CoResearch

CSIRO's staff newspaper December/January'84 **267**

Changes recommended

EQUAL OPPORTUNITY FOR CSIRO WOMEN

Wide-ranging recommendations for changes in the employment status of women have been made to CSIRO's Executive following a study carried out by a sub-committee of CSIRO's Consultative Council.

Among the 49 recommendations which will go to the Executive's February meeting are five policy changes which would see the appointment of an equal employment opportunity coordinator at a senior level in the Personnel Branch and equal employment opportunity contact persons in each Division of the Organization.

The report to the Consultative Council followed an investigation of the role of women within CSIRO, and general attitudes towards the employment of women in CSIRO. The terms of reference included a provision that the sub-committee recommend solutions to any problems uncovered as a result of the study.

All women and a sample group of men were surveyed as part of the investigation and the results of the questionnaire were analysed by Dr Cecily Neil, a research sociologist at the Division of Building Research in Melbourne.

In the course of the investigations, the sub-committee found instances in which women graduates were advised by staff in their university departments that CSIRO was reluctant to employ women and in one case learned of a woman who was told after her interview that she had been unsuccessful purely because of her gender.

The sub-committee also learned that this opinion was held by at least one university appointments board and by senior staff of the Women's Affairs Branch of the Public Service Board.

The Chairman of the sub-committee, Dr Judith Koch, said the committee was grateful for the assistance and high level of cooperation it had received from many people.

Recommendations to the Executive are:

1. The Executive as a matter of first priority declare CSIRO to be an equal employment opportunity (EEO) employer.
2. The Executive's decisions on the sub-committe's report to be publicized widely throughout the Organization and, in particular, decisions arising be directly conveyed to all women.
3. The Executive designate an EEO coordinator at a senior level in Personnel Branch to be responsible for development and monitoring of personnel practices and policies following EEO principles.
4. CSIRO appoint an EEO officer directly responsible to the EEO coordinator to establish EEO programs.
5. CSIRO designate EEO contact persons in each Division to counsel and inform staff.

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Government grant

WORK SKILLS FOR THE UNEMPLOYED

CSIRO will employ and train 150 people with a $2.5 million grant from the Commonwealth Community Employment Program (CEP).

The jobs, for 120 technicians and 30 animal attendants and farm assistants, will be provided in nearly every CSIRO Division and in about 70 urban and rural locations around Australia. Training began in early December.

Over half the places will be reserved for women (76), Aboriginals (10), migrants with English language difficulties (4) and physically handicapped people (4).

Skills learnt will be readily transferable to other work areas. The knowledge and experience gained in the 12 month training period should greatly assist the trainees to find other jobs.

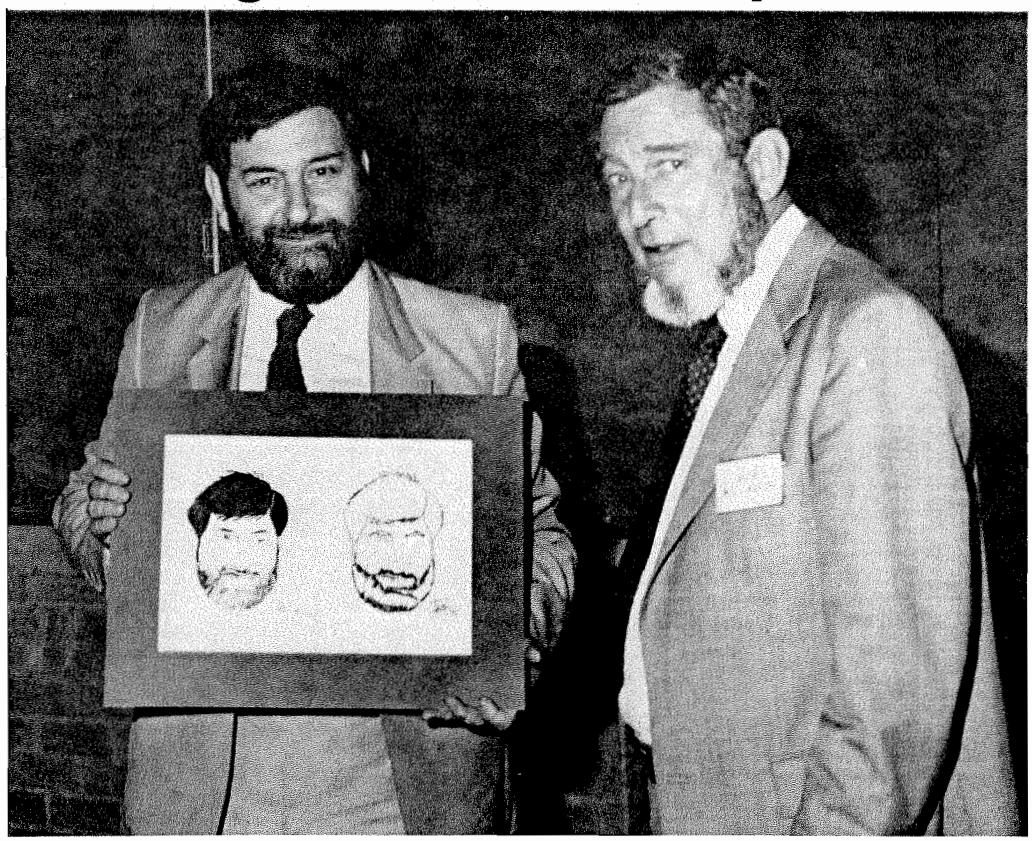
The duties of the trainees will vary between laboratories and locations, but the major skills to be acquired will be:

- use of laboratory equipment, knowledge of analytical and sampling techniques and preparation of materials;
- training in applications of microcomputers, with broad experience of scientific electronic equipment;
- care and maintenance of animals and animal husbandry; and
- farm management techniques.

A total of 49 positions will be filled in NSW, 43 in Victoria, 18 in Queensland, 10 each in South Australia and Western Australia, 3 in Tasmania, 13 in the ACT and 4 in the Northern Territory.

A total of $300 million has been made available by the Federal Government for the Community Employment Program, for projects developed by Federal Departments, State and Local Governments and community organizations.

Picturing himself on computer



The Minister for Science and Technology, Mr Barry Jones, came face-to-face with himself opening the new VAX 750 computer at the Division of Water and Land Resources.

A caricature of the familiar face by 'Canberra Times' cartoonist, Geoff Pryor, beamed from the screen after Mr Jones commissioned the new system, which will be used in the survey and assessment of Australia's water and land resources.

Mr Jones said the Government recognized the importance of what the Division was doing. A more complete understanding of Australia's water resources and the measures of land use to be adopted now and into the 1990s was needed, he said.

Mr Jones is pictured above receiving the original artwork from the Chief of the Division, Dr Richard Millington.

Strategic Research Review

CSIRO's Executive has established a committee to examine and report on CSIRO's strategic research planning procedures and practices, and to report on ways in which the planning of CSIRO's broad research priorities might be improved.

The Committee, chaired by Dr Keith Boardman, is calling for submissions from the staff of CSIRO on these subjects. The terms of reference and the full membership of the committee are set out in information circular No. 83/51. If you wish to make a contribution, please address it to Mr T.J. Healy, Secretary of the Review of CSIRO's Strategic Planning Activities, CSIRO Headquarters. Submissions should reach him by 10 February 1984.

Wool research reviewed

Two Advisory Committees visit the Division of Textile Physics annually to carry out a review of its wool research activities.

They are the Wool Textile Research Advisory Committee (WTRAC) chaired by Mr David Fletcher Jones (Fletcher Jones and Staff Pty Ltd) and the Wool Distribution Research Advisory Committee (WDRAC) chaired by Mr John Silcock (a prominent woolgrower and Deputy Chairman of the Australian Wool Corporation). These Committees report to the Australian Wool Corporation Board which has a statutory duty to advise the Minister for Primary Industry on the disbursement of the Wool Research Trust Fund.

Their 1983 visit took place in November and was the last one for which the Chief, Dr Bob Haly, was host as he retires in the first half of 1984. The two committees were given demonstrations and explanations of current research programs during the morning and were then entertained to an excellent buffet lunch prepared by the two canteen staff, Mesdames Pat Chisholm and Stephanie Clarkson.

At the conclusion of lunch a special tribute was paid to the work of the retiring Chief by Mr Silcock and supported by Mr Fletcher Jones on behalf of their respective committees.

Eastern trek of minds and equipment

John Beresford and Gerald Watson (Division of Groundwater Research) Perth, checking their navigation charts before setting off from Floreat Park to cross the mighty Nullabor.

They are heading for Bateman's Bay in New South Wales where they will be joined by Dr Eric Greenwood (Groundwater Research), Louis Klein (Animal Production) and others from Plant Industry, Forest Research, and ANU.

The purpose of this meeting of minds and equipment (see trailer in the photo) is to compare several methods of measuring evapotranspiration from plant communities. The trailer contains components of the 'ventilated chamber' technique which Dr Greenwood's team has been using in WA's jarrah forest, pine plantations and farm lands. It's all part of the Division of Groundwater Research's work to combat the growing problems of man-induced salinity.

Photo by Bill Van Aken.

Retirement for CSIRO Chief

Dr Gordon Crewther, Chief of the Division of Protein Chemistry for the last eight years, retired in November after 40 years service with CSIR/CSIRO.

A few days before his retirement, about 160 of his past and present colleagues and their wives attended a dinner to honour Gordon and his wife, Dorothy.

A tribute was paid to Gordon's contributions in the field of protein chemistry and to the confident direction which he gave to the Division during his period as Chief.

Gordon Crewther was born in 1918. On completion of his secondary education at Kyneton High School in 1934, he studied Science at the University of Melbourne where he graduated BSc (Biochemistry) with 1st Class Honours in 1940. Further study at the University of Melbourne led to the award of the MSc degree (with 1st Class Honours), the title of his thesis being 'The Nature of Enzyme Action'.

After a short period with the Victorian Department of Agriculture in 1943, he joined the Council for Scientific and Industrial Research (now CSIRO), initially with the Division of Industrial Chemistry in Melbourne, and then in 1950 he began his long association with the Division of Protein Chemistry (originally known as the Biochemistry Section) at Parkville.

His prime research interest has been in the field of protein biochemistry, particularly related to the structure of wool keratins. The University of Melbourne recognized his significant contributions by the award in 1956 of the Grimwade Prize, and in 1969 of the DSc degree (thesis title: 'Physical and Chemical Studies on the Structure of Wool'). In 1974, he was elected a Fellow of the Royal Australian Chemical Institute. In 1963, he was appointed Assistant Chief of the Division and in 1973 became Chief of the Division, the position he retained until his retirement in November 1983, exactly 40 years after joining CSIR.

All of his colleagues, past and present, wish both he and Dorothy a long and happy retirement.

Quarantine procedures for CSIRO researchers

CSIRO has, for many years now, had its own accredited Quarantine Officer appointed by the Department of Health, and if you are a CSIRO officer, importing experimental biological material can be easier than you think.

Please do not try to go around the quarantine system, as the regulations endeavour to keep Australia free of dangerous pests and diseases.

We have so far avoided foot-and-mouth disease, rabies, oriental fruitfly, screwworm, colorado beetle, and a host of other menaces. Hundreds of plant species would welcome the opportunity to exploit our expanses of susceptible environment.

Many pests and diseases have reached our shores accidently, inadvertently, or through the naivety of our early settlers and gardeners. Rabbits, cane-toads, lantana, skeleton weed, serrated tussock, African boneseed, and many others which we could well have done without were introduced in this way. Occasionally an unwanted species, such as parthenium weed, penetrates the dragnet of our Customs and Quarantine screen of modern times, and we have had some 'too close for comfort' scares recently, but generally the quarantine system in Australia works well, and is the envy of most countries.

QUARANTINE SCREENING

As the Plant Introduction and Quarantine Officer for CSIRO, located in Canberra, I ask all of you who contemplate importing biological materials from overseas for your CSIRO work, to send them to me for quarantine screening on your behalf. Unless you have a special official arrangement with the Chief Quarantine Officer (Plants) or the Chief Quarantine Officer (Animals) in your State, you will break Commonwealth laws.

Two procedures, if simply followed, will ensure that the materials arrive at your laboratory without having to go on a State queue and with most of the paper work done at your own CSIRO quarantine office.

Parcels from overseas containing material subject to quarantine regulations must be directed through me, acting as your agent:

Mr Roy Pullen,
Plant Introduction/Quarantine Officer,
CSIRO Division of Plant Industry,
GPO Box 1600,
Canberra, ACT 2601.
Phone: (062) 46 5483

If you are arriving from abroad with quarantine items in your luggage or in your pockets, declare them openly on your customs declaration form and ask the quaran-

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Chem. Physics celebrates

Dr Lloyd Rees, right, chats to Lady Wark over a glass of champagne, while Sir Ian Wark talks to Mrs Marion Rees.

Past and present members of the Division of Chemical Physics gathered to celebrate the Division's Anniversary at a convivial champagne party held in courtyard one of the David Rivett Laboratory at Clayton last month. They were joined by old friends, foreign scientists presently visiting the Division, and a number of distinguished and honoured guests. The party was attended by wives and by Chiefs from other Divisions on the Clayton site.

The Division of Chemical Physics was entirely the brainchild of Sir Ian Wark and the swift development of the Division is due not only to Sir Ian Wark but also to the energies and dedication of Dr Lloyd Rees, the foundation Chief.

In blazing sunshine the present Chief, Dr Lewis T. Chadderton, briefly addressed the gathering and introduced Dr A.L.G. Rees who, for the benefit of guests, traced the development of the Division and its achievements from November 11, 1958 to the present. To a rousing cheer, he then officially cut the 25th birthday cake, one hundred helium balloons were set free, and informal celebrations began.

Amongst the distinguished guests were Sir Ian and Lady Wark, Sir Alan and Lady Walsh, and, of course, Dr and Mrs Rees. Many telegrams of congratulations and good wishes were received, including one from members of the Division at Lucas Heights, and one from the Director of the Institute of Physical Sciences.

People... People... People... People

Reg Lawrence of CSIRO's Printing Unit retired recently after 24 years of service.

Reg has been responsible for the printing of many publications and journals in letterpress and since 1975 has been in charge of the distribution and mailing section.

In this position Reg has become very well known and respected by many members of the Organization.

Mr Alec Zarins retired from the Division of Energy Chemistry on 18 November after 24 years service with both the AAEC and CSIRO at Lucas Heights.

On the same day, he was also awarded the Journalism Prize (Diploma and $500) of the Free World Latvian Federation for his contributions to Latvian journalism around the world.

Betty Lee, of the Division of Entomology, well known in recent years for her battle strategies in the mighty mite's 'war of the roses' campaign in the Federal Parliamentary rose garden, recently retired from CSIRO to live on the New South Wales south coast.

Betty's work on biological control of roses and orchids ensured that the blooms in the rose garden were large and lush, with fewer sprays.

Dr Salvador A. Cruz, pictured above, who was a guest scientist at the Division of Chemical Physics for five weeks. Dr Cruz is from the Instituto de Fisica, Universidad Nacional Autonoma de Mexico, Mexico City. His research interests include atomic collision phenomena in solids, 'ab initio' calculations for the construction of planar potentials, and the quantum three-body problem.

John Connell, an experimental officer in the Division of Textile Physics in Sydney, has recently been awarded his PhD from the University of New South Wales with his thesis entitled 'Reflectance Infrared Studies of Wool'.

Jack Bourne retires

Mr Jack Bourne retired in December after more than 44 years service with CSIRO and its predecessor,CSIR, and some 100 friends, former colleagues, and officers from various laboratories and offices attended his farewell dinner.

Jack commenced with CSIR in 1939 as a junior clerk in Accounts in Head Office which was then located in East Melbourne.

After war service, Jack returned to Head Office, and later occupied administrative positions at the Division of Forest Products, and the Central Experimental Workshops, Maribyrnong (later to become the Division of Energy Technology).

Jack was appointed Personnel Officer in the Regional Administrative Office, Melbourne, following the establishment of that office in 1963.

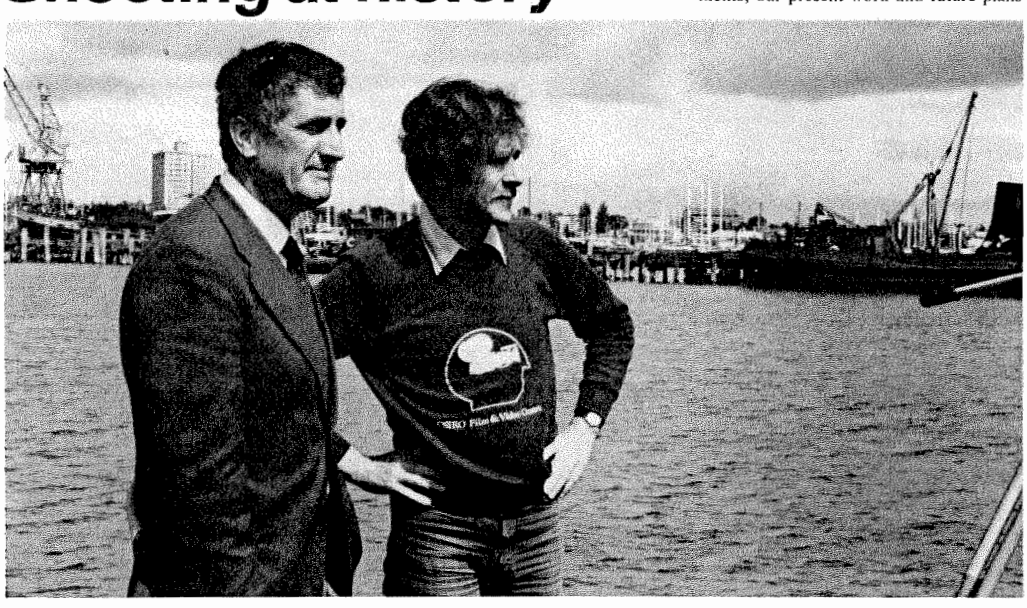
Subsequently, he spent more than 12 months as Acting Regional Administrative Officer, Brisbane. In 1971, Jack visited CSIRO locations throughout Australia explaining to staff the operation of the new superannuation scheme.

He resumed duty as Regional Personnel Officer, Melbourne, in 1972, and continued in that position until his retirement.

Jack was involved in a number of other activities including Treasurer and later Director of the CSIRO Co-operative Credit Society, and a member of the CSIRO Benevolent Fund Southern Region from its formation in 1968 until his retirement.

Probably Jack will be remembered most by the children who attended the Christmas Party each year and confided in him their secret wishes. Jack has played the part of Father Christmas at the RAO/CILES Christmas Party for many years.

Shooting at history



John Whalan, Head of New Zealand's DSIR Audio-visual Unit, recently visited Australia to check up on specialized film and video production. John spent three days with CSIRO's Film & Video Centre in Melbourne and managed to fit in a quick location shoot at historic Williamstown with Roger Seccombe.

From the Chairman-

A regular column by the Chairman of CSIRO Dr. J. Paul Wild

The first requirement and priority of this great Organization has to do with the excellence and relevance of its science and technology; the second, inseparable from the first, must surely be communication: communication of its results to industry and community users; communication with politicians and other policy makers; communication with the public at large.

Communication can and should take place at all levels in the Organization. It may take many forms: the written word, the spoken word, the visual picture; face to face, in journals or newspapers, or broadcast. We have to give tireless attention to all aspects of communication; it can always be improved.

To my mind one major deficiency (not the only one) in our communication arrangements is that it is exceedingly difficult for a person in any given industry or profession to find out about the total scope of our work in their field of interest. We are now doing something about that deficiency. The idea is to produce a series of booklets each covering an industry or user-oriented field of endeavour. We are thinking of calling the series the CSIRO 'Research for Australia' series. It would be aimed first for the user, and second for the policy maker, policy analyst and, if possible, the public – if it proves feasible to sell them on the bookstalls, so much the better. The series will consist of about 20 volumes which may vary greatly in size according to the amount of work we do on each subject. Suggested titles for the twenty volumes are as follows (in random order): Manufacturing Industry, Public Health, Information Technology, Biotechnology, Water, Advanced Materials, Agriculture, Weather and Climate, Radio Astronomy, Mining and Mineral Processing, Forestry, Fisheries, Conservation and the Environment, Energy, Building and Construction, Land Management, Oceanography, Wool, Processing and Marketing, Weeds and Pests, and Food.

Each should cover our past achievements, our present work and future plans and policies, as well as the economic and social impact of the work. Each should be attractive and interesting as well as informative and will indicate to the reader exactly what work is in progress and whom to contact for further information. They will be updated every so often.

We have gone as far as appointing an editorial board: Sam Lattimore, Jim Lumbers (editor), and me. The initial writing will be done in Divisions under the direction of a panel of specialists headed by a senior scientist (e.g. a Chief or Director). We shall produce a number during 1984 and aim at doing the lot by July 1985. I have already rung around a number of the Divisions and have received enthusiastic support for the project. I hope you all agree it's a good thing and I ask for your full cooperation when the time comes.

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When I first took over as Chairman, Keith Boardman and I did the rounds of the capital cities in barnstorming fashion and came face to face with a large part of the total staff in less than a fortnight. I am now planning to do the same early in 1984, accompanied part of the time by Keith and part by Geoff Taylor. I want to talk about what has been achieved in these five years and pose major questions for the future. There will be an opportunity for all members of staff to pose any kind of questions they like.

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The news has just come to hand that the Government has given approval to voluntary retirement of CSIRO staff at age 55. I believe this increased flexibility in retirement policy will be welcomed by everybody.

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The year 1983 has been a memorable year in the history of the Organization: a year of considerable achievement in a changing world, a year in which we have come in for more than our fair share of criticism and controversy, but to some extent that has added spice to the proceedings. I am confident that issue by issue, one by one, each will be resolved in the end. I would like to thank so many of you for your support and loyalty to the Organization in many different ways during this challenging year.

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It is a platitude to say that we can always do better; but I want to say it as an excuse to tell a true story, remembered from my youth – my first cricketing story for some time!

Hedley Verity was a slow left-arm bowler who had many a do-or-die duel with Bradman in the Anglo-Australian Tests of the 1930s. At the end of one long, hot day, playing for Yorkshire, he walked up the pavilion steps, weary but triumphant with figures of 7 for 28 against his name. He sat himself down beside the old master of left-arm spin, the legendary Wilfred Rhodes. 'Well, how did I go?', asked Verity, aglow with success. 'Huh', answered Wilfred, '7 for 28: 'twere a proper disgrace; 'tshould have been 7 for 24 ....'

Paul Wild

CAT

The CAT Column is open to all members of CSIRO who wish to comment on communication matters.

Shaun Coffey of CSIRO's Science Communication Unit in Canberra has contributed this month's CAT column.

A recent survey, initiated at the request of CAT, has examined the contention that when resources are scarce, information positions in CSIRO are shed to keep research positions alive.

Much to the surprise of many people, the survey found that there has been an overall increase in the number of information positions in the last five years. Some Divisions reported marked declines, but these were matched by increases in others. Generally, these changes related to policy changes related to the appointment of a new Chief, a change in research priorities or to budgetary considerations.

Apart from this main purpose, the survey found three other interesting facts.

1. The range of communication activities conducted, and the relative priority accorded each activity, varied markedly between Divisions.
2. Similarly, a wide range of personnel are involved in these communication activities.
3. Some 10 Divisions have no full-time communicator position.

The three factors reflect the disparity of Divisional needs in information services.

The report contains detailed descriptions of the types of duties being performed by communicators but notes that there were many jobs that Divisional staff considered *ought* to be done, but mostly are not because more urgent, less important tasks could demand immediate attention. The full range of duties performed makes interesting reading.

The report also notes that in Divisions where responsibility for communication was shared within a team, information programs appear to run smoothly. Isolated communicators appeared not to be so effective. Examples of Divisional approaches to communication are included to show how information, editing and liaison are integrated activities.

The full report, 'INFO people: a survey of Divisional and Unit information staff and their duties', is currently being printed. You can obtain a copy from Shaun Coffey of the Science Communication Unit (telephone 062 48 4477).

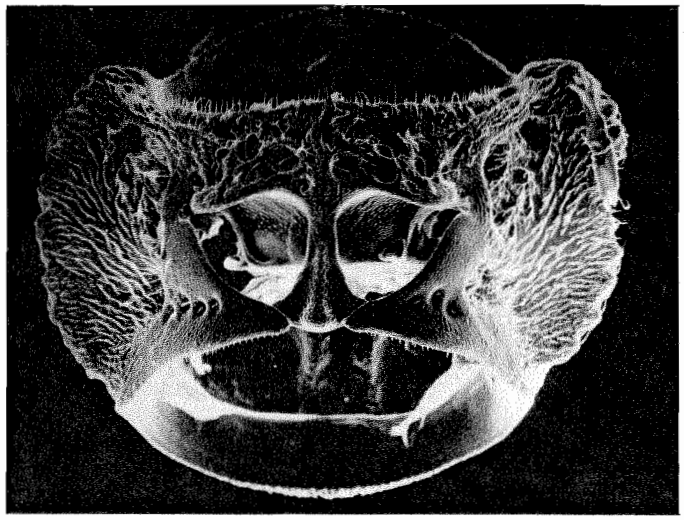
Mentors for gifted children

CSIRO scientists are being invited to join a gifted children's mentor scheme being operated by the Victorian Department of Education.

The Scheme aims to improve the quality of education available to able and highly motivated children by providing an opportunity for them to communicate with experts in their respective areas of expertise. The mentor provides the student with advice about how to develop his or her skills in a particular topic.

CSIRO staff in Melbourne interested in making a contribution by offering time and expertise can make contact through Mr Shaun Coffey of CSIRO's Science Communication Unit in Canberra. Scientists outside Melbourne who are interested in participating by correspondence could also get details of the scheme through Mr Coffey. His Canberra telephone number is (062) 48 4477.

Photography prize



International recognition has come to CSIRO technician Elizabeth Lockie from the Division of Entomology for this scanning electron micrograph of a beetle's prothorax magnified 160 times. Elizabeth's entry was placed third in an international competition in photo-micrography. A total of 2600 entries were received in the competition.

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6. All documentation and communications originating within the Organization be prepared in non-sexist, non-discriminatory terms.
7. All instructions to delegates responsible for implementing conditions of employment be reviewed to ensure that they are non-discriminatory in both substance and practice.
8. All vacancies be advertised on the basis of defined criteria which will preclude decisions regarding recruitment and promotion being determined on the basis of sex.
9. All recommendations for employment be argued on a non-discriminatory basis.
10. Occupancy of CSIRO houses and rental policy be determined on a non-discriminatory basis.
11. The Executive ensure that a woman's entitlement to maternity leave does not lead to bias in any aspect of her employment irrespective of tenure or source of funds.
12. The Executive actively attempt to identify and appoint women to policy and review committees.
13. All advertisements for positions feature a statement that CSIRO is an EEO employer and invite persons of both sexes to apply.
14. CSIRO actively provide clear and accurate information to undergraduates and school leavers, including those from single-sex schools, encouraging applications from the widest range of people.
15. Every endeavour be made to include a woman on the selection committee when the field of applicants for a position includes women.
16. A standard 'personal details' form be completed by interviewees so that details are recorded in a non-discriminatory format.
17. Particular care be taken in formulating selection criteria to ensure appointments to positions involving contact with persons or organizations outside CSIRO are made on a non-discriminatory basis.
18. Particular care be taken in formulating selection criteria to ensure appointment to positions involving field work are made on a non-discriminatory basis.
19. A training course in selection principles and techniques be introduced, with an emphasis on equal opportunity.
20. All staff likely to sit on selection committees be required to attend this training course.
21. Selection panels should be directed not to preferentially recommend appointment of women to the less desirable, repetitive and 'dead-end' postions.
22. The Executive introduce a provision for paid retraining for a period not exceeding six months if this is necessary to enable a female former employee who is a suitable applicant for a position and who has been out of the work force for at least five years to return to CSIRO's employment.
23. CSIRO take positive action to ensure an increase in the representation of women in the trades area. Ten per cent of apprenticeships should be offered to women in each intake and successful female apprentices should be given active assistance in seeking trades positions in CSIRO.
24. As a short-term measure, CSIRO preferentially appoint a female applicant to a technical or professional engineering position if in all other respects, except experience, she is equal to the best male applicant.
25. An EEO sub-committee be established within Consultative Council to investigate and report to Council on:
    - the impact of EEO and anti-discrimination legislation on CSIRO's personnel practices,
    - an affirmative plan,
    - dissemination of EEO policy,
    - evaluation of EEO statistical data,
    - EEO training programs,
    - part-time work,
    - job sharing, and
    - child-minding facilities.
26. The absence of specifically designated female personal and hygiene facilities not be used as a reason to prevent the participation of women in any area of CSIRO activity (e.g. field trips, camping parties, work on field stations or smaller sites).
27. A joint working party comprising representatives of CSIRO and staff associations be established to review the existing keyboard/secretarial structure in the Organization.
28. Appeal committees include a female member in all cases where the appellant or provisional promotee is a woman.
29. The numbers of staff held at promotion barriers be monitored. Where the number of women held at promotion barriers is disproportionately high, an evaluation of these officers' career opportunities be undertaken with the aim of determining whether there is any possibility of promotion over the barrier concerned.
30. A deliberate system of lateral transfers be implemented so that women are able to receive adequate training in all aspects of administration and thereby to compete seriously for senior divisional positions, an area where women are significantly underrepresented.
31. Action be taken to identify promotional barriers, specialized career paths or limited career paths which predominantly affect women.
32. Action be taken to ensure that women receive adequate information on their rights for promotion, to appeal and to receive post-appeal counselling.
33. All existing management and supervisory training programs be revised to include a specific session on EEO.
34. An EEO training program be developed.
35. The EEO training program be conducted in each region on a non-residential basis requiring attendance of all supervisors and inviting attendance of all women.
36. Introductory seminars of short duration for the most senior management staff of the Organization be developed and conducted by a person experienced in EEO to present EEO concepts, responsibilities and advantages to management.
37. Staff counselling skills programs be reviewed to ensure that participants are made aware of the existence of gender-linked differences in attitudes and female and male stereotypes of roles, and are equipped to take these factors into account in their counselling activities.
38. Existing management courses be conducted periodically on a non-residential basis and positive action be taken to ensure increased participation by women in these courses.
39. Career development workshops be conducted for women.
40. CSIRO improve its statistical and data collection practices on staff appointments.
41. CSIRO improve its statistical and data collection practices on promotion.
42. CSIRO improve its statistical and data collection practices.
43. Women be interviewed at conclusion of employment with CSIRO to gather details of the degree to which their career expectations were met.
44. The Staff Training and Development Unit should report annually to Consultative Council on the attendance of women at training courses.
45. The EEO officer and the EEO coordinator report annually to Consultative Council and prepare an annual report for inclusion in the CSIRO Annual Report.
46. The EEO officer be responsible for assessing and reporting upon the extent to which EEO principles are followed in the exercising of personnel delegations throughout the Organization.
47. It be the responsibility of the EEO contact persons (Recommendation 5) to provide initial contact points for women on EEO matters and that EEO contact persons be provided with direct access to the EEO officer.
48. EEO contact persons be placed on the distribution list for Information, Staff, Policy and any other CSIRO circulars and similar documents.
49. The EEO contact persons attend regular regional seminars for training and ongoing discussion of EEO policies and issues.

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tine officer at the barrier to forward them to me for processing on your behalf.

The commonest items dealt with are seeds, live plants, cultures, soils, sera, cell extracts and insects, but the actual list for any year is enormously varied.

The service is for all CSIRO Divisions.

READILY AVAILABLE

Procedures for importing plant materials have always been handled by the quarantine section for the Divisions of Plant Industry, Forest Research, Tropical Crops and Pastures, Horticultural Research, Water and Land Resources, Protein Chemistry, Food Research, and the Baas Becking Geobiological Laboratory. However, as staff come and go, it has become obvious that some people are unaware of this quarantine service.

If you are contemplating an overseas trip and the eventual mailing home of biological material, I suggest you send me a memo outlining the details as soon as possible. If you put something in your luggage at the last moment, don't hesitate to declare it as you come back into Australia. Our CSIRO office is known to all quarantine officers at the airports, and they will appreciate it if you can pack it neatly for forwarding to me.

CSIRO is a respected scientific organization whose officers are considered responsible.

The Canberra section comprises four people at the Black Mountain site. Sue Tibbitts and Lorly Allen cope with a host of various chores which include cleaning out weed seeds, fumigating consignments, documenting, and submitting requests for permission on your behalf. Ru Baye runs the two quarantine glasshouses for those species of plants which require a generation in quarantine before release.

Quarantine facilities for growing plants also exist at Samford and Townsville for the Division of Tropical Crops and Pastures, and at Merbein for the Division of Horticultural Research.

We can arrange for use of restricted materials under laboratory confinement, make intercessions on your behalf for those tricky items that set the public servants muttering, and advise you on procedures for any long term imports you may have in mind. We don't operate outside the system but work within it. CSIRO's privileged advantage in being able to employ a section to specially implement quarantine procedures could be disastrously offset by just one officer not obeying the rules of quarantine as administered by the Commonwealth Department of Health.

Don't let an illegal import knowingly perpetrated by yourself be the one to spoil CSIRO's reputation. As I mentioned at the beginning of this article, importing biological material is easier than you think.

So why should I ever have to pick up a copy of a letter which recently came my way, written by a CSIRO colleague to another, which says, 'I am enclosing a few seeds of .... I hope Customs don't find them!' After all, I am empowered to investigate and prosecute!

This article has been contributed by Roy Pullen.

'CoResearch' is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 8th day of the month of publication. Material and queries should be sent to the Editors, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editors: Jeannie Ferris and Penny Gibson.

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CSIRO's staff newspaper February 1984 **268**

Study Group recommendations:—

Strengthened role for Information Technology

CSIRO's Executive will be seeking financial resources for a major expansion in information technology which would increase both advanced research and project-based development.

'Both these aspects of the strengthened approach will be carried out in close association with industry, government and other research bodies so that results can be turned into products as soon as possible', the Chairman, Dr Paul Wild said.

CSIRO's Executive has adopted the major recommendations of an expert group which had carried out a study of the Organization's information technology activities.

These included:

The establishment of a substantial information technology group within the Institute of Physical Sciences to perform advanced research, develop state-of-the-art expertise and participate in collaborative projects in information technology; and

The development of an organization-wide collaborative program with industry, Telecom and others.

The work will cover software technology and related hardware, man-machine interface, information management, computer networking and device and systems hardware technologies.

CSIRONET SEPARATED

The Executive has also decided to separate CSIRO's computer network, CSIRONET, from the Division of Computing Research. Divisional research staff not working on CSIRONET will form the core of the new information technology group.

The decision to separate CSIRONET is the major recommendation of a recent review of the Division of Computing Research.

'CSIRONET will perform research and development related to the operation of the computer network. This work will be paid for by the network's users, who include other sections of CSIRO, government departments, universities and industry.'

Dr Wild said CSIRO had allocated about $4.6 million for information technology research this financial year compared with $3.7 million in 1982/83.

'This amount needs to be greatly increased if we are to keep abreast of world-wide trends which suggest this area is very important to the development of new industry.'

Now we are to be 'CSIRO, Australia'

The word 'Australia' will in future appear near the acronym CSIRO in the headings of letters, press releases and publications emanating from CSIRO.

This follows a discussion between the Chairman and the Minister for Science and Technology, Mr Barry Jones, which was sparked off by a comment from an Australian trade representative. Mr Jones said the representative had pointed out that CSIRO was increasingly thought of as an instrumentality of the British Commonwealth, particularly in countries not having strong traditional ties with Australia. This was because the word 'Commonwealth' appeared in CSIRO's full name instead of the word 'Australia'.

The Chairman said that he hoped this would encourage foreign journals to refer to CSIRO as 'CSIRO, Australia'. This was preferable to altering CSIRO's name to ASIRO because of the tremendous goodwill associated with the existing name in Australia and many countries overseas.

Women to get top posts

CSIRO is to strengthen its efforts to adopt the full principles as an equal opportunity employer, according to the Chairman of CSIRO, Dr Paul Wild.

