

# Society of Crystallographers

in

## Australia

### Newsletter No. 7

September 1983

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- 1983 Annual Gen. Meet.
- (i) -Organization of the 1987 I.U.Cr Congress and General Assembly.  
Dr E.N. Maslen reported that the Australian Government has given written assurances that entry visas will be granted to all bona fide foreign scientists intending to visit Australia for the 1987 Congress. These assurances are in accordance with the I.C.S.U. rules, and now allow the organization of the meeting to proceed at full strength. Dr Maslen stressed that Australians attending the 1984 Congress in Hamburg should make every effort to 'sell' the Perth meeting.
  - (ii) -The National Committee for Crystallography has invited the SCA to proceed with negotiations relating to the formation of a South East Asian Regional Group. This group will be composed of countries in the region bounded by China, Japan, India, Australia and New Zealand. It may not include the United States. The SCA will now send letters to the National Crystallography Societies in the major countries of the region inviting them to participate in the proposed Group.
  - (iii) -Since no further nominations for Officers of the Society were received additional to the list presented by the Nominations Committee in the last Newsletter, an election was not required, and the candidates proposed are confirmed in office. The updated list of office bearers appears on the inside of the front cover of this Newsletter.  
I am sure that the Secretary speaks for the entire SCA membership in congratulating Bryan Gatehouse, our retiring President, on his outstanding job at the helm during the last 18 months. Much of the business of the Society, of course, takes place quietly behind the scenes, and Bryan has discharged these duties with the efficiency and wisdom of a seasoned campaigner. It was certainly a pleasure to work with him.
  - (iv) -Amendments to the SCA Constitution which are required in order to receive tax-exempt status as an Incorporated Society were approved during the meeting. However, in accordance with Article VI, Section 1 of the SCA Constitution, an amendment is not ratified until an affirmative vote of at least two thirds is received in a postal vote by the whole membership. The proposed amendments are detailed on an accompanying loose sheet forwarded with this Newsletter. Please indicate your approval, or otherwise, of the amendments in the appropriate space on that sheet and mail it either to the Secretary, or to the Treasurer, along with your 1984 membership dues.
  - (v) -Venue for Crystal XV.  
As usually experienced by Chairman of the AGM, Bryan Gatehouse had the very difficult task of choosing between the large number of volunteers clampering to organize the next Crystal meeting. One offer, however, stood out from the rest, and was received with acclamation when announced. Crystal XV will, therefore, be held in Adelaide in May 1985, and will be coordinated by Dr M.R. Taylor. Thanks a million Max!!

#### TREASURER'S REPORT

The following statement of the Society's finances were presented to the AGM in Morpeth, and accepted by that meeting.

Statement of Income and Expenditure  
for the year ended 30th June, 1983.

<u>INCOME</u>	\$	\$
Membership Subs.	1158.55	
Interest on FCA debts. 1.4.82 to 30.6.83	478.15	
Interest on IBD (Westpac).	472.50	
Sales World Directory	10.90	
Savings Bank Interest (Westpac)	28.73	
La Trobe Credit Union Interest	<u>12.81</u>	<u>2161.64</u>
<u>LESS EXPENDITURE</u>		
Bank Charges	<u>2.40</u>	<u>2.40</u>
Surplus for year transferred to Accumulated Funds		<u>2159.24</u>
		<u>2161.64</u>

Balance sheet as at 30th June, 1983.

ACCUMULATED FUNDS

Balance as at 30.6.82	6870.22	
Add surplus for this year	<u>2159.24</u>	<u>9029.46</u>

THESE FUNDS ARE REPRESENTED BY CURRENT ASSETS

Finance Corp. of Aust. Ltd debs (maturing 24.11.83)	3000.00	
Westpac Interest Bearing deposit (maturing 5.4.84)	3500.00	
La Trobe University Credit Union	1512.81	
Westpac Savings Account	766.65	
Prepaid expenses for Xstal XIV	<u>250.00</u>	<u>9029.46</u>

LIABILITIES

-  
\$9029.46

Audited by David Goodridge  
Manager  
Westpac Banking Corp.  
La Trobe University

(Signed) M.F. Mackay  
Hon. Treasurer

13.7.83



## NEW MEMBERS

A warm welcome from the Executive of the SCA is extended to the following new members of the Society:-

- Full:    - Dr J. Drennon (CSIRO Advanced Materials, VIC.)  
          Ms S.A. Miller (CSIRO Energy Chemistry, NSW.)  
          Dr A. Pring (RSC, ANU)  
          Dr P.K. Smith (RSC, ANU)
- Student: - Mr A.T. Baker (Chemistry, University of New South Wales)  
          Mr W.B. Church (Inorganic Chemistry, University of Sydney)  
          Mr C.A. Collyes (Inorganic Chemistry, University of Sydney)  
          Mr C. Dean (P. and I. Chemistry, University of Adelaide)  
          Miss J. Delaney (Inorganic Chemistry, University of Sydney)  
          Mr T.B. Williams (RSC, ANU)

## PERSONALIA

Dr A.F. Reid, Chief of the CSIRO Division of Mineral Engineering, has recently been elected to Fellowship of the Royal Australian Chemical Institute.

