18040 Praha 8, Czechoslovakia.

20-30 July  School on Direct Methods and Macromolecular
Crystallography (C)
Buffalo, New York
Dr Jane F Griffin, Medical Foundation of Buffalo, Inc,
73 High Street, Buffalo, New York 14203, USA

24-29 July  15th Meeting of the Federation of European Bio-
chemical Societies (M), Brussels
15th FEBS Meetings, Brussels International
Conference Centre, Parc des Expositions, B-1020
Brussels, Belgium.

7-10 August  Applications of X-ray Topographic Methods to
Materials Science (C), Snowmass, Colorado, USA
Prof. S. Weissman, Dept of Mechanics & Materials
Science, Rutgers Univ., Piscataway, New Jersey 08854,
USA

29 July-
4 August  8th International Biophysics Congress (M),
Bristol, England. Dr H C Watson, Dept of Biochem.,
Univ. of Bristol, Medical School, University Walk,
Bristol BS8 1TD.
SYMPOSIUM
CRYSTAL RELATED ARTHROPATHIES
Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol BS16 1QY
22nd - 23rd October, 1982.

PROGRAMME

Friday

Introduction - "Crystals and Crystal Deposition Disease" Dr. P. A. Dieppe (Bristol)

Uric Acid Metabolism

Pr. G. Nuki (Edinburgh)

Nucleation and Growth of Monosodium Urate Monohydrate Crystals

Dr. P. Calvert (Sussex)

Gout - Recent Advances

Dr. J. Scott (London)

GENERAL DISCUSSION

LUNCH and POSTER VIEWING

The Pathology of Articular Deposition of Calcium Salts Their Relationship to Osteoarthritis

Pr. D. Mitrovic (Paris)

Metabolism and Crystallisation of Calcium Pyrophosphate Dihydrate

Pr. G. Russell (Sheffield)

Pyrophosphate Arthropathy - Recent Advances

Dr. M. Doherty (Bristol)

TEA

Growth of Calcium Phosphate Crystals in Normal and Osteoarthritic Cartilage

Dr. Y. Ali (London)

Periarticular Hydroxyapatite Deposition and Calcific Periarthritis

Dr. G. Faure (Nancy)

Intra-Articular Hydroxyapatite and Related Diseases

Pr. R. Schumacher (Philadelphia)

GENERAL DISCUSSION

COCKTAILS POSTER VIEWING DINNER

Saturday

Radiodiagnosis of Crystal Deposition Diseases

Dr. I. Watt (Bristol)

Polarised Light Microscopy

Dr. J. Chayen (London)

Physical Methods of Identifying Crystals

Dr. J. Shah (Bristol)

Laboratory Handling of Crystals

Dr. P. Dieppe (Bristol)

Crystal-Induced Inflammation

Dr. C. Dick (Newcastle)

CASE PRESENTATIONS Drs. Dieppe, Macfarlane and Doherty

LUNCH POSTER VIEWING

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I/We would like to reserve ........ places at the above Symposium at a cost of £35 per person. I enclose a cheque, made payable to "Crystal-Related Arthropathies" for ..........

NAME(S) ..........................................................
(Block capsitals please)

POSITION...........................................................

ADDRESS ............................................................

Please return form, with cheque, to:

Mrs. M. A. Clarke,
Rheumatology Research Secretary,
University Department of Medicine,
Bristol Royal Infirmary,
Marlborough Street,
Bristol BS2 8HW

RETURN AS SOON AS POSSIBLE, PLEASE