'New efforts will be made by CSIRO to ensure that women are recruited to top jobs in the Organization', Dr Wild said.

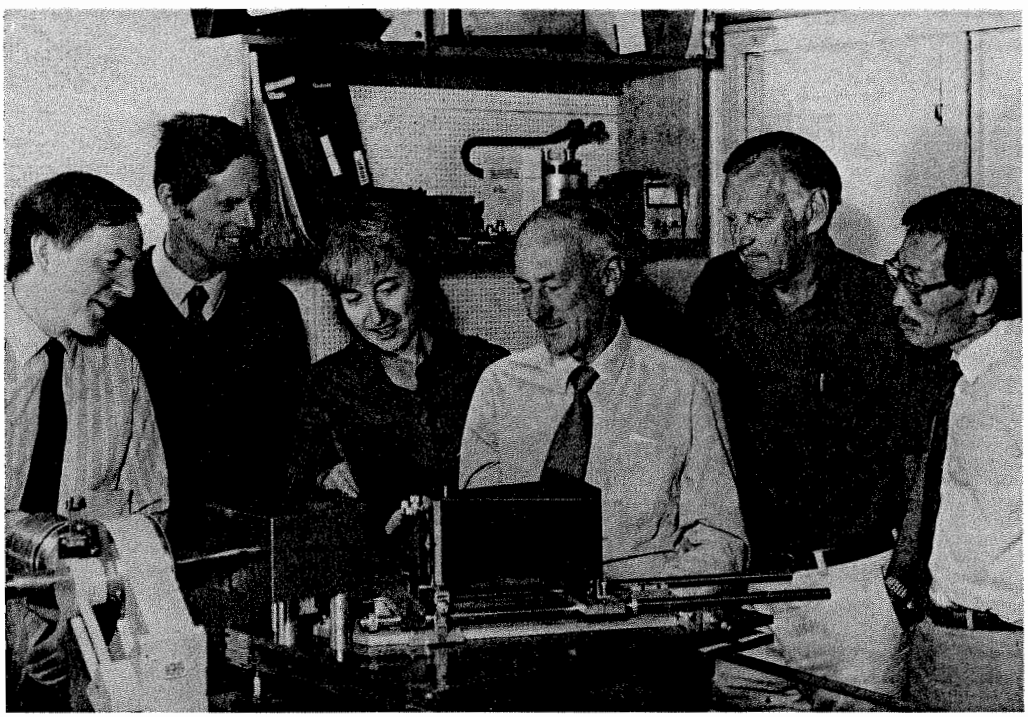
'Women are strenuously under-represented in top posts in CSIRO and the Executive has recognized this and adopted a comprehensive plan to ensure that people are recruited to CSIRO on merit and without regard to stereotypes whether based on gender or any other irrelevant ground.

'Australia needs the best scientists and technologists it can get', Dr Wild said.

He said the Organization could not afford to neglect large numbers of the cream of young graduates.

The decision, taken at an Executive meeting in Melbourne, follows a wide ranging inquiry into the status of women within the Organization which has been undertaken by a sub-committee of CSIRO's Consultative Council headed by Dr Judith Koch. The Consultative Council is a body comprising representatives of all levels of staff within CSIRO which reports to the Executive on matters affecting staff or subjects referred by the Excecutive. Full recommendations were published in *CoResearch* last issue.

Visiting scientists at Protein Chemistry



Research on the structure of collagen (the major protein in skin) and keratin (the major protein of wool and hair) is an important aspect of the Division of Protein Chemistry's research program.

The Division was fortunate recently to have three eminent overseas scientists visiting the laboratory concurrently, which enabled discussions to be held on the present state of research in these fields.

Pictured above from left to right are Professor Andrew Miller (Edinburgh University, UK), Dr David Parry (Massey University, NZ), Dr Barbara Brodsky (Rutgers University, USA) and from the Division, Dr Bruce Fraser (Acting Chief), Mr Tom MacRae and Mr Eikichi Suzuki.

Photograph by Leona Monarch

Letter to the Editor

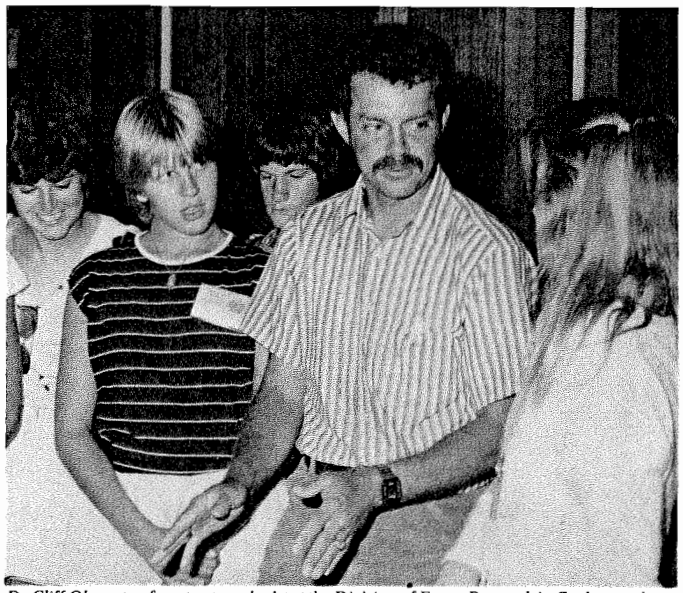
Dear Editor,
It was with interest I read Bob Rummery's CAT column ('CoResearch' November 1983) on improving the general public's perceptions of the CSIRO.

I'd like to applaud the efforts being made to show people outside the CSIRO the work going on behind the ivory facade.

As a journalist I would like to make one point. It is often very difficult for journalists to find out just what work is being done by the CSIRO at any one time. While I have always found CSIRO staff cooperative when doing stories, the basic idea that a story may be there is often not recognized by the CSIRO researchers themselves. Perhaps it's just modesty?

Could I suggest therefore that journalists be invited on these forays behind the scenes at CSIRO for a story by one of them may communicate with more people in the community than a small invited group.

Rae Allen
Rural Department
ABC, Hobart



Dr Cliff Ohmart, a forest entomologist at the Division of Forest Research in Canberra, shows examples of insects which affect forests to a group of secondary students participating in the recent National Science Summer School. Two hundred students from all over Australia took part in the two-week school which was formally opened by the Governor-General, Sir Ninian Stephen, and the Prime Minister, Mr Bob Hawke.

'Future Age' arrives

The Melbourne 'Age' newspaper has launched a new national science newspaper which aims to act as a bridge between science, technology and the general community.

The new publication, called 'Future Age', circulates free with 'The Age' and is sold in news-stands outside Victoria for $1.00.

Mr Russell Skelton, 'The Age' Chief of Staff, said 'Future Age' is designed to tap the high quality scientific, engineering and technological research and development taking place in Australia and to present it to the public in a readable form. 'The Age' has secured rights to science reporting in top overseas publications including 'The New York Times'.

'There is a lot happening in these fields which largely goes unreported in Australian newspapers', says Mr Skelton.

He leads a 10-person team developing the 'Future Age' concept.

'We feel that newspapers have generally fallen down in their job of reporting the revolution in science and technology that affects us all', Mr Skelton added.

SPECIAL UNIT

'The Age' has established a science reporting unit which produced two pilot editions of 'Future Age' in 1983. Reaction from the public and from advertisers was good, with the most recent edition selling 7000 copies outside Victoria, as well as its 250 000 home circulation. The first monthly edition for 1984 will be released on March 5 and future editions will follow on the first Monday of the month.

Mr Skelton said an important function of 'Future Age' would be to provide information on computers that was more accessible to the general public than that normally published in Australian newspapers. He said most computer reporting tended to be industry-oriented and did not provide down-to-earth information and advice to the consumers of computer products.

TECHNOLOGY INFORMATION

'Australians are crying out for information on computers and automation, how they can make use of these technologies and how will it affect them, and we hope to fill this need', he said.

Mr Skelton said 'Future Age' was strongly committed to the development of technology as one way for Australia to ensure its future prosperity. A special section of the supplement, called 'Technology, Watch', would be the forum for discussing the technological issues facing the country.

'We believe there has long been a need for a major newspaper to take the challenge of science and technology seriously. 'Future Age' is an idea whose time has come', Mr Skelton concluded.

CSIRO sets international standard for meteorology

A reference psychrometer developed by the Division of Applied Physics has been adopted by the World Meteorological Organization (WMO) as the international reference standard for meteorological humidity and temperature measurement.

As early as 1960, the WMO Commission for Instruments and Methods of Observation began to seek a reference standard suitable for the evaluation of meteorological hygrometers under field conditions. It soon became clear that a suitable instrument neither existed nor could easily be produced.

In 1965, the Commission decided that a psychrometer should be developed for the purpose.

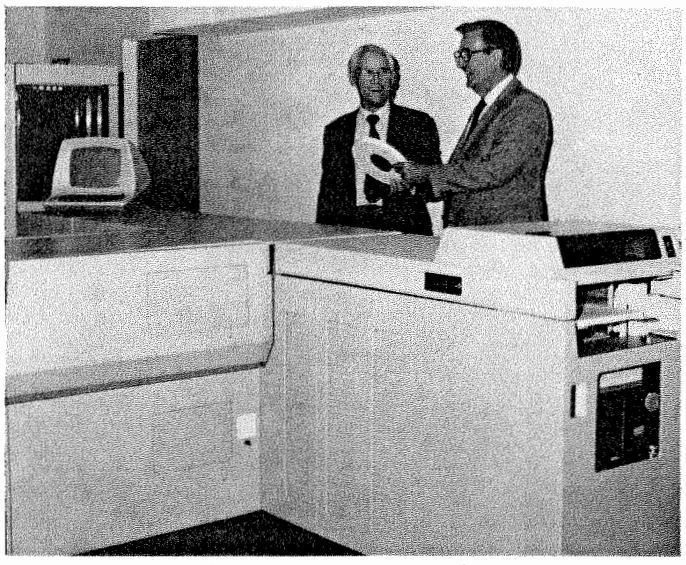
Dr Russ Wylie, who had been associated with the Commission since 1961, submitted a generalized design in 1969 which aimed at achieving the highest degree of reproducibility from one individual instrument to another. However, in experiments to determine this reproducibility, Dr Wylie found that, provided organic monomolecular films were removed from the wet-element surfaces and some other simple precautions taken, the reproducibility achievable with a good design was far better than had been thought possible. The temperature depression could easily be reproduced within 0.002°C to 10°C.

INTENSIVE STUDY

In 1971 Wylie, assisted by Theo Lalas, began a very deliberate theoretical and experimental study of psychrometer systems. One result has been a tie-up between theory and experiment which is limited in accuracy only by the uncertainty in the data available for the thermal conductivity of moist air and the diffusivity of water vapour in air. In fact, accurate direct measurements of psychrometer coefficients have improved the knowledge of the diffusivity. Another result has been a greatly improved knowledge of the practically important relationship between the coefficients for forced convective heat and water-vapour transfer in air, and a better knowledge of the evaporation (condensation) coefficient of a water surface.

The reference psychrometer was adopted by WMO in 1977 as the reference standard for meteorological humidity measurement. Following a field study, the reference psychrometer was further adopted by WMO in 1981 as the reference standard for meteorological temperature measurement.

WMO has recently asked member countries to refer their measurements within the Global Observing System to the reference psychrometer, with a proposed effective date of 1 January 1985.



The Chief of the Division of Computing Research, Dr Peter Claringbold, left, with Mr Allan Stevens of Microsystems Pty Ltd, lean on the Xerox 9700 laser printer which has been linked to SIRONET. Microsystems Pty Ltd has signed an agreement which includes funds for two research positions within the Division. Laser printers are among the most sophisticated printing systems in the world. They can reproduce up to 7200 A4-sized letters or forms per hour.

Explainers needed at Questacon

Thousands of school children visit Canberra's Questacon each year to see science in action.

The Questacon is a collection of exhibits which visitors must manipulate to find scientific principles which show how science affects everyday life.

Since opening in 1980, it has grown into the nucleus of the national science centre, which has been suggested as a $13 million bicentennial project.

There are over seventy exhibits, some built by CSIRO and others donated by tertiary institutions and companies such as Kodak, Telecom, BHP, CIG and others.

The centre is heavily booked by schools for the two and a half days each week it operates, and the occasional open day is held for adults.

Although there are several science centres around the world, the Questacon was the first to use voluntary 'explainers' who came from the ranks of the retired, people out of the work force and students from tertiary institutions and senior secondary colleges.

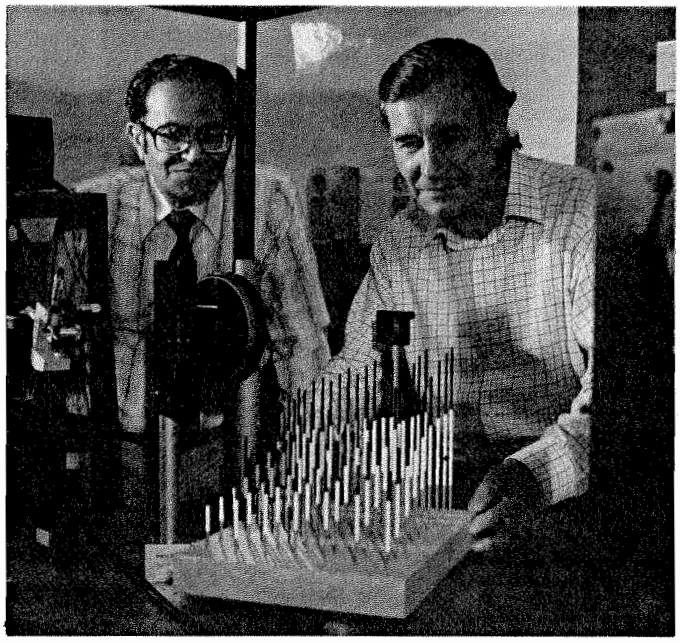
Explainers are given on the spot training about each exhibit, and receive a small honorarium for each two hour session they attend.

Some former CSIRO staff already assist at Questacon, and Dr Michael Gore, a senior lecturer in Physics at the Australian National University, who instituted and developed the centre, has invited anyone who is interested to contact the centre.

New explainers are always needed and the Questacon would not be possible without them. There is no need for explainers to have any scientific background.

If you would like to become an explainer, or know of someone who may, ring Dr Gore on 492811, Ms Miklos on 492747 or Ms Braxton on 513438 for further details.

Artists in residence



Dr Hariharan, left, of the Division of Applied Physics, watches as Alexander prepares to make a hologram.

A musician, film-maker and two sculptors are spending three months at the Division of Applied Physics as part of the Artists in Residence Program.

Funded by grants from the Australia Council and the Australian Film Commission, artists will experiment with the application of technology to their art.

All four have an established artistic reputation in the particular area they are working in.

Moya Henderson, a musician, has invented a new percussion instrument and is working with the acoustics and vibrations groups to refine its tuning. The 'Alemba' is a series of triangles attached to resonating pipes, and has already been used in a performance at the Opera House.

Alexander is working with Dr Hariharan and developing holograms of his 'four dimensional' sculptures, sculptures which change their patterns and colours as you move around them.

Holograms would portray the multi-coloured '4-D' sculptures in their full dimensions, and Alexander is researching how to make them and how to produce them cheaply as the sculptural equivalent of a photograph of a painting.

He is credited with creating the largest bronze sculpture in modern times, a sculpture in Leicestershire, England, titled the 'Great Tower'. He has also published a paper in a national art, science and technology journal on holography.

Michael Scullion, a film maker, is researching how the conditions of filming, such as zooming and panning, change an object's image from its reality. He is working with Ian Chappel and using the three dimensional facilities of the Computer Aided Design system and the large plotter of the Division.

The other artist, who is currently responsible for producing the arts and technology section at the Adelaide Festival, is a painter and sculptor. Simon Biggs has worked extensively with computer graphics and will either study in that area or with the Computer Aided Design and Computer Aided Manufacturing facilities to create and produce sculptural components.

The relationships between the artists and scientists are collaborative, with the scientists receiving a new dimension into their research through the interaction.

The whole artistic spectrum was represented in the 100 applications received for the program, and reflected the many interactions of science and art. Some artists wanted to use science as a tool in their art, or use it to create a new art, while others wanted to reflect science and technology in their art.

Fossil Fuel's new Chief

Dr Ernest Bendit, formerly Officer-in-Charge of the Physical Technology Unit, has succeeded Professor Tony Bradshaw who has completed his term as Chief of the Division of Fossil Fuels.

Under Dr Bendit's leadership the Physical Technology Unit achieved some notable advances in coal-handling technology, e.g., the dewatering of coal-washery tailings, greater understanding of spontaneous combustion in coal stockpiles, and the characterization of Australian coals and oil shales.

These projects, and work on the prevention of stream pollution from mining operations, have attracted considerable financial support from industry.

Dr Bendit graduated in aeronautical engineering at the University of London in 1940 and obtained his MSc degree in 1955 at the University of New South Wales. Later, in 1967, he was awarded a PhD in physics by the University of London. He joined CSIRO in 1955 and spent most of his time in the Organization in the Division of Textile Physics.

He is the author of some 40 publications on studies of the structure and physical properties of wool, using spectroscopic and mechanical techniques. Dr Bendit has been the Officer-in-Charge of the Physical Technology Unit since its inception in 1979.

The Unit was amalgamated with the Division of Fossil Fuels on January 1.

From the Chairman -

A regular column by the Chairman of CSIRO Dr. J. Paul Wild

As our helicopter rotor began to accelerate John Nicolson gave his final advice to our pilot, 'The DC6 pilot thinks it would be a rather good idea if you kept out of his way'.

The remark was delivered in the casual way that reminded me of Sergeant Wilson of the Warmington-on-Sea Home Guard (deceptively because John is a staunch RAAF type of bygone years). The pilot's reply ('So do I') wasted no words. We ascended vertically leaving a whirlpool of dust below. Soon after the silver Conair DC6, augmented by a long bulging tank beneath its belly, came into view below us, flying two hundred feet or so above the line of tree tops. After two or three dummy runs we were told that next time would be 'it'. The plane passed slowly over the orange balloon marker, then hydraulically-operated tank doors opened up and several thousand litres of water fell to the ground, trying to push forward with the plane's motion but slowed by air resistance. It was all over in a couple of seconds. The act was repeated twice more.

Later, on the ground under tall trees, we inspected the target area. The ground was covered with a regular pattern of plastic ice-cream cartons, and a team was busy labelling and measuring the water content of each. 'In practice' we were told 'we don't use water; but a chemical retardant — looks like tomato sauce'. Later still, at the RAAF base at Sale, we saw the DC6 perform its hydrological expulsion on the ground — 11 000 litres sploshing on the hot tarmac as the twelve tanks opened in rapid-fire controlled sequence. Parked a little way away from the 'bomber' was the CSIRO Fokker equipped for reconnaissance with infra-red scanner.

The Latin for water carrier is Aquarius which gives its name to a constellation in the zodiac. The aim of our Project Aquarius is to assess the effectiveness, under Australian conditions, of fighting bushfires by aerial bombardment with water or chemical retardants. The first phase, collecting data on high-intensity burns, was conducted in Western Australia. The second phase, testing the technique, is being done near Nowa Nowa in Gippsland.

I found the whole operation most fascinating. It seemed to me that bushfire fighting was like an army operation. Ideally you needed armour, infantry, and air support for both tactical bombing and reconnaissance. As in warfare you don't attack the enemy arbitrarily, you attack his front. You don't try to put out a fire, you aim to contain it. The front of a bushfire is picked up by the infra-red scanner which also warns of deadly spot fires, beind your own lines so to speak. Next comes the bombing aimed at dampening down the strip through which the front is about to pass. Then the 'armour' moves in — bulldozers and the like cutting fire breaks beyond the front — and, most important, outside the spot fires. Finally the infantry moves in — poor bloody dedicated men. Their main tool is a rake hoe, otherwise known as a 'McLeod tool'; with it they cut a four-foot wide path which forms a boundary for back burning.

The project is a fine example of collaboration. Under the direction of Phil Cheney and his colleagues of Forest Research, there is collaboration with other Divisions (notably Mineral Physics for the IR scanner and Wildlife on environmental effects), with State and local government fire authorities, with the Met Bureau, with the Commonwealth Institute of Health (undertaking exertion and exhaustion studies on the fire fighters), the Chisholm Institute of Technology (for computer modelling), the US Forest Service (participating and deeply interested in this the most thorough fire fighting assessment ever undertaken), Canadians including the contractors (Conair), and finally the RAAF whose cooperation was described to me as superb.

What will the report, due later this year, have to say about the effectiveness and economics of aerial fire fighting? Nobody yet will say. But I came away certain that the benefits that will accrue from this highly professional study will far transcend the original purpose of the exercise.

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The Executive recently considered a Consultative Council report on the employment of women in CSIRO. We decided to adopt all the recommendations of the report which should ensure that people are recruited to CSIRO solely on merit, without regard to gender or any other irrelevant grounds. The Organization needs the best scientists and support staff it can get and therefore must adopt the full principles of equal employment opportunity. Within CSIRO women are under-represented in senior jobs and new efforts will be made to increase the representation of women at this level.

The report found clear evidence of discrimination and that this was due to stereotyped attitudes held by some staff in a position of influence. Clearly our efforts to put the matter right will require trust, flexibility and patience.

Under the equal employment opportunity program, the under-representation of women is to have priority. However the same principles will also be applied to any other grounds of discrimination which may be in existence.

The Executive wants to congratulate the eight members of the sub-committee responsible for the report, under the worthy chairmanship of Dr Judith Koch. It's timeliness puts CSIRO in a front-running position among government agencies and departments all of which, you may be sure, have harboured similar prejudices — usually, I dare say, without realizing the fact.

Paul Wild

Bronze Ear Award for CSIRO

The Film and Video Centre has once again received international attention.

Its film, 'Duck Farming — An Indonesian Tradition' won a Bronze Ear at the 13th International Agricultural Film Competition in Berlin.

The prize comrises a bronze plaque with two ears of corn, and a certificate.

1984 is the Institute of Electrical and Electronics Engineers' centennial year and 1 984 medals are being awarded around the world. **Peter Somlo** from the Division of Applied Physics has received a medal and certificate in recognition of his service to the Institute and to his profession.

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Royston Mansfield, a biochemist from Cambridge University, has a British Science and Engineering Research Council Fellowship to study the orientation of photosynthetically important membrane proteins from spinach and peas. He will be working with **Jan Anderson** at the Division of Plant Industry until November.

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Bill Sobey, the person responsible for the introduction of the European rabbit flea to spread myxamatosis in Australia, retired last month after thirty years with CSIRO. He also studied the genetic variation of the myxoma virus and the heritability of resistance of rabbits to myxamatosis. Dr Sobey transferred from the then Division of Animal Genetics to the rabbit ecology group at the Division of Wildlife and Rangelands Research in 1975, and will work there during 1984 as an Honorary Research Fellow.

***

Mr Neil Schafer of the Division of Fossil Fuels in Sydney, recently won the men's over 56 years division of the Asia-Pacific Orienteering Championships held in the South Island of New Zealand. He defeated runners from Finland, Canada, Japan, Australia and New Zealand. Move over Cliff Young.

***

David Thomas, the Brisbane Regional Administration Officer, was recently surprised to receive an old, well-thumbed copy of 'New Scientist' from the librarian of Radiophysics.

Identified merely by a faint impression 'RAO Brisbane', an officer of that Division had discovered it in the seat pocket of an aircraft flying between Adelaide and Sydney.

As the Division has use for back numbers at their Narrabri unit, it had been decided to post them there in future and not rely upon this other roundabout route.

One can't help wondering why someone else hadn't returned it to us before — perhaps RAO Brisbane is only known to a very select few, or are CSIRO travellers the only honest and observant ones left?

Dr Mike Murray, of the Division of Materials Science, has been awarded the Rodda Award by the Society of Automotive Engineers, Australasia.

In a letter to Dr Murray, the Executive Director of the Society, **Don Clark**, said the award had been made for the most outstanding paper presented at one of the Society's functions during the year.

The paper which won the Society's most prestigious award was entitled 'Ceramics and Their Future in Diesel and Multi Fuel Engines'. The award carries with it a medal and a prize of $500, which will be presented in October during an Awards Dinner.

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Dr Kevin Sheridan, who recently retired from the Division of Radiophysics in Sydney, was created a Member in the general division of the Order of Australia in the Queen's Birthday awards announced in January.

Kevin's award was made for public service to science, particularly in the field of radio physics. Prior to his retirement in August last year, Kevin was a senior principal research scientist, in charge of the solar radio astronomy group within the Division.

He joined the Organization in 1945, and within a couple of years was responsible for the installation and trials of the Division's multiple track range for aircraft navigation while still a technical assistant. He subsequently graduated from the University of Queensland as a Bachelor of Science, and in 1973, his scientific achievements were recognized when the same university awarded him an honorary Doctor of Science.

***

It's nice to see CSIRO is getting the right sort of exposure. The message of a recent **Australian Penthouse Magazine** article was that Australian soils are being denuded. We twice rated a mention in the article, which bared all the facts about erosion and land degradation.

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The Department of Science and Technology and ANZAAS have implemented an annual **Michael Daley Award** in memory of the former Executive Producer of ABC TV science programs. The $1000 prize will be awarded to the author or producer judged to have most effectively presented scientific and/or technological issues or ideas to the Australian public. Further details from Eric Hunter at the department on (062) 513657. Entries close 29 February.

Staff study for PhDs

The Animal Health Research Laboratory at Parkville recently received approval from the University of Melbourne for two members of staff to carry out their PhD studies in the Laboratory.

They will be supervised by a member of the teaching staff of the University and a CSIRO research scientist.

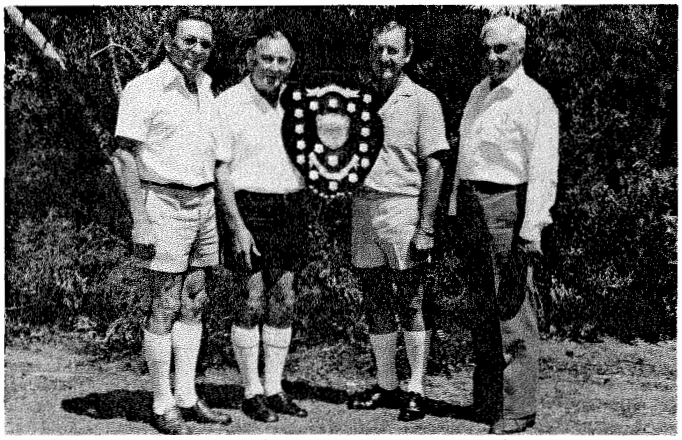
To mark the occasion, the students, supervisors, heads of Departments, senior university officials, senior members of the staff of the laboratory and the Chief of the Division of Animal Health were entertained at lunch by the Officer-in-Charge. Photographed above are Miss Jenny York, PhD student in the Department of Veterinary Biology, Professor Ken Jubb, Dean of the Faculty of Veterinary Science, and Dr Len Lloyd, Officer-in-Charge of the Laboratory. They are watched over by the portrait of Dr L.B. Bull, one-time Chief of the Division. Below, Mr Paul Martin, right, PhD student in the Department of Genetics is talking to Mr Geoff Clark, a university postgraduate student in genetics.

Two senior divisional communicators have recently left CSIRO to pursue careers in other related fields of communications.

Justin Murphy, who for the past 15 years has worked in science communication with the Division of Groundwater Research in Perth, has joined the Sydney radio station 2GB working in current affairs. **David Zerman** , who worked in science communication at the Division of Building Research in Melbourne, has been appointed to the Glass Manufacturing Industry Council of Australia in Melbourne. David was with the Division for five and a half years, working with **Bob Cooper**.

Justin joined CSIRO in January 1966, originally as a Site Services Clerk on Black Mountain in Canberra. He went to Perth with Dr Ray Perry when the Division of Land Resources Management was formed in 1974. More recently, he spent four months on secondment to the Australian Broadcasting Commission in Sydney as a research assistant on the program 'Heartlands' which featured **Dr Dean Graetz** of the Deniliquin laboratory.

Premier golf team



CSIRO won the Public Service Golf Association of Western Australia Tournament recently for the first time since the competition began in 1966. The winning team, from left to right, is Mike Krencej and Ron Cooper from the Division of Mineralogy, Geoff Anderson from the Division of Animal Production and Rudi Horwitz, also from Mineralogy. Photo by Bill van Aken.

The first Director of the Royal Australasian Ornithologist Union in Melbourne is **Dr Stephen Davies,** formerly a senior principal research scientist in the Division of Wildlife's laboratory in Western Australia. Dr Davies, a wildlife biologist, was Officer-in-Charge of the Western Australian laboratories and has been a member of the committee of the International Ornithological Congress and the conservation committee of the World Wildlife Fund.

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Bob and **Laura Payne** from the University of Michigan in the USA have just spent three months at the Division of Wildlife and Rangelands Research Helena Valley laboratories studying parasitism of Splendid Wrens by Bronze Cuckoos and the inheritance of call-patterns in the wrens, the latter entailing recording more than one hundred individually identified wrens.

The Assistant Chief of the Division of Computing Research, **Mr Terry Holden**, has retired from the Organization, and has been appointed Manager, Government Systems, with Wicat Computer of Australia, based in Canberra.

Terry joined CSIRO in 1945 as a technical assistant in the lubricants and bearings section of the Division of Materials Science. In July 1946, he joined the Building Research Section in Melbourne, working as an assistant research officer. He joined the Computing Research Section in 1963, and was appointed an assistant chief in 1979.

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Nina Bajanova of the National Parks and Wildlife Service is working at the Division of Water and Land Resources for six months and helping gather ecological data for the Kakadu National Park data base being built at the division.

Dr Rob Marshall and **Dr Mort Gillespie** of the Division of Protein Chemistry, were the recipients of the 1982 Philip Allen Memorial Prize. The prize is awarded each year by The Forensic Science Society, UK, for the best article published in their journal. The title of the paper was 'Comparison of Samples of Human Hair by Two-dimensional Electrophoresis'.

The work on human hair was an extension of work on wool using this technique, which, because of the sensitivity of the technique, made it possible to study single fibres. The method is at present under investigation, as a routine forensic science tool, by laboratories both in Australia and overseas.

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John Platt

Mr John Platt , the Divisional Secretary of the Division of Textile Physics, retired on January 24 after almost exactly 25 years in the Organization.

A barbecue in his honour at the Division was attended by 150 present and former colleagues including **Victor Burgmann** and **John Downes**, former Chiefs of the Division, and **Bob Haly** and **Ernest Bendit**, current Chiefs of Textile Physics and Fossil Fuels respectively.

Of his 25 years, John spent 21 at the Division and four at the now defunct Australian Scientific Liaison Office in London. He was the first of the administrative staff to be appointed to ASLO as deputy to the Chief Scientific Liaison Officer, the deputy having previously always come from the scientific staff.

John joined CSIRO somewhat late in life at a time when the Organization had just adopted a policy of replacing scientific staff serving in Divisions as technical secretaries by administrators recruited, if necessary, from outside the Organization. He had then arrived recently in Australia after holding senior executive posts in the cinema industry in various parts of the world on behalf of a London-based Corporation.

His retirement plans include a long visit to Europe in the current year, enabling him to make full use of the Division's farewell gift of a magnificent set of travel bags.

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A celebration of the life, work and character of **Professor Michael White**, former professor and emeritus professor at Melbourne University, was held at the Academy of Science in Canberra in January following his death late last year. Professor White worked at the Division of Plant Industry from 1953 to 1956, where he helped lay the foundations for the development of a genetics research group. He maintained links with CSIRO through his research programs on a parthenogenic grasshopper with no males in the population. His research has had wide implications in genetic and evolutionary theory and earned him many distinctions.

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Tian Guoliang from Academia Sinica in China has joined the Division of Water and Land Resources to work on the fundamental aspects of remote sensing applications for two years.

Dr Henry T. Ostrowski-Meissner has been appointed as a Director of the Australian Feeds Information Centre (AFIC) operating within the CSIRO Division of Animal Production, located at the Division's Headquarters in Sydney.

Dr Ostrowski-Meissner replaces **Dr Terry Leche** who, from January 1, has been made available by the Division for three years as full-time Executive Secretary of the International Network of Feed Information Centres, of which AFIC is a Member.

According to a new operational structure, the Director of AFIC is supported by the Advisory Board made up of the Chief of the Division, **Dr T.W. Scott** (Chairman), **Dr N.McC Graham** and **Dr T.F. Leche**.

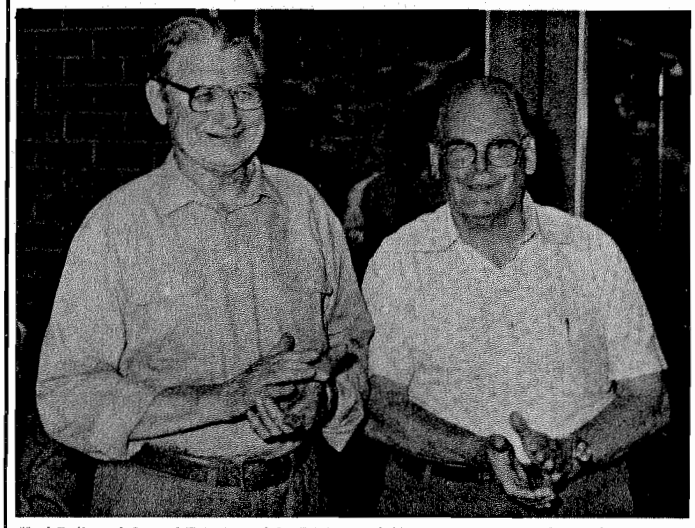
AFIC operates Australia-wide through Animal Feedstuffs Liaison Officers appointed by State Departments of Agriculture (New South Wales, Victoria, South Australia, Western Australia and Tasmania) or Departments of Primary Industry (Queensland and Northern Territory) who are actively involved in development of a national liaison mechanism for the provision and receipt of analytical data on the composition of animal feeds in Australia.

During 1984, Dr Ostrowski-Meissner plans to develop two-way communication between AFIC and animal and allied industries Australia-wide employing the latest information technologies and communication means to serve animal industry, research workers and farming communiuties, particularly those in isolated rural areas and in remote country locations.

To enable AFIC to provide liaison and disseminate information from the AFIC feed data base for daily needs of the feed industry and animal producers, active support from both potential users and potential contributors to the AFIC database is necessary.

Anyone with old or recently completed analyses/data of any kind on feeds of known origin, anywhere in Australia, who would like to contribute to the AFIC data bank should contact the Director of AFIC either on (02) 631 8022, by Telex 27450 or by correspondence, PO Box 239, Blacktown, NSW, 2148.

Any routine chemical analyses, including those for anti-nutritive compounds as well as nutritive description of feeds obtained in bioassays, are welcomed. Once included in the AFIC computer database, data will be acknowledged and listed as a reference in future AFIC publications. Cooperation from within CSIRO Divisions and from outside the CSIRO will be most appreciated and valued. Any enquiries on feeds and on their use in feeding practice should also be addressed as above.



Karl Balkau, left, and Eric Lee of the Division of Chemical Physics, at the garden party where they were farewelled.

Two members of the Division of Chemical Physics retired recently.

Mr Karl Balkau, who was born in Germany and trained there as an instrument maker, came to Australia in 1955 and has worked in the Division as a Senior Laboratory Craftsman since 1971. His main work in recent years has been connected with the development of an oil-free vacuum pump in conjunction with Mr J.L. Farrant and Mr E. Bez.

Mr Eric Lee has been an instrument maker and later a Senior Laboratory Craftsman with the Division since 1966. He acquired a particular reputation for his high-class engraving work and has also constructed many scientific instruments.

Karl and Eric were farewelled at a garden party held in the courtyard of the David Rivett Laboratory, Clayton.

Dr Robert Rew, a Senior Research Fellow of the Merck, Sharp and Dohme Research Laboratories, Rahway, New Jersey, is spending six months studying the mechanisms of anthelmintic resistance in sheep nematodes at the Division of Animal Health, McMaster Laboratory, Sydney. He had problems convincing our embassy in Washington that he was a genuine American Roo.