Dr M.F. MacKay has been appointed Reader in the Dept. of Physical Chemistry at LaTrobe University. After obtaining her double major in Chemistry from the University of Sydney, Maureen worked at New England University College, and then as a research assistant in the Chemical Crystallography Laboratory at Oxford University. It was during her years there, working under the direction of Nobel Prize winner, Prof. Dorothy Crowfoot-Hodgkin, FRS, that she developed her interest in crystallography. Returning to Australia, she completed a Ph.D thesis at the University of Melbourne, supervised by Dr A. McL. Mathieson of the CSIRO Division of Chemical Physics, and joined the faculty at LaTrobe in 1971.

Dr M.A. Spackman has made a welcome return to Australia after spending several years as a postdoctoral research associate with Prof. R.F. Stewart at Carnegie Mellon University in Maryland. Mark has joined Dr E.N. Maslen's very active group at the Crystallography Centre at the University of Western Australia.

Dr J.B. Parise has also returned to Australia after several years in the United States working with Profs C.T. Prewitt (Stony Brook) and R.D. Shannon (Du Pont). He is now working with Prof B.G. Hyde at the RSC in Canberra.

## FORTHCOMING MEETINGS

- Nov. 25 and 25, 1983: RACI Solid State Division Two-day Symposium, Victorian College of Pharmacy, 381 Royal Parade, Parkville, Victoria. Contact: Mr H. Jaeger, CSIRO Division of Materials Science, University of Melbourne, 3052, Parkville.
- Jan. 22-26, 1984: 12th Conference of the RACI COMO Division, University of Tasmania, Hobart. Contact: Dr P.W. Smith, Chemistry Dept., University of Tasmania, Box 252C, G.P.O., Hobart 7001.
- May 6-20, 1984: International School on Direct Methods of Solving Crystal Structures, Erice, Italy. Contact: Prof. L. Riva di Sanseverino, Istituto di Mineralogia, Piazza di Porta San Donato 1, 40127 Bologna, Italy.
- May 21-25, 1984: American Crystallographic Association Spring Meeting. Lexington, Kentucky, U.S.A. Contact: Prof. D.E. Sands, Dept. of Chemistry, University of Kentucky, Lexington, Kentucky, 40506, U.S.A.
- Aug. 9-18, 1984: I.U.Cr. 13th Congress, Hamburg, Germany. Contact: Gesellschaft Deutscher Chemiker, Abteilung Tagungen, Postfach 90 04 90, D-6000 Frankfurt/Main 90, Federal Republic of Germany.

This meeting, sponsored by the Deutsche Forschungsgemeinschaft (DFG) and Freie und Hansestadt Hamburg, will be held 9-18 August 1984 at the Congress Centrum Hamburg, Hamburg, Federal Republic of Germany.

You are cordially invited by the Arbeitsgemeinschaft Kristallographie (AGK<sub>r</sub>) of the Federal Republic of Germany to attend the XIII<sup>th</sup> Congress and General Assembly of the International Union of Crystallography to be held in Hamburg at the Congress Centrum Hamburg (CCH). Registration will begin on Wednesday, 8 August 1984. The sessions will continue until 18 August.

#### Programme

The scientific programme will include invited general lectures, invited oral papers and open Commission meetings. Most contributed papers will be presented in poster sessions. Commercial and non-commercial apparatus will be exhibited and crystallographic data file demonstrations are planned.

#### Subjects

The congress will cover recent advances in all aspects of crystallography. It is anticipated that the following areas will be represented:

#### 1. General Topics

Anomalous scattering  
Atomic scale mechanisms of physical, chemical or biological properties  
Applied crystallography  
Computing statistics  
Crystal chemistry  
Crystal physics  
Crystal growth and morphology  
Diffraction theory  
Dynamical diffraction  
Education and data retrieval  
Electron density studies  
Electron diffraction and microscopy  
EXAFS and near-edge spectroscopy  
Instrumentation and apparatus  
Lattice dynamics  
Materials research  
Methods of structure determination  
Neutron diffraction  
Phase transitions  
Powder diffraction  
Resonance studies  
Real and ideal crystals  
Small angle scattering  
Synchrotron radiation and applications  
Symmetry and related topics  
Techniques

#### 2. Structural Studies

Biological materials (proteins, viruses, membranes, drugs, etc.)  
Coordination compounds  
Glasses and amorphous materials  
Industrial materials  
Inorganic and intermetallic compounds  
Liquid crystals  
Magnetic structures  
Minerals  
Organic compounds  
Organic-metallic compounds  
Polymeric materials  
Surfaces, interfaces and films

A Workshop on the X-ray Powder-Diffraction File is planned for 8 August 1984.

#### Committees

Organizing: Professor H. Saalfeld, Hamburg (Chairman) with the assistance  
the Gesellschaft Deutscher Chemiker

Programme: Professor U. Bonse, Dortmund (Chairman)

#### Accommodations

Reservation will be arranged by a special travel agency. A limited number of student dormitories and camping facilities may be available. Detailed information will be given in the second circular.