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After 31 years of service, **Mr G.R. (Don) Cocks** of the Division of Tropical Animal Science retired on January 11, 1984.

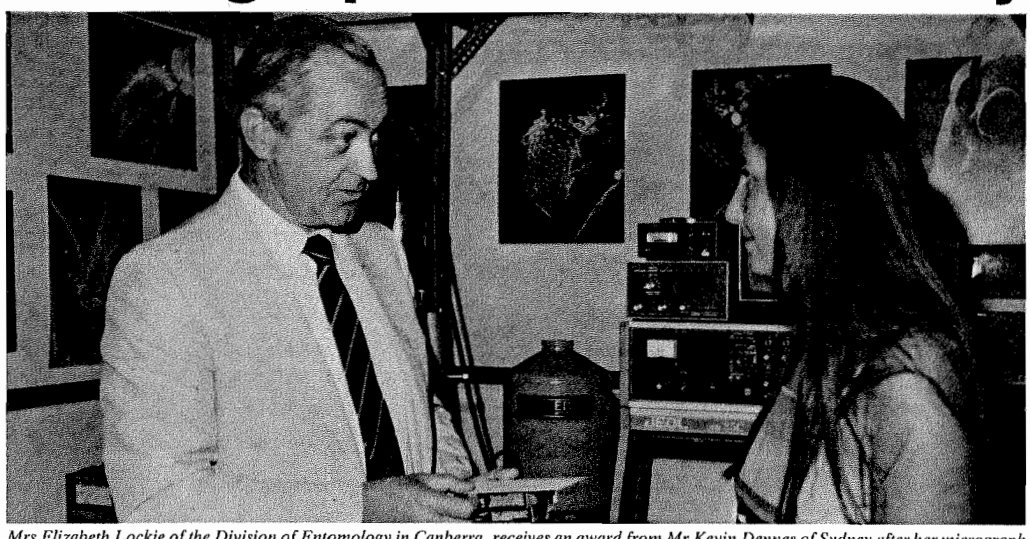
Don joined the Division of Entomology in 1953 as a labourer and advanced to Technical Officer. In 1964 he became Manager of both Amberley and Willowbank Field Stations near Ipswich. In 1982 he was transferred to the newly established Division of Tropical Animal Science and continued to manage both field stations for that Division.

Don had a direct involvement with experiments in tick ecology, the breeding of tick resistant cattle and field testing of acaricides and was responsible for many improvements in the pastures and animal handling facilities on the field stations.

A barbeque farewell was held in his honour by colleagues at the Long Pocket Laboratories at Indooropilly, Queensland.

It is with sadness we learned that the recently-retired Chief of the Division of Mineralogy, **Arthur Gaskin,** died in Perth on February 4 and was buried in a private ceremony. Arthur was Chief of the Division from its formation in 1970 until his retirement in September 1983. Prior to that he led the Division of Applied Mineralogy in Melbourne and had worked for CSIRO (with a couple of short breaks) since 1942.

Photographic success story



Mrs Elizabeth Lockie of the Division of Entomology in Canberra, receives an award from Mr Kevin Dennes of Sydney after her micrograph of a beetle's prothorax won third place in an international competition. A total of 2600 entries were received in the competition. Mr Dennes is medical and scientific products supervisor for Polaroid.

Project Aquarius goes to air

Project Aquarius made headlines on Australian news bulletins after an open day for the media in January. Penny Gibson from the Media Group attended the event.

Although wet weather has delayed Project Aquarius experiments to test the effectiveness of airborne water tankers against bushfires, a demonstration of the aerial bombing techniques was given to a stunned media audience.

The shining silver Douglas DC6 airtanker, leased from Conair Aviation of Canada, came roaring in over the treetops seemingly only metres away, opened its hold and released 3600 litres of coloured water which filtered down through the trees in a red haze.

The Channel 10 cameraman followed it out of sight, let go his camera and leapt high into the air with a yell of delight. His excitement was reflected on everyone's faces.

The ABC and Channel 8 crews, who had followed the aircraft in a helicopter to get a bird's eye view, were just as excited when they landed to watch the next two drops from ground level.

FINAL EXPERIMENTS

The current experiments at Nowa Nowa in Gippsland are the culmination of the $3.2 million, three-year bushfire study by the Division of Forest Research in cooperation with State forestry and fire control authorities.

Last winter the 1600-hectare research plot was prepared for a long hot summer with access roads bulldozed through the bush, culverts made with hollow logs and an extensive survey done of the groundcover and trees.

The Project Aquarius team moved in for the three-month-long experiments in January. They set up their base camp at Radar Hill, a bare outcrop in the middle of the site now scattered with meteorological equipment, an old refrigerated container dubbed 'The Esky' where all the communications and computer activities take place, and an office, storage and tea room shed.

The eucalyptus forest around Radar Hill has been divided into 16 blocks, each to be burnt under different conditions, weather permitting. The airtanker bombs the fires with water, water thickened with a gel, or the fire-retardant ammonium sulphate.

The aircraft's 11 000-litre capacity can be dropped in many combinations depending on the nature of the fire, the altitude and speed of the aeroplane. It can bomb the fire directly or spread the load over the fire front with a series of drops from each of the twelve 900-litre compartments.

The tanker is flown by an experienced team from Conair, but directed from 'The Bird Dog', a helicopter which dodges in and around the big plane and tells it where to drop its load.

Although aerial water tankers are used in the United States, Canada and some European countries, Australian conditions are very different and far more dangerous. The experiments are to determine when the tankers are no longer useful for stopping the initial outbreak of fire, and how and when they are most effective.

Using data from the United States, the Chisholm Institute of Technology, under contract to CSIRO, has developed an Australian computer model to reflect these conditions and which involves over thirty variables. Three United States foresters are observing the experiments to see how the conditions vary and how their model has been adapted.

Only two fires have been lit so far because of the wet weather, and though they were low intensity fires, the project leader, Mr Phil Cheney, said that the models were accurate and the tanker was able to suppress the fires as predicted.

ASH WEDNESDAY

As the summer gets hotter, and conditions become closer to those of Ash Wednesday last year, the fires will be more intense, culminating in dangerous 'crown' fires.

Although Project Aquarius is mainly investigating the aerial suppression of fire, the team has also carried out a great deal of research into fire conditions, the various methods of fighting fire from the ground and the physiological effects it has on firefighters, and developed both ground and air equipment to monitor fires. This research is continuing at Nowa Nowa.

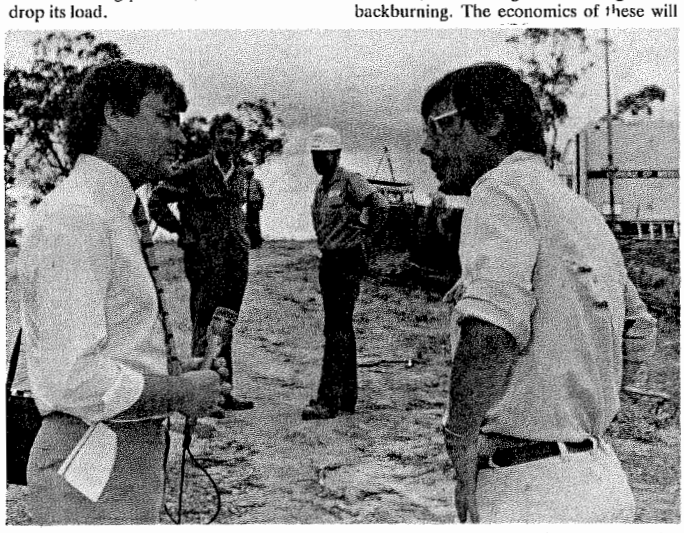
An infra-red scanner developed by CSIRO for Project Aquarius was used during the Ash Wednesday fires near Warburton to direct firefighters safely to trouble spots.

The scanner is mounted in CSIRO's F27 research aircraft, and enables a clear map to be built of a fire area, including roads, forests, water and grassland. As it uses the infra-red (heat) signature of the land, the scanner can 'see' through dense smoke and pick up a 'hot spot' only half a metre square.

Although no fires were lit during the media open day, the Fokker could be seen flashing high in the sky, in constant contact with 'The Esky' and the 'Bird Dog' helicopter.

Dr John Nicolson, Project Coordinator, took the media around the site to see the road networks necessary for the experiment. Signs such as Northbourne Avenue, Federal Highway and Lillee Lane (not the cricketer, though one could be forgiven for thinking so) decorate the dirt roads that are still being levelled.

During the fires, these roads will be used by conventional bushfire teams, in concurrent experiments to study other firefighting methods, including bulldozing and backburning. The economics of these will be compared to the aerial suppression techniques in a detailed cost analysis of the use of aeroplanes to combat bushfires.



Mr Phil Cheney, right, is interviewed by Mr Brian Abbott from the ABC during an open day for the media at the Project Aquarius site, while Mr David Packham, second from the left, from the Chisholm Institute of Technology, and Mr Peter Hutchings from the Division of Forest Research watch. *Photograph by Peter Hay*

The DC6 demonstrates one of the drop formations with coloured water. The spectacular footage made headlines on Channels 8 and 10 and the ABC in Victoria, but received little publicity in the other States.

To research wind behaviour at the fire fronts, CSIRO developed equipment to measure the speed and heat of winds ahead of, during and after the fire. The anemometer can tolerate heats of up to 600 degrees Celcius, and a small computer buried on site records all the data.

The media were told how retrieving the data can be a little daunting when the large fire-damaged trees creak and crack in the wind and limbs crash to the ground.

Later in the tour, Dr Nicolson pointed out a team from the Division of Wildlife and Rangelands Research sweeping the road. Early in the morning they return and identify any animal prints in the dust as part of their survey to monitor animal life in the blocks both before and after the fires.

Dr Alan Newsome, a senior scientist from the Division, said that animals survived in moist refuge areas along creek lines which are easily accessible in the Aquarius site. Previous studies have found that four to five years after a fire, populations tend to increase up to fourfold over the original numbers.

CSIRO physicist dies

The former Chief of the then Division of Physics, Dr Ronald Giovanelli, DSc FAA, died after a long illness in late January.

He was educated at the University of Sydney and then spent two years (1937–39) as a research fellow at the Commonwealth Solar Observatory (Mount Stromlo) before joining CSIR.

One of the original group of nine scientists recruited by CSIR to establish the National Standards Laboratory, now the CSIRO Division of Applied Physics, he spent 1940–41 at the UK National Physical Laboratory in Teddington preparing for this task.

Dr Giovanelli was deeply involved in scientific support to the war effort, particularly in the production of optical munitions and military problems with night vision.

After the war Dr Giovanelli played an important part in establishing Australia's National Standards of Physical Measurement, especially in the fields of optics, photometry and colorimetry.

Until 1958 he was leader of the light section in the Division of Physics, one of the three constituent Divisions of the National Standards Laboratory, and he served as Chief of the Division from 1958–74. After retiring in 1976 he retained an active research connection with CSIRO as an honorary senior research fellow.

Dr Giovanelli contributed further to the growth of Australia's national measurement system by serving as a member of the National Standards Commission from 1959–76.

Notwithstanding his contributions to physical standards and measurements, Dr Giovanelli's deepest research interest was on solar astronomy. His research team greatly increased our knowledge of the physical pocesses that account for the fine structure in the outer layers of the sun.

Dr Giovanelli set up modern solar observatories, first at Fleurs near Sydney, and later at Culgoora near Narrabri, NSW, and led the development of sophisticated, narrow-band optical filters that served as new spectroscopic tools for use on the telescopes.

He also made many theoretical contributions to his subject including extensive studies of the diffusion of light through stellar atmospheres.

Dr Giovanelli's contributions to solar physics were recognized by his being awarded the degree of Doctor of Science by the University of Sydney in 1950, and by his election to the Fellowship of the Australian Academy of Sciences in 1962.

Dr Giovanelli helped establish the Astronomical Society of Australia in 1966 and served as its President from 1968–71. He was a fellow of the Royal Astronomical Society (UK) and was active in the International Astronomical Union. He received many invitations to visit overseas solar centres to lecture and undertake research.

Dr Giovanelli helped in the training of many younger solar astronomers, some of whom are continuing solar research in Australia while others occupy very senior positions in astronomy in the USA.

Just prior to his death Dr Giovanelli completed a book, 'Secrets of the Sun', which will enable the public to share his fascination with the sun and demonstrates his special interests and ability in exploiting novel photographic techniques.

CIRC aids developing countries

In Bhutan, CSIRO researchers are helping the local population to improve the efficiency of their cool stores ... in Papua New Guinea, the Government is receiving the Organization's technical assistance to streamline the efficiency of pulping its tropical hardwoods, while in the Philippines, technologists from a number of South-east Asian countries are being trained by CSIRO and Queensland University scientists in a technique to increase the yield from copper mines.

These projects are among the many currently being arranged with advice and assistance from CSIRO's Centre for International Research Cooperation (CIRC).

FOCAL POINT

The Centre was established in 1978 to provide an identifiable focal point for CSIRO support for research cooperation in developing countries. This cooperation may take the form of continuing projects, expert advice or training facilities within CSIRO.

CIRC is also responsible for planning and evaluating the Organization's overall contribution to the science and technology component of Australia's assistance to those countries, and encouraging the efficient deployment of resources for that purpose.

Most of the assistance projects for developing countries in which CSIRO becomes involved contain a strong research component or require specialist advice from scientists. A number of the Divisions and laboratories have provided training for scientists and technical officers from these developing countries.

CORE STAFF

With only a small core staff headed by Dr Barry Filshie, the role of the Centre is essentially one of coordination, and CIRC relies heavily on the cooperation of the Divisions to ensure that CSIRO's participation in aid activities is effective. Once projects have been established, the Centre is concerned mainly with general liaison and policy matters, while the day-to-day management of the projects is left to the Divisions concerned.

Dr Filshie joined CIRC in March 1983 after a research career spanning 20 years, first in the Division of Protein Chemistry and later in the Division of Entomology. The Deputy Officer-in-Charge, Dr Brian Harrap, will shortly be retiring after more than 30 years in CSIRO, first in the Division of Protein Chemistry and later at the Dairy Research Laboratory where he was Officer-in-Charge. Brian joined CIRC soon after its formation.

John Burdett and David Brett, both scientific services officers, complete the scientific staff. The administrative staff comprise the Centre secretary, Charles Pearmain, who has had considerable experience in the international field, having worked in the international relations group, and David Down who joined CIRC last year from the Headquarters contracts section. Secretarial and clerical backup is provided by Lyndal Hornshaw and Camilla Jansen.

Dr John Nicolson, who is presently seconded to Project Aquarius, will rejoin CIRC's staff later this year. Both David Brett and David Down have spent periods of service at the ADAB/CSIRO project for Animal Research at Bogor in Indonesia.

CSIRO CONTRACTOR

Dr Filshie explained that where consultants were required, CSIRO, rather than the individual scientist, could act as a contractor to agencies requesting the staff's expertise. In this way, scientists travelled overseas under the Organization's terms and conditions of service.

'They also maintain their scientific association with their home laboratories', Dr Filshie said.

He added that it was normally possible to arrange full reimbursement of the cost to the Divisions concerned, and in the case of long assignments, the Chief was often able to replace an absent scientist with a term appointee.

Dr Filshie said there was a consistent demand for CSIRO's expertise overseas.

'Many of these consultancies have enabled our scientists to assist with improvements in primary production in developing countries', he said.

'The emphasis continued to be on tropical agriculture, not only related to food production, but also the post-harvest handling and the preservation of food and food products.'

TRAINING PROGRAMS

In 1983, 61 training programs were prepared with assistance from CIRC for scientists, administrators and technicians from numerous countries. Most came from China and Indonesia, and others from countries as widespread as Ghana, Yemen, India, Bangladesh, Thailand, Vietnam, Philippines, Colombia, Cuba and Argentina. CIRC's accumulated experience and contact with immigration authorities and donor agencies has been of great help to CSIRO Divisions for arrangement of entry and exit visas as well as recovery of costs incurred during the training period.

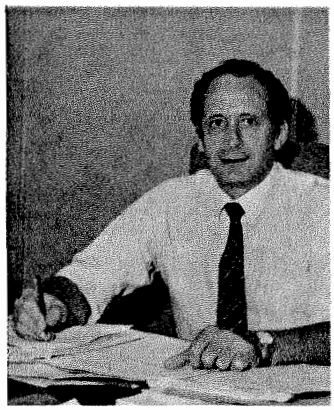
Since the Australian Centre for International Agricultural Research (ACIAR) was formed a little over a year ago, CSIRO's research on problems common to Australia and developing countries has received a very significant boost.

'Some 30 separate research projects, in various stages of preparation and implementation are currently being negotiated between CSIRO and ACIAR', Dr Filshie said.

He explained that CIRC has developed a close and valuable relationship with the staff of ACIAR which has been of assistance to a number of Divisions in establishing projects with the new agency.

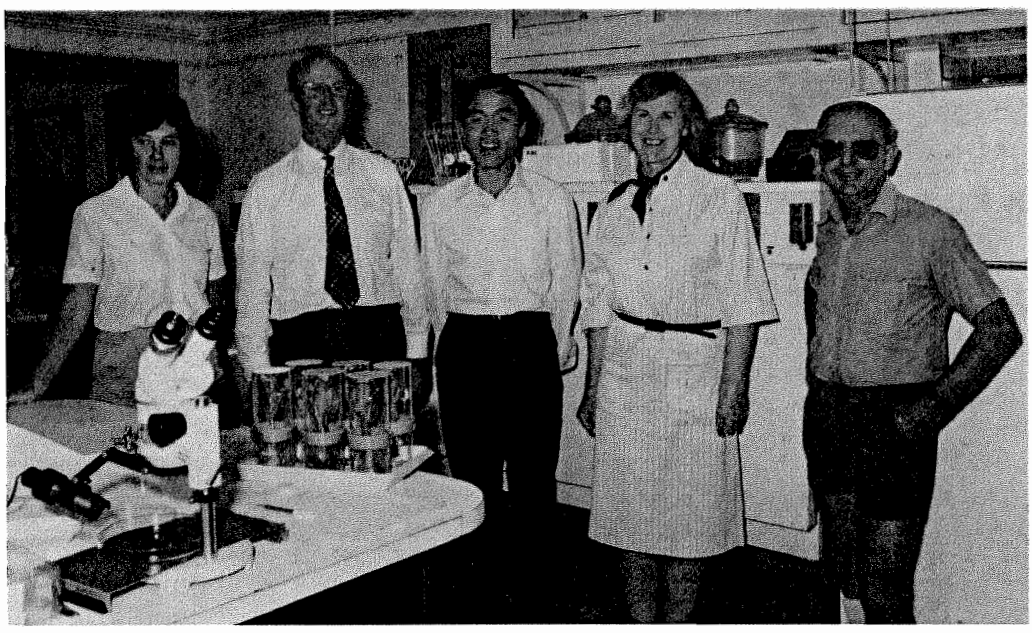
Dr Filshie said any Divisional staff needing more information on CIRC could contact him on (062) 48 4495.

CIRC staff above are, standing, David Brett, left, and David Down. Seated from left to right are Lyndell Hornshaw, Brian Harrap, Barry Filshie, Camilla Jansen, John Burdett and Charles Pearmain.



Dr Barry Filshie, Officer-in-Charge of CIRC.

Biological control student goes home



Liu Shu-sheng with Division of Entomology colleagues, from left, Mrs Anne Hughes, Dr Dick Hughes, Dr Mary Carver and Mr Ted Woolcock.

A young Chinese scientist who joined CSIRO in April 1980 for 'project training' is now returning home with wide experience in the strategy and tactics of biological control, and a doctorate from the Australian National University, in Canberra.

Liu Shu-sheng of the Zhejiang Agricultural University, has been attached to the Division of Entomology at Black Mountain for the past four years, working with the research team investigating the biological control of aphids. His visit was sponsored by the Chinese Government and arranged by the Australian Development Assistance Bureau and CSIRO's Centre for International Research Cooperation.

A few months after Liu's arrival at the Division, his enthusiasm and ability led him to enrol for PhD study, with Dr Dick Hughes of the Division and the late Dr John Short of the ANU's Department of Zoology as his supervisors. His thesis, entitled 'An Investigation of Ecological Relationships — Experimental studies of the interactions between the sowthistle aphid, *Hyperomyzus lactucae* and its parasite, *Aphidius sonchi*', was accepted by the University in November 1983.

Liu does not let the grass grow under his feet. He returned home in the middle of 1982 for a holiday and took the opportunity to get married! He is looking foward to seeing his wife and family again.

CAT

The CAT Column is open to all members of CSIRO who wish to comment on communication matters.

Paul Lynch, Manager of CSIRO's Printing Unit in Melbourne, has contributed this month's CAT column.

Over the past 12-18 months, I have often pondered the future of an out of town Westpac Bank Manager who decided to order his branch's stationery from the local Printer. After having done so, he let the Printer match the Westpac Red near enough to the required standard. Because the said Printer had difficulties matching the typeface, and/or our enterprising Manager decided that he did not quite like the Head Office standard, he let the Printer use something more in keeping with 'local' design concepts.

Having got so far, an order for at least two years was placed and he shouted — 'I have got *my stationery* — for *my Bank*.

Even if they catch up with me, they won't make me reprint two years' supply'. Ah! Ah!

I have pondered his fate. My Westpac friends tell me it would be, at the least, a very quick end to any promising career our friend may have liked to enjoy.

As Manager of the CSIRO Printing Unit and an avid reader of 'CoResearch', and this column in particular I have come to marvel, even drool with envy, at all the exciting ways CSIRO can and will communicate. Video, Film, Telex, Voice, Satellite, Cable, so on, so on, etc., etc. But seriously, and if I was now speaking, I would be thumping the table very hard, saying, why? why can't CSIRO get its act together with the very simplest and established method of communication — that of the printed word?

I believe that CSIRO has a very long way to go before it gets anywhere near an acceptable level of print standard. For such a large and publicly-funded organization as ours I believe, with no apologies to anyone, that our communications do not present the image that I as a taxpayer expect. It is a disjointed, ad hoc approach, and when standards (such as those for stationery) are laid down, nobody cares less about them!

Strong stuff. Maybe. But I firmly suggest that before we all get too carried away with new methods of communication and the gee whiz stuff that goes with it, the Organization should start looking at the range of presentation of Annual Reports, Technical Bulletins, Newsletters, Business cards, Logos, and 5-, 6-, 7- and 8-colour covers.

At the moment a lot of money is being spent (and quite rightly) on how we should develop and present our public image (Woodruff and Eckersley's paper) and from where I sit, I am not surprised CSIRO is thought of as CSL, CRA and CSR. Yet there is no effort being made to tidy up the ghastly array of slipshod matter, and I defend my recent appointment of Manager of Quality in that my role is not that of publishing or image-setting standards. I can only offer advice on technical matters and on whether the printing is up to standard. It is not the role of any Quality Control Manager to judge or criticize artistic licence or the esoteric nature of the end product. What *he may like* or dislike has nothing to do with it. Besides all that, nobody seems to take any notice of Executive decisions. How and why would they take any notice of a lowly Printing Manager?

As you may have guessed by now, I feel very strongly about this issue and believe that unless the communicators have a serious and impartial look across the broad spectrum of CSIRO-printed matter, in turn lay down very strict guidelines, establish a firm publishing policy offer a forum or group to advise on the printed work, not only will CSIRO continue to be associated with CRA, CSL and CSR, but it will carry this mish mash over to the newer forms of communication. We will probably at that stage be associated with 'CBS', the 'Canadian Broadcasting Service'.

'...the other night, I was wondering what would happen if the Branch Manager of a Regional TV station decided to call in the local Graphic Designer...'

P.S. ...and it's about time the full points were left out of 'CSIRO' and that it was spelt with a 'z', not an 's'.

The Chinese connection

China had much to teach the world about cropping systems, and joint projects with Australia could greatly advance soils and water management knowledge in both countries, Dr Gavin Gillman said recently.

Dr Gillman was in China for a month as part of an exchange program between the Australian Academy of Science and Academia Sinica.

In southern China he saw land that had been used for centuries in such a way as to maintain yield and soil stability, and said that it was clear that the farmers had an intimate knowledge of the soils they used.

In some upland areas where timber clearing had severely degraded the red soils, the infertile soil was being removed from the landscape in the form of clay bricks and when the hills were sufficiently reduced in height, the areas would be turned into paddy fields.

Great interest was shown in Dr Gillman's seminar at the South China Institute of Botany on the fertility problems of northern Queensland soils and the research being done to better understand and manage the soils.

RED SOILS

While in Nanjing Dr Gillman attended a symposium on red soils, and presented data (with Prof. Yu Tien-ren of the Nanjing Institute of Soil Science) for a range of Chinese soils where properties not conventionally determined were estimated and interpreted.

The Institute was very large, with over 300 researchers and technicians. Dr Gillman said that most of the staff were housed at the Institute itself in low-cost apartments and that salaries ranged from about $30 per month for junior laboratory assistants to $200 for senior professors.

Soil electrochemistry was strongly emphasized at the Institute, which had produced a portable meter which would be of great value, for example, in pollution monitoring and flood irrigation studies, Dr Gillman said.

He also visited an agricultural academy where research was conducted on food, industrial, fruit and vegetable crops. Valuable work has been done there on the reclamation of saline and alkaline soils, and on the use of green (crop) manure in crop rotation.

Chinese scientists appear to be particularly interested in collaborative studies with Australian institutions, Dr Gillman said, and the need for personnel training was mentioned often during his visit.

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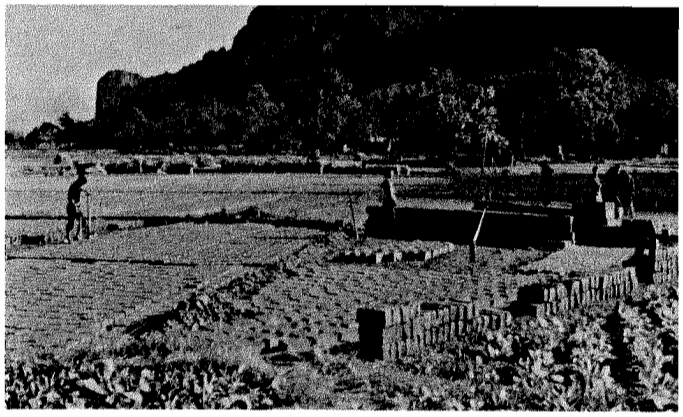
Establishing working associations with Australia's neighbours was Harry Higgins' main aim when he toured several Asian countries recently.

Mr Higgins, from the Division of Oceanography in Sydney, visited Indonesia, Malaysia, Thailand, Burma, Japan, Korea, Taiwan and China during his three-and-a-half month trip.

Seaweed is a multi-million dollar industry in China, and Mr Higgins spent a month lecturing at and visiting research institutes involved in seaweed and algal research as part of an exchange agreement between the Australian Academy of Science and Academia Sinica.

China produces about half the world's annual production of commercially important seaweeds, which are largely used for food. The single most important species was worth over $US300 000 000 in 1978–79.



Most of the village, or commune housing is constructed from clay bricks, produced directly from the paddy soil. The clay is cut to size in situ, *the soft bricks removed and stacked until dry before being fired in field kilns. The depression in the paddy field is rejuvenated with sludge and manure, forming fresh paddy soil.*

Mr Higgins said a large centre of marine research at Qindao, on the Yellow Sea coast south-east of Beijing, concentrated on the photosynthetic mechanisms, life history studies, nutrient requirements, cultivation techniques, disease control and genetic manipulations of the commercial seaweeds.

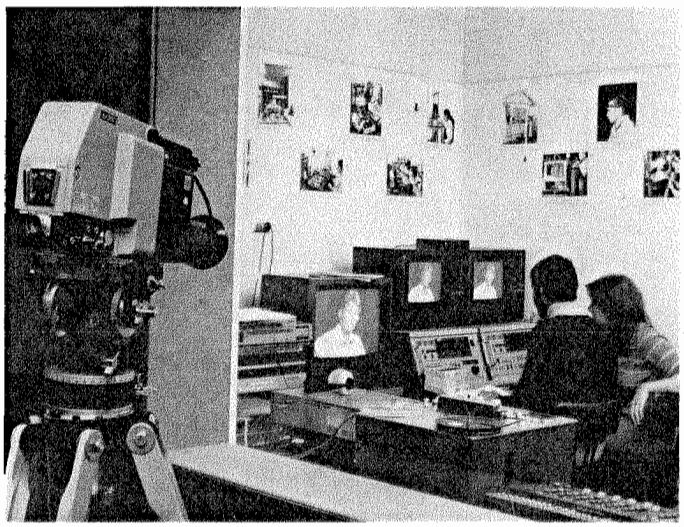
It was the location for the 13th International Seaweed Symposium which attracted over 500 participants.

He also visited other marine institutes: Wuhan, 600 kilometres from the coast on the Yangtze River, where oxygen tolerant bluegreen algae were being developed for inoculation into rice paddy fields; tropical Hainan Island which has developed techniques for cultivating seaweed; Guangzhou where the geology, ecology and resource exploitation and protection from pollution of the South China Sea was studied; and scenic Hangzhou where there was a large research program concerning the production and remineralization activities of marine bacteria.

Mr Higgins said the Institute of Plant Physiology in Shanghai was carrying out some excellent research on photosynthetic mechanisms and the action of plant hormones.

He hopes the interest shown in his tour will result in collaborative research between Australia and China, and said Australia had already been asked to assist with establishing some seaweed processing facilities.

Building Research on video



The Division of Building Research has recently released, for industry consumption, the first video tape in its 'Building Tomorrow' series. Each tape in the series aims at presenting current awareness information on various subjects in an easily digested and understood format. With a playing time of around 10 minutes, the tapes can be easily slotted into regular industry association meetings.

The first tape looks at the problem of corrosion of concrete reinforcements in some of our more recent buildings. A copy of the tape can be arranged for showing at your Division through the free loan service operated by the Division's publications' office at Highett. Each loan is accompanied by handout material specially prepared on the topic discussed. For more detail on this service, ring Johanna Becker on (03) 555 0333.

Hal Christian and Tracey Nichols are pictured above editing the second tape in the series which looks at the performance of houses in bushfires.

'CoResearch' is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 8th day of the month of publication. Material and queries should be sent to the Editors, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editors: Jeannie Ferris and Penny Gibson.

CoResearch

CSIRO's staff newspaper March 1984 269

Research strengthened :–

Crop adaptation lab. opens

The Minister for Science and Technology, Mr Barry Jones, opened the new $3.5M crop adaptation laboratory at the Division of Plant Industry in Canberra on 14 March.

The laboratory, built by the Department of Housing and Construction, will be a centre for CSIRO research into new crops and cropping techniques, and will also serve as a national and international gene bank for wild Australian relatives of crop plants.

Mr Jones said the laboratory would play a key role in the urgent task of introducing and adapting new crop species to diversify Australian dryland agriculture which, in an age of increasingly volatile markets, rested on its traditional but precariously narrow base of wheat and sheep.

He pointed out that wheat was the only major dryland crop species that had been specifically adapted to Australian conditions. A major part of wheat's adaptation had been carried out before the end of last century by the pioneering wheat breeder, William Farrer.

'It is not just a matter of introducing and adapting new species to strengthen Australia's agricultural base. There are lucrative niches for new crops in international markets if we move quickly', Mr Jones said.

'Crop adaptation research is also needed for traditional crops such as wheat.

'There is scope for expanding the range of environments in which wheat or other crops will grow, by increasing drought resistance or modifying a species' tolerance of temperature extremes or disease.

We must also cope with emerging problems such as increasing soil acidity in some areas of Australia, or the rapid appearance of pests or diseases such as the lucerne aphids or stripe rust in wheat.'

Mr Jones said the new laboratory would provide offices and laboratory facilities for a research group of about 70 people, with diverse but complementary skills in fields such as plant breeding, plant physiology, agronomy and integrated crop-animal production systems.

Fully-instrumented glasshouses and growth cabinets would allow scientists to evaluate plants in a wide range of simulated environments.

The laboratory also contained refrigerated storage facilities in which germ plasm of introduced crop species, as well as native relatives of important crops could be maintained for prolonged periods at temperatures as low as -20°C.

Mr Jones said few Australians would be aware that their native flora contained wild relatives of crops such as cotton, soybeans, rice and sorghum, which were potentially a rich source of genes for improving crop species.

Oil shale research agreement

A grant of $377 321 has been received by Southern Pacific Petroleum NL/ Central Pacific Minerals NL under the National Energy Research, Development and Demonstration Program and is the subject of a collaborative research agreement with the Division of Energy Chemistry at the Lucas Heights Research Laboratories.

The grant is for a two-year study of the key processing characteristics of Australian oil shales from the Rundle, Stuart, Condor, Duaringa, Nagoorin, Nagoorin South and Lowmead deposits in Queensland, to be carried out by the Division's Chemical Engineering Group, under the direction of Mr Geoff Wall.

The funds will enable the purchase of new equipment to convert the former uranium pilot plant and provide salaries for two additional chemical engineers and two technical officers. The new starters are Graeme Fox, George Kartl, Steve Smith and Martin Chensee who worked with the Division of Mineral Physics and the AAEC previously.

Under the agreement, SPP/CPM will provide representative seam composite and bulk samples and characterize them in terms of their geology, mineralogy and micropetrography, whilst the Division will undertake research to determine the drying-preheating characteristics of raw shale, its basic pyrolysis behaviour, as well as kinetic of pyrolysis and the combustion of spent shale. The aim of this research is to characterize the oil shales themselves and provide data useful for existing or potential process technologies.

Brisbane boy wins BHP Prize

A young Brisbane university student, John Siminidos, won a gold medal and $5000 in the BHP Science Prize, awarded in Canberra on February 28.

John, 18, of Clayfield in Brisbane, studied the formation of colour patterns on the wings of moths and butterflies, and included a comprehensive collection of these insects with his entry.

John was presented with his prize by Sir Mark Oliphant, in a ceremony at CSIRO in Canberra. He has also won a return trip to the United States, sponsored by Westinghouse Australasia.

A silver medal and $1000 was awarded to Lisa Juckes, a Newcastle schoolgirl, who found that it was possible to detect whether plants were compatible with each other by combining their juices with particular chemicals and growing crystals. Lisa also wins a trip to the United States.

The third prize went to Robin Humble, a student of Yarra Valley Anglican School at Ringwood, whose project was entitled 'squeaking sand'. Robin receives a bronze medal and $500.

The BHP Science Prize is jointly sponsored by Broken Hill Proprietary Limited, CSIRO and the Australian Science Teachers' Association. Tickets to the United States are donated by Westinghouse Australasia.

Rock music at Geomechanics

Dr Dane Blair, right, explains how experiments on sound transmission through an isolated block of rock are rewriting the textbooks on the use of seismic pulse techniques. The picture was taken during the February Executive Visit to the Division of Geomechanics. His listeners are, from left to right, Chief of the Division, Dr Barry Brady, the Chairman, Dr Paul Wild, the Director of the Bureau of Scientific Services, Mr Sam Lattimore, the Executive Secretary, Mr Gratton Wilson and the Director of PEAU, Dr Don Weiss.

From the Advisory Council

This column from CSIRO's Advisory Council has been contributed by Professor Peter Scott, Chairman of the Council's Natural Environment and Renewable Natural Resources Standing Committee.

Seemingly the titles of committees and documents associated with environmental research — and even perhaps their respective proceedings and content — are remarkably verbose. The Minister for Home Affairs and Environment has recently appointed an Interim Consultative Committee for a National Conservation Strategy for Australia (NCSA). Its establishment had been proposed by a conference held in Canberra last June and attended by delegates from government, industry, educational research, and community interests. The Committee's function is to advise the Minister on the action necessary to promote and implement the Strategy nationally. The Advisory Council had been asked to nominate a person for appointment to the Committee, and as a result I attended its first meeting in February.