#### Further Information

A second circular with a call for papers, more details of the programme, the general arrangements and registration forms will be distributed in the Autumn of 1983. Those wishing to receive the second circular should write to:

Gesellschaft Deutscher Chemiker  
Abteilung Tagungen Postfach 90 04 90  
D-6000 Frankfurt/Main 90 F.R.G.

#### Associated Meetings

1. A Symposium on Neutron Scattering will be held on 6-8 August 1984 at the Hahn-Meitner-Institut, West Berlin. Organization: Prof. W. Saenger, Institut für Kristallographie, Freie Universität Berlin, 1000 Berlin 33, F.R.G.  
Programme: Dr. M. S. Lehmann, Institut Laue-Langevin, Avenue des Martyrs, BP 156, 38042 Grenoble, France.
2. An International Summer School on Crystallographic Computing is planned for 30 July - 8 August 1984 at the Max-Planck-Institut für Kohlenforschung, Mülheim/Ruhr. Organizing Committee: Prof. H. Buzlaff, Prof. C. Krüger, Prof. G. Sheldrick. For information: Prof. H. Buzlaff, Institut für Institut für Angewandte Physik, Universität Erlangen-Nürnberg, Loewenichstrasse 22, D-8520 Erlangen, F.R.G.

3. A Symposium on Small Angle Scattering and Related Methods will be held on 20-23 August 1984 at DESY, Hamburg. Organization: Prof. H. Stuhrmann, c/o EMBL, DESY, Notkestrasse 85, D-2000 Hamburg 52, F.R.G. (together with Prof. P. W. Schmidt, Columbia, MO, USA).
4. A Symposium on Metals and Intermetallic Compounds is planned for 20-24 August 1984 at the Technische Hochschule Aachen. Information: Prof. W. Bronger, Institut für Anorganische Chemie der Technischen Hochschule Aachen, Templergraben 55, D-5100 Aachen, F.R.G.
5. An International Summer School on Symmetry-Related Crystal Structures: Group-Subgroup Relations is planned for 20-24 August 1984. Location: In the western region of the Federal Republic of Germany. For further information write to Prof. W. E. Klee, Institut für Kristallographie der Universität, Postfach 63 80, D-7500 Karlsruhe, F.R.G.

The Schweizerische Gesellschaft für Kristallographie has announced that it will hold the "Paul Niggli Symposium über geometrische Kristallographie und ihre morphologisch stereochemischen Anwendungen" on 6-7 August 1984 in Zurich. For further information can be obtained from Prof. W. Nowacki, Mineralogisches Petrographisches Institut der Universität, Balzerstrasse 1, CH-3012 Bern, Switzerland.

For further information on the XIIIth Congress and General Assembly contact:

Gesellschaft Deutscher Chemiker  
Abteilung Tagungen  
Postfach 90 04 90  
D-6000 Frankfurt/Main 90  
Federal Republic of Germany

From the March, 1983 Newsletter of the ACA

#### PREVIOUS MEETINGS OF THE SOCIETY

During the Morpeth Crystal XIV meeting, and just prior to the ACM, a small group of the 'Elder Statesmen' of the SCA attempted to find out which capital city in Australia had not hosted a Crystal meeting for some time. As it turned out, it was clearly Adelaide's turn, and indeed, Max Taylor from Flinders University is now scheduled to coordinate the arrangements for Crystal XV. However it was also abundantly clear that there is some considerable confusion in regard to the dates and venues of all but the last 4 or 5 Crystal meetings.

The list which was eventually drawn up is reproduced below, and is decidedly tentative beyond Crystal 9. The Secretary would greatly appreciate hearing from members who can correct any mistakes in this list and/or fill in the missing details of the earlier meetings, for the Society's records.

Crystal	Year	Dates	Venue	Chairman of Org. Comm.
15	1985	May	Adelaide	Dr M.R. Taylor
14	1983	Aug. 30-Sept. 2	Morpeth, NSW.	Mr H.R. Tietze
13	1982	Feb. 2-5	Univ. Queensland	Cr C.H.L. Kennard
12	1980	Jan. 30-Feb. 2	ANU, Canberra	Dr G.M. McLaughlin
11	1978	Jan. 29-Feb. 2	Bendigo, Victoria	Drs Gatehouse, Lloyd, Grey and Bursill
10	1976	Feb.	Hawkesbury, NSW.	
9	1973	Feb. 14-16	LaTrobe Univ. Vic.	Dr M.F. MacKay
8	1971		Adelaide	
7				
6				
5	1967	Aug. 17, 18	Monash Univ. Vic.	Dr B.M. Gatehouse, Prof. H.C. Bolton



(cont.)

Crystal	Year	Dates	Venue	Chairman of Org. Comm.
4				
3				
2				
1	1961			

#### REPORT ON THE AXAA '83 MEETING

The Fifth Australasian Schools and Conference on X-ray Analysis and Surface Analysis (AXAA '83) was held at the Victorian College of Pharmacy, Melbourne from 16th to 20th May 1983. This meeting and associated equipment exhibition was arranged by the Victorian Branch of the Australian X-ray Analytical Association and was attended by over 220 delegates, visiting lecturers and exhibitors. The attendees came from every state in Australia, New Zealand, U.S.A., Canada, U.K., Germany, Holland, Switzerland, China, Japan, Singapore, Chile and Papua New Guinea.