CSIRO SUBMISSION

In 1982, to assist CSIRO in its preparation of a submission to the Department of Home Affairs and Environment, the Council's Standing Committee on the Natural Environment and Renewable Natural Resources (NERNR) had provided the Organization with informal comment on a Discussion Paper that led to the formulation of the draft Strategy. The Committee took the view that the adoption of a National Conservation Strategy by the Commonwealth and all States and Territories would represent significant and valuable progress towards the objective of sustainable development. This view is entirely consistent with the functions of the Consultative Committee, which in particular is required to advise the Minister by 31 March 1984 on means of obtaining the widest practicable endorsement of the Strategy. Other terms of reference include advising the Minister on 'how best to initiate, promote and coordinate research to provide the knowledge on which informed decisions on the management of living resources can be based'.

Currently the NERNR Standing Committee is reviewing a Preliminary Planning Document prepared by the CSIRO Planning and Evaluation Advisory Unit and entitled 'Knowledge and Management of the Natural Environment and Extra-terrestrial Research'. Since the document encompasses research on the entire biosphere together with astronomy, it is both substantial and succinct. It outlines environmental R&D needs, future research opportunities identified independently by CSIRO and other scientists, and the current CSIRO environmental research programs. From this material the document specifies gaps and imbalances.

PLANNING DOCUMENT

Environmental and extra-terrestrial research spans so vast a range of subject matter that no single, small committee acting on its own, however judiciously constituted, could furnish balanced and useful comment. Yet the machinery of the Advisory Council and the State Committees enables a Council Standing Committee to tap a wealth of expertise and experience. Thus the Preliminary Planning Document was sent to the Council's four other Standing Committees, the six State Committees, and the Northern Tereritory Committee for comment. The State and Territory Committees have in turn sought an assessment not only from their relevant sub-committees but also externally from selected scientists and others in universities, State Government departments, and research institutions. It is from all this feedback, as well as from the contributions of its members, that the NERNR Standing Committee will prepare its response to PEAU.

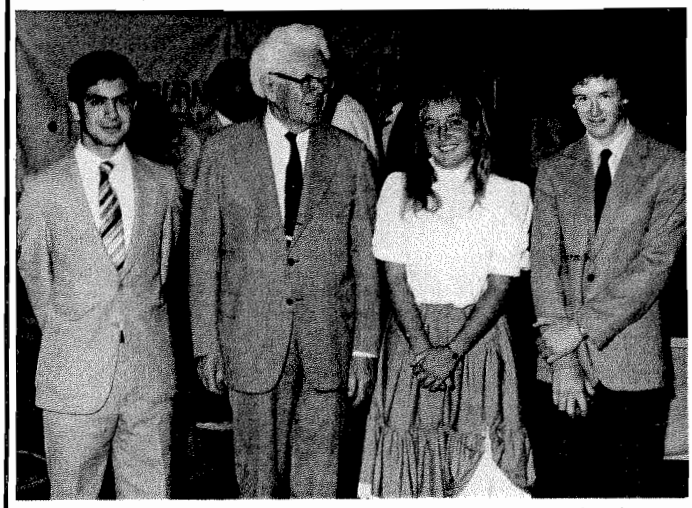
FISHERIES RESEARCH

Another PEAU document currently under consideration by the NERNR Standing Committee is that on CSIRO Fisheries Research. It has two parts: the first is the draft Initial Planning Document, which represents the first stage in the Executive's strategic planning for future fisheries research; and the second, on the fishing industry, discusses socioeconomic factors and raises the principal industry issues. In seeking comment on these papers, the NERNR Standing Committee has followed a procedure similar to that employed in respect of the planning document on environmental and extra-terrestrial research. Subsequently informal comment on the fisheries papers will also be sent direct to PEAU.

RESEARCH PLANNING

At a later stage the Standing Committee will be asked to report to the Advisory Council on the advice that Council might give the Executive on strategic planning for research in these fields. CSIRO's role in environmental research represents a major fundamental contribution to a better understanding of the Australian environment, and in particular to the management of its many and incredibly complex interactive systems. Last June Dr Keith Boardman, when addressing the NCSA Conference, highlighted the challenge of the World Conservation Strategy's concept of experimental management, in which scientific experimentation and resource management are integrated. The NCSA, which represents a consensus of diverse interests, has only one paragraph out of 36 specifically on research and four on environmental management. Clearly a better understanding of the complexities of environmental management will be of little avail unless the knowledge is translated into practice. It is therefore pertinent that not only is the CSIRO examining its strategic planning for environmental research, having regard to perceived R&D needs and research opportunities, but that the NCSA Consultative Committee has embarked upon promoting community acceptance of a National Conservation Strategy and a community commitment to implement it.

BHP Science Prize:— The winners on show



Sir Mark Oliphant stands with the winners of the 1983 BHP Science Prize, from left, John Simonidis, Lisa Juckes and Robin Humble. Photo by Peter Hay.

Scientist elected to Royal Society of Arts

Robert Hughan, of the CSIRO Division of Material Science, has recently been elected a Fellow of the Royal Society of Arts.

The RSA (full name the Royal Society for the Encouragement of Arts, Manufactures and Commerce) is one of the oldest of the bodies which bear the tag 'Royal', having been set up in 1754 for the primary purpose of 'getting industry moving'. The 'Arts' in its name is the same as that used in patents ('.... those skilled in the arts will know ....') but it has dallied also with the aesthetic arts, establishing Britain's premier artist's Club, the Royal Academy, within a few years of its inception and at later stages in its career the Royal College of Dance, the Royal School of Music and the Royal School of Design. But it is best known for its sponsorship of the Great Exhibition, in the 'Crystal Palace', of 1851, in the days when Prince Albert was its President.

The RSA once played an important role in building up Australian industry, giving prizes in the 1820's for the introduction of new Merino strains and new wine grape varieties. Later it encouraged the canning of meat (previously discarded as unsuitable for shipping), and for refrigeration of meat (but this ended in miasma as various claimants contested the prize).

So it is very fitting that Bob Hughan, artist and scientist, should be a Fellow. Some years ago a booklet on Australia's ten best known potters featured both Robert Hughan and his father, Edward, a double that only the Boyd family might challenge! In recent years Bob has been an important part of the team which has had such success with the partially stabilized zirconia (PSZ). This year Bob is President of the Australian Ceramics Society (a role that he has also occupied in the past).

PREMIER POSITION

Incidentally, Dr Clive Coogan of CSIRO took over last year as Honorary Corresponding Member of the RSA chapter in Victoria, from Sir Laurence Hartnett, who had occupied that office for 20 years or so. This is the premier position in the Chapter, and a role once occupied by Benjamin Franklin in another colony!

Among the Fellows also recently elected were Minister for Science and Technology, Barry Jones, the Australian paradigm of an industry innovator/encourager, and Professor Boris Schedwin, whose book on the history of CSIR 1926–1949 has recently been completed, the publication of which is eagerly awaited.

—Clive Coogan

It takes all kinds ...

Are you a 80/20 QN/GL, trying desperately to manage a research or administrative group made up of impossible 20/80s?

In other words do you have 'left-hand brain dominance' with all its quantitative (QN), analytic and logical competence, and find yourself constantly frustrated by the qualitative (QL), intuitive nd possibly more innovative 'right-hand dominant' brains that make up your group? Is this you, or are you perhaps one of the team? Well don't despair! There are practical answers, according to Mr Neville Smith of NIS Associates, Sydney, who addressed a meeting of Chiefs and Officers-in-Charge of the Institute of Biological Resources in February at Head Office, at the request of Institute Director, Dr Mike Pitman.

The first step is to recognize the nature of the problem. The chances are it's a very common one, for which all sorts of solutions in all sorts of organizations have been devised and successfully applied before. Self-rating on a quantitative-qualitative scale, for instance, is a useful starting point. To demonstrate its simplicity, Mr Smith applied a QN/QL test to the 20 people present, resulting in a range of 38/62 to 62/38. He then placed people with similar scores into a group, making four groups, and proceeded to make surprisingly accurate predictions about how they would respond to a management problem he then posed.

RECOGNITION

To know only how people rate on a QN/QL test is to at least recognize that there are basic, tangible reasons for some of those intra-group differences. It provides better understanding and tolerance, and may even allow a bridge-building strategy to work, using people with intermediate scores, for instance. It is also likely that a combination of QN/QL types may be ideal for certain work groups, which will demand that such differences be understood and accepted.

Occupations as well as people can be given a QN/QL score. To match the person to the job makes sense, and simple techniques are available for doing it. It's not easy to just change your or someone else's job, but a little simple analysis of this type can greatly improve our understanding of where certain qualities and abilities may reside within a work group. This sort of understanding is fundamental to a sensitive manager, and not everyone can arrive at it over a few beers after work with the office team.

Mr Smith concluded the session with reference to a 'contribution matrix', by which members of a work group can inflict upon themselves the nasty shock of seeing precisely how others in the group perceive everyone else's role, including their own naturally crucial all important life-sustaining contribution.

Dr Pitman believes that proper science management is essential for effective science productivity. He would like to see the introduction of more opportunities for management training, particularly at program leader level.

—Peter Martin

From the Chairman-

A regular column by the Chairman of CSIRO Dr. J. Paul Wild

The assembly of CSIRO Divisions and Units into five groups called Institutes has now been in place for a little over five years, and it is timely to take a look at the new system of management and see how things have worked out.

The most important unit of the Organization is the brain of each individual that goes to make up its 7500 staff. Within that brain are generated ideas and methods and the drive to put them into practice; ultimately all depends on the individual — on the individual's imagination, effort and style. Usually the individual is a member of a team working on a project, or a unit that supports a Division's projects. Every project yields results, some more significant than others, but more than that it is at the project level that the most important ideas for the next step, the next project, are generated.

The principal organizational unit is the Division, each of which conducts a number of projects at any one time. The Chief of Division has considerable freedom and autonomy in deciding which projects shall proceed, in setting the research priorities and providing for research leadership.

Research, whether scientific or technological, thrives on freedom; but alas freedom must have its bounds when he who pays the piper calls the tune. 'He' in this case is the taxpayer (of whatever gender) and the taxpayer's agent is the National Parliament. Legally responsible to Parliament for the conduct of our research is the governing body of the Organization called the 'Executive'. (This is really quite a misnomer and goes back to the pre-1949 days when the 'Council' included a three-man Executive to manage its affairs.) The Executive receives advice from many sources inside and outside CSIRO, and then has the task of setting the bounds and priorities of the Organization's work. If the Executive comprehends the way in which science really works, it will carry out this task in a way that imposes the minimum of interference and maximum of encouragement on those doing the real work at the project level.

So we have Divisions and an Executive. Where then do Institutes fit in? The concept of the Institute system grew out of the fact that it was proving quite impracticable for 40 or so Chiefs of Division to report to a small corporate Executive, no one member of which had individual authority or power. This fact and the growing need for accountability in the eyes of the Parliament and public alike caused the Government, on the advice of the Birch Committee, to require the Executive to reorganize our research effort in not more than six Institutes (a reorganization which the Executive was actually in the process of doing on its own account before the Birch inquiry was initiated.) So in December 1978 the Executive established five Institutes and imparted to each Director a degree of authority and power over his particular Divisions which exceeded that of a former member of Executive, acting as an individual.

While Chiefs retained most of their former autonomy and indeed acquired additional powers of delegation, the Directors were given powers in relation to the direction and coordination of research, and the distribution of resources. Chiefs and Directors were given the direct delegation to appoint and promote staff up to specified levels. In one sense the new 3 full-time Executive members plus the 5 Directors replaced the former 5 full-time Executive members plus 2 or 3 Associate Executive members. But in another, the new system is more workable and the lines of authority more direct. What is even more important is the fact that each Institute develops its own sense of corporate identity and provides a regular forum for its 7–10 Chiefs to meet together with their Director and discuss common problems. People and topics within Institutes inevitably form more cohesive groups than those across the whole Organization and lead to more productive discussion on management matters.

The Directors also meet regularly with the full-time Executive as equal members of the top management committee of the Organization ('Executive Committee') which not only handles top management matters but also develops policy for consideration by the full Executive. As a consequence most management decisions made by the Executive have had the approval of the Directors and most policies have been developed with their full involvement. Whenever possible, policy issues are also discussed with Chiefs at Institute meetings. This structure means that there should be an effective two-way line of communication which runs as follows: Divisional staff ⟷Chief⟷Executive. In practice this system of communication is not always as effective as it should be. I am extremely anxious that it should work well and would welcome any suggestion you have for improving it.

One sometimes still hears the criticism that the introduction of Institutes has simply muddied the line of communication by adding an extra barrier between Chief and Executive. I hope I have answered this criticism. Further, in practice, my colleagues and I are always glad to talk to Chiefs directly on the understanding that when relevant their Director should be involved. Also the Chiefs meet annually with the Executive and Directors for a whole-day meeting in which the Chiefs are in charge of the agenda. One of the happiest annual occasions for Elaine and me is to entertain all Chiefs, Directors and Executive members in our house in the country outside Canberra during an evening of the Chiefs' meetings.

During the five years of Institutes we have made a lot of progress, made a lot of mistakes and learned a great deal on how to do things better in the future. But, by and large, and speaking as one who originally opposed their introduction, I have found them to be a marked success. I hope those of you who come into regular contact with the system agree with me; and I hope the rest of you see the good sense of it all.

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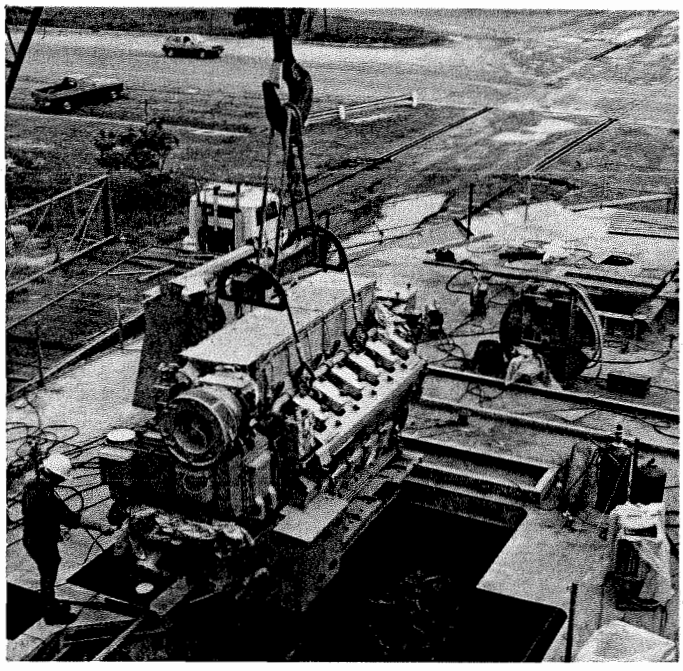
On 31 December 1983 one of the most illustrious of our numbers took his leave from the Organization: Ivan Edgar Newnham. I quote two paragraphs of my farewell letter to him, partly as a tribute to the man and partly because it relates directly to what I have just been talking about:–

'Yours was a name well known to me long before I first met you. You had the reputation of being both scientist and operator at the heart of CSIRO's research effort for the mineral industry. Then we first met properly as members of a committee of Chiefs, set up by Jerry Price, under the chairmanship of Michael Tracey, to examine new organizational arrangements for CSIRO (effectively what became the 'Institute' system). I recall many convivial arguments. We were at opposite ends of the spectrum: you favoured a new system; I opposed it. But there is none more faithful than the converted and thus it proved that I became not only champion of the Institute system, but also the one legally charged with the task of implementing it.

'My job was made so much the easier in having you, with so much successful experience behind you, available to be one of the five foundation Institute Directors. I have since benefited greatly from this experience and have come to admire your decisive no-nonsense approach to management; and to appreciate the sudden, unexpected, flashing smile that registers accord.'

Paul Wild

The heart of the matter



The Wartsila engine is lowered into the new oceanographic vessel, which is due to commence service with CSIRO in late 1984.

The engine was lowered into Australia's new oceanographic research vessel on February 16 in a ceremony marking this significant point of the vessel's construction.

The 18-tonne Wartsila engine will drive the 1100-tonne, 55-metre craft at about 13 knots.

It is currently expected the $12.204 million vessel will be launched in late September and be officially handed over to CSIRO at the end of 1984.

It is being built by North Queensland Engineers and Agents Pty Ltd in Cairns, and was designed by a German company, SCHIFFKO GmbH to special design requirements.

The nature of many scientific tasks has led to the craft being designed to be quieter and have lower noise and vibration emission into the water than normal commercial craft of the same size.

Special attention has been given to the manoeuvring system which is microprocessor-based and joystick controlled to ensure the craft can maintain its station in the water.

There will be eight laboratories, scientific and technical workshops and a wide range of scientific equipment on board to undertake physical, chemical and biological oceanographic research.

Although operated by CSIRO, the vessel is a national facility and will enable waters from tropical to sub-temperate zones to be researched.

It will be based in Hobart, alongside the new CSIRO Marine Laboratories being built at Castray Esplanade.

The buildings are ahead of schedule and should be fully occupied in September of this year. The buildings will house over 200 staff.

CSIRO in OECD study

A CSIRO officer has won an OECD traineeship to study women's affairs.

Linda Meech, the most senior female Administrative Officer in CSIRO, has been sponsored by the Organization to spend a year in Paris working on part of a large project about the role of women in the economy.

The project has been examining imbalances between the proportions of men and women in certain occupational training courses, and occupational segregation in the work force and in specific industries.

Ms Meech said her precise duties on the project would be settled on arrival in Paris, but she hoped to be looking specifically at the employment of women in scientific occupations.

'This is really important for CSIRO at the moment,' she said.

'The Consultative Council's Sub-committee on the Employment of Women's report has highlighted many areas requiring positive action to improve the position of women in CSIRO, and the Executive has supported its recommendations.'

'My work at the OECD will enable me to have an enhanced input into the policy developments arising from the recommendations of the women's report,' she said.

'I hope to bring a different perspective to areas of EEO in CSIRO. We are such a large area for women's employment in the scientific area, and women are seriously under-represented.'

The OECD has twenty member countries and Ms Meech said she hoped to be able to make comparisons between Australia and countries with similar problems, and see how other countries may have attempted to redress the balance.

Ms Meech works in Personnel Branch in Canberra. She has a degree in modern European languages.

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CAT

The CAT Column is open to all members of CSIRO who wish to comment on communication matters.

This month's CAT Column has been contributed by Dean Graetz of the Division of Wildlife and Rangelands Research, who was seen across Australia on the ABC Series 'Heartlands'.

In November 1982 I was contacted by the ABC and invited to be the presenter or 'talking head' in a series of programs on Australia's renewable resources.

After considerable thought I accepted. My motivation was primarily conscience. I wanted to do my bit 'for the cause' — for the conservation of what we have left of Australia. In the past my contributions were rather passive — membership of various societies, financial support, etc. — and now I had the chance to say the things that needed to be said to the people that really count — urban Australia. That is where the political power is concentrated; and it is political solutions and leadership *not* scientific or technological solutions that are lacking. Besides, the timing was perfect. In the Xmas period of 1982/3 the country was gripped by a severe drought, both politically and climatically. Predictably the day we began filming, 5 March 1983, it poured with rain and the Fraser Government was turfed out of office.

The end result of the ABC's labours was the four-part 'Heartlands' that went to air in a 7.30 pm prime time slot starting Wednesday,January 25. They were made and scripted by ABC Rural ('Big Country') TV, not CSIRO. The theme of each program evolved from six 'ideas' papers that I wrote (on weekends) but were individually crafted by the producer of each episode. I had complete control over what I said in narration and on-camera. We rarely used a script — many of the pieces-to-camera, e.g. the opening sequence of Part I in the schoolroom, were spontaneous. We shot all four programs in two bursts of three weeks each in the field with the final narration, scripting etc. requiring several weeks in Sydney. In all, about ten weeks of my time were involved.

Now that it is all over I have found that it is hard to return to private normality. I was most apprehensive about seeing the programs, knowing that at least a million others were also watching, and I have been overwhelmed by the letters and telephone calls since. I have received support from all sectors, with only one critical letter (from the Mayor of Broken Hill). I am unashamedly proud to have been associated with 'Heartlands' though all the credit goes to the ABC. They are a remarkable bunch of creative and concerned people who work under appalling conditions. If you think the management of CSIRO is bad — just try the ABC!

Wilfred Odagola of the Ugandan National Research Council and **Marlon Ritchie** from the University of Guyana are working on solar energy applications to crop drying and preservation at the Division of Energy Technology for two months. They have been sponsored by the Commonwealth Foundation.

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Tom Sinclair, from the US Department of Agriculture, is working at the Division of Tropical Crops and Pastures' Cunningham Laboratory for six months to work on the drought response of soybeans, pigeon pea, cowpea and mungbean.

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Sahder Singh Wazir is visiting the Division of Wood and Chemical Technology to work on high-yield wood pulping. He will be in Melbourne for nine months under the Colombo Plan for Technical Co-operation.

le... People... People... People ... People ... People...

Maggot Manor melodrama

Miranda Devine, Joe Snaith, Bern Rigby, Mariette Plante and Murray Andrews in the parlour at Maggott Manor.

Photograph by Bill Denby

Suffering from the Seven Year Itch, staff of the Division of Textile Physics at the Hermitage in Ryde, NSW, mounted a Post-Review Revue on Friday 17th and Saturday 18th February, 1984. The last Revue was in 1977 and this was preceded by Revues in 1974 and 1971.

A special effort was made to stage this Revue prior to the 65th birthday of Dr Bob Haly, Chief of the Division of Textile Physics, who produced and directed previous revues before his elevation to Chief.

The 1984 Hermitage Revue was produced by Barry Hoschke with Ken Whiteley as Artistic Director and Ian Watt as compere. Ken brings a wealth of theatrical experience from his years with the Independent Theatre.

Four members of staff of the former Physical Technology Unit, now incorporated into the Division of Fossil Fuels but still located at the Hermitage site, also participated. The cast of 30 Siroactors was augmented by six guest artists, including the disembodied voice of recently-retired Divisional Secretary John Platt who provided a tape recording of 'Troise and His Mandoliers' which was played while photographs taken of John during his 25 years at the Hermitage were projected.

Ron Gamble, now at the Division of Food Research, returned to the Hermitage to render his traditional impersonation of the highest political figure in the land and 'officially' open the Revue.

Carmel Raffel brought along two friends to perform as a string trio (violin, viola and cello), playing movements by Haydn and Schubert to raise the tone of the evening.

Pre-show wine and cheese relaxed the audience for the three-hour show which included singing and dancing, miming, two one-act plays written around Hermitage occurrences, and the traditional Melodrama from Bern Rigby and his team. John Bristow on organ and Bill Denby on piano provided musical entertainment throughout the show.

Mrs Elsie Mayhew came out of retirement to join Murray Andrews in a nostalgic guided tour of the Hermitage Site in the year 2004. The audience went home emotionally touched by Murray's rendition of 'I Still Call the Hermitage Home' which closed the show.

— Barry Hoschke

Jean-Paul Giordano-Orsini is spending three months working with **Graham Arnold** of the Division of Animal Production. Dr Giordano-Orsini is from the 'Laboratorie d'Etudes Comparées des Systèmes Agraires' (LECSA) at Montpellier, France, and his research interests are grazing systems and modelling

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Doris Colahan, who was recruited from the ranks of the Girl Guides in 1940 to produce gauge blocks for the National Standards Laboratories has retired. Among her other duties, Doris sometimes stood in for the welfare officer and many of the staff came to know her and appreciate her willingness and ability to help in emergencies.

***

A well-known identity of the Division of Plant Industry, **Dan Kelo**, retired recently. Dan worked for virtually his entire thirty year's service in the Glasshouse Services Section, producing plant material and maintaining plant growing facilities. He helped maintain the grounds and the Division took advantage of his reliability and capacity for hard work, often using him as a relief technician to assist scientists establish and harvest trails outside Canberra.

***

Peter Colman from the Division of Protein Chemistry has won the first Frederick White Prize, which was instituted to recognize the achievements of scientists in Australia who are currently engaged in research of intrinsic scientific merit which also contributes an understanding of natural laws and new concepts that are important to the well-being and civilized progress of society.

Students study soil

Helena Carlson, left, and Birgitta Seveborg, students from the Swedish University of Agricultural Sciences in Uppsala, recently completed a four-month study project with Dr John Angus and Dr Gordon Burch of the Division of Water and Land Resources based in Canberra.

Using the Division's rainfall simulator, the students visited Griffith, Murrumbateman, Jugiong, Whitton and Coleambally, investigating rates of water infiltration in soils cultivated in different ways. Their work has made significant contributions to recent research which is indicating that direct drilling leads to better water infiltration than conventional techniques of cultivation.

'CoResearch' is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 8th day of the month of publication. Material and queries should be sent to the Editors, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editors: Jeannie Ferris and Penny Gibson.

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CoResearch

CSIRO's staff newspaper *April 1984* **270**

Biotech research grants signed

Two research agreements between CSIRO divisions and other institutions and organizations have been signed, with a further agreement to be ratified in the near future.

The Divisions of Animal Health and Plant Industry and the Wheat Research Unit received grants under the Federal Government's new National Biotechnology Program, but final arrangements with collaborative companies and research institutions have only just been completed.

The grants will be over three years.

Dr John Dineen of the Division of Animal Health will soon sign an agreement with the Division of Protein Chemistry and Biotechnology Australia Pty Ltd for a project related to vaccines for veterinary purposes.

The $805 000 project will identify antigens and develop vaccines against gastrointestinal nematodes which infect sheep causing economic loss in meat and wool production. Recombinant DNA techniques will be used.

Dr Jim Peacock, Chief of the Division of Plant Industry, was granted $520 000 for a project to detect virus induced diseases in crop and pasture plants and has signed a collaborative agreement with the Department of Biochemistry at the University of Adelaide and Biotechnology Research Enterprises SA Pty Ltd.

The techniques to be developed in the project will help researchers make informed decisions for control of crop plant diseases.

BIOTECHNOLOGY SUPPORT

In the third CSIRO grant, Dr Colin Wrigley, the Officer-in-Charge of the Wheat Research Unit received $250 000 to develop equipment for biotechnology support with Gradient Laboratories and the Sydney Blood Bank.

The project aims at producing a product for use in research and industrial laboratories involved in biotechnology, namely a range of pre-cast polyacrylamide gels for electrophoretic analysis of proteins and nucleic acids.

The other four projects to receive grants were:

Sir Gustav Nossal and Dr Chev Kidson at the Walter and Eliza Hall Institute for work on an anti-malarial vaccine;

Dr Dudley Pinnock of the Waite Agricultural Research Institute for research on a project involving genetic engineering of insecticidal compounds of bacterial origin for animal health;

Professor Derrick Rowley, Adelaide University, for research on live vaccines for gastrointestinal disease, and;

Dr Heddy Zola of the Flinders Medical Centre to develop diagnostic probes for medical and veterinary purposes.

The National Biotechnology Program was established in May 1983 to bridge the gap between biotechnological research and industry.

Applied Physics:

High-technology transfer

Collaborative research ventures in a new program to aid the transfer of high technology into Australian industry were announced at the Division of Applied Physics Open Day on April 13.

Eight Australian companies will be involved in collaborative projects with the Division, under a special program in which industry staff work in the laboratory to become more familiar with technology which will benefit their employer.

The Applied Physics Industrial Program (APIP) was established last October, and was designed to foster research in new technology that is of immediate relevance to industry but is not available from existing consultants.

The program is funded by a CSIRO special grant of $200 000, with additional contributions being made by each of the industries involved.

Research projects will be supervised by CSIRO staff in consultation with industrial partners.

The research activities selected jointly by industry and CSIRO include:

- The development of a new type of precision reference voltmeter with Statronics Power Supplies, Sydney, using new solid state devices recently developed.
- The production of metallic glasses for electromagnetic devices with Ferguson Transformers Pty Ltd, using the new glassy metals in equipment such as transformers.
- A venture with the Sugar Research Institute in Queensland, developing equipment to measure large gears so that new methods can be devised to measure wear.

Methods of ultrasonic scanning of castings to be developed for the Steel Company of Australia in Melbourne, aimed at producing a device for the automated detection of defects in castings.

Other projects involve the BHP Research Laboratories, Yeo-Kal Electronics Pty Ltd, Brookvale, and the Metal Manufactures Ltd, Port Kembla. These cover the development of methods of optical processing to measure at a distance dimensions of hot steel; on-line ultrasonic measurement for the control of the metal tubing production; infrared spectroscopy for the analysis of coal; and the use of microprocessors in the instrumentation of salinometers for measuring salinity in the ocean.

Animal Production:

Defleecing under scrutiny

The President of the National Farmers Federation, Mr Michael Davidson, left, examines the fleece of a sheep which could be biologically shorn, during a visit to the Division of Animal Production's Prospect laboratory late last month. John Bennett, a CSIRO research scientist, explained the biological defleecing process to groups of industry representatives, one of a number of major research initiatives on show during the open days. John is pictured at left behind Mr Davidson. Also pictured is John Copland of the Australian Centre for International Agricultural Research, Mark McGuire of the Wool Council, Geoff Ashton-Jones of the National Farmers Federation and Ian Steel-Park of the Cattle Council. *Photograph by Phill Potter*

Letters to the Editor

The Editors,
From cover to cover *CoResearch* No. 268 contains a number of inflammatory remarks. I am not sure how to respond to them all without jeopardizing my superannuation rights, but what price freedom of the press?

Firstly, the decision to rename CSIRO to CSIRO, Australia, apparently because an obscure trade representative was unable to enlighten an official in some less-developed country, is beyond belief. To me, and indeed many others, the acronym CSIRO says it all. Indeed, this is recognized in the same article '. . . the tremendous goodwill associated with the existing name . . . '.Such a change could even result in the same trade representative explaining that CSIRO, Australia is not a subsidiary of a multinational like BP, Australia or Shell, Australia. Doesn't anyone ever think these things through?

In a time of diminishing funds for staff and equipment, how can the Chairman justify the cost of renaming us? I hope the new stationery doesn't suffer the same fate as the 1976 Jubilee material which was repulped by the kilo in 1977/78.

Secondly, I must object to the militarization of CSIRO. The unfortunate acronym for the Bureau of Scientific Services with its potential association with the South Africa secret service (BOSS) seemed to start the trend. Next we had Head Office becoming Headquarters. Now we have bushfire research and its infantry. 'Poor bloody dedicated men' we are told — all this in the International Year of the Woman! Don't women fight fires, or are they supposed to be placated by being promised 'top posts'!

Finally, whilst I agree with Paul Lynch that the printed word is the best medium, I can't agree we need whizz-bang logos, 8 colour covers, and the associated expense. Ever heard of simplicity? Furthermore, many of us have read bits of the Style Manual. Even in 1966 CSIRO didn't need punctuation, and could have used the 'Z'. Paul should be grateful that we are CSIRO, Australia and not ASIRO because we would then be confused with ASIO and ASIS!

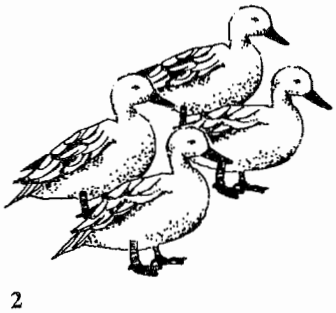
What this Organization needs is a lot less money spent on 'CSIRO speak', and a lot more spent on equipment and staff. That way, our 'modest steps', (*Scientific American*, Jan. 1984, p.A52) will be substantial and not ephemeral.

M.H. Jones
Division of Mineral Chemistry
Melbourne

The Editor,
I wish to draw your attention to an inaccuracy in issue No. 268 of *CoResearch*.

The film 'Duck Farming — An Indonesian Tradition', was a co-production of the ADAB-funded Project for Animal Research and Development, Indonesia, and the CSIRO Film and Video Unit.

J.L. Wheeler
Project Manager
Project for Animal Research
and Development



Three new personal counsellors

The personal counsellors, from left, are Kent Hallett, Ian Mackie, Acey Choy, Curt Fisher, Peggy Kershaw and Ian Paton.

The CSIRO personal counselling service has been expanded following a twelve month trial period.

The Executive decision to continue the service was strongly supported by the Consultative Council, which represents both unions and management.

Part-time counsellors have been appointed to Brisbane, Adelaide and Perth, and will provide the same confidential service the present counsellors give in Canberra, Sydney and Melbourne.

Mr Ian Mackie, who has worked in individual and family therapy in New Zealand, the USA and Australia, will be based at the Division of Groundwater Research in Perth.

'I'm particularly concerned about the quality of marriage and family life and the effect this has upon the person as a staff member,' Mr Mackie said.

'I'm also deeply interested in the effects upon the family of stress in the workplace, occupational safety and health, and issues such as retirement,' he said.

He said that life skills education in the workplace has obvious benefits for employee, employer, family and community.

Kent Hallett, although based at the Division of Mathematics and Statistics in Adelaide, expects to travel to all divisions in South Australia and the Northern Territory.

He is a psychologist and social worker, and worked at the South Australian College of Advanced Education until leaving to set up a counselling service at the Roseworthy Agricultural College.

He is very interested in the use of hypnotherapy, particularly in stress management.

'People are starting to realise the effects of stress in the workplace. It is in the interest of the individual and the organization to develop more constructive ways of dealing with these situations,' Mr Hallett said.

He said anything that constitutes a problem for a person will be relevant to the counselling situation, and that the person will be happier in the workplace if the problem is solved.

'I'm not there to solve problems for people, but to be a resource to help them solve their own problems,' he said.

Ms Peggy Kershaw, who will work from the Division of Tropical Animal Science at the Long Pocket laboratories in Brisbane, has over ten years experience in community and mental health and psychiatry and has organised a course in social and preventative medicine for a medical school.

She has always enjoyed face-to-face counselling and is setting up a private counselling practice in Brisbane.

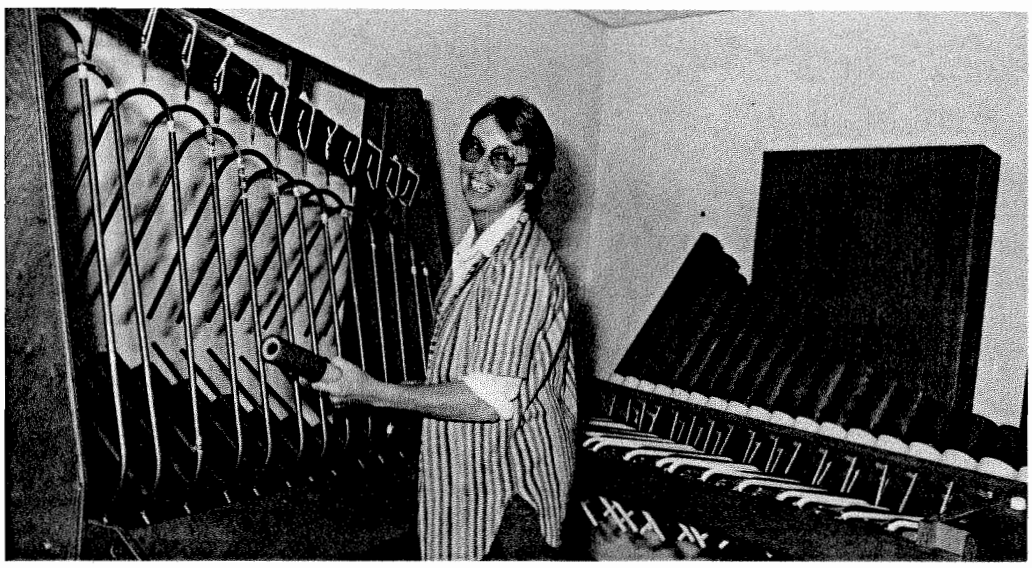
'Just one interview with someone when they are having a crisis can be a great help,' she said.

'Talking to an uninvolved third person can help someone get perspective on a problem, and help that person decide what the reality is so they can get back on the track they want to get on,' Ms Kershaw said.

She is interested in people's feelings and emotions, and said that a lot of us worry unnecessarily about doing things that are irrational. People may have to look at sides of life, other than intelligence and rationality, which can add richness to life.

'We are passing the phase where jobs are the be all and end all. We seem to be moving out of that now and deciding that quality of life is also important,' she said.

Making music at Applied Physics



Moya Henderson, above, was one of the four artists in residence at the Division of Applied Physics. She invented the Alemba, a percussion instrument based on triangles attached to resonating pipes. She refined its tuning at the Division and displayed it at the recent Applied Physics Open Day.

Less added sugar for dairy products

A process which will enable liquid dairy products to be marketed with less added sugar is to be developed commercially by a venture involving CSIRO and four collaborators.

The Minister for Science and Technology, Mr Barry Jones, said the development could be worth more than three million dollars per annum to the Australian dairy industry.

Mr Jones said the process involved splitting the milk sugar lactose in dairy products into its component sugars, glucose and galactose, which naturally produced a much sweeter taste.

'This will enable almost all liquid dairy products to be marketed with an acceptable level of sweetness with less added sugar,' Mr Jones explained.

He said the process split or digested the lactose within dairy products, giving it a vast potential market in South East Asia, where a large proportion of the population was unable to digest lactose.

The process was developed at the Dairy Research Laboratory in Melbourne, as a result of team work between Hydrolyzed Products and CSIRO. CSIRO has now joined with the Sumitomo Chemical Company Ltd, Japan, Miles Laboratories Australia Pty Ltd, Hydrolyzed Products Pty Ltd, and the Australian Dairy Corporation to work on the production of a new range of dairy products using the process.'

'All partners in this joint venture are taking key roles,' Mr Jones said.

'Sumitomo will continue to develop and manufacture the immobilized enzyme employed in the process. Miles Laboratories will supply the enzyme in Australia, provide laboratory support for the CSIRO research, and collaborate in developing the market for the process and the product. The Australian Dairy Corporation will provide the program with marketing expertise and technical support, and CSIRO will carry out the necessary research to assist Hydrolized Products in the development of a commercially satisfactory system,' the Minister added.

LACTOSE LOST

The Officer-in-Charge of the Dairy Research Laboratory, Mr Lawrie Muller, explained that lactose, the major component in milk, was particularly important for its contribution to the flavour and energy value of dairy products. However in existing dairy manufacturing processes, much of the lactose was lost in whey, which posed a considerable problem in disposing of it as waste.

'One means of increasing the value of whey so it becomes a highly marketable product is to give it this new treatment,' Mr Muller said.

He said developments in recent years of so called immobilized enzymes had offered the opportunity to reduce the cost of processes which could split lactose.

'Following a survey by CSIRO into these immobilized enzymes about two years ago, the Sumitomo system was recognized as having considerable potential. Collaborative work with CSIRO resulted in recognition of the commercial potential and subsequently, the joint venture, Mr Muller added.

P.M. at Cronulla

The Prime Minister, Mr Bob Hawke, announces the transfer of the Cronulla site from the Commonwealth to the New South Wales government for fisheries reserach. With the Acting Chief of CSIRO Division of Fisheries Research, Dr S. Jeffrey, is Mr Mike Egan, from the Cronulla electorate.

The Prime Minister, Mr Bob Hawke, visited CSIRO's Marine Laboratories at Cronulla in March and announced that the present site of the headquarters of the Divisions of Fisheries Research and Oceanography will be handed over to the New South Wales Government.

The Prime Minister discussed the future of the site with the Acting Chief of the Division of Fisheries Research, Dr S.W. Jeffrey. He also met with staff, and discussed their reactions to the Divisions' move to Hobart.

He said the Federal Government had agreed in principle to transfer the CSIRO marine research facility at Cronulla to the New South Wales Government to enable the site to be retained for fisheries research.

'Cronulla has been associated with marine research since the turn of the century and the transfer will ensure that the 80-year history of the Cronulla marine laboratories is continued,' Mr Hawke said.

The site will be used by the New South Wales Department of Agriculture's Division of Fisheries Central Research Group. It will also serve as a station for Water Police and for the Maritime Services Board local patrol craft.

The Fraser Government in 1980 decided to transfer the marine laboratories to Hobart. The move to Hobart started at the end of 1982, with the transfer of part of the Division of Oceanography, and it is expected that transfer of both Divisions will be completed by January 1985.

From the Chairman -

A regular column by the Chairman of CSIRO Dr. J. Paul Wild

Many Divisions of CSIRO hold regular open days — usually several consecutive days at a time — in which the public and representatives of industry, government and the media are shown the work being done and plans for the future. I believe these exhibitions do a great deal of good both from the viewpoint of public relations and industry awareness.

Yesterday (as I write) I went to one such open day at the National Measurement Laboratory where the Division of Applied Physics (augmented by a section of Mathematics and Statistics) did their stuff. I have never been to a better one — it was superbly stage-managed. The official opening took place in the Division's impressive auditorium in which all 250 seats were occupied plus a comfortable overflow.

After a stimulating opening by our Minister, the audience was split into groups — no less than 42 groups, each with a guide. We then were shown a series of splendid exhibits very clearly and professionally explained covering exciting new technologies such as lasers, holograms, thin films, glassy metals, medical ultrasonics, sub-millimetre waves, high technology for the mineral industry (including a beautiful optical technique to monitor rail wear) and many more, as well as some modern work on physical standards. It seemed miraculous to me that the 42 groups could move around without getting tangled up with one another. I heard much favourable comment, especially from industry people, all of which reflects much credit on the Chief and all the staff. The open days go on for four days.

There was some amusing by play during the opening proceedings. In introducing Barry Jones I had produced a sample of glassy metal, saying that this was a technique I had learnt from the Minister who regularly excites and enlivens his parliamentary colleagues in the House by producing bionic ears, silicon chips, quartz crystals, pieces of PSZ and so on. As I finally handed the microphone to the Minister he eagerly seized the sample from me and put it in his pocket. It will probably next be seen one sitting day at Question Time.

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There is an increasing trend these days for groups of people who work together or who form a management team to spend a day or two together, away from it all, in a relaxed rural, mountain or seaside place. The idea is to discuss, sort out and improve the working relationship between members of the team. Industry does it a lot and, in CSIRO, the Chiefs now get together once a year by themselves. Last month the full-time Executive Members, the Directors and the three Secretaries got together for a couple of days in the peace and quiet of Bowral (the home town of you-know-who). To help us on our way we had a group of three management experts. I think the exercise was thoroughly worth while and we all came away a little wiser, a little more conscious of the need to be absolutely clear about our relative roles and aims, a little humbler and yet a little more confident.

And more than that we were all subjected to tests that measure the relative strengths of the left-side of our brain (comprehending the analytical, the numerical and the quantitative), to the right-hand (comprehending the conceptual, the artistic and the qualitative). The significance of these tests was discussed in the last issue of *CoResearch* (p.2, 'It takes all kinds . . . '). For the enlightenment and amusement of you all I reveal our L/R ratios.

Boardman	48.52
Crozier	37.63
Ferguson	49.51
Fletcher	61.39
Lattimore	49.51
Pitman	51.49
Reid	35.65
Taylor (Geoff)	46.54
Thrift	42.58
Whitton	49.51
Wild	46.54
Wilson	51.49

Henceforth can we trust Howard to keep our accounts? Or Neville to make music?

At Executive meetings we frequently put aside the hour before lunch to hold discussions with a prominent community or government leader. Last week it was our pleasure to meet with the new Chairman of the Public Service Board, Dr Peter Wilenski, who had clear and refreshing ideas on every subject we cared to mention. These included the topics of voluntary retrenchment, superannuation and equal opportunity. While deeply aware of the realities of the system, which tended to oppose reform, Dr Wilenski gave us encouragement that with patience and persistence there would be light at the end of the tunnel for each of these problems.

After lunch we had a most useful discussion with Professor Roy Rutland, Director of the Bureau of Mineral Resources, on our respective roles in mineral research. As in other areas — water, energy, meteorology and marine science — CSIRO is not the only Federal Government research agency, and regular discussion on how to coordinate our efforts can save a great deal of misunderstanding.

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A few months ago I was approached by Senator Button who told me of his desire to restructure the Australian Industry Councils, to make them more entrepreneurial, less protective and, if need be, more controversial. Each Council would have specified representatives from industry, government and union interests. There would also be a personal nominee of the Minister for Industry and Commerce. Senator Button raised the possibility that that person might appropriately be a CSIRO scientist. I heartily agreed and said I would suggest some names. In the event the following CSIRO scientists have been appointed.

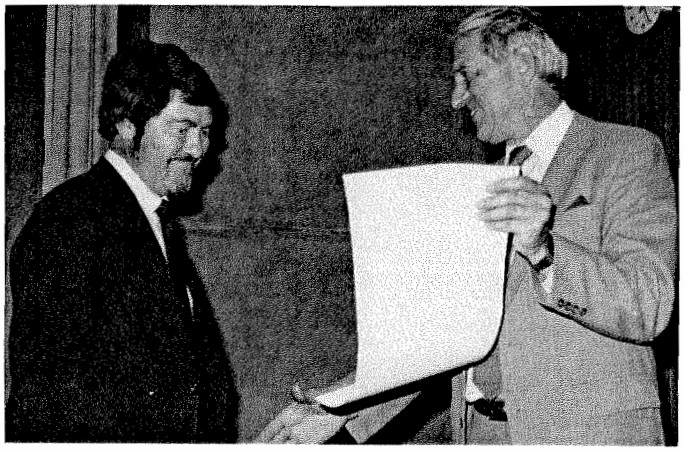
Industry Council

Basic Metals	Alan Reid
Chemical & Plastics	Dave Solomon
Electrical, Electronic and Information	Peter Claringbold
Forests & Forest Resources	Warren Hewertson
Metal Fabrication	Bob Brown
Paper Conversion, Printing and Publishing	Sam Lattimore
Processed Foods	John Christian
Textiles, Clothing and Footwear	Don Taylor

I see this as yet another way of bringing us closer to industry and yet another sign of government recognition of the importance of science and technology to industry and confidence in CSIRO.

Paul Wild

Textile industry honours



Dr John Leeder, left, receives his award from a Vice President of the Textile Institute, Mr David Brunnschweiler.

The work of Textile Industry Principal Research Scientists Dr Max White and Dr John Leeder was honoured recently by the awarding to each of a Fellowship of the Textile Institute.

The Textile Institute, established in 1910, serves the professional interests of its members in the textile industry. Its sphere of influence and interest embraces the utilization of fibres in any form, and reaches into areas such as retailing, fashion, apparel, floorcoverings and furnishings. Membership of the Institute includes people in more than ninety countries involved in management, science, technology, design, information transfer and marketing.

The aims of the Fellowship awards are to recognize the achievements of those who have made their mark in textiles by adding substantially to the body of useful knowledge.

Since 1925, when Fellowships were introduced, some 1000 have been awarded.

Mr Brunnschweiler gives Dr Max White, left, his award from the Textile Institute.

Staff working over the weekend at the Marine Research Laboratories in Cronulla recently got rather a shock to find it being checked over by a Commonwealth policeman. The next day, Monday, March 19, everyone got a surprise when the Prime Minister, **Mr Bob Hawke**, dropped in to announce the handover of the site to the State Government. It will be used for the NSW Department of Agriculture's Division of Fisheries Central Research Group which comprises 70 research and ancillary staff, as a station for Water Police and for the Maritime Services Board local patrol craft and perhaps as an alternative site for the Australian Fishing Museum presently located at Birkenhead Point.

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Robert Raven is working at the Division of Entomology studying the taxonomy of mygalomorph spiders. He has a CSIRO Postdoctoral Award and has just returned from a year's study in the United States.

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The longest serving member of the Samford Pasture Research Station in Queensland, **Eric Gieseman**, has retired after 29 years at the Station.

A world expert on electron-atomic and molecular collisions, **Dr Phelps**, visited the Division of Applied Physics for two months recently to work on gaseous electronics, high voltage, molecular chemistry and optogalvanic effects.

***

Alan Gibson of the Division of Plant Industry has been elected the first chairman of the Australian Society for Nitrogen Fixation, formed in Sydney in February. The main objective of the new society is to help promote the benefits of nitrogen fixation to agriculture.

***

Mike Austin of the Division of Water and Land Resources is in Mexico, as part of the Australian-Mexico Science Agreement, working on vegetation survey methods for conservation.

***

Steve Neutze from Sydney University Farms is working at the Division of Animal Production for two months on nitrogen enrichment of digesta and plasma samples.

Mike Wooldridge of the Division of Energy Technology has just spent two weeks visiting the Philippines, Singapore and Malaysia on behalf of ADAB to identify ASEAN research proposals in energy conservation that are to be funded under the Australian-ASEAN Economic Cooperation Program.

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Warren Hewertson, Chief of the Division of Chemical and Wood Technology, has been nominated by the Chairman, **Paul Wild**, as his representative on the Joseph William Gottstein Memorial Trust Fund, a major educational trust for the Australian forest products industry. It commemorates Bill Gottstein, a CSIRO scientist who died in a logging accident in 1971.Dr Hewertson replaces **Mervyn Page**, who represented the Chairman for eight years, and who retired recently.

***

Five CSIRO scientists have been given grants by the Academy of Science's China Exchange Subcommittee to travel to China as part of the Academy's exchange agreement with Academia Sinica.

They are: **Jan Anderson**, Division of Plant Industry, about photosynthetic processes; **William 'Beattie' Steel**, Division of Applied Physics, about interferometry and optical testing; **Jeff Simpson**, Division of Plant Industry, about nitrogen cycling; **Kevin Tiller**, Division of Soils, about soil chemistry and **Roy Pullen**, also of the Division of Plant Industry.

***

Several scientists at the Division of Environmental Mechanics have attended conferences and given lectures in North America recently.

Dr John Philip, Chief of the Division, was an invited keynote speaker at the American Society of Agricultural Engineers National Conference on Advances in Infiltration in December 1983. During his visit to North America Dr Philip also lectured on recent research on soil-water movement and related problems in hydrology at Harvard, M.I.T., Standford, the University of California at Davis, Texas A & M, and the Universities of Minnesota, Arizona, and Guelph.

Dr Ian White presented a paper at the Conference on Advances in Infiltration and at the winter meeting of the American Society of Agricultural Engineers. He gave lectures at the University of Hawaii, Colorado State University, and the New Mexico Institute of Mining and Technology.

Dr John Knight lectured at the University of Waterloo and the University of Nebraska.

Dr John Finnigan and **Dr Tom Denmead** presented invited talks at the Forest Environmental Measurements Conference, Oak Ridge, Tennessee, in October 1983 and Dr Finnigan also gave an invited paper at the US/Australian Conference on Stomatal Function in Hawaii in April 1983.

***

Division of Textile Industry Chief, **Don Taylor**, has joined the Australian Government's Textiles, Clothing and Footwear Industry Council.

The aim of the Council is to promote increased consultation between all sectors of the Textile, Clothing and Footwear Industry, to monitor industry activity, to propose solutions to industry problems and assist in their implementation where applicable, and to advise the Government on appropriate policies and other matters relating to the industry.

The Council is one of ten set up by the Government to cover key sectors of the Australian economy.

Dr Taylor's appointment is for an initial period of two years with provision for an extension of up to two years. He has also accepted appointment to the textiles and Apparel Sub-committee of the Council.

Mary Lou Thompson, a South African scientist, has joined the Division of Mathematics and Statistics for twelve months. She has worked in the United States and West Germany for the last four years, and while in Australia will work at the Division of Atmospheric Research for three days of the week and at Chemical and Wood Technology for the other two days.

***

Robin Thompson from Edinburgh is spending two months at the Division of Animal Production in Sydney working on aspects of the analysis of animal breeding data.

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John Schneider has retired from the Division of Water and Land Resources as an Administrative Officer after 21 years with CSIRO.

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Peter Laut of the Division of Water and Land Resources spent some time in Kenya recently teaching Landsat evaluation.

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Tony Mason, an apprentice fitter and machinist at the Division of Plant Industry has been awarded third place by 'Workskills Australia' in a trades competition held recently in conjunction with the ACT Apprenticeship Board.

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The Department of Conservation and Environment has given the Division of Forest Research a grant to support **Ian Foster** in a two-year study of the tent technique of measuring transpiration of large trees.

***

Ralph Beeby has just retired from the Division of Food Research after 35 years with the Organization. A senior research scientist, he is well known for his research on immobilized enzymes in the area of milk protein and for riding his bike to work every day through rain, hail, shine and other Melbourne weather.

***

David Batten, from the Division of Building Research, is spending nine months in Europe doing collaborative research at the International Institute for Applied Systems Analysis in Austria. He will also be attending several conferences, including the 3rd International Conference on the Durability of Building Materials and components.

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Jo Elliot, a CSIRO Librarian for the past 32 years, was farewelled recently by several dozen of her colleagues from throughout Australia. Although retiring from the Division of Geomechanics, for most of her working life Jo was the Reference Librarian at Head Office (now Central) Library and as such was one of those most responsible for maintaining the cohesiveness and high standards of service between CSIRO libraries. The particular contribution of those who provide essential central services to the Divisions was highlighted by **Dorothy Lamberton**, Librarian of the Division of Applied Organic Chemistry in her farewell speech, when she said of Jo: 'This excellent service — efficient and unobtrusive — made a significant contribution to the advance of Australian science, quietly and helpfully furnishing the mind so that those leaps of insight and understanding based on prior knowledge could take place. It takes a very special kind of person to work so well, so hard, and for so many years, remote from the action — the research going on in CSIRO laboratories.'

A fitting tribute to an officer who has given much to CSIRO over the years.

Gold 'watch' after 33 years

Jim Wilson, Senior Clerk at the Division of Energy Technology, retired in December 1983. At a farewell function held at the Division Jim was presented with a cheque by the Chief, Dr Don Gibson, on behalf of the staff and, in a lighter vein, Lindsay Chapman gave him a recycled laboratory timer (refurbished in gold that morning).

Jim started work with CSIRO in 1950 as Storeman with the Central Experimental Workshops at Maribyrnong, in 1962 was appointed Purchasing Officer and in 1974, Senior Clerk. In these roles he played an important part in the Workshops transition to Engineering Section, then Division of Mechanical Engineering and finally, Division of Energy Technology.

Jim's contribution to the administration of the Division and welfare of the staff during his 33 years was considerable. His 'bark' which often disguised a gentle 'bite' will be missed.

Lindsay Chapman, left, presents Jim Wilson with a special 'gold watch'.

Photograph by Neil Hamilton

SIROTECH appointment

The Managing Director (designate) of SIROTECH Ltd, is Mr Julian Doyle, a Melbourne businessman, the Chairman, Dr Paul Wild, has announced.

Mr Doyle established the Victorian Development Corporation and was its first Chief Executive. He is a lawyer by profession, has served as Trade Commissioner in Europe and Africa and recently attended the OECD Conference on high technology as an Australian delegate.

Dr Wild said Mr Doyle would take up his position immediately. He is the second appointment to the SIROTECH company. Mr Lindsay Cuming was appointed late last year as Chairman (designate) of the company.

SIROTECH Limited is the joint venture company aimed at increasing industry's use of CSIRO research results.

Its formation is seen as a significant step towards increasing the technological capability of Australian industry through improved links with Government research laboratories.

Special provision of $600 000 has been made available to CSIRO by the Federal Government to assist in the establishment and operation of SIROTECH which will begin operations towards the middle of this year.

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Greg Kirby from Flinders University is spending four months at the Division of Plant Industry working with the genetics resources and bio-systematics group.

Brian Harrap has retired

Dr Brian Harrap retired in March after what can only be described as a productive and varied career over 34 years with the Organization.

Completing his PhD in Chemistry at the University of Melbourne in 1949, Brian first joined CSIR as a Research Officer with the then Division of Industrial Chemistry. He resigned from that position in 1950 to take up a Zinc Corporation Fellowship at Cambridge

Returning to Australia in 1952, with another PhD, he took up a position with the Biochemistry Unit of the Wool Research Laboratories, later to become the Division of Protein Chemistry. From 1952 to 1966 Brian was engaged in studies which gained him an international reputation, on the structure and properties of solublized wool proteins and of mechanisms of dyeing wool. In 1966 he became leader of the leather research section in the Division and his research changed to the study of the structure of collagen and the interaction between chrome tanning agents and collagen.

In 1971, Brian transferred to the newly constituted Division of Food Research as an Assistant Chief in the Division and more particularly Officer-in-Charge of the Dairy Research Laboratory.

After seven years at Highett, Brian again moved, this time to Canberra to the position of Deputy Officer-in-Charge of the Centre for International Research Cooperation (CIRC). It was from CIRC that Brian retired and, with his wife Ruth, moved to Pambula Beach on the New South Wales south coast.

—Charles Pearmain

Kathie Raphael has just returned from 15 months in the United States where she learnt how to microinject cloned DNA into the fertilized eggs of mice at Columbia University. She is now setting up a laboratory for microinjection and analysis of the mice at the Division of Animal Production at Prospect. The aim of the research is to study the genetic control and development of mice, with eventual application to sheep. Before going to the United States, Kathie worked at the Genetics Research Laboratories at Ryde.

***

Don Gwynne of the Staff Training and Development Unit and Douglas Baines, Director, Indicators and Resource Analysis, Department of Science and Technology undertook a two week whirlwind visit of five ASEAN countries in late February.

The Australian Development Assistance Bureau invited them to visit Singapore, Indonesia, Philippines, Thailand and Malaysia and discuss Research Management and Policy Indicators with the heads of Science Ministries.

A report was written in Malaysia on the Management of Science and Technology:– Options for Australian Involvement in Upgrading ASEAN Capabilities. The recommendations were accepted at a meeting of the Committee of Science and Technology held in the Philippines in March.

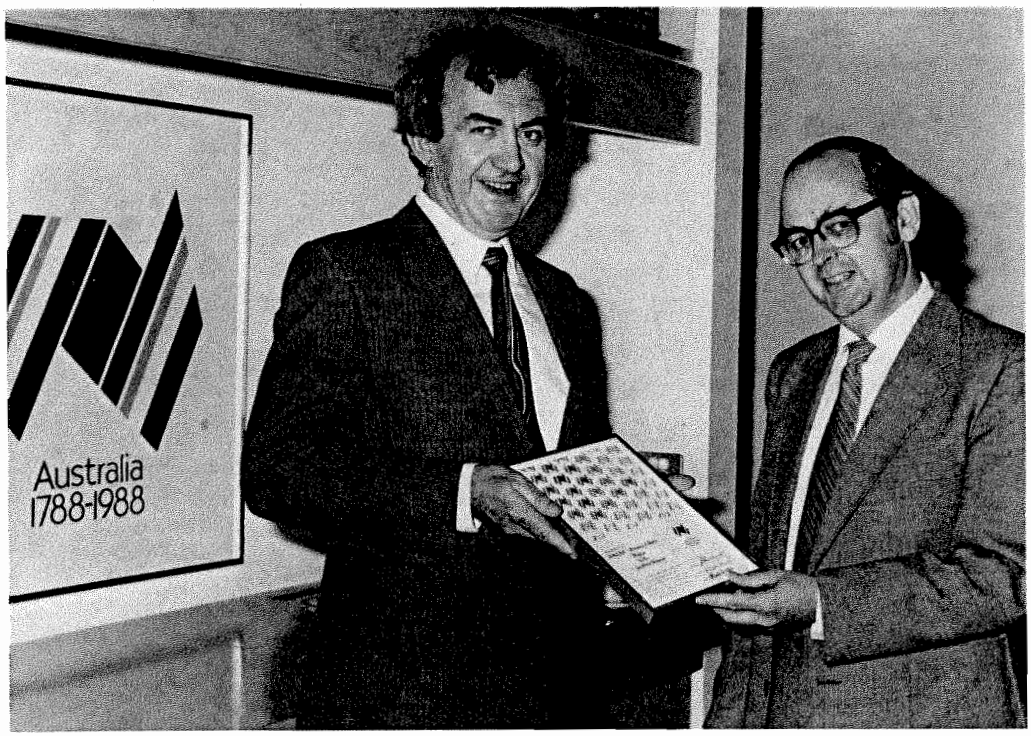
***

Graeme White has joined the Division of Radiophysics for six months to look for optical identifications of radio sources based on accurate positions from both VLBI measurements and the Tidbinbilla interferometer.

***

Michael Phillips is working at the Division of Wildlife and Rangelands Research until November on a Rotary Scholarship. From the University of Alaska, Mr Phillips will be working on the ecological interaction between foxes and dingoes.

Telescope is Bicentennial project



The Australia Telescope has been endorsed by The Australian Bicentennial Authority as an official commemorative activity for 1988.

Building began on the telescope on November 17, 1983 and the preliminary survey work has been carried out at the Culgoora site where six 22 metre antennas will be constructed to make a 6 kilometre long array.

The antenna design optimization study has been finalized and a new contract has been let to MacDonald, Wagner and Priddle to prepare the detailed design for the antennas, to assist with tender preparation and evaluation and to provide supervision during the course of construction of the antennas.

Staff of the Division of Radiophysics have carried out a great deal of preliminary design work on aspects of the Telescope other than the antennas.

The General Manager of The Australian Bicentennial Authority, Mr David Armstrong, left, is pictured above with the Chief of the Division of Radiophysics and Australia Telescope project Director, Dr Bob Frater, at the endorsement ceremony.

Computer car sets standards

Research at the Division of Energy Technology could lay the foundations for a drastic revision of methods of testing current fuel consumption standards for vehicles.

Project leader of the passenger car fuel conservation project, Dr Ron Johnston, said current standards are based on tests using a chassis dynamometer, where two wheels run across rollers. These are the basis of consumer guidelines on fuel consumption for motorists.

'However, although the dynamometers are useful for comparing different cars, there is no relationship between the results obtained and the on-road situation where four tyres are on the road,' Dr Johnston said.

'The physics of the rollers is not well understood, and methods of relating it to the road are not yet established either in Australia or overseas.'

The Division has developed a car which can be used on both the road and the dynamometer to make this relationship.

The car, which is fitted with special equipment and a digital computer similar to that used in Australia II, collects data on driving loads and monitors engine operation. It was displayed at a workshop at the Division in late February.

Over forty representatives from the major car manufacturers, the car components industry, the Standards Association of Australia and Government departments were given a progress report on the research project and inspected the research facilities.

The research is being done in cooperation with GMH, Nissan and the Environment Protection Authority.

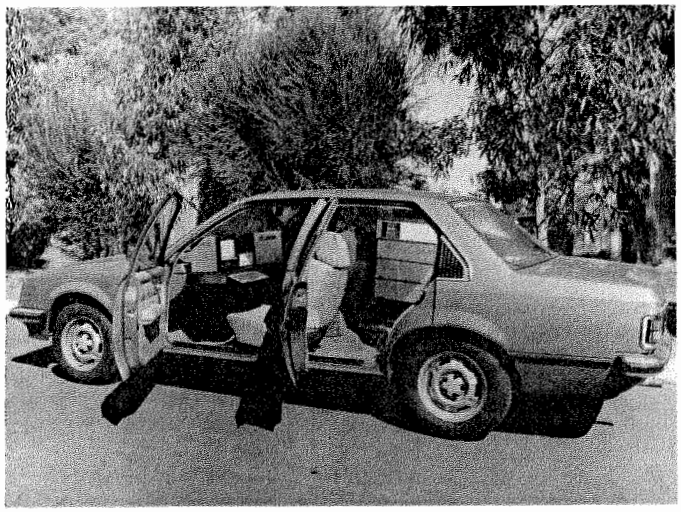
A digital cassette records fuel flow, driveshaft torque, acceleration and many other variables important to measuring fuel consumption.

'This data can be used to compare any chassis dynamometer with another, and the dynamometers with the road,' Dr Johnston said.

In a parallel research project, but using the same data from the car, the laboratory has developed an engine dynamometer, where the car's engine is made to run against a resistance equivalent to that experienced on a set journey.

'We can test any engine and the computer will make it think it is in a car. It can make the same demands as the road,' Dr Johnston said.

One advantage is that prototype engines can be developed without the actual car. Variations to engines, such as more efficient transmission systems, continuously variable gearboxes and turbo chargers can be assessed.



The test car that Dr Johnston's team uses has a microcomputer system that continuously records 14 variables concerned with the car's operation. These include fuel flow and temperature, acceleration, engine rpm and engine oil and coolant temperatures.

Rural funds promise

The number of people employed in technology transfer in agriculture would not be reduced, the Minister for Science and Technology has said.

Replying to a letter from the outgoing President of the Australian Society for Animal Production, Dr John Corbett, Mr Jones said there were about 1800 people employed in technology transfer in agriculture in Australia, but only 20 in manufacturing.

Dr Corbett appealed to the Minister for strong financial support for research for agriculture, and gave Mr Jones a copy of his Presidential address to the 15th Biennial Conference of the Society.

In his address Dr Corbett said returns to investment in agricultural research and development were very large, and those from pasture improvement alone have been esimated to be as great as 58% to 68%.

Dr Corbett, from the Division of Animal Production, said the volume of rural exports has doubled over the past 30 years.

He called for strong financial support for rural research, and said the decrease in agricultural research and development expenditure was becoming very serious.

'Now with the increasing attention being paid to high technology manufacturing industries there is danger that research support for our rural industries will be even further curtailed, with most serious consequences for what this country does do very well indeed, that is the production of food and fibre,' Dr Corbett said.

COSTS OUTWEIGHED

'Even on the most conservative view of how much research has contributed to this increase, the costs of the research are far outweighed by ... financial gains,' he said.

'The present total cost of rural research inAustralia is about $300 million annually, which is a considerably lesser sum than the dairy industry alone wins as export income alone'.

Animal Welfare report

A major study of sheep handling is being undertaken by Dr Lesley Syme of the Division of Animal Production in Perth.

Dr Syme is acting as consultant to the Bureau of Animal Health, which has arranged a series of consultancies to investigate sheep behaviour and handling.

Dr Syme is looking at the strengths and weaknesses in knowledge of sheep requirements, particularly in the live sheep export trade. She will, where necessary, suggest improvements and make recommendations for further studies.

She has published widely on the effects of environment on the biochemistry, behaviour and physiology of housed animals and in particular on the behaviour of sheep under conditions of intensive handling.

Bush picnic

Australian eucalypts flourish in Brazil and extensive plantations are used for charcoal, pulp and paper, timber and fuelwood. Roberto Silveira is from EMBRAPA, the Brazilian equivalent of CSIRO, and is at the CSIRO Tree Seed Centre for a year collecting many different species of eucalypt seed from all around the country to maintain the genetic pool of eucalypts for the Brasilian breeding programs. He is pictured above making camp in Queensland with his wife, Lilean, who helps shoot the seeds from the trees, and Philip Whiteman, who EMBRAPA is employing to assist Roberto. They have already been to Fraser Island, the Gympie area, and northern Queensland and will also collect seed from the Kimberlies before returning to Brazil in September.

Manager for Safety, Health Unit appointed

Controlling hazardous chemicals is one of the more important tasks facing the Occupational Safety and Health Unit, its new Manager, Mr Gary Knobel said.

'A computer will house data on the hazardous chemicals used in the Organization. We aim to eventually make it directly accessible to all Divisions,' Mr Knobel said.

Mr Knobel is an analytical chemist who has worked for 12 years in the Safety and Health area in the Department of Defence Support. He received a Public Service Board post-graduate scholarship to do a Masters of Science in Occupational Safety and Hygiene at the University of Aston in Birmingham in 1977–78.

He is also the President of the ACT Division of the Safety Institute of Australia.

His appointment followed the major recommendation of the Craig Report to establish an upgraded health and safety resource in CSIRO.

'The report provides an excellent blueprint for meeting CSIRO, Government, staff association and union objectives in occupational health and safety,' Mr Knobel said.

'The Executive has already issued recommendations to Divisions and Units to implement some of the recommendations directly. Others will be implemented as a result of this Unit's establishment. to some extent we will have to wait until the remaining staff, an occupational physician and a hygienist, are appointed.'

'Gil Barnes, known to most people concerned with satefy activities will be concentrating on safety engineering and ergonomics.'

SITE SURVEYS

Mr Knobel proposes to commence an annual series of site visits by members of the unit to do occupational health and safety surveys, and will look at the need for permanent occupational safety and health officers at sites or in regions.

'It's obvious that a lot of labs are sub-standard in relation to modern requirements,' he said.

'I think we will be looking for greater participation by all staff in formal safety and health matters, such as committees, and in alerting us to hazards at the individual workplace level,' he said.

'I'm also looking to cooperating with staff associations in introducing current Government initiatives following on from the safety and health accord between the Government and unions last year.'

'There is a current lack of Commonwealth legislation on occupational safety and health, but pending the establishment of the National Occupational Safety and Health Commission we'll see greater emphasis on either legislative or other control, such as expanded codes of practice, in the Commonwealth sphere,' Mr Knobel said.

PRESENT PRIORITIES

At the moment his priorities are to review the current CSIRO policy directives, establish comprehensive, computer-based accident statistics and cost data, and meet all staff, particularly the staff associations and local safety and health committees.

He also sees problems in providing safety and health information to remote locations and in the introduction of new technology.

'New technology such as word processors are showing up to have potential health effects unless proper conditions are set up for their operation,' Mr Knobel said.

'If anyone has either general or specific occupational safety and health queries please contact me on (062) 48 4440,' he said.

Bass Strait marine study

A large marine project planned by collaboration between the Division of Oceanography, Sydney University, and Victorian Institute of Marine Science is now under way in Bass Strait.

Thirteen institutions will participate in the project.

'Planning has been completed for an intensive coordinated study of the Bass Strait region which will provide a better understanding of this extremely important part of the Australian maritime zone,' the Chief of the Division of Oceanography, Dr Angus McEwan, said.

Experiments involving oceanography, fluid dynamics, tides, geology, zoology, chemistry, atmospheric physics and numerical modelling will be undertaken during seven cruises of CSIRO's research vessel, R V Sprightly, which began on April 4 and will continue until December.

Surface data will also be collected to complement simultaneous observations from the space shuttle 'Columbia' during its planned flight in September.

'This is the first opportunity to undertake such a highly integrated series of experiments to study the Bass Strait waters as a whole,' Dr McEwan said.

Apart from the support provided by CSIRO in the use of its ship, many of the experiments have been financed by the Federal Government's Marine Sciences and Technology Grants Scheme.

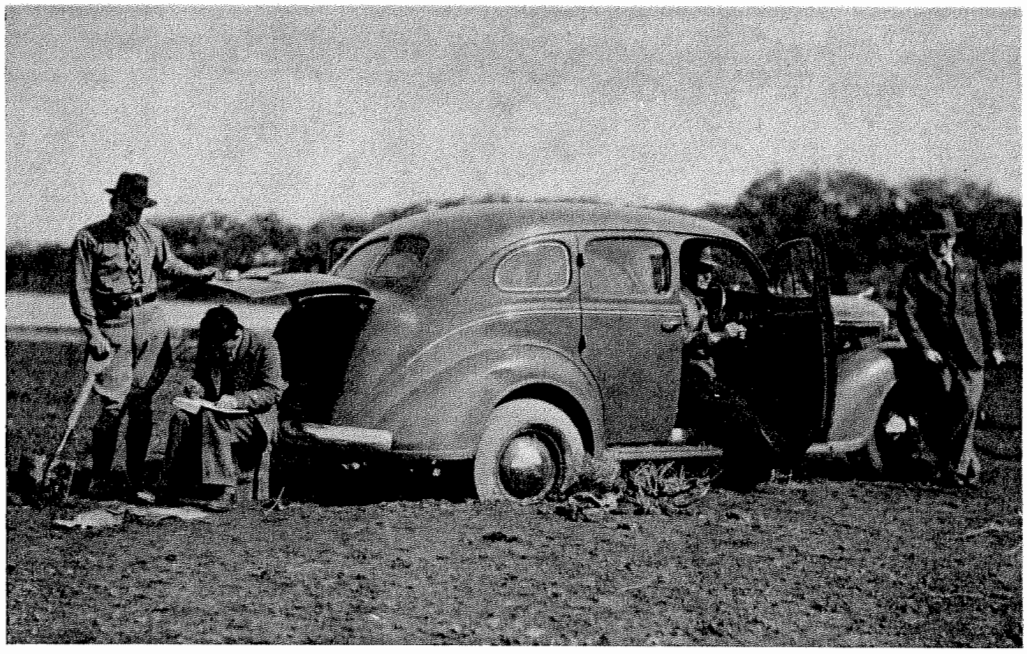
The project, code-named CBSS 84 (CSIRO Bass Strait Study 1984), will be under way at the same time as Sydney University experiments, entitled BASS 84, which are making use of the RAN hydrographic vessel Kimbla in eastern Bass Strait.