The Schools and Conference were opened by Dr W.J. McG. Tegart (Secretary of the Department of Science and Technology) who gave an address on science and technology policies. Plenary lectures, on the main themes of the Schools and Conference, were given by Dr. C.R. Hubbard (N.B.S. Washington, U.S.A.) "Computer Aided Revolution in X-ray Powder Diffraction", Dr. K. Norrish (C.S.I.R.O., Division of Soils) "X-ray Fluorescence — Past, Present and Future", and Prof. R.J. MacDonald (University of Newcastle) "Surface Analysis — The State of the Art".

The Schools programs on each of these topics, ran concurrently over three days, had been arranged by Mr K.G. Hamilton (Gippsland Institute of Advanced Education) and Dr. T.C. Hughes (University of Melbourne). During the X-ray Diffraction School, a workshop on manual methods of phase identification consisting of tutorial and problem solving sessions based on course material provided by JCPDS — International Centre for Diffraction Data, was led by Dr. Hubbard with the assistance of Dr. E. Slansky (Geological Survey of N.S.W.). Among the subjects covered in the XRD school were crystallography, instrument optimization and quantitative XRD. Those who attended the X-ray Fluorescence School were able to hear presentations from four international speakers; Dr. M.A. Short (Occidental Research, U.S.A.), Dr. F. Claisse (Canada), Dr. J. Kikkert (Philips, Holland) and Mr. D.F. Sermin (Bausch & Lomb, Switzerland). The subjects that were covered in this school included instrumentation for wavelength and energy dispersive analysis, sample preparation and correction procedures.

A forum for Computer Search Match Methods in XRD was held and a subcommittee (Messrs. Horne, Bogi and Slansky) was formed to keep the AXAA up-to-date on the current methods.

The most recent feature of AXAA Schools is the coverage of the wide range of Surface Analysis techniques, which were represented this year by lectures

on sem-eda, epma, PIXE, SIMS, ESCA, AES. These topics were thoroughly covered by sixteen well-known speakers. On the Wednesday afternoon of AXAA '83 week, visits were arranged to laboratories in the Melbourne area which allowed delegates to see how the "locals" applied various techniques to a wide range of problems. The XRF school organized practical sessions at this time.

The Conference sessions were lead by review papers on "Preparation of metals and alloys for XRF" (Dr. K. Norrish and Mr. R.A. Davies), "Progress in XRD Quantitative Analysis" (Dr. C.R. Hubbard), "The Present and Future of Surface Analysis" (Dr. B.F. Phillips, Perkin Elmer, U.S.A.), "X-ray Fluorescence — The State of the Art" (Dr. M.A. Short) and "Safety for X-ray Instrumentation" (Mr. A. Melbourne and Mr. F.P. Robotham). There were a total of fifty papers presented orally in three concurrent sessions and the delegates were able to view thirteen poster papers during the meeting.

An Energy Dispersive XRF workshop, led by Dr. J.D. Smith (Melbourne University), was held during the Conference sessions.

The manufacturers exhibition was held in the Main Hall which is conveniently close to the lecture theatres at Pharmacy College. Equipment and accessories were displayed by thirteen companies and their representatives included twelve experts from overseas. One manufacturer was able to show one of the latest automated X-ray fluorescence analysis system working for the first time in Australia.

An automated XRD system was demonstrated and delegates could see how a mini- and micro-computer could be used in Search Match XRD analysis for compounds.

A Student prize of \$200, donated by Sietronics, was shared by Mr. P. Kennedy (Auckland University) and Mr. P. Lambrineas (Monash University). The Rocklabs prize was awarded to Mr. V.J. Manners, for his new XRD powder camera design and Mr. R.A. Coyle, for a new automated drive to a microdensitometer.

The Proceedings of the Fifth Australian Schools and Conference (326 pages) are available from AXAA '83, P.O. Box Parkville, 3052 at \$20.00 per copy. It is planned to hold the sixth Schools and Conference on X-ray Analysis in Sydney in 1986.

P.W. Wright  
Conference Secretary

*The Australian Physicist*, Vol. 20, August 1983 — Page 177



## OBITUARY OF PROF. D. McLACHLAN JR.

Dan McLachlan died on 3 December 1982, two days before his 77th birthday. McLachlan was emeritus professor of mineralogy at Ohio State University. He was editing the final proofs of *Crystallography in North America* for the American Crystallographic Association when he suffered a massive heart attack.

McLachlan was born in Arcola, Saskatchewan, and educated at Kansas State College, receiving his BS in 1930, and at Pennsylvania State College, receiving his MS in 1933 and PhD in 1936. He was a physical chemist at Corning Glass from 1936 to 1941, and a physicist at American Cyanamid to 1947, before serving as professor of metallurgy, mineralogy and physics at the University of Utah until 1953. He then went to the Stanford Research Institute as assistant chairman of the Poulter Laboratory, and later to the University of Denver, where he served

MCLACHLAN



(From: 'Physics Today, April 1983, p.72)

as coordinator of the physics department and professor of metallurgy until 1963. After a year as Batelle professor, he remained professor at Ohio State University from 1964.

His interests ranged over large areas of crystallography. In the days before high-speed computers, he invented a series of ingenious analog devices to lighten the tedium involved in such hand calculations as Fourier series summations. He published *X-Ray Crystal Structure* in 1957 and *Statistical Mechanical Analogies* in 1968. He was active in a number of scientific societies and was a member of the US delegation to the celebrated 1946 meeting in London that led to the organization of the International Union of Crystallography. He was the ninth president of the American Crystallographic Association. His major activity in the last two years was editing *Crystallography in North America*, a comprehensive account of the development of this science in the US and Canada from its beginnings, before WWI, to the present.

McLachlan was a warm and friendly man with a keen if wry sense of humor. His hilarious tale *Your Dog Died*, published under the pseudonym Dok McMud expresses his comic perceptions with great fidelity.

S. C. ABRAHAMS  
Bell Laboratories

## BOOK REVIEWS

**WILLIAM HENRY BRAGG, 1862-1942: Man and Scientist**, G.M. Caroe, Cambridge University Press, Cambridge, 1978, xii + 212pp., \$39.00.

Reviewed by John Jenkin, Physics Department, La Trobe University.

Ever since William Henry Bragg's two surviving children (Gwendolen Caroe and William Lawrence Bragg) wrote a short memoir of their father for the Royal Society on the centenary of his birth (1962), Mrs. Caroe had urged her brother to write a "Life" of their

father, but she could not persuade him to do it — he was "too busy"; "a son could not write about his father". Later Sir Lawrence reluctantly agreed to write something with his sister, but he died (1970) before much progress had been made. In the end she had to do it alone.

This book is now not new, and it has been reviewed elsewhere (see, for example, *Historical Records of Australian Science*, 5(2), 1981 pp. 123,4, and references therein). Nevertheless, it deserves to be brought to the attention of the Australian physics community, for it



tells (in part) of a very important piece of our scientific heritage and it does so throughout in a warm, chatty and immensely readable manner that emphasizes the personal aspects of a creative and lovable man. This genuinely is a book to be opened in the evening after a hard day in the lecture theatre, laboratory or committee room.

Mrs. Caroe has used family documents, newspaper clippings, the extensive Bragg holdings at the Royal Institution, Bragg's unfinished and unpublished autobiographical notes and her own personal memory. The result is a sensitive and charming portrait for, "despite this scissors-and paste approach, there is a charm and unity about the book" (Badash in *Isis*). On the other hand, in sketching the scientific work of her father and brother she has relied on quotations from the two Royal Society obituary memoirs and the guidance of scientific acquaintances, and these have not served her particularly well.

Mrs. Caroe traces her father's career from his happy early childhood, sometimes traumatic youth (first when his mother died and later when a wave of religious fervour hit the school he was attending so that "we were terribly frightened and absorbed"), and successful early manhood at Cambridge (where he graduated Third Wrangler in the Maths Tripos of 1884), to his unexpected appointment as professor of mathematics and physics at Adelaide. He was but 23 years old.

Bragg left England in mid-winter (14 January 1886) and arrived off Glenelg in late summer (27 February). The cold and damp of Cambridge, where "I was in fact very much shut in on myself, unventuresome and shy", gave way to the warmth and openness of the Adelaide plan: Bragg's spirits lifted at once. "I was marvellously fortunate in being thrown into a society of the Todds and people like them, so open and kind and good-natured. The whole thing, the going to Australia to a new work and an assured position, the people I met there, the sunshine and fruit and flowers, was a marvellous change for me....: sunshine and fresh invigorating air", he said later. For their part, the Todds (father Sir Charles, Government Astronomer, Inspector of Telegraphs, Postmaster General, builder of the overland telegraph and one of the very few physical scientists in the colony, his wife, Alice, and their two sons and four daughters) welcomed "the fessor" warmly. Three years later Bragg married the third daughter, Gwendoline; they had three children and "lived in love and loyalty together ever after".

On the basis of evidence of this kind, and his own statement that he had "never thought of doing research", it has been assumed by other commentators that Bragg "worked it (physics) up leisurely and otherwise relaxed in the comfortable colonial society" (Heilbron in *Science*). This is far from the truth. Apart from the help of one or two junior assistants he alone was responsible for the whole of the mathematics and physics teaching at the university; he complained of the shortage of students, but perhaps the lack of a final-year physics class in some years made this enormous load bearable. Bragg had not, after all, done any formal physics at Cambridge, and was only just ahead of his students in his early years in Adelaide. There is one report that he apprenticed himself to an Adelaide instrument shop to gain experimental skills. And yet he kept up with the latest overseas developments: he was the first in Adelaide to experiment with and demonstrate the new Roentgen rays and the transmission of signals without wires (radio). He gave regular and very popular public ("extension") lectures — on radiation, heat, light and optics, photography in natural colours, Roentgen rays and wireless telegraphy.

Every winter he played lacrosse, quickly establishing himself as the colony's leading player and founding two new and successful clubs; every summer he played in the top level of the local tennis competition. In later years he took up golf avidly, helped establish Adelaide's leading club and became a very competent player with a near-scratch handicap. At the university he led the formation of the Union and the Sport's Association and mended the electrical system when it broke down. At home he learnt to paint and played the flute.

In the wider Adelaide community he took a keen interest in primary and secondary education and appears to have played a leading part in the new Education Movement around the turn of the century. He spoke at school speech days; he encouraged and he led. And I wonder if further research will not reveal that he was a leading figure in Adelaide church life too.

Caroe's book has only snippets of all of this, charmingly presented; but a detailed study of the Adelaide period remains to be written.

Some attention has been given by other authors to Bragg's "sudden" rush into research in 1904. In the next few years he established a world-wide reputation on the basis of his elegant work on the range of alpha-particles and the nature of x- and  $\gamma$ -rays. In fact, however, he had been preparing himself, both consciously and unconsciously, for nearly twenty years; he had, for example, flexed his muscles with a few not insignificant papers on electromagnetism early in the 1890s. An offer to return to England was now inevitable: it came from Leeds, and Bragg left with his now grown and growing family early in 1909.

"Willie" (Lawrence) almost immediately went up to Cambridge, having recently completed an honours science degree at Adelaide University. It was he who, walking along the Cambridge backs in 1912, first

envisaged the correct explanation for von Laue's "spots" ( $n\lambda = 2d \sin\theta$ ). But this was an area (the nature of x-rays and their interaction with matter) in which his father had been working; it was WLB who first noticed the German report and it was he who first got a spectrometer working well and routinely on the new technique. Bragg's Law was often attributed to the father and, despite their early work together and their continued contact, a coolness and tension developed in their relationship which the joint award of the 1915 Nobel Physics Prize did not erase: it was a cross that WLB carried with him to his grave. Mrs. Caroe gives some attention to this matter, always with affection and sympathy for both men, but there is surely more to be said. One wonders how the relationship developed when WLB was young. Despite his own first-rate mind and talent (and a considerable school athletic ability), Lawrence seems always to have lived in his father's shadow. There are other parent-child relationships in our field (J.J. & G.P. Thomson, Manne and Kai Siegbahn, Pierre and Marie and Irene Curie and Niels and Aage Bohr) with which comparison could be made; but only the Braggs worked so closely together in the same field.

Mrs. Caroe follows her father's career though the early difficult days in Leeds, two world wars, time at University College and finally an illustrious period at



the Royal Institution. He was gifted and determined, wise and kind, self-contained and self-sacrificing. He wrote and spoke with exceptional lucidity, a skill he did not immediately possess, it seems, and to which his Adelaide period again contributed substantially. He was widely honoured: "the career that led to these distinctions", Heilbron has suggested, "could not be reproduced in our time".

And yet there are many facets of Bragg's life and work that are timeless. Mrs. Caroe's extensive use of quotations from private family papers and from more public documents is one of the many attractive features of her book; when Bragg talks of research (pp.130-3), for example, the reader cannot fail to be uplifted by his down-to-earth understanding as well as his insight and vision, in 1982 as in 1924.

When I was growing up in Adelaide as a school boy and an undergraduate student I hardly knew the name Bragg or its intimate connection with my alma mater: I see a small dusty photograph in a dark corridor, but no more. In recent years the Adelaide Physics Department has rectified this omission by naming the Bragg Laboratories, but what other reminders are there in Australian science that William Henry Bragg ever

walked these shores or that his equally-illustrious son, William Lawrence Bragg, was an Australian: born, bred, raised and educated? Professor Home tells me that there is little in the Bragg papers in England to suggest that Australian science later made any serious attempt to keep in touch with the family, father or son.

This sad situation says something about the Australian psyche. But it is never too late to celebrate in Australia the memory of these two great scientists, who laid the foundations of their careers in a small town on our southern shores, as far away from the European centres of their sciences as it was possible to be, during one of the golden ages of our subject.

In summary, we can thank Mrs. Caroe for reminding us so pleasantly that, to use Perutz's words, "success in science can be combined with devotion to human values, and that occasionally the great can also be good and true".

From: ('The Australian Physicist', Vol.20, August 1983, p.179)

#### CRYSTALLOGRAPHY IN NORTH AMERICA

The American Crystallographic Association has recently published the book Crystallography in North America (edited by Dan McLachlan, Jr. and Jenny P. Glusker; 414 pp. plus detailed subject and name indexes).

It contains 85 historical articles by well-know crystallographers under the headings: Accounts of Some Crystallographic Laboratories, In Memory of Some Past-Presidents, Organizations of Crystallographers, Apparatus and Methods, Internal Properties of Matter, and Applications to Various Sciences. It also contains a foreword by Linus Pauling, a historical account of crystallography in North America from the late 18th century to about World War II by Clifford Frondel, and 22 pages of historical portraits and snapshots collected by Sidney Abrahams.