'The opportunity of having two properly instrumented vessels in the region was too good to miss,' Dr McEwan said.

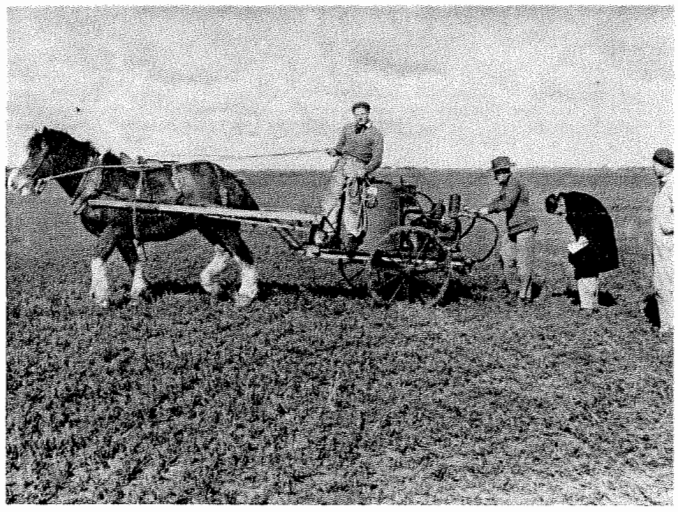
The CBSS 84 cruises are the swansong for Sprightly, after 12 years of successful charter to CSIRO. The 42-metre converted ocean-going tug, built during World War II, is to be replaced by the new oceanographic vessel now under construction.

Sprightly has been the main oceanographic research platform in Australia, and has worked all the seas and oceans around the continent, for experiments from Antarctic to equatorial waters.

Science in the Depression



Science, as it was practised in the 1930s, operated very differently from today. Land surveys, above, appeared to get bogged down in paper work, while agricultural research, below, plodded on regardless.



Historical photos on display

A permanent historical display consisting of both old and recent Plant Industry photos was prepared by the combined efforts of the photographic and illustrating sections of the Division of Plant Industry and CSIRO Archives for the opening of the Division's Crop Adaptation building.

Great interest was taken in the 'as we were' photos of early Canberra laboratories situated in open fields, horse-drawn equipment used by Land Army girls at Dickson Field Station in the production of opium poppies and prints of work in progress in laboratories.

Hints on mothproofing

A report recently issued by the Division of Textile Industry offers manufacturers of popular natural or Berber-style wool carpets, upholstery fabrics, blankets or apparel, a new approach to the mothproofing of their products.

Normally the mothproofing of wool is undertaken during dyeing. However, the use of undyed wools in Berber-style products has created a protection problem.

The report outlines a method for mothproofing Berber-style products by the intimate blending — during carding or gilling — of mothproofed fibres with natural fibres. In this instance the report recommends that a minimum of 10% of the wool be treated with mothproofing agents, and a higher application level is required.

Advice on best methods of blending of treated and untreated fibres, levels and methods of application of mothproofing agents is given in the report, entitled 'Protection of Wool Products from Insect Damage by Blending Wool with Insectproofed Wool'.

CSIRO . . . on the record

CSIRO is often mentioned in the media. Some recent snippets include the following:

'All of my biochemistry colleagues whom I told said it wouldn't work. I had the advantage of knowing nothing about protein chemistry . . . and it does work.'
Dr Grigg, Division of Protein Chemistry, commenting on a new way of synthesizing peptides which may upstage genetic engineering techniques for the manufacture of some drugs.

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'This technological breakthrough by CSIRO means that the Ord River Valley has the potential to turn off more fat cattle than is currently produced by the whole of the Kimberleys or the Northern Territory'.
The Minister for Science and Technology, Mr Barry Jones, telling Parliament of the discovery of anaerobic bacteria in Hawaiian goats' bellies that destroys the toxic mimosene in leucaena, a prolific plant in northern Australia.

'This is another achievement of the Hawke Government.'
The Minister on the same subject.

'Australia will own or lease $500 million worth of satellites by 1985 and the ground sector investment will be of like amount. By the year 2000, the book value of Australian space and ground sectors will exceed $4 billion in 1984 dollars. Our annual expenditure on space-related equipment will exceed $600 million 15 years hence. With proper nurture of the manufacturing sector and appropriate procurement policies, this internal need could generate an Australian industry whose turnover would equal that of our iron ore industry by the year 2000. More importantly, we would have established a beachhead for Australia into the technologies of the 21st century.'
Dr McCracken, Chief of the Division of Mineral Physics, speaking at the National Space Symposium.

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'It is a very exciting discovery. It gives the potential to manipulate plant species in a way that hasn't been done before. We will have real control over the direction of our plant breeding.'
Dr Gerlach, the Division of Plant Industry, commenting on the 'jumping gene' discovery.

'Many consumers wouldn't know fresh food if it was given to them.'
A spokesperson from the Division of Food Research, as quoted in the 'Sydney Morning Herald', when asked if Australian food could be fresher.

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Australians had been slow to appreciate their native flora and 'teaching botany to university students was rather like opening their eyes' since they had only ever seen the plants around them in Australia 'as a kind of green fuzz'.
Dr Pitman, Director of the Institute of Biological Resources, speaking at the launching of the Australian campaign in the World Wildlife Fund's International Plants Campaign.

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'Not enough research has been done in this area and as it concerns an area of increasing human consumption, it is time there was.'
Dr Culvenor, Division of Animal Health, commenting on carcinogenic alkaloids that have been found in Salvation Jane honey and some herbs used in herbal treatments and teas.

CAT

The CAT Column is open to all members of CSIRO who wish to comment on communication matters.

Phil Allan, the Education Officer at the Science Education Centre in Adelaide has contributed this month's CAT column.

Planning of the second CSIRO Science Education Centre is under way following the appointment of an Education Officer in February this year. The centre is to be located at the Division of Manufacturing Technology at Woodville, about 8km from the centre of Adelaide.

Many people will be aware of the CSIROSEC at the Division of Energy Technology in Melbourne. The overwhelming success of this centre provides an excellent model to aid decision making regarding directions and operation of the Adelaide Centre.

The Adelaide centre will run all activities under a broad theme 'Science and Technology'. While there will be an emphasis on Manufacturing Technology, an attempt will be made to cover all science disciplines in some way. The activities that will be offered will include experiments, demonstrations, audio-visual presentations, talks by CSIRO scientists, working models, displays and tours of CSIRO facilities. (It is envisaged that to cater for the target audience of years 7 to 12 adequately, two levels of experiments will need to be offered. During all activities, stress will be made of the application of the activity to the real world. In this way, students and teachers will be able to see more readily how science and in particular the science and research of CSIRO is utilised. I believe the view of CSIRO in schools is rather narrow and this centre will provide an active means of promoting CSIRO.

Some of the areas where activities are planned are:

- metals and their properties
- robotics
- electronics
- high and low temperature technology
- pneumatics
- hydraulics
- building technology
- communication

HANDS ON

The emphasis at the centre is one of 'hands on'. Students will visit the centre for (normally) half a day and complete various activities during that time. Some preparatory work will have been done at the students school before the visit and much writing up of experiments will need to be completed after the visit. This links the excursion tangibly with their classroom activities.

In addition the centre will act as a focus for teachers. Inservice conferences, meetings and seminars will be held to 'update' the teaching force in the areas of science and technology. Current CSIRO research will be highlighted at such meetings.

The first students through the door will appear, all going well, early in 1985. Prior to that, the centre may well be open for a special offering during National Science in Schools Week in October of this year.

I believe at this early stage the centre is taking an exciting shape. The activities offered will be stimulating, applicable to the real world and educational. I am looking forward to a successful launch early next year.

Sirospun to run in L.A.

When Australia's Olympic team march into view of the biggest world-wide TV audience ever, at the opening of the Los Angeles Olympics later this year, CSIRO will not only be behind them, but on them as well.

The team's sensational all-wool outfits, designed by Prue Acton, are made from fabrics spun using processes developed by the Division of Textile Industry, Belmont.

Both the team blazers and dress/shirt fabrics are made from Merino Extrafine Sirospun yarns. The Sirospun process, developed at Textile Industry, produces fine weavable worsted wool yarns in a single stage, as against the more normal two-stage path of spinning and twisting. Since its release in 1981 it has been fitted to more than 100 000 spindles worldwide, and is ideally suited for the spinning of fine wools. Before being made up into garments, the dress/shirt fabrics were set using textile finishing equipment in the Division's mill at Belmont.

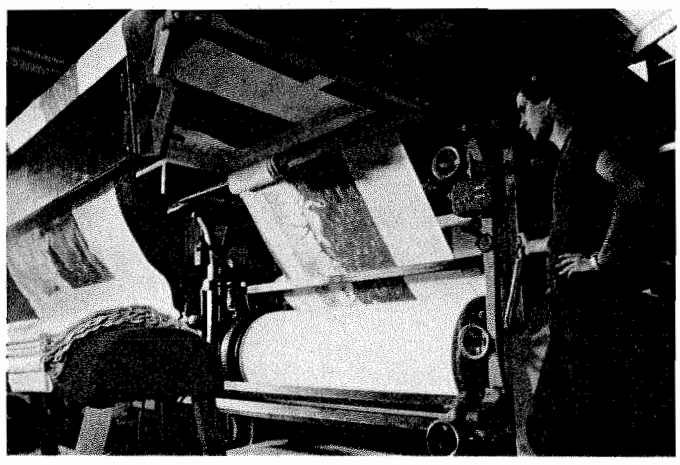
SELF-TWIST

The team's wool-blend skirts/slacks have also been crafted using Belmont technology — the Self-Twist process developed in the late 1960s. These fabrics were made by Macquarie Worsteds Ltd, an Australian textile company with a large installation of Self-Twist spinners.

With predicted temperatures of 35°C for the Los Angeles Olympics, cool, ultra-lightweight team outfits will be mandatory. Combining Australia's finest 19.5 micron wool, design flair, and CSIRO technology, has achieved an eyecatching blend of fashion, comfort and coolness.

Marathon runner Rob de Castella and middle distance runner Michelle Baumgartner model the Australian Olympic Team's official opening ceremony outfits for the Los Angeles Olympics.

Peter Tegelaers of the Division of Textile Physics supervises the setting of the fabric to be used for the 1984 Australian Olympic Team outfits.



Library System goes tender

Great excitement in library and information circles has greeted the news from the Director, Bureau of Scientific Services, Sam Lattimore, that approval has now been given for the CSIRO Library Network System (CLINES) Specifications to go to tender.

At an impromptu celebration at Central Library on the day of the announcement, March 23, Chief Librarian Peter Dawe said the decision was a true watershed and one of the most momentous decisions in the history of CSIR(O) and its library network.

Library and library-based information services exist to facilitate and provide direct support to the Organization's research. The provision of an on-line interactive library management system would very greatly enhance the capacity of the network and every library in it to marshall the scientific and technical information resources of the world and make these more readily and immediately available to the Organization.

Draft Specifications for CLINES were put together by a Committee representative of Central Library, the Central Information Services' Systems and Development Group, Divisional and Headquarters Libraries and the Division of Computing Research over a period of six months or more in 1983. It is expected that it will be at least twelve months before the selected system is fully operational.

Conservation survey

Researchers at the Division of Entomology are studying the insect ecology of Philip Island as part of an Australian National Parks and Wildlife Service conservation program.

The National Parks and Wildlife Service is surveying the fauna and flora of the island, near Norfolk Island, before rehabilitating it after severe damage by feral animals which have ripped and eaten it out completely.

The early settlers of Norfolk Island introduced rabbits, pigs and goats to the island, and it has been used for many years by the islanders for game shooting.

David Rentz, Ted Edwards and John Feehan from the Division of Entomology and Penny Greenslade from the South Australian Museum have been funded by the National Parks and Wildlife Service to survey and collect insects, spiders, scorpions, and other land-living arthropods.

The aims of the expedition are to gain information on the fauna relevant to conservation management purposes, in order to provide a basic point of reference for future studies on the ecology of Philip Island throughout its rehabilitation.

The specimens collected will also help establish a reference collection of insects from these islands in the Australian National Insect Collection, which is housed at the Division.

This will serve as a basic reference set of the species present on Philip Island at the lowest point of its environmental degradation.

The researchers are using many methods to trap the insects, including light trapping and spotting at night, beating, sweeping, flight intercept trapping and pan trapping. The phases of the moon dictate the night work since a full moon reduces the effectiveness of the artificial lights used to attract the insects.

'CoResearch' is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 8th day of the month of publication. Material and queries should be sent to the Editors, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editors: Jeannie Ferris and Penny Gibson.

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CoResearch

CSIRO's staff newspaper May/June 1984 271

Floreat Park report:

Neurologists to study staff

Specialist neurologists are to examine any staff suffering from possible work-related illnesses at the Floreat Park laboratories in Perth.

The Chairman, Dr Paul Wild, said some staff remained concerned about the cause of their illnesses, although reports by the Western Australian Department of Public Health and Mr Anthony Findlay, Senior Chemist and lecturer in Occupational Hygiene at the Commonwealth Institute of Health, had not supported these concerns.

The Commonwealth Department of Health initially recommended the neurologists be appointed following allegations by staff associations that poor working conditions at the laboratories may have caused neurological disorders in a number of present and former staff members.

Mr Findlay commended this action in his report, which CSIRO received in late May and Dr Wild has asked the Department of Health to provide the names of suitable consultants. Staff associations will be invited to participate in oversighting the conduct of the study.

Dr Wild said that in his report Mr Findlay found that at present there were no levels of hazardous fumes above the maximum levels set by the Commonwealth Director-General of Health.

'Mr Findlay reported that, in the past, in one area the concentration of solvent may have approached these recommended standards, and the exposure to the chemical could have had a narcotic effect,' he said.

The report said these problems could be solved if work with the solvents, including the hydrocarbon n-hexane, was carried out in a ventilated hood.

In his summary of findings and recommendations, Mr Findlay also found that levels of mercury in the atmosphere were not detectably different from zero. Though some localised contamination was detected at floor level at the sites of previous spillages, he did not consider the quantities sufficiently great to warrant the lifting of benches and floor coverings to gain access to it.

Mr Findlay said that the performance of balanced design fume cupboards was unsatisfactory and smoke tests and velocity measurements should be performed.

Ventilation in some rooms was found to be inadequate to dilute odours to acceptable levels unless fume cupboards were in operation.

Although staff were concerned at the constant odour of xylene in one room, Mr Findlay said that olfaction is a double-edged weapon and that his measurement of the vapour found concentrations to be generally insignificant.

He did infra-red scans of the atmosphere of some rooms in response to staff concerns that harmful chemicals may be present, but undectable by odour or irritation, and concluded that if there are such chemicals, they do not absorb infra-red radiation.

Mr Findlay's recommendations fell into three categories: buildings and equipment, housekeeping and safety performance.

Work is proceeding at the laboratory to remove safety hazards and improve conditions following internal reports and Mr Findlay's criticisms, which included the leakage of air from fume cupboards and the placement of airconditioning intake ducts near fume cupboard exhausts.

BAD HOUSEKEEPING

Mr Findlay was critical of housekeeping practices at Floreat Park and the apparent lack of understanding by staff about the toxicology of chemicals.

Referring to corrosion of fittings in one room, he said, '... I cannot understand how a desire to get on with the work in hand can lead people to tolerate such degradation of their work environment...'

He said that overcrowding, poor housekeeping and clutter did not necessarily lead to health hazards, but they did not facilitate hazard control.

'They do not reflect an awareness of, and concern for, chemical safety, either in the part if some persons immediately involved or on the part of management,' he said.

He also recommended that more objective measurements and monitoring of the working environment be made. This will be a major task of the new CSIRO Occupational Hygienist, to be appointed soon to the new Occupational Safety and Health Unit.

ANZAAS Medal for Chairman

The Chairman, Dr J. Paul Wild, CBE, was awarded the ANZAAS Medal, 1984, for services in the advancement of science in Australia and New Zealand at the opening of the 54th ANZAAS Congress.

Dr Wild, an internationally recognised radiophysicist, developed a radio spectrograph to study solar radio emissions and in the late 1950's, developed a 10 km diameter radioheliograph, built at Culgoora, NSW, for the same purpose.

While Chief of the Division of Radiophysics, he invented Interscan, the landing aid for aircraft which has gained world-wide recognition.

The ANZAAS Medal is awarded for outstanding contributions to technology, research or education and the advancement of science in public areas.

Continued on p.2

CAWT out ...

The Prime Minister, Mr Bob Hawke, shows his miniature cricket bat to the audience at the official opening of the Division of Chemical and Wood Technology's Clayton laboratory on April 19. The cricket bat was made from SCRIMBER, a composite wood product developed in the Division. Mr Hawke is watched by the Chief of the Division, Dr Warren Hewertson.
Photo by Neville Prosser

Research ties for CSIRO

CSIRO signed agreements with Japanese and Thai scientific institutions during May, the Officer-in-Charge of the Centre for International Research Cooperation, Dr Barrie Filshie said recently.

During the Japanese Minister for Science and Technology's visit to Australia in May, the President of the Institute of Physical and Chemical Research (RIKEN), Dr Tatuoki Miyazima, and member of the Executive, Dr Keith Boardman, signed an agreement for research cooperation between RIKEN and CSIRO.

RIKEN was established as a specially funded government organization in 1958 to conduct general research in science and technology and to disseminate the results to advance the standards of science and technology in Japan.

Dr Filshie said it was managed under the jurisdiction of the Science and Technology Agency and was engaged in a wide range of research extending over the fields of nuclear physics, solid state physics, applied physics, engineering, inorganic chemistry, organic chemistry, biochemistry and agricultural chemicals.

He said the research was conducted by two groups and 46 research laboratories. RIKEN has 611 staff, 214 with doctorate level qualifications.

Continued on p.2

Letters to the Editor

Dear Editor,

Does nothing change?

'The first Man I saw was of a meagre Aspect, with sooty Hands and Face, his Hair and Beard long, ragged and singed in several Places. His Clothes, Shirt and Skin were all of the same Colour. He had been Eight Years on a Project for extracting Sun-Beams out of Cucumbers, which were to be put into Vials hermetically sealed and let out to warm the Air in raw inclement Summers. He told me he did not doubt in Eight Years more that he should be able to supply the Governors Gardens with Sun-Shine at a reasonable Rate; but he complained that his Stock was low and entreated me to give him something as an Encouragement to Ingenuity, especially since this had been a very dear Season for Cucumbers. I made him a small Present, for my Lord had furnished me with Money on purpose, because he knew their Practice of begging from all who go to see them'.

(Johnathan Swift, Gulliver's Travels, 1735)

Alan Lane
Food Research

Dear Editor,

Whilst I agree with most of the comments made by M.H. Jones, Mineral Chemistry (CoResearch No. 270), I must correct a couple of things which appear to be misunderstood.

Never have I stated that the printed word is the best medium, nor have I tolerance for the 'Whizz Bang' logos or eight-colour covers. The last point is that when I referred to the 'Z' in CSIRO, it was concerning the spelling of **Organization**. Many, many times we see it spelt Organisation.

Although my CAT contribution has been received favourably, judging by the calls and the few notes I have received, I did believe that it may have raised a bit more dust. But judging by the agenda received for the next CAT meeting, it has not stirred our communicators enough for comment unless it falls into the category of 'any other business/general discussions' at 4.30 p.m. or 'The hard — a lot of talk — but no action basket'.

I will be interested to learn from Helen Dornom if any other communicators offer the suggestion of a trip to the Printing Unit as being part of a Catkit.

Oh well, I guess we will plough-on regardless. I just hope nobody has seen the recent edition of National Geographic with the hologram on the front cover.

Paul Lynch
Printing Unit

CSIRO recently received the following letter offering land near Marulan, NSW, to CSIRO.

Dear Sir/Madam

We have recently purchased 110 acres (possibly a further 100 acres) of land on the Hume Highway at Marulan.

On the property are two large sheds, 300' × 30' and 80' × 30', that were used for egg production. They haven't been in use for a number of years.

We were wondering if the CSIRO would have any suggestions as to how these sheds could be best utilized, apart from egg production. Would they be of use to the CSIRO for experimental work? Town water and electricity are available.

We are graziers and know the land.

Looking forward to your reply with interest.

Yours sincerely

Mr and Mrs Cooper

Textile Physics Chief Retires

Dr Alan Robert (Bob) Haly retired on the 1 June after 33 years of service with CSIRO.

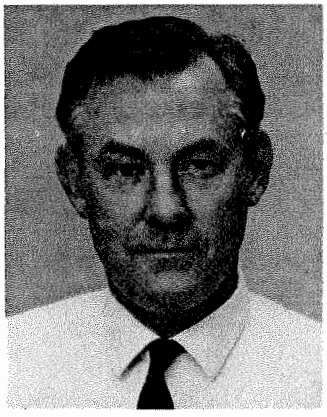
When Bob became Chief of the Division of Textile Physics in 1976 he was almost the epitome of a classic CISRO Research Scientist.

He had graduated with a B.Sc. in mathematics and physics from the University of Queensland in 1951, followed by M.Sc. (1958) and D.Sc. (1978) from the University of New South Wales.

Research into the interaction of wool and water has absorbed all his working and much of his waking hours for a quarter of a century, resulting in some 80 papers on wool and polymer structure, water absorption and thermal properties.

Though his work had been in the laboratory, and his conversations with research scientists of the 'strategic' persuasion, Bob was uneasily aware that the wool trade existed and the sale of greasy wool had been revolutionized by the application of objective measurement as a basis of trading.

A period of intense learning followed: he had to learn, and fast, the subtleties of the wool trade, the techniques of getting research funds from the Australian Wool Corporation and the ways and means of transferring technology to industry.



Bob Haly

It is a measure of the man that he succeeded so well: he survived many skirmishes with their review and funding committees.

In his early years as Chief, the Division was required to redirect some research programs from textiles to energy, involving the redeployment of many staff.

Successful projects related to studies of coal and the environment were instigated and these eventually led to the formation of the Physical Technology Unit (now part of the Division of Fossil Fuels). At the same time he initiated new projects in the Division for the application of textiles in industry, for assessing fabric performance and fibre characterization.

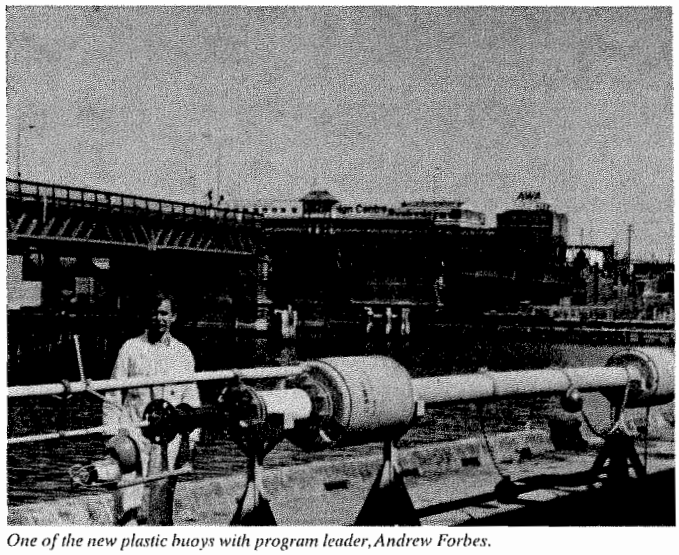
Not ony did Bob Haly adapt to many, often unsettling changes during his time as Chief, he also developed an entrepreneurial bent in fostering the adoption by industry of such developments as the fibre fineness distribution analyzer, the ink jet printer and electrostatically enhanced filtration.

Bob departed from a Division vastly different from the one that he took over in 1976. He left it in good shape to cope with the changes in research and development directions which are facts of life for CSIRO today.

Past and present staff farewelled Bob and Eunice at a traditional 'Hermitage' barbeque on the evening of his last day at CSIRO.

Ian Watt

It's a buoy



One of the new plastic buoys with program leader, Andrew Forbes.

A CSIRO group has designed, constructed and tested a new meteorological buoy which is attracting industry's interest, and could be used extensively in future oceanographic studies worldwide.

The buoy has a plastic pipe for the main hull and data logging house instead of the usual steel or aluminium, and was made at one tenth the cost of purchasing similar systems overseas.

The leader of project 'ACE', Andrew Forbes, said the entire buoy was designed and constructed at the Division of Oceanography's Cronulla laboratories with less than a year's lead time.

Mr Forbes chose plastic rather than steel to house the sensitive electronic weather recording equipment because of its non-corroding qualities in seawater, light weight and flexible durability.

They were first used in 'ACE', Australian Coastal Experiment, to detect and measure continental shelf waves and the winds which generate these waves and currents, but the results have further practical applications.

'ACE' was a six month joint experiment by CSIRO, Orgeon State University of the United States and the Institute of Ocean Science in British Columbia, Canada.

Wind speed and direction, atmospheric pressure, air and sea temperature and solar radiation, which were all measured by six buoys deployed from Cape Howe to Newcastle during the experiment, could provide vital clues to the distribution of sea nutrients necessary to spawn and develop rich fishing yields.

Measuring underwater flows could determine the exchange of water and nutrients between the shelf and the deep ocean, necessary for sustaining underwater ecology.

Waves up to 1000 kms long and unusual rotational currents were carefully measured and recorded during the exercise by 45 currents meters and water level gauges.

The six buoys were anchored to the seabed, extended eight metres underwater and were completely sealed at both ends to form a watertight buoyancy chamber for the data logging recorders.

ANZAAS Medals

Continued from p.1

Two other medals were awarded at the ceremony.

The Mueller Medal for 1984 was won by Dr Lawrence Johnson, Director of the Royal Botanic Gardens in Sydney since 1972.

Dr Johnson has been at the Royal Botanic Gardens for most of his professional life. He has contributed to an understanding of the Australian flora and Gondwanan biogeography. His major studies include revised classifications and evolutionary interpretations in major groups of the Australian flora. With another Mueller medalist, L.D. Pryor, he has developed a classification of the Eucalypts and has extended this to a new systematic treatment of major significance for taxonomy and evolution in Australia and overseas.

The Mueller Medal honours Baron Sir Ferdinand von Mueller, one of the great pioneers of exploration and science in Australia. It was awarded for important contributions to botany.

The ANZAAS Mackie Medal, 1984, has been awarded to Dr David Mossenson, OA, Director General of education in Western Australia until his retirement in 1982.

Dr Mossenson was regarded as an innovative educator who was responsible for major changes in the W.A. Education system.

Research ties

Continued from p.1

'Besides these staff, approximately 700 guest research scientists and students are working in RIKEN's laboratories, many from other countries,' Dr Filshie said.

'CSIRO has a number of informal exchanges with RIKEN, particularly between the Division of Plant Industry and RIKEN's solar energy group. It is hoped that the new agreement will stimulate wider collaboration between our two institutions,' he added.

Under the terms of the agreement, activities will generally be undertaken on a 'requesting side pays' basis.

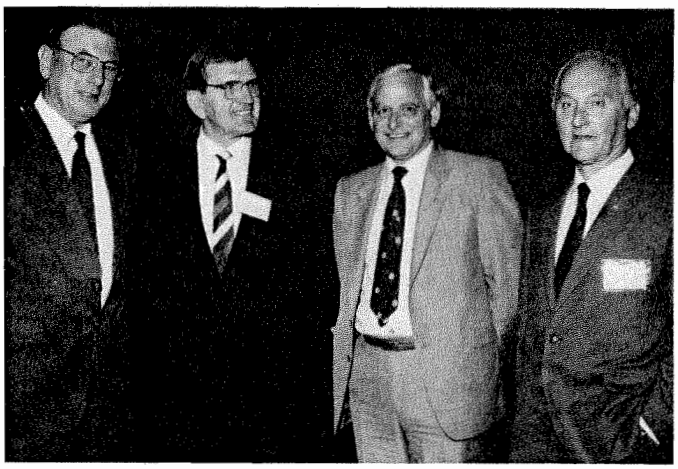
CSIRO also signed an agreement with Kasetsart University in Thailand in May, to facilitate cooperation between the two institutions in the training of Thai graduate scholars.

The agreement, which will be sponsored by the Australian Development Assistance Bureau under Australia's contribution to the National Agricultural Research Project of Thailand.

Dr Filshie said Kasetsart PhD scholars would be jointly supervised by CSIRO and the University.

'Kasetsart University scholars will spend approximately 15 months in CSIRO laboratories and provision will be made for brief exchange visits of the Australian and Thai supervisors during the scholarship period,' he said.

Industry address



During the Chairman's recent visit to Melbourne, the Victorian State Committee arranged for him to address leaders of Industry, Community, Government and Education at the Great Hall Melbourne Arts Centre. The event attracted an audience of some 300 people and was officially opened by the Honourable Ian Cathie, Minister for Industry, Commerce and Technology in the Victorian Government.

This was the first public presentation by the Chairman on 'CSIRO 1978-1983: Years of Change', and was by far the largest outside audience which he encountered during the course of his Australian tour.

Pictured above at the presentation are, from left, the Chairman, Dr Paul Wild, the Secretary, Victorian State Committee, Mr Jack Pattison, the Victorian Minister for Industry, Commerce and Technology, the Honourable Ian Cathie and the Chairman, Victorian State Committee, Mr Jan Kolm.

From the Chairman-

A regular column by the Chairman of CSIRO Dr. J. Paul Wild

During the month of May I, accompanied by either Keith Boardman or Geoff Taylor, have spoken to 25 groups of staff and four meetings with business and community leaders.

We have visited laboratories in Sydney, Canberra, Melbourne, Adelaide and Perth as a two-man team, in addition to which we have spoken to groups at Narayen, Rockhampton and Townsville as part of an Executive visit. The visits continue in June with Brisbane, Hobart, Darwin and Alice Springs. On each occasion there has been an opportunity for free discussion and question time, usually of 45 minutes duration.

These discussion times have been very good and remarkably varied; they have reflected a strong interest in Organization-wide issues as well as local and domestic matters. I will return to some of those issues at a later time after we have completed the circuit. In the meantime let me thank those of you we have already visited for your participation, interest and goodwill. Although formidable in prospect the exercise has been overwhelmingly rewarding from our point of view, if only to have had the opportunity of meeting so many of the body of people known as CSIRO in so short a time and learning about their feelings, aspirations and hopes for the future. And if I say we have thoroughly enjoyed the operation so far it does not deny that never have weekends been more appreciated.

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When in northern Queensland the Executive party visited Cairns and inspected our oceanographic research vessel which is under construction there by the North Queensland Engineers and Agents (NQEA). The company has done an extraordinarily good job both as regards quality of construction and keeping to timetable. The vessel is due to be launched next September. Our oceanographers won't know themselves when they get their hands on this superb vessel, with its special provisions for bow and stern lateral thrust power and its copious provision for on-board laboratory facilities.

I was intrigued to find it was built a couple of hundred yards from the water, requiring a special rail track to convey it there, across a road, at launch time. Why? Because the water side of the road was maritime territory subject to the jurisdiction of a particular trade union. **This** side of the road was ordinary urban territory in which the ship could be regarded as an ordinary manufactured article.

***

On May 18th the Prime Minister, accompanied by our Minister, opened the splended new buildings of the Division of Chemical and Wood Technology at Clayton. It was a gala day with a large number of guests from industry and the community. All, including the guests of honour, were shown the work of the Division through a series of first-class presentations which drew much favourable comment, especially from industrialists.

The Prime Minister was most encouraging. After he had completed the prepared part of his speech he had this to say, off the cuff:-

> "Dr Wild, I convey to you, your Executive and to all your colleagues and workers in theCSIRO, the congratulations of the Government for all that you have done to this stage for not merely the advancement of scientific research, but also the application of that research to the welfare of this country...
>
> We thank you for past cooperation and I give to you and your Organization, personally and through the Minister whom you rightly identify as one of the outstanding Ministers in this Government, noted for his enthusiasm, (and I can vouch for that — he doesn't let me alone, and I am thankful for the fact) — the assurance that this Government will seek to work closely with you: so that together we can see that the fruits of that research are reflected in the creation of a better and more prosperous and more equitable Australia."

Paul Wild

CSIRO booklets for industry

The 'CSIRO Research for Australia' project, a series of 20 booklets, is rapidly taking shape.

Several of the author panels which have already met to thrash out the form and content of their booklets and assign writing tasks include Advanced Materials, Conservation and the Environment, Building and Construction, Fisheries and Word Processing and Marketing.

In the Chairman's announcement of the booklet series in the December/January CoResearch, he said the booklets were intended to allow 'a person in any given industry to find out about the total scope of our work in their field of interest'.

The Organization has responded vigorously to the Chairman's call for co-operation on the project.

The Science Communication Unit staff who are providing editorial and design services for the project have put together a directory containing both the author guidelines and lists of the panel chairs and Divisional contacts for the series. Each Division has nominated an officer to liaise with the editorial staff. This should improve co-ordination where one booklet requires information from a number of Divisions.

The booklets will be produced in two colours — budget constraints limit the use of full colour illustrations except on the covers.

'A few Divisions are keen to have some high quality colour reproductions in their particular booklets. We are looking at ways of arranging this, but it raises budgetary problems. It is worth keeping in mind that simple, clear, well-produced diagrams and illustrations can have an even bigger impact than colour photographs,' the managing editor, James Lumbers said.

He said that much of the early work on the project was aimed at ensuring the booklets cover all the Organization's research, and that research priorities are explained in terms of community goals.

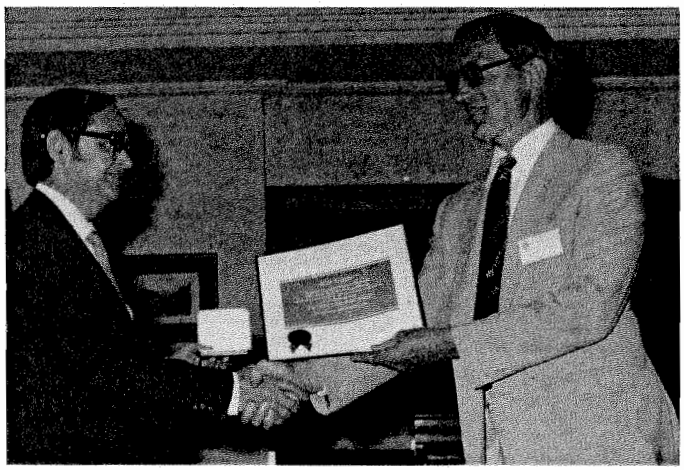
'The basic criterion is that a particular research area should be reported under the booklet title where a reader would *expect* to find it, even if this means mentioning it in more than one booklet,' Mr Lumbers said.

The editorial staff hope to have the first booklets published in the last quarter of 1984.

–Tim Anderson

Protein work wins prize

Dr Peter Colman of the Division of Protein Chemistry, left, receives the inaugural Fredrick White Prize from the President of the Academy of Science, Professor Arthur Birch. Sir Frederick White, a former Chairman of CSIRO, is on the right. The prize was instituted to recognise the achievements of scientists in Australia who are currently engaged in research of scientific merit which also contributes an understanding of natural laws and new concepts that are important to the well-being and civilized progress of society. Dr Colman's area of research involves the study of protein crystallography. He is currently studying the three dimensional structure of an enzyme of influenza virus.



To commemorate its centenary, the world's largest international professional organization, the IEEE (Institute of Electrical and Electronic Engineers) has awarded 1984 Centennial Medals. On a membership-proportional basis, Australia's share was eight medals. Of these, three awards were for work carried out at the CSIRO by Professor Lampard, now with Monash University. Dr Bob Frater from the Division of Radiophysics and Peter Somlo from the Division of Applied Physics.

The awards were presented to Dr Frater, above, and Mr Somlo, below, on behalf of the IEEE by Mr Barthold, President of the IEEE Power Engineering Society, at a ceremony held in Sydney on May 18.

Malcolm Peck has been awarded the Division of Energy Technology's first overseas research fellowship. He will spend six months at the University of Manchester gaining experience in the use of laser-doppler anemometry and laser interferometry techniques for measuring natural convection and heat transfer in cavities.

***

Sophia Ben Tahar has been awarded a French Government Fellowship to work on the molecular biology of photosynthesis with **Paul Whitfeld** at the Division of Plant Industry for two years. She has just completed a PhD at the Institute Jaques Monod in Paris.

***

Thomas Gollan, from the University of Bayreuth in Germany, visited Floreat Park for a week recently before joining the Division of Plant Industry in Canberra for six months. He will be working on the control of leaf growth and leaf gas exchanged by root water potentials.

***

Bob Ferraris of the Division of Tropical Crops and Pastures is in the Philippines for a six week consultancy trip with ADAB. He is managing a research program on rainfed crops, part of the PADAP project.

***

Richard Pharis from the University of Calgary in the United States is visiting the Division of Plant Industry for two months to work with **Rod King** on the control of flowering by gibberellins, which can effect growth and development in young plants.

Jorg Landsmann, from the Max Planck Institute, has joined the Division of Plant Industry for three years to work on the isolation, cloning and characterisation of haemoglobin genes from non-leguminous plants which are capable of fixing atmospheric nitrogen.

***

An International Atomic Energy Agency Fellow from Thailand, **Tuangrak Nantawisarakul**, has arrived at Lucas Heights to work in the Division of Applied Physics, the Health and Safety Division, and the Division of Energy Chemistry for several months.

***

Chief of the Division of Mathematics and Statistics, **Terence Speed**, has been appointed to the board of management of the Australian Institute of Criminology.

***

Margaret Saville has taken up the position of librarian at the Division of Forest Research, while **Max McMaster** has joined the Division of Geomechanics as librarian.

***

Theo Lalas has retired after 15 years with the Division of Applied Physics. Theo gained a science degree in the middle of his working life. He supervised the viscometry work, carried out an extensive series of diverse experiments on water vapour, and made substantial contributions to the WMO reference psychrometer (refer CoResearch no. 268).

Charles Kowala, a senior research scientist in the coal group at the Division of Applied Organic Chemistry, formally retires on June 22 after 27 years with CSIRO at Fishermens Bend.

***

Tom Romberg, a senior research scientist at the Division of Mineral Physics, spent two weeks in China recently at a joint seminar on two-phase flows and heat transfer, organised by the Xi'an Jiaotong University and the University of Miami in the United States. Three scientists from third countries, including Dr Romberg, were invited in recognition of their important contributions to this field.

***

Peter Banks, Division of Energy Technology, is visiting England, Finland, Canada and the USA before presenting a paper to the Fourth International Drying Symposium in Japan.

***

Dominic Mulligan, from the Workshop in the Division of Mineral Energy, has been awarded first prize in Stage 1 Metal Fabrication 1983 by Sydney Technical College. Apprentices from all over Sydney competed for the award.

***

Tony Watson, at the Division of Entomology, has been awarded the inaugural Ian Mackerras Medal for excellence in entomology by the Australian Entomological Society. The medal honours the late Dr Ian Mackerras, one of the Society's founders and President.

***

Gordon Aitchison the former Chief of the Division of Geomechanics, has won the prestigious John Jaeger Award for his work on soils and rocks. Dr Aitchison has a Ph.D in civil engineering and worked on many facets of mining, including safety, underwater, coal and metal during his 35 years with CSIRO.

***

Dr Peter Howells, of the small-scale dynamics group in the Division of Atmospheric Research has recently been awarded a CSIRO Postdoctoral Research Fellowship, and left the Division in April to spend a year at NCAR (National Centre for Atmospheric Research) in Boulder, Colorado, USA.

***

Ian Simpson, from the New Zealand Meteorological Service is spending three months in the Division of Atmospheric Research until the end of July. During his stay he will also interact with scientists of the Bureau of Meteorology and the Chisholm Institute of Technology.

***

Bob Anderssen, Division of Mathematics and Statistics, has been elected President of the Australian Mathematical Society for 1984/85.

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Dot Crisp, the hands behind CoResearch, Sci-file, Industrial Research News, the Annual Report and several other CSIRO publications has gone on extended leave before retiring later this year. Dot had just made the big change from IBM Composer to the fully computerised CRTronic phototypesetting equipment and her expertise and inside knowledge of all the above publications will be sadly missed — and our jobs made more difficult.

Fish expert retires

One of the pioneers of the Division of Fisheries Research, Ian Munro, has retired after 41 years with CSIRO.

He has been appointed honorary post-retirement Research Fellow in recognition of his contribution to fish taxonomy, and will complete the first comprehensive book on Australian fish fauna, *Handbook of Australian Fishes*.

He was born in Brisbane and educated at the Brisbane Grammar School and the University of Queensland, graduating with B.Sc. (Hons). His thesis was on the shoreline ecology and plankton communities of a mangrove island in Moreton Bay. He received his M.Sc. from the same university for work on the biology of the black bream.

During 1941–42 he was the Walter and Eliza Hall Research Fellow in Economic Biology at the University of Queensland working on the biology of the Spanish mackerel.

After a year of active service in the A.I.F, he was appointed Assistant Research Officer in the CSIR Division of Fisheries in 1943. In these early years he worked in estuaries, mainly on black bream, developed an interest in fish eggs and larvae and continued his work on Spanish mackerel.

During 1948 and 1949 he participated in the 'Fairwind' surveys in Papua New Guinea.

Ian Munro

He was the first technical expert sent to Ceylon under the Colombo Plan for Technical Aid to South East Asia. As a result of this work he published *The Marine and Fresh Water Fishes of Ceylon* in 1955.

Between 1956 and 1961 the *Handbook of Australian Fishes* was published serially in forty-two parts which is yet to be completed. During this period, Ian started the fish reference collection which now stands at over 57 000 registered specimens of about 2200 species.

In the early 60's, the Queensland Government requested a survey of the prawn resources of the south eastern corner of the Gulf of Carpentaria, then a remote and unexamined area. The Division of Fisheries, headed by Ian Munro, conducted a survey from 1963–1965 which led to the establishment of the multi-million dollar prawn export industry in the Gulf and other parts of northern Australia. The results of this survey are presently being published as a five part Atlas.

Ian Munro's marriage to Joan Saxton in 1946 was the first staff romance at the Cronulla headquarters. They have three children, and three grandchildren and plan to remain in Sydney with their family group.

Between working on the text and preparing watercolour illustrations for his fish book, Ian hopes to find more time for his many hobbies and interests which include his workshop, aviaries, green houses and large freshwater aquaria.

—Phil Hindley

Three scientists have recently joined the Applied Mechanics Program of the Division of Environmental Mechanics: Dr John Knight, left, comes from the Division of Mathematics and Statistics and over the past several years he has collaborated extensively with scientists from Environmental Mechanics on the theory of soil-water flow; Dr Phil Broadbridge, right, comes to the Division from Perth, where he was a senior tutor at the Western Australian Institute of Technology; and Dr Geoff Aldis, who recently completed his doctoral work at the University of Cambridge, where his research centred on unstirred layers and their relevance to osmotic flow experiments.

In addition to their own research work, the scientists in the Applied Mechanics program provide general mathematical and theoretical support to the Division's other, more experimental, programs.

obituary: Rex Ferguson

The former CSIRO Architect, Mr Rex Ferguson, died recently in Melbourne.

Mr Ferguson first joined CSIR as a Senior Research Student in 1933, and was appointed CSIR Architect in 1945.

Until his retirement in 1970 he was involved in the design of many CSIRO laboratories, from Industrial Chemistry at Fisherman's Bend in 1942, to the Division of Water and Land Resources at Black Mountain in Canberra and the new Division of Horticulture laboratories in Adelaide.

He was highly regarded and innovative in his design, and had a reputation of coping well with World War 2 shortages.

His international reputation in the field of laboratory design led to consultancies on projects in Bangkok, Colombo, Djakarta, Honolulu and Montevideo.

He wrote a book, 'Practical Laboratory Planning', detailing his and CSIRO's experience in laboratory design, and which was published in 1973.

Chief resigns

The Chief of the Division of Wildlife and Rangelands Research, Dr Charles Krebs, has resigned due to family and health reasons, and has returned to Canada.

Dr Krebs, one of the world's leading animal ecologists, joined CSIRO in 1982.

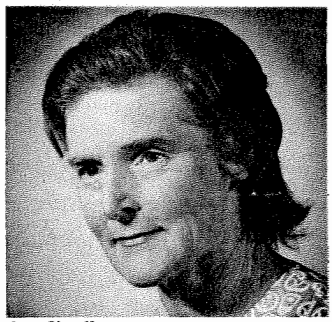
He graduated from the University of Minnesota in 1957 and received his PhD from the University of British Columbia in 1962.

For eleven years before joining CSIRO he was Professor of Zoology at the University of British Columbia in Vancouver, Canada, where he was interested in the problem of population regulation in animals. His special field of interest was the population dynamics of the Canadian snowshoe hare.

Dr Krebs is the author of a textbook, 'Ecology' and is writing a book on ecological methodology.

Jean Sheaffe retires

Monday 14 May was a sad day for staff of the Division of Water and Land Resources when they gathered to farewell their old colleague Jean Sheaffe.



Jean Sheaffe

Jean joined CSIRO in 1938, and the Division's precursor, the Land Research and Regional Survey Section, in 1948, making her the longest serving officer in the Division at the time of her retirement.

The unofficial title now passes to forest researcher John Saunders who joined the Division in 1954.

Born in Canberra, Jean grew up in Australia's most unusual country town, where most people knew everyone and a couple of Cabinet ministers as well.

Her father had been posted to the district in 1910 to survey the boundaries of the ACT, and later prepared the contour base map for the international town planning competition won by Burley-Griffin.

With her father a senior public servant, Jean's family had a close association with an assortment of Prime Ministers. Bob Menzies had a particularly good tennis serve, Jean said.

Staff of the Division would like to wish Jean many happy years in her retirement, and express their thanks for her long and invaluable contribution to their research.

—Peter Martin

Statistician retires

Bruce Hall retired from the Division of Mathematics and Statistics in April after 33 years of service.

He joined DMS when it was still a small section with about a dozen professional staff, and he retired from the Division of Mathematics and Statistics, with a staff of 96.

In 1951 Bruce joined CSIRO in Melbourne as a Technical Assistant, and after graduating in Mathematics and Statistics at the University of Melbourne was reclassified as a Research Officer in 1952.

He first worked at the Division of Building Research at Highett and later spent his time in Melbourne acting as a consultant to a variety of CSIRO Divisions including Textile Industry, Forest Products and Protein Chemistry.

In addition he spent some time commuting to Sydney to consult with the Divisions of Textile Physics and Food Preservation. In 1963 he spent nine months in India, mainly at the Indian Statistical Institute, following up his interests in experimental design.

In 1965 he was transferred to Adelaide, working principally with the Division of Human Nutrition, and continued his research into the design and analysis of experiments.

Many years ago, Bruce realised the advantages of constructing designs by the cyclic method, and its extensions, and the resulting simplifications to the analysis and the estimation of varietal effect, etc., arriving from the cyclic constructions.

Staff are very pleased that Bruce has been appointed an Honorary Research Fellow with DMS. They will be able to continue to benefit from his broad experience in statistics.

—Barbara Hartley

Degree is a first

Dr Bob Brown, Chief of the Division of Manufacturing Technology, has been awarded the degree of Doctor of Engineering in the Faculty of Engineering, Monash University at the conferring ceremony held on May 9 1984.

This is the first time in the history of the University that this professional degree (e.g. not honorary) has been awarded, and it is the highest honour which an Australian university can confer on an engineer.

Dr Brown's international standing as an engineer and academic is well recognised.

His academic career started with his student days at Melbourne University and continued through his engineering lecturing positions at that university from 1957 to 1964 and at Monash University from 1965 to 1967.

It extended with his associate professorships at Carnegie-Mellon University, Pittsburgh 1968–1969 and Monash University, from 1970 to 1976, until he became Professor and head of the mechanical engineering department at the University of Western Australia (1977 to 1980).

His contributions include a textbook and some 40 research papers in the fields of metal machining and metal forming. He belongs to a wide range of professional engineering societies, including fellowship to the Institution of Engineers (Aust.), and memberships of the Institution of Mechanical Engineers (London), the Institution of Production Engineers (London) and the International Institution for Production Research.

MANY SKILLS

His activities, including chairmanship of the College of Mechanical Engineers of the Institution of Engineers, Australia, board member of Technology Transfer Council, and member of the Metal Fabrication Industry Council, are well known.

Dr Brown has combined technical, administrative and political skills to establish, mould and direct the activities of the CSIRO Division of Manufacturing Technology since its creation in 1980 to the current stage where it conducts present time research which is relevant and vital to the needs of Australian Industry.

Jack Pattison leaves

On May 10, 1984, over 100 friends of Jack Pattison gathered at the Division of Building Research to farewell him after 36 years of service with CSIRO.

Mr Pattison has accepted the position of Chief Executive with the Credit Societies' Guarantee Fund Advisory Committee in Victoria, which is appointed by the Minister administering the Co-operation Act, the Hon. Ian Cathie, to administer the Guarantee Fund, provide assistance and direction to credit societies and provide advice to the Victorian State Government on the operation of Credit Societies.

He is also Secretary of CSIRO's Victorian State Committee.

The evening was hosted by Dr Lex Blakey, Chief of the Division of Building Research. Amongst those who attended were present and former colleagues from many parts of CSIRO together with representation from the Victorian State Committee and the Joseph William Gottstein Memorial Trust Fund.

Pictured above, from left, are John Vavasseur, Jack and Yvonne Pattison and Lex Blakey.

Soil Scrutinised

A soils conference held in Brisbane in late May had been very successful, the chairman of the organising committee, Dr John Russell of the Division of Tropical Crops and Pastures said.

Soil erosion and land degradation, soil biology, chemistry and physics, soil classification and mineralogy and soil fertility were all discussed.

Over 350 people from all Australian states, and 7 overseas countries attended the conference.

'More than 190 papers, including six major reviews on the present state of soil research and of the directions of future studies in soil science, were presented and discussed,' Dr Russell said.

'The reviews covered soil erosion and its better management, the build-up of salts in soils, the use of high technology to monitor physical and chemical changes in soils, the manipulation of soil microorganisms and the use of mechanical and chemical treatment to improve the quality of soils with the subsequent better yield of crops.'

'Over 40 papers will deal with losses by land degradation, indicating the concern scientists have for our country's declining soil resources. But on the brighter side we will discuss soil improvement by correct management techniques,' Dr Russell added.

Other subjects discussed included a new locally developed laser surveying technique up to 3 times faster than previous methods, mechanical and chemical treatment of soil as seeds are planted to improve grain yield, and the effects of mulching and the importance of worms in transferring mulch nutrients down into the soil, making them available for plant roots.

On field visits to the Lockyer Valley and Bundaberg in Queensland, deep pits were dug in the soils so that detailed soil profiles could be examined and discussed. The soils of general Agricultural areas, sugar cane and pine plantations, tropical pastures, fruit producing and recreational areas were studied.

Dr Ross Coventry, left, of the Division of Soils was awarded the J.K. Taylor OBE Gold Medal for Soil Science at the recent National Soils Conference. The award was given by the Taylor family in memory of Mr John Taylor, Chief of CSIRO's Division of Soils from 1947-1963. The medal is awarded for a publication, including book, film, map or video, or achievement over a four year period.

Dr Coventry is congratulated above by Mr Taylor's daughter, Miss Jill Taylor, and the President of the Australian Society of Soil Science, Dr John Russell.

New look for ABC

The ABC is reorganising its coverage of science and technology, and has appointed a leading television science producer to its television science programs.

Mr Dick Gilling, who has been involved in such programs as 'Tomorrow's World', 'The Ascent of Man', 'The Human Brain' and 'Spaceships of the Mind' was a founding member of the 'Horizon' documentary group and has produced, written and directed over 25 programs for the series.

A senior researcher of the Science Unit, Mr Harry Bardwell, said the ABC is keen to let the science community know that changes are underway.

'Conversely, we are interested in hearing much more news about what is happening in Australian science. We would appreciate being kept posted on events, visits, major breakthroughs, funding etc,' he said.

'In this way we hope to develop an up-to-date and broad based local data bank,' Mr Bardwell said.

Savanna problems discussed

The problems and research needs of the world's tropical grazing lands were discussed by 150 scientists from 60 countries at a Brisbane symposium recently.

The International Savanna Symposium had been the first in Australia of a number of activities planned to bring world-wide attention to the tropical grazing lands or savanna regions said the organizing chairman, CSIRO's Dr John Tothill.

The symposium formed part of the recently proclaimed International Decade of the Tropics and followed the International Rangelands Congress held in Adelaide the week before.

'The tropics contain the greatest proportion of the world's poor and hungry people and also contain large areas that have become less productive because of soil erosion and other forms of environmental damage,' Dr Tothill said.

'This symposium brought together scientists to discuss how to maintain and enhance long term stability and productivity from tropical savannas.'

'By understanding more about how savannas function in different parts of the world, we will be able to devise better ways to manage these regions,' he said.

'This will enable us to strike a balance between the industries such as grazing that require an economic level of productivity from these regions, and the conservation practices required to ensure long term stability and preservation of savannas,' Dr Tothill added.

Most of the tropical savannas in Australia are used for beef and wool production, and problems such as soil erosion have occurred from over-grazing.

An increasing area is also being developed for crop production which further puts at risk much of the better soils of the region if managed unwisely.

Dr Tothill said that more research was needed to understand the effects of grazing animals and ground disturbance on savannas, e.g. why native grasses in the northern tropics were more likely to die from overgrazing than those in the sub-tropics.

'Any attempt to increase animal productivity generally also increases the stress on the soil and vegetation resources and determining suitable management techniques for the grazing industries is a continuing aspect of research,' he said.

'Also Australian savannas are coming under increasing pressure from the demands of alternative land uses such as cropping, mining, National Parks, Aboriginal Reserves and tourism — the needs of some of these various uses may conflict and rational land management requires solving these problems,' Dr Tothill added.

The symposium paid special attention to savannas in different countries that are subject to conflicting use by man, and included a section on land use by Australian aborigines.

The International Savanna Symposium had received international sponsorship, including $15,000 from UNESCO, a comparable amount for the funding of a number of keynote speakers by the Commonwealth Foundation, London, $5,000 from the Queensland Government, and the facilities of the CSIRO Division of Tropical Crops and Pastures and the Queensland Department of Primary Industries.

Savannas can be defined as those areas with a good ground cover of tropical gras species in communities that range from grasslands to open forests. They typically have marked seasons — warm wet summers and cooler dry winters.

"Antarctic Man" wins Michael Daley Award

The inaugural Michael Daley Award for excellence in science and technology reporting has been won by ABC TV producer, David Parer.

Mr Parer, of the ABC's TV Natural History Unit, won the $1000 Award for his documentary, 'Antarctic Man', which covered the International Biomedical Experiment to the Antarctic (IBEA).

The two-part program was considered by the judging panel to be an excellent example of science reporting. It had impact and was presented in such a way as to have appeal for both a scientific and lay audience.

The panel said the program presented a refreshing portrayal of scientists as human beings. It was about scientists carrying out a scientific experiment and not only did it accurately explain the nature of the experiment, but it also implicitly raised valid questions about the value of the experiment.

The panel also highly commended Jane Ford, science correspondent for the 'Australian' and publisher of the science and technology newsletter, 'SciTech', and Robyn Williams, producer/presenter of the ABC radio program 'The Science Show'.

Research to counter disaster

Nine staff of the Australian Counter Disaster College, Mt Macedon, and their Director, Brigadier Gilmore, OBE, fourth from right, visited the Division of Atmospheric Research in April. They were briefed by the Chief, Dr Tucker, right, on current research in the Division relevant to natural and man-made disasters. Above, the visitors are shown the receiving antenna for data from the NOAA polar-orbiting satellites for the Division's CSIDA (CSIRO system for Interactive Data Analysis) facility.

Photograph by David Whillas

Gungahlin Homestead:

CSIRO's historical home

One of Australia's historical homesteads, Gungahlin, is the Canberra home for the Division of Wildlife and Rangelands Research.

Gungahlin Homestead while owned by the Craces, showing both Georgian and Victorian wings. Photograph from the Crace Collection.

The house has two distinctive styles of architecture: an older Georgian wing featuring wide verandahs, cedar fire surrounds and a magnificent staircase; and a Victorian style southern wing with large bay windows, a tiled hall and cedar stair.

The two storey house, outbuildings, driveway and century old dam are classified by the National Trust and are on the Australian Heritage Commission's register of the National Estate.

The homestead's owners during its 150 year history were beset with troubles of their times, from robbery by bushrangers, to a tragic riding accident, tension between squatters and selectors, Depression, drownings and financial woes.

The land was first granted to the purser of the First Fleet ship 'Sirius', John Palmer, in about 1828, but the present homestead was built by Palmer's daughter and son-in-law, William Davis Jnr, in 1862.

It was Davis Jnr who was robbed by Ben Hall and Johnny Gilbert near Lake George as he returned to Gungahlin with two new domestic servants.

The house was described by a touring correspondent in 1871 as '... a fine building, erected on a commanding portion, in fact, overlooking many miles of country'.

TRAGIC ACCIDENT

Gungahlin was sold to Edward Crace in 1877, after Davis Jnr's adopted son was killed while trying to jump a horse over a six rail fence at the Queanbeyan show.

The Davis family had contributed significantly to the colonial settlement of the Canberra district.

Edward Crace expanded his landholding to make Gungahlin one of the largest properties of the district, and he added the imposing coursed rough faced sandstone Victorian wing to the south side of the house. It included a drawing room, dining room, hall and master bedroom.

His first ten years at Gungahlin were fraught with tension as he and other squatters clashed with selectors. In one incident when a selector damaged his fencing, Crace took him to court and won a farthing's damages.

DISTRICT TELEPHONE

In 1887 Crace, who was prominent in the social and business affairs of the community, installed the first private telephone in the Canberra district at Gungahlin.

Disaster struck, however, in 1892 when he was forced by the deep economic recession to return from a business trip to England and mortgage his property. Later that year he and his groom were killed while trying to cross the flooded Ginninderra Creek.

Crace's son Everard was also active in local affairs, and lived at Gungahlin until his death in 1928. During this time the spring races were held at the property and in 1915, it was resumed by the Commonwealth as part of the newly created Federal Capital Territory, but leased back to the Crace family.

Dr Frederick Watson, the honorary librarian and trustee of the Public Library of Sydney from 1910–1912, and editor of the Australian Historical records, took up a ten year lease on the homestead in 1928.

During the 1930s it was popular with pilots, who landed their planes, turned them round and flew back to the city and airport.

Mr Ambrose Kitchen held the lease from 1940 to 1949, when Gungahlin was allocated to the then Canberra University College (now Australian National University) as housing for diplomatic cadets.

It was, however, closed for repairs in 1950, and after reopening in 1952 for a year, was closed again due to high running costs and distance from Canberra.

CSIRO CHANGES

In 1953 CSIRO's Wildlife Survey Section moved in and since then a number of alterations and additions have been made to the building, including new blocks of offices.

Most of the timber outbuildings have been demolished, the horse trough removed and the well covered over. The stone coach house, cellar and servants' quarters have to some extent been preserved as a recreational facility, but the main house has completely changed, with rooms being made into laboratories, windows changed, verandahs enclosed, bathrooms altered, rooms subdivided and fireplaces closed in.

The dam, which formed a miniature lake with a windmill pump and gear to supply the home with water, has been fenced in and bird observation platforms built. The original driveway, which is lined with English trees planted by the Crace family, remains.

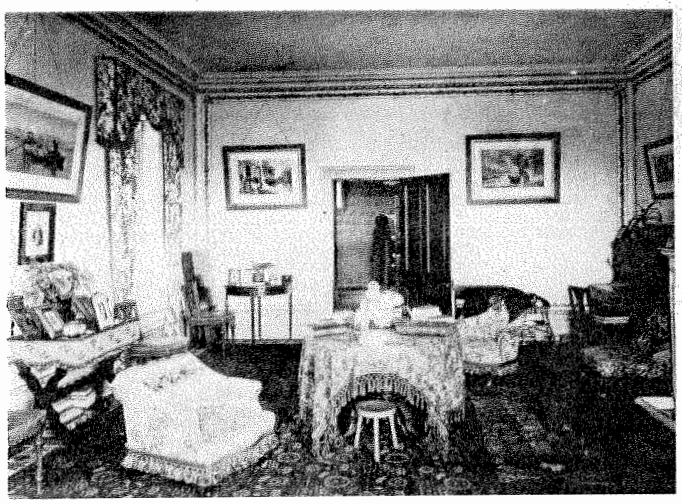
A report commissioned in 1982 by the Department of Transport and Construction, at the request of CSIRO, found that despite the building's deterioration, it is an important part of Australia's heritage and should be preserved and enhanced for present and future generations.

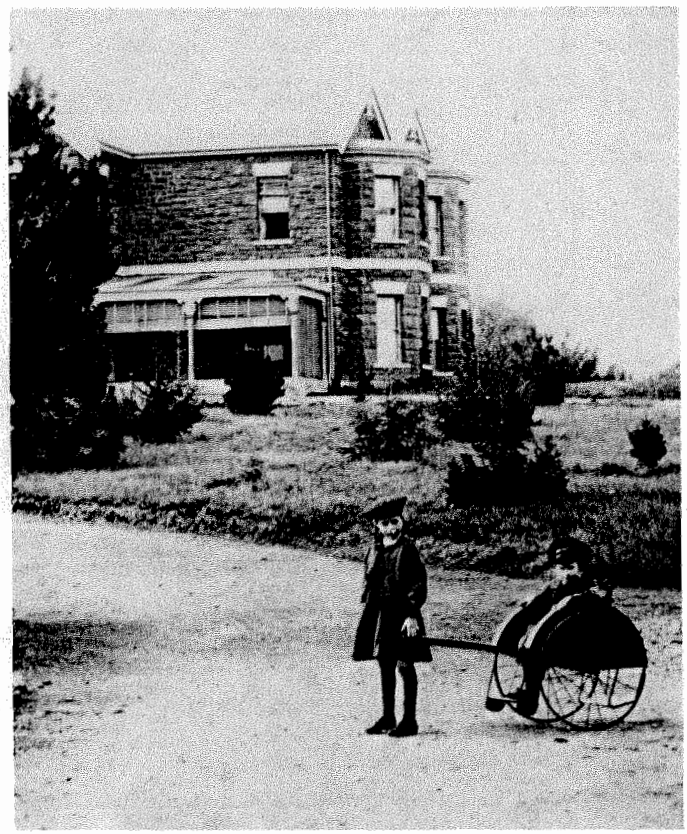
In November 1983 the homestead, two outhouses, the dam and driveway with its original trees, were placed on the Australian Heritage Commission's register of the National Estate.

This enables CSIRO to apply for funding, under the National Estate Grants Program, to maintain, repair and perhaps return Gungahlin to its former splendour.

It also obliges CSIRO to advise the Heritage Commission of any building proposals which may effect Gungahlin, though the final decision rests with the Minister.

Photographs from the Crace Collection include, bottom left, the drawing room, and below, the Victorian wing from the driveway.





CAT

The CAT Column is open to all members of CSIRO who wish to comment on communication matters.

Dr Michael Dack of the Science Communication Unit contributed this month's CAT column.

Communication — in recent time the word has hovered on everyone's lips. Yet what does it mean and why has it assumed such a high profile in CSIRO's vocabulary?

To the scientist, communication could mean research papers or conferences. To the Executive, liaison with industry or relations with the Minister. To the specialist communicator, films, inquiry services or press releases. To the administrator, the spread of policy decisions throughout the Organization.

Depending on our particular function in CSIRO, the word obviously has different connotations. This allows us all to lay claim to being communicators. But it can also lead to people talking at cross purposes when discussing the subject.

We are now in the throes of a review of CSIRO's external communication activities. It might be useful, therefore, to look at four major aspects of these activities in an attempt to define their place in the communication spectrum.

Information Transfer — the transfer of CSIRO's non-confidential research results and expertise to the community by such means as personal contact, publications and inquiry services. This process is a two-way one, involving feedback of community needs into the Organization.

This area of communication is addressed in the revised promotion guidelines for research scientists. On his current tour of CSIRO laboratories, Dr Wild has stressed the Executive's genuine determination to ensure that scientists who take their expertise to industry and the community are not penalised in the promotion stakes.

Information transfer activities recognise the fact that scientific research, in itself, helps no-one. The Australian community only benefits when the results and knowledge gained are put to use.

Public education — programs of information transfer which utilise CSIRO's specialised knowledge in specific areas to alter public attitudes.

Areas immediately springing to mind are diet and human health, the handling of foods, bushfire safety and energy conservation. Dean Graetz's recent ABC television warnings of the state of Australia's arid regions fall into this category, as too do collaborative projects with education authorities.

Public awareness — activities which heighten community appreciation for science in general and CSIRO's work in particular.

These activities include Divisional open days and VIP visits, and the provision of films for television, feature articles and news releases for the press, and 'experts' for talk-back radio. Public awareness generated in this way acts as a signpost to CSIRO's research, allowing industry and community groups to take advantage of our skills and services.

Public relations — the goodwill generated in the community as a result of the above three communications activities.

In addition, by participating in projects of other organizations — e.g. Australia's Bicentennial, National Science Summer School, BHP Science Prize — CSIRO develops a 'good neighbour' reputation for itself in the community.

Not all Divisions, Units and sections in CSIRO will want to participate in all these communication activities. Some are best served at local level; others, centrally.

What is certain is that CSIRO has responsibilities and needs in all these areas.

CSIRO Fun Run time again

As readers of CoResearch are well aware, the month of July heralds the start of one of the world's great sporting events. No, not the Olympics in LA but the CSIRO Fun Run on Black Mountain.

Now in its eighth year, the prestigous 'Black Mountain Cup' will be run at lunchtime on Friday, July 20. It will follow the usual 5.6km course on the slopes of Black Mountain, starting and finishing at the Pye Laboratory.

Last year the Cup was won by Entomology with Animal Products (Sydney) second. This year might see Ento's virtual monopoly of the teams event toppled by a strong team from Water and Land Resources or one of the 'dark horse' Interstate Divisions.

So let's see a good roll-up of CSIRO athletes (and others) at Canberra on July 20 for this great event. Remember, more than your Divisional honour is at stake, you could win a bottle of fine wine worth maybe $3.00.

For entries and information phone Colin Hazelton on (062) 46 5891 or Gregory Heath (062) 465 692.

Search for scientists for science search

The Australian and New Zealand Scientific Exploration Society (ANZSES) is searching for scientists to lead an expedition to Hinchinbrook Island, off the north Queensland coast.

ANZSES annually has five week long scientific expeditions to rugged and interesting parts of Australia for 30–40 fit young people.

Scientific study of tropical Hinchinbrook Island has been sparse and infrequent, though evidence of aboriginal occupation has been found, and over 100 bird, 20 reptile, two amphibian and 13 fish species have been observed.

It is heavily vegetated, with eucalyptus forest, closed forest and open tropical heath.

In January 1985 the expedition will for the first time survey the island's fauna and flora in the wet season.

It requires up to seven volunteer leaders, including a Chief Leader, who will be required to have leadership, bushcraft, navigation and safety skills, and be capable of planning, supervising and writing up field observations.

Any interested people should write to Gillian Barclay, Assistant Executive Officer, ANZSES, PO Box 174, Albert Park, Victoria, 3206.

C'wealth workshop

African, Asian and Pacific nations were represented at the Commonwealth Science Council workshop on environmental planning held at the Division of Water and Land Resources in May.

Of the variety of environmental problems identified in the 13 nations, insufficient data, inadequate capacity to handle data and lack of public awareness and understanding were most frequently mentioned.

Possible collaborative research was discussed, with the Pacific delegates suggesting further development of environmental planning methods (eg for zoning coastal areas) and a range of resource assessment projects (eg evaluating forest resources in the Solomon Islands).

Asian and African delegates suggested collaborative work to establish and maintain environmental databases and on soil erosion would be most beneficial for their countries. Joint work on the effects of agricultural chemicals and salinisation would also be valuable.

Delegates are pictured above with Water and Land Resources staff, including the organiser of the workshop, Mr Jan Basinski, bottom right.

— Photo by Jack Cavanagh

Fleece "falls" off CSIRO Sheep

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CSIRO has developed a substance which causes wool to fall off sheep thus doing away with manual shearing.

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...scientists have isolated a protein known as 'epidermal growth factor', which, when injected, causes the fleece to break off in 48 hrs.

PRICK GOES THE NEEDLE
(sung to click go the shears)

Song:
Down in the lab the technician stands
Grasps his syringe in his thin bony hands
Fixed is his gaze on a well covered sheep
Glory when he gets her won't he stick the needle deep.

Chorus:
Prick goes the needle, prick, prick, prick,
Straight is his blow and his hands move quick
A bit of cotton wool and a sterilizing dab
And then he looks around to find another sheep to stab.

In the middle of the lab a computer keeps the score
of perforated sheep dropping fleeces to the floor
And shearers now redundant say 'My scientific oath'
'We've got the bloody sack because of epidermal growth'.

Chorus:
Prick goes the needle, prick, prick, prick,
Straight is his blow and his hands move quick
A bit of cotton wool and a sterilizing dab,
And then he looks around to find another sheep to stab.

"

This anonymous offering arrived at CoResearch recently.

'CoResearch' is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 8th day of the month of publication. Material and queries should be sent to the Editors, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editors: Jeannie Ferris and Penny Gibson.

CoResearch

CSIRO's staff newspaper *July 1984* *272*

Senate Committee:

Animal welfare concern

CSIRO placed great importance on ensuring that the animals used in its research were treated humanely, a Senate inquiry on animal welfare has been told.

The Organization was looking for ways to reduce the numbers of animals used for research.

Dr Keith Boardman of CSIRO's Executive told the inquiry that the Organization was continually investigating and wherever possible adopting new techniques that made it possible to reduce the numbers of animals required for research. But continued progress in many areas of biological science, including research for the control of human and animal diseases, would require the continued use of animals for the foreseeable future.

ANIMAL CODE

'CSIRO has been involved with the NH&MRC in the production of a code of practice for the care and use of animals in research which has been widely adopted by other research organizations and funding bodies,' Dr Boardman said.

A key requirement of the Code is the establishment of Animal Experimentation Ethics Committees to monitor all research involving animals. The wide-ranging responsibilities of these Committees include the examination of all proposals for the use of animals in research and ensuring that the treatment of animals conforms with the guidelines set out in the Code.

Each Committee has at least four members, of whom at least one is not an employee of CSIRO and one is not directly involved in animal research.

'The non-CSIRO and non-research members provide a valuable perspective on the aims and methods of the research,' Dr Boardman said.

CSIRO presented its submission to the Senate Select Committee on Animal Welfare on July 3.

The Committee is examining the question of animal welfare in Australia, with particular reference to:

- interstate and overseas commerce in animals
- wildlife protection and harvesting
- animal experimentation
- codes of practice of animal husbandry for all species
- the use of animals in sport

The Committee was told that animal experimentation had benefited society in countless ways, ranging from alleviation of suffering through advances in medical science to more efficient livestock production and better livestock health.

MAJOR CONTRIBUTIONS

In Australia, CSIRO had made major contributions to the wellbeing of animals which were used by man for the production of food and fibre.

Among examples given to the Senate Committee were the part played by CSIRO in the eradication of contagious pleuropneumonia in cattle and the control of pulpy kidney in sheep.

'There are other diseases of animals which are of a painful and distressing nature for which better methods of control are still needed,' Dr Boardman said.

These included tick diseases and blowfly strike of sheep.

CSIRO was not involved with routine testing of cosmetics, human pharmaceutical agents, household products or addictive narcotics, Dr Boardman said.

Animals were now used by 11 research divisions and will be used at the Australian National Animal Health Laboratory.

These included goats, pigs, donkeys, marmosets, dogs, rabbits, guinea pigs, rats, mice, chickens and quail as well as cattle and sheep.

A variety of Australian native animals were also kept at the Division of Wildlife and Rangelands Research laboratories throughout Australia.