The book may be obtained from Polycrystal Book Service, Box 27, Western Springs, Illinois, U.S.A., price U.S.\$50.00

#### JOURNAL OF MOLECULAR GRAPHICS

A new journal of possible interest to members is the Journal of Molecular Graphics published by Butterworth Scientific in the U.K. (quarterly cost £45/\$U.S.\$83.30). First issue - March 1983. The publication is a forum for the presentation of research in the use of computers for the investigation of molecular structure, function and interaction. It is international in both scope and readership. For further information contact Chris Rawlins, Butterworth Scientific Ltd, P.O. Box 63, Westbury House, Bury Street, Guilford Surry, GU2 5BH, U.K.

## INORGANIC CRYSTAL STRUCTURE DATA BANK, ICSD

The SCA has been informed that the ICSD data bank is now available on magnetic tape under a leasing arrangement. For one year's use of the files on about 23000 structures (as of May 1, 1983), the cost is approximately DM220 plus postage. This price includes the programs for handling and retrieval of the data.

For further details contact the Secretary, or write direct to Dr H. Behrens or Dr G. Ebel, Fachinformationszentrum, Energie, Physik, Mathematik GmbH, D-7514 Eggenstein-Leopoldshafen 2, Federal Republic of Germany.

## BIDICS 1981

The 1981 Bond Index of the Determination of Inorganic Crystal Structures is now available from Dr I.D. Brown, Institute for Materials Research, McMaster University, Hamilton, Ontario, Canada L8S, 4M1.

With the advent of the ICSD and the Metals Data File, the need for BIDICS as an independent compilation of structure data has declined, and the 1981 issue of BIDICS will therefore be the last volume of the series. Future hard copy indices to inorganic crystal structures will be produced from computer data bases.

## CSIRO'S CDC 205

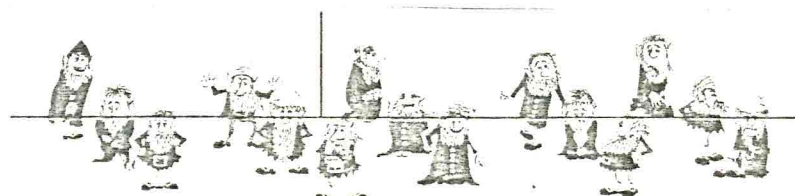
The April meeting of the Queensland Regional Computing Committee was told that the CYBER 7600 replacement, the CDC 205, will be treated as a National Resource. It was stated that it might be possible for University Scientists to get Federal grants to use this specialist facility. CSIRO would not help in translating any software but would help in the purchasing of established packages.

If any member would like to explore the possibility of using the 205 for major crystallographic computing normally carried out at local computing centres, please contact Dr C.H.L. Kennard, Dept. of Chemistry, University of Queensland, St. Lucia, Queensland, 4067.

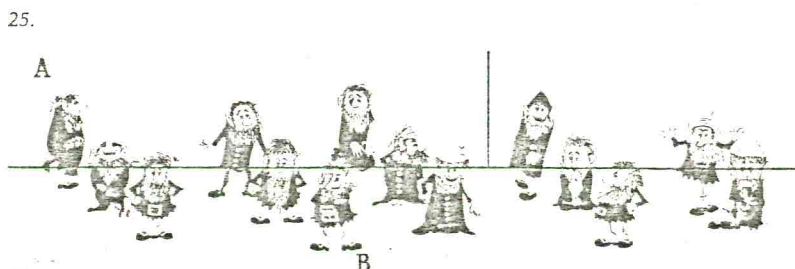
## THE VANISHING LEPRECHAUN

Dr F.H. Moore, leader of the AINSE Neutron Diffraction Group at Lucas Heights was the first reader to submit a solution to the problem of the vanishing leprechaun in the last Newsletter. Congratulations Frank!

25.  
*The Disappearing  
Leprechaun, courtesy  
William Elliot  
Company, Toronto.*  
Arranged in this  
manner, 15 leprechauns  
are present.



26.  
*The Disappearing  
Leprechaun, courtesy  
William Elliot  
Company, Toronto.*  
By rearranging the top  
two pieces, one  
leprechaun has  
vanished. Which one?  
Where has he gone?





The solution lies in the observation that leprechaun A in the bottom figure has gained a foot relative to the top figure, and leprechaun B has gained a little extra on the top of his head. All the others have extrabits and pieces in between and the result is, therefore, one less body.

Readers will perhaps have noted that SCA members from Building 58 at Lucas Heights have won both of the "crystallography" problems that have appeared so far in the Newsletter. Despite appearances to the contrary, there is apparently no truth to the rumour that they have only been this successful because they haven't got anything better to do!

### THE ARGONNE ANTI-JET-LAG DIET

For those few lucky people who can still manage to find the money to travel overseas, Dr C.F. Ehret of the Division of Biological and Medical Research at Argonne National Laboratory has developed the following diet, designed to stop you waking up bright-eyed and bushy-tailed in the middle of the night after a long trip.

How to avoid jet lag:













1. **DETERMINE BREAKFAST TIME** at destination on day of arrival.
2. **FEAST-FAST-FEAST-FAST** — Start four days before breakfast time in step 1. On day one, FEAST; eat heartily with high-protein breakfast and lunch and a high-carbohydrate dinner. No coffee except between 3 and 5 p.m. On day two, FAST on light meals of salads, light soups, fruits and juices. Again, no coffee except between 3 and 5 p.m. On day three, FEAST again. On day four, FAST; if you drink caffeinated beverages, take them in morning when traveling west, or between 6 and 11 p.m. when traveling east.
3. **BREAK THE FINAL FAST** at destination breakfast time. No alcohol on the plane. If the flight is long enough, sleep until normal breakfast time at destination, *but no later*. Wake up and FEAST on a high-protein breakfast. Stay awake and active. Continue the day's meals according to mealtimes at the destination.

**FEAST** on high protein breakfasts and lunches to stimulate the body's active cycle. Suitable meals include steak, eggs, hamburgers, high-protein cereals, green beans.

**FEAST** on high-carbohydrate suppers to stimulate sleep. They include spaghetti and other pastas (but no meatballs), crepes (but no meat filling), potatoes, other starchy vegetables, and sweet desserts.

**FAST** days help deplete the liver's store of carbohydrates and prepare the body's clock for resetting. Suitable foods include fruit, light soups, broths, skimpy salads, unbuttered toast, half pieces of bread. Keep calories and carbohydrates to a minimum.

### COUNTDOWN

	1 FEAST	2 FAST	3 FEAST	4 FAST	BREAK FINAL FAST
B					Westbound: if you drink caffeinated beverages, take them morning before departure. Eastbound: take them between 6 and 11 p.m. If flight is long enough, sleep until destination breakfast time. Wake up and FEAST, beginning with a high-protein breakfast. Lights on. Stay active.
L					
S					

Coffee, tea, cola, other caffeinated beverages allowed only between 3 and 5 p.m.

### THE ARGONNE ANTI-JET-LAG DIET

The Argonne Anti-Jet-Lag Diet is helping travelers quickly adjust their bodies' internal clocks to new time zones. It is also being used to speed the adjustment of shiftworkers, such as power plant operators, to periodically rotating work hours. The diet was developed by Dr. Charles F. Ehret of Argonne's Division of Biological and Medical Research as an application of his fundamental studies of the daily biological rhythms of animals. Argonne National Laboratory is one of the U. S. Department of Energy's major centers of research in energy and the fundamental sciences. Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439

## CORRIGENDA

The last SCA Newsletter contained a list of minerals named after Australian crystallographers/mineralogists. Two minerals, wadsleyite and jeppelite, were included in this list when in fact the original descriptions of these minerals were 'in press' at the time of release of the Newsletter, and had, therefore, not appeared formerly in the open literature. Dr E.N. Nickel, the Australian representative on the International Mineralogical Association's Commission on New Minerals and Mineral Names, has pointed out that this is a very sensitive area in the Mineralogical Community. In order to prevent any misunderstanding, the full references to the papers naming these two minerals for the first time are reproduced below:-

Wadsleyite, natural  $\beta$ -(Mg,Fe)<sub>2</sub>SiO<sub>4</sub> from the Peace River Meteorite. G.D. Price, A. Putnis, S.O. Agrell and D.G.W. Smith. Canadian Mineralogist (in press).

Jeppelite, a new K, Ba, Fe titanate from Walgidee Hills, Western Australia. M.W. Pryce, L.C. Hodge and A. Criddle. Mineralog. Mag (in press).

Dr Nickel has also pointed out that the mineral bowleyite included in the earlier list has been discredited, and is now no longer a valid mineral name. The species now has the name bityite.

## BOOKLIST

Anyone with an interest in seeing the total range of currently available books on crystallography, and virtually all topics concerned with crystallography, can take advantage of the new, comprehensive Booklist recently produced by IUCr. It has been published not as a separate booklet but in the Journal of Applied Crystallography (JAC), where it is in the December issue of the 1982 volume, running from page 640 to page 676. JAC can be found, of course, in any good library.

It is sometimes quite useful to have a document of this kind at hand, or on one's shelf, for reference. Copies of this new booklist can be obtained from the Chester office of the IUCr; however, as photocopying is nowadays so efficient, and so routinely available, the IUCr would prefer crystallographers who have such equipment in their institutions to make their own copies, if that is reasonably convenient. The Chester office will gladly supply copies to those who cannot easily make their own - to crystallographers in the developing, or Third World countries particularly.

This new booklist is the successor to Helen Megaw's list (of about 1965, which was updated about ten years ago by Michael Woolfson). The new list has about 1,200 entries. It differs from previous lists in having the books classified into some 20 or so subject areas (rendering it less tedious to consult), and in the use of various different type-faces, making it rather easy for a comparatively casual user to scan up and down the pages, to pick out what is interesting in his or her own speciality. The period covered is the decade 1970-1981, with a sprinkling of 1982 titles included. Incidentally one book that's not in the list (because it has appeared only during the past month) is the reprint of James's classic, 'Optical Principles of X-ray Diffraction.'

From the May, 1983 Newsletter of the ACA.

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