These included wallabies, bandicoots, rabbits, bush rats, bird and waterfowl as well as a variety of kangaroos.

Dr Boardman explained that most of the Organization's work involving domestic animals aimed to improve their health and efficiency.

'This research is concerned with the control and prevention of animal diseases and many aspects of animal husbandry including nutrition, reproduction and the management of farm animals,' Dr Boardman said.

'The only other research areas requiring animal studies are for human nutrition, food and nutrition studies and wildlife conservation and management.

Dr Boardman was joined at the Senate Committee by Dr Alan Donald and Mr Peter Carter of the Division of Animal Health and Mr Bunny Fennessy of the Division of Wildlife and Rangelands Research, while Dr Graham Caughley of the same Division met with the Committee later in the week to discuss kangaroos.

Biologist elected

Dr Cyril Appleby of the Division of Plant Industry has been elected a Fellow of the Australian Academy of Science.

He was one of nine new fellows elected at the 30th annual meeting of the Academy, and the only CSIRO representative.

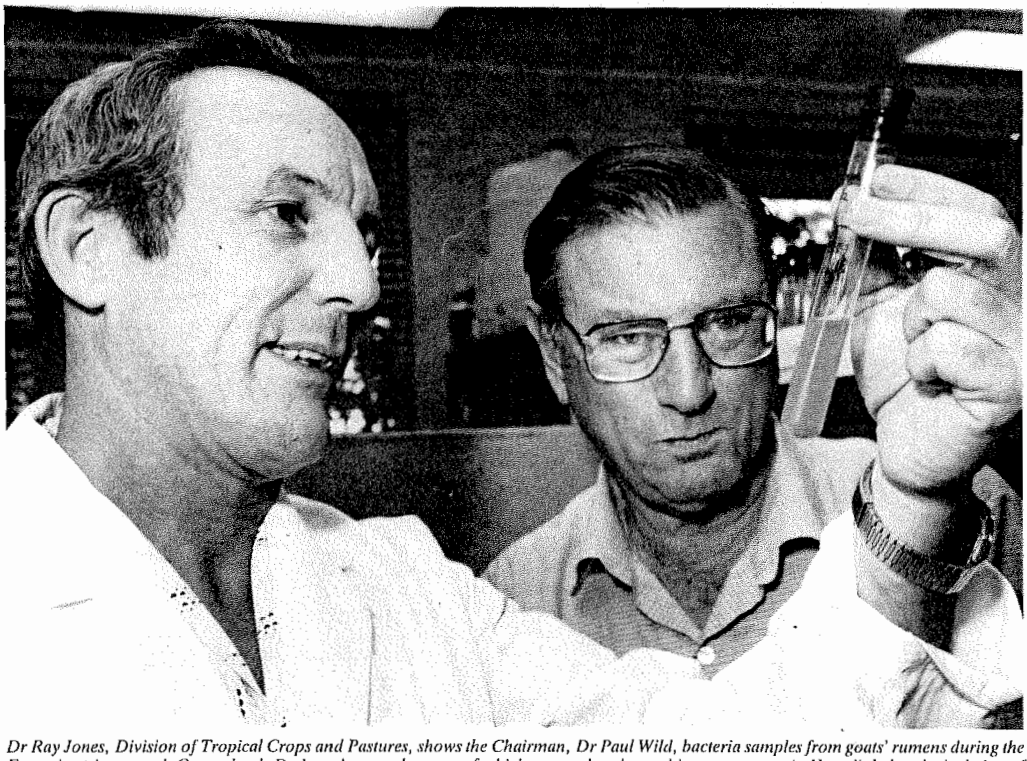
A Chief Research Scientist, Dr Appleby was elected for his contribution to the understanding of haemoprotein structure and function.

He showed that the haemoglobin of legume root nodules has unique properties which permit the rapid binding and transport of oxygen at extremely low free oxygen concentrations. This permits the nitrogen fixing bacteria present in such nodules to breathe efficiently at oxygen levels too low to damage the oxygen-intolerant nitrogenase enzymes.

His work has also given new insights into the basic mechanism of oxygen binding by haemoglobins, which may lead to a better understanding of the function of animal as well as plant haemoglobins.

Dr Appleby graduated with a PhD from Melbourne University in 1958 and has been with CSIRO in Canberra since 1956.

With love from Hawaii



Dr Ray Jones, Division of Tropical Crops and Pastures, shows the Chairman, Dr Paul Wild, bacteria samples from goats' rumens during the Executive trip to north Queensland. Dr Jones' research, some of which was undertaken at his own expense in Hawaii, led to the isolation of bacteria which breaks down an amino acid in the high protein stock food leucaena which is toxic to Australian cattle. The discovery, and the bacterias' release into northern Australian cattle, could have a profound impact on the cattle industry.

Dr Wild reimbursed Dr Jones' airfares to Hawaii during his 'Years of Change' speech at the laboratory.

Photograph courtesy of the Townsville Daily Bulletin Photo Service.

Letters to the Editor

Dear Editor,

We have received recently for review a spate of books written by CSIRO scientists.

All have been published overseas by prestigious American and British companies and have been imported by local subsidiaries of these companies. Their recommended retail prices are high — in some cases being $An compared with $US(n/2) or £(n/3) — in line with normal publishing economics here in Australia.

If Australian authors wish to see their books marketed in this country at more reasonable prices they would be well advised to seek out local publishers first.

CSIRO's policy of copublication with commercial companies (either Australian or foreign) is one way of ensuring that our books are not overpriced by local standards. Any author concerned about this problem should discuss the matter with me before signing a contract with a foreign publisher.

BJ Walby
Editor-in-Chief
CSIRO.

The Editors

Playing with Toys

The daily papers have recently carried a large display advertisement for five senior positions in SIROTECH, CSIRO's new commercial venture. In the centre of this advertisement is a sketch of what is obviously a child's toy microscope and a bad one at that, the stage is not even square to the tube.

If those who are selecting the senior management of SIROTECH think that this is an example of the 'new technologies, new techniques and new ideas generated by the multidisciplinary research units of CSIRO' I have little faith in this initiative.

W H Steel
Optics Group
Division of Applied Physics

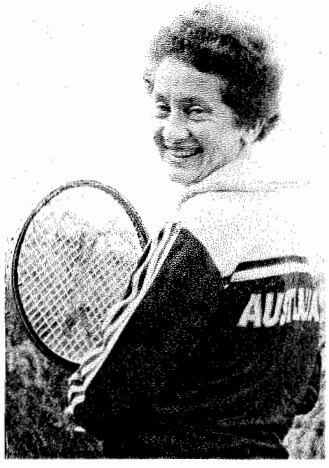
Dear Editor

I was interested to see the membership of the West Australian State Committee reported in the June 25 issue of Floreat News.

Was it coincidence that the only woman member of the committee (Dr P V Kailis), was also the only one not identified with her professional qualifications? Other members were identified as 'farmer', vice chancellor, leader project group steering committee, etc, but Dr Kailis, a leading medico in Perth and one of the individuals responsible for the highly successful Perth ANZAAS, was simply named.

Jeannie Ferris
Science Communication Unit
Canberra.

Tennis Veteran



Mrs Lesley Heumiller, of the Division of Atmospheric Research and the Australian Veteran's Tennis Team, represented Australia at the Young Cup teams competition for women over 40 held from 21-27 May in Cervia, Italy.

Lesley and her teammates, Jenny Burke (Victoria), Betty Grigg (Queensland) and Alison Ide (ACT), reached the semi-finals of the consolation event, having been beaten in the first round of the main event by Spain, the eventual winners of the consolation event. Thirteen countries were represented, and the main event was won by the USA team.

— Photograph by David Whillas

Editor resigns

Jeannie Ferris, CoResearch's Editor for over three years, has been appointed Director of Public Relations at the National Farmers' Federation.

Jeannie began editing CoResearch in September 1980 and made several changes, including the establishment of the Chairman's Column.

She joined CSIRO's Media Group in 1978 after spending some years at the Canberra Times and ABC and editing a Yass newspaper.

Butler or Bellamy needed

Geelong Grammar School is offering a CSIRO scientist the opportunity to spend a few days showing its students how scientific research can be interesting and sometimes exciting.

The school is looking for a person with the flair of Harry Butler or David Bellamy to visit students at its Highton campus for three or four days during third term 1984.

The scientists will be flown from any Division in Australia, offered a lecturing fee and could stay with the headmaster of the campus, Mr John Bugg.

Mr Bugg said the visit would be financed from an endowment fund set up by Geelong Grammar old boys.

'The fund provides money to give students contact with specialists from various walks of life,' he said.

Previous sponsorships have included an Australian artist, a poet, an Everest explorer and a former Bishop of North-Western Australia.

'This year, the school decided to ask a scientist to spend time with our students and we think CSIRO has the sort of person we would like,' he added.

The Highton campus of Geelong Grammar has students up to year 9.

'The scientists wouldn't need to give formal lectures,' Mr Bugg said.

'In fact, it would be terrific if the scientist took groups of students off on field trips or provided a program of practical experiments and demonstrations.'

The Science Communication Unit is coordinating the selection of a scientist. Contact Paul Costantoura at the SCU on (062) 48 4472 for more information or if you can suggest an appropriate person.

Spinning a good yarn

The Division of Textile Industry recently hosted Madame Gu Xiulian, Governor of Jiangsu Province, and five officials of the Jiangsu Provincial People's Government. Jiangsu, a province in the North-East of China with a population of 60 million, has a 'sister state' relationship with Victoria. During her visit, Madame Gu and her party viewed displays of Textile Industry work in the areas of spinning, yarn splicing, continuous yarn dyeing, and textile testing. She is pictured above at left with two of her party as Dr Russell Garnsworthy shows them a wool yarn spliced using Textile Industry technology.

BHP seeks winners

BHP has called for nominations for its six Awards for the Pursuit of Excellence

People may nominate themselves, or be nominated by others, for an award in one of the following categories: Science and Technology; Rural Development; Commerce, Industry and Management; Community Service and Welfare; Environment; Literature and the Arts.

Each winner receives $40 000 and a sculptured trophy.

The Chairman of the project steering committee, Mr Geoff Stephenson, said the six awards offered an opportunity for people to receive recognition for their special area of endeavour.

'We feel strongly that some of the best candidates will not be game to put themselves forward and so we urge associations and members of the public to put entries in if they know of some outstanding accomplishment,' he said.

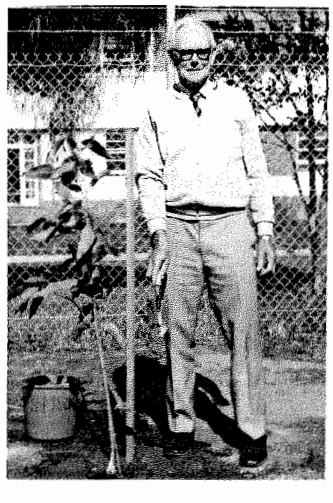
'It won't just be the six category winners who will receive recognition, but we will progressively release details of the entries we feel should merit some publicity,' he said.

Nominations, which close on August 31, can only be made on the form in the booklet, 'The BHP Awards for the Pursuit of Excellence', which is available from the BHP office in your State capital or from the Secretariat, BHP Pursuit of Excellence, GPO Box 8003V, Melbourne, 3001.

Retirement reminder

A tree planting ceremony culminated a career of 43 years for Senior Research Scientist Jack Nobbs at the Woodville North Laboratories of the Division of Manufacturing Technology.

Jack commissioned the spectrographic laboratory at the Finsbury (now Woodville North) Munitions Supply Factory in 1941 and apart from short periods at the University of Adelaide, in the UK and at Maribyrnong, worked in the same laboratories with many name changes, under the Departments of Supply and Defence. There has been a proportionally greater number of name changes since 1977, when the laboratories were incorporated into CSIRO. Jack was farewelled by his colleagues at a barbecue following the tree planting ceremony. Jack hopes that the spotted gum will be a more permanent record of his career at the laboratories than his numerous research papers.



Sand of the future

Two of the CSIRO researchers who have been involved in the development of zirconia, Dr Mike Murray, left, of the Division of Materials Science, and Dr Hari Sinha, of the Division of Mineral Chemistry. The men were present at a national press conference at which the Minister for Science and Technology, Mr Barry Jones, announced a collaborative agreement between CSIRO and ICI Australia Limited, to process zircon sand in Australia.

New Institute Director

Dr Alan Reid has been appointed Director of the Institute of Energy and Earth Resources, succeeding Mr Ivan Newnham who has recently retired through ill health.

Dr Reid had been acting Director of the Institute for some months. He was formerly Chief of the Division of Mineral Engineering in Melbourne and is an internationally recognised scientist who has made important contributions to fundamental solid-state science and its applications to assist the mining industry.

Dr Reid, a Fellow of the Australian Academy of Science, graduated with an MSc from Canterbury University in 1954, and as a PhD in 1959 from the Australian National University. In 1970, the Australian National University awarded him a DSc for his contributions to solid state chemistry.

In 1970, Dr Reid was awarded the CSIRO David Rivett Medal for 'a decade of outstanding contributions to physical science.'

Dr Reid developed QEM*SEM, a technique for automated image analysis which is now being applied to problems in the mining and minerals processing industries.

Ivan Newnham to retire

Ivan Newnham relinquished his post as Director of the Institute of Energy and Earth Resources last December and is to retire from CSIRO in November after 37 years of service.

He joined the Organization after working as a metallurgist in industry and his appreciation of industry motives and problems laid a basis for his major influence on the direction of CSIRO minerals research; first as a leader of a research group, then as Chief of the Division of Mineral Chemistry, subsequently as Director of the Minerals Research Laboratories and latterly as Director of the Institutes of Earth Resources and Energy and Earth Resources.

Ivan Newnham

Ivan's first major contribution to CSIRO came through the process he developed for the separation of zirconium from hafnium. There was at that time no prospect of the process being developed in Australia, so he went to a company in the United States, where he was able to demonstrate its feasibility on a larger scale. He then conducted a one-man negotiation to reach a licensing agreement with a return of $250 000 to CSIRO.

His ability as a scientist and his skills in negotiation were rewarded by the Waverley Gold Medal in 1957 and the MBE in 1959.

When Ivan Newnham became Chief of the Division of Mineral Chemistry in 1961, he set about establishing close contact with the mining industry and visited mining operations throughout Australia with his section leaders.

When several Divisions conducting minerals research were grouped into the Minerals Research Laboratories in 1971, Ivan became MRL Director and initiated a series of CSIRO/AMIRA Study Groups to discuss how CSIRO research could contribute to the minerals industry.

This unified approach of a group of Divisons interacting with a particular industry provided a model for the current CSIRO Institute structures, established after the Independent Inquiry led by Professor A Birch.

In December 1978, Ivan was made Director of the Institute of Earth Resources, which was renamed Energy and Earth Resources in 1981 after non-nuclear energy research groups from the AAEC were transferred to CSIRO.

Ivan is a foundation Fellow of the Australian Academy of Technological Sciences and in 1981, was made an Officer of the Order of Australia for his contributions to the mining industry. In 1982 he received dual honours — the highest award of the Royal Australian Chemical Institute, the Leighton Medal, for his initiatives in directing chemical research to assist the mineral industry and the President's Award of the Australasian Institute of Mining and Metallurgy for his 'personal achievements in research and development for the mineral industry and his leadership in these fields'.

He has served on many committees whose decisions had a strong bearing on R&D in Australia, including the National Energy Research, Development and Demonstration Council and the Australian Industrial Research and Development Incentives Board.

In 1981 he took leave from CSIRO to head an industry working party appointed to report to the Government on the prospects for uranium enrichment in Australia.

A record of Ivan Newnham's achievements does not provide an adequate picture of the man. His cheerful personality, sharp intellectual perceptions and his ability to match the aspirations of the research scientist to the needs of the mineral industry can only be fully appreciated by those who know him. However, his contributions are evident in the existence of a strong Institute which has a research staff highly respected in both scientific circles and in industry, able to apply its scientific skills to the technologies and needs of the future.

— 'A Mineral Chemistry Consortium'

From the Chairman-

A regular column by the Chairman of CSIRO Dr. J. Paul Wild

Meeting the staff of CSIRO, from Townsville to Perth, from Hobart to Darwin, is, I have learnt, a very demanding task, but a very rewarding one.

One meets dozens of people to talk to informally and thousands of people to communicate with in a more structured way across the floor. As a result I hope and believe that each side of the exchange has got to know the other a little better and see the other more as human beings, all with their hopes, their fears and their problems. As I write I have just returned from Darwin and Alice Springs on the last leg — from the warmth of the tropics to the cold of Canberra.

Two weeks ago, in between these sallies, I managed to fit in a week in New Zealand — a much overdue visit to DSIR, our sister Organization; and what a beautiful country, which I sampled from Auckland in the north to Queenstown in the south. And next weekend I take off for Canada, the USA and France to talk with my opposite numbers and, together with Ken McCracken, explore opportunities in space technology. Under the circumstances I ask your forebearance for the brevity of this article.

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Thanks to Jane Ford's journalistic flair I can no longer hide some recent clandestine activity on an application of Newtonian mechanics. This resulted in a report by John Brotchie, John Nicolson and me entitled 'A Proposal For A Fast Railway Between Sydney, Canberra And Melbourne'. The idea, as you may have read, is to travel from Sydney to Canberra in one hour, then Canberra to Melbourne in two hours. The proposal has implications for national development, employment, tourism, export industry and future airport options of considerable magnitude. With Jane's help the proposal has been received with extraordinary enthusiasm and has stirred various groups of people (especially in towns along the route) into supportive action. But these are early days, and the central problem remains — how to raise $2500M.

The railway takes as its technological starting point the TGV from Paris to Lyon. On July 27 I am going to be shown this remarkable engineering feat by the French engineers. And I look forward, with the anticipation of a schoolboy, to a ride in the train.

Paul Wild

G-G visits Parkes

Their Excellencies the Governor-General and Lady Stephen discuss a plaque commemorating the inaugural showing of the new audio-visual at the Parkes Radiotelescope Visitors' Centre with the Centre's information officer, Mr David Krumlauf. The plaque was made at the Division of Radiophysics' workshop.

The Governor-General visited the radiotelescope as part of a familiarisation tour of the Australia Telescope Project with their Excellencies the British High Commissioner, Sir John Mason KCMG, Japanese Ambassador, Mr Kensuke Yanagiya and their wives and the First Secretary (Scientific) of the Japanese Embassy, Mr Akio Yuki.

...People ... People... People ...People ... People... People... People...

Dr Peter Claringbold of the Division of Computing Research recently headed a software trade mission to Japan for the Department of Trade. The mission attended the fourth World Computing Services Industry Congress and Software Product Fair in Tokyo, and spent a few days examining the structure of the Japanese software market.

It also investigated establishing better communications between Japanese and Australian software companies and the possibility of setting up joint ventures for software development.

★★★

Mr Brian O'Neill has just returned to the Division of Tropical Crops and Pastures from six weeks in the USA, where he investigated recent developments in data logging and environmental measurements and likely future developments in electronics and microcomputers.

CAT

The CAT Column is open to all members of CSIRO who wish to comment on communication matters.

This month's CAT Column comes from David Bennett of the Officers' Association.

Money became short in CSIRO around 1975. By 1980 the Officers' Association resolved to take some action to improve CSIRO's financial state.

We decided to copy a scheme developed by the Royal Institute of Chemistry (UK) who had not only run a series of Parliamentary Luncheons, but also begun a pairing scheme between members of the Institute and parliamentarians.

Individuals and staff associations have a great deal more freedom to lobby parliamentarians compared with government agencies like CSIRO. We began extremely cautiously, limiting meetings to parliamentarians in their offices and issues to the abysmal state of Australia's science funding compared to other advanced nations. Seventeen pairs were established around Australia, more or less, some involving only a single visit while others were stronger, like that set up in 1980 between the organiser of the scheme, Bill Raper, and the Member for Lalor, Barry Jones.

But international comparisons did not constitute a sufficient agenda for continuing discussions between busy parliamentarians and timid scientists. The next initiative came from South Australia, when David Topping invited his pair, Senator Janine Haines, to visit the laboratories of the Division of Human Nutrition. She was so impressed that she paid a return visit and incorporated some of what she learnt into the Democrats' science policy speech leading up to the March 1983 election. Similar visits to the laboratories at Floreat Park in Perth and Materials Science in Melbourne have followed.

However, this activity is criticised as being indistinguishable from CSIRO's normal public relations. Our parliamentary colleagues are suggesting that they need a list of local issues of a more 'pork barrel' nature for them to fight. Such a strategy will be more difficult to orchestrate and require more time and energy from members. Like science funding these are resources in short supply.

If you would like to help this campaign, whether you are a member of CSIROOA or not, please call me on (09) 387 0274 (direct), (09) 387 4233 (Floreat Switchboard) or (09) 387 7276 (home).

Dr Bob McCown, Dr Roger Jones and **Mr Ross Davidson** recently spent time in Africa for ACIAR, the former developing co-operative agreements and research plans for the Division of Tropical Crops and Pastures' African Project with government departments in Nigeria and Kenya, and Ross making administrative arrangements for the Project. Ross also spent some time in Europe discussing the problems of administering research programs in Africa with aid agencies.

★★★

At the 17th Convention of the Australian Institute of Food Science and Technology in April, the Chief of the Division of Food Research, **Dr John Christian**, was presented with the Institute's Award of Merit for achievements within food science and technology in the wide areas of research, industry and education, and for contributions to further the aims and objectives of the Institute. The Award citation made reference to three fields of particular concern to Dr Christian: microbiological research; national and international food regulations, and the encouragement of the application of research results in industry.

★★★

Dr Fujio Kimura, from the Japanese Meteorological Research Institute in Tsukuba, will be working in the Division of Atmospheric Research's Small-scale Dynamics group until the end of November. Dr Kimura's main research interest is in mesoscale numerical modelling.

Dr Roger Pielke from Colorado State University also visited the Division in June. He, too, is interested in mesoscale numerical modelling, has collaborated with scientists in the Division on previous occasions, and by now is a familiar face in the Division.

★★★

Dr Menzie Lipson, one of the pioneers of the Division of Textile Industry, has been conferred with an honorary degree from Deakin University.

Dr Lipson graduated in science nearly fifty years ago, and created the Division of Textile Industry after World War 2 from a virtually empty six-hectare paddock.

Not only did he obtain staff, buildings and equipment, and design the research programs, but he was the driving force behind the establishment of Deakin University in Geelong.

★★★

Two teachers from the ACT Schools Authority, **Kevin Ross** and **Eleanor Haddock**, recharged their scientific batteries during a 6-week work experience at Entomology and Soils, respectively, in June/July. Eleanor also took the opportunity of examining the scientific possibilities for women in the workforce.

★★★

The Division of Manufacturing Technology invites prominent technological academics to spend study leave periods with the Division.

Associate Professor Glen McClaren, Department of Electrical and Electronic Engineering at the University of Cape Town in South Africa, completed his four month stay at Fitzroy at the end of June. Responsible for research and teaching in the field of automatic control, he is currently engaged in robotics research with the Division's Integrated Engineering Manufacture (IEM) Group.

Professor Hartmut Kaebernick, Head of Production Engineering at the University of Hamburg, joined the IEM Group in March. His main interests are in machine tools, job planning and the application of robotics and flexible manufacturing systems to manufacturing processes. He will be at the Division until the end of the year.

Professor Richard Paul, Ransburg Professor Robotics at the School of Electrical Engineering at Purdue University, USA, will visit the Division during August. He will be a guest of the Mechanical College of the Institution of Engineers, Australia, and will be the keynote speaker at the forthcoming national conference and exhibition on robotics to be held in Melbourne on 20–24 August.

An animal scientist with the Department of Agriculture, **Mr N Kritzinger**, visited the Floreat Park laboratories to discuss animal nutrition, particularly trace elements.

★★★

Mr Atkinson, from the Department of Primary Industry in Konedobu in Papua New Guinea is visiting the Division of Food Research as part of an Australian Council for International Agricultural Research project.

★★★

Mr Doug Crook has just retired from the Division of Building Research after 35 years with CSIRO.

He first worked on bituminous materials before transferring to lightweight aggregate materials, including the successful 'Shellite' which was used extensively for construction by the Housing Commission in Victoria.

Between 1961 and 1977 he was involved in aspects of clay characterization and clay technology, and then moved onto projects in the ceramics and design for durability sections. His work on perlite and moisture expansion led to the discovery of 'singing bricks', otherwise known as acoustic emission of fired ceramic bodies.

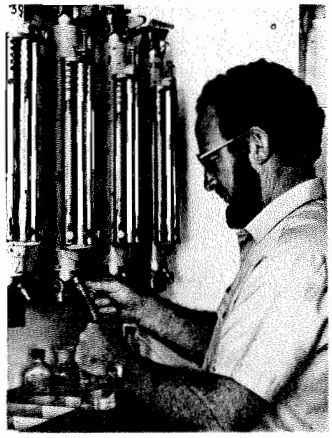
Doug has published and co-authored some 40 papers. He was the Treasurer and Committee Member of the Victorian Branch of the Australian Ceramic Society for over six years and its President in 1981–82.

★★★

'Bloke phoned the CSIRO the other day to ask for information on weed sprays.

CSIRO told him their information service closed three years ago and he would need to phone the Department of Agriculture. He did so and was told: We'll send out some CSIRO pamphlets.'

— from the **Melbourne Herald**, 6 June 1984.



Norm Dyson, above, Senior Technical Officer with the CSIRO Marine Laboratories in Perth, died recently of a heart attack. Norm started with the hydrology section of the Division of Fisheries in 1952. He was employed in that field for most of his career, mostly in Perth, but with some spells in Sydney and the Antarctic. His death was unexpected, occurring while he was on duty, and is a sad blow to his friends and colleagues at the Marine Laboratories. He is survived by his wife, Val, and three children.

★★★

Dr Brian Bolto of the Division of Chemical and Wood Technology has been awarded the Royal Australian Chemical Institute's 1983 Applied Research Medal for his research into new water purification processes which are based on polymers. The medal is the A J Parker Medal in honour of the late Profesor Jim Parker.

'Your pocket or mine?'

The Minister for Science and Technology's well known propensity for whipping CSIRO discoveries out of his pocket during Question Time may well have adverse effects for him.

Above, Mr Jones discusses scampi, the new Australian seafood, with Dr Peter Young of the Division of Fisheries Research. A team of researchers led by Dr Young discovered the scampi on an experimental trawl of the waters on the North West shelf. Mr Jones launched the crustacean onto the Australian retail market at a ceremony in Parliament House in June.

CoResearch is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 5th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel 48 4479. Editor: Penny Gibson.

CoResearch

CSIRO's staff newspaper Aug./Sept. 1984 273

Budget 'one of the worst'

CSIRO staff have begun a public and industry campaign after what the Chairman, Dr Wild, has described as 'one of the worst budgets in our history'.

CSIRO suffered an effective cut in real terms of about 3 per cent in salary and operating funds in this year's budget.

About 200 Canberra-based staff demonstrated outside Parliament House on September 13 and were addressed by the Leader of the Opposition, Mr Peacock, the Opposition spokesman on Science and Technology, Dr Edwards, and the Minister, Mr Jones.

Mr Jones and Dr Edwards then debated the budget issue for over 30 minutes on the lawns of Parliament House.

All CSIRO Chiefs have sent a telex to the Prime Minister, Mr Hawke, condemning the cut and have issued it to the media. They have each written to their user groups outlining how the budget cuts will effect each Division's research programs: some have also issued news releases.

The Officers' Association has issued a news release saying it would fight the cuts and has also telexed the Prime Minister and is writing to all Members of Parliament.

The Chairman has had a busy media schedule, speaking on radio and television and to newspapers about the effects of the Budget. He has also written to the Prime Minister.

Divisions are exploring a number of options to make up the budget shortfall.

Staff at the Division of Plant Industry have volunteered to take a few days leave without pay to save enough money to avoid retrenchments.

Dr Wild said while the budget made provision for ongoing capital works including the commencement of the new Applied Organic Chemistry building at Clayton and the continuing construction of the Research Vessel and the Australia Telescope, for the second year no allowance was made for inflation on CSIRO's basic operating funds.

'An additional impost on CSIRO this year is a Government decision requiring CSIRO to spend $8.1M on repairs and maintenance whereas only $5.4M was provided for this,' Dr Wild said.

'Additionally, certain salary related costs have not been provided.

'These factors mean that in real terms CSIRO has suffered an effective cut of approximately $9.0M or 3‰, in salary and operating funds in this year's Budget.

'Despite the severity of these cuts the Executive and the Management Committee consider it important that the Organization maintains a strategy for redeployment to boost selected growth areas of research. Some $1.5M will be thus redeployed.

'The Executive has also decided that all designated growth areas should be protected from any reduction in funding. Areas to be protected from cuts include information technology, manufacturing technology, biotechnology, advanced materials, oceanography, soils and water, and plant pathology.

'These amount to some 20% of the Organization's work and the cuts will, therefore, fall on the remaining 80% of the programs for which the cut will amount to an average of 4.3‰,' he said.

In the Federal Budget papers, the Minister for Science and Technology, Mr Jones, said CSIRO would continue to transfer resources into those areas identified by the Government, industry and the Organization as of the highest national priority.

'There will never be sufficient funds to permit unlimited proliferation of research programs. CSIRO has achieved, and will

continued on p.3

Greenhouse expert wins fellowship

Mr Keith Garzoli, the head of the solar greenhouse research group at Griffith, has been awarded a Churchill Fellowship for 1985.

Mr Garzoli, a specialist in greenhouse technology and designer of a number of solar greenhouses, will study developments in solar and renewable energy use in horticulture in North America and Europe in 1985.

He will attend the International Solar Energy Congress in Montreal and the Conference on Greenhouse Climate and its Control in the Netherlands. He will also visit a number of research establishments where similar or related work is taking place.

At present it costs between $25 and $30 million per year for greenhouse heating in Australia, and this can be reduced by at least 70 per cent by the use of new technology in which the greenhouse itself acts as a solar collector, with the heat that is generated in the day being stored and used for greenhouse heating at night.

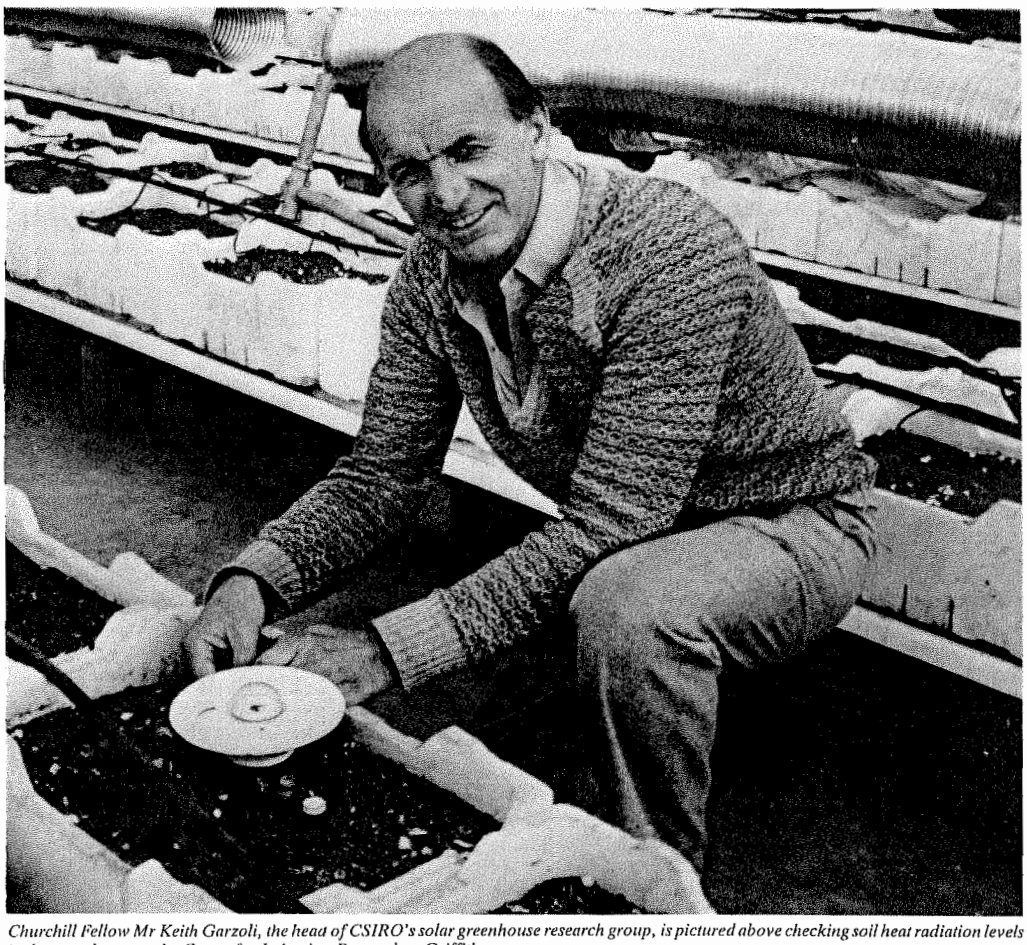
He will use the information gained from the Fellowship to produce a series of handbooks, the major funding for which is being provided by the Department of Science and Technology.

The handbooks will be compiled in a way that will be suitable for commercial greenhouse users, manufacturers of greenhouses, home gardeners, hobby farmers and community groups.

Some of the funding will be used to do further research at Griffith as well as at the new solar greenhouses at the Australian National University and Burley Horticultural College in Melbourne, both of which were built to Mr Garzoli's design.

Mr Garzoli, 49, was recently elected vice-chairman of the Horticultural Engineering Commission of the International Society of Horticultural Science and he is a member of the National Committee on Agricultural Engineering.

He will have completed his PhD by the time he leaves for his ten week trip.



Churchill Fellow Mr Keith Garzoli, the head of CSIRO's solar greenhouse research group, is pictured above checking soil heat radiation levels in the greenhouse at the Centre for Irrigation Research at Griffith.

From the Advisory Council

This Advisory Council column on "Communication Policy — Just Another Bandwagon?" has been contributed by Dr Valerie Brown, Chair, Information and Social Impact Committee (ISIC).

It would be easy to fob off the present public interest in CSIRO's communication and information activities as just another impediment to true research work.

Nothing could be further from the truth. Communication is part of CSIRO's responsibility to the community and the community has a responsibility to help ensure that the techniques used by the Organization are as effective and cost-efficient as possible.

CSIRO is in a time of intense self-scrutiny in the field of communication policy, and that doesn't mean just public relations policy. It means the full range of communication activities undertaken by an organization — from information transfer to management communication channels.

The newest of the five Standing Committees of the Advisory Council (the others deal with Minerals and Energy, Environment, Manufacturing and Rural Industries), ISIC is a reflection of this awakened public interest in science and its social impact on everyday life.

Established three years ago, ISIC has been allotted the responsibility of advising the Council on matters arising from nine out of the ten categories of the Science and Industry Research Act from which CSIRO gets its charter. While section 9 (a) of the Act empowers CSIRO to undertake research, 9 (b) to 9 (j) deal with information transfer, technology transfer, scientific liaison, and training.

Matters identified as being in ISIC's brief include the maintenance and development of Australia's scientific intellectual base, the protection of scientific property rights, the consequences of shifts in the nature of the Australian labour force such as youth unemployment, the development of 'information' as a scientific property in itself and the need to encourage an understanding and appreciation of the work of CSIRO.

As if this isn't a broad enough field already, ISIC is also asked to react to aspects of Section 9(a) of the Act, where research interests make a notable impact on community interests. Examples are the conservation of land and native animals, industrial safety, and the employment consequences of particular research options. In this capacity ISIC also deals with areas of CSIRO research related to public health. This gives us an interest in research with consequences for nutrition, pure air and water, and implications for human physiology or genetics.

It is obvious that ISIC needs advice from as broad a spectrum as possible and so members are drawn from key areas of expertise.

We have representatives from a number of the State/Territory Committees and from the ranks of professional communicators, universities, departmental experts and trade unions.

To the chairing of ISIC I bring my own research interest in the social applications of scientific evidence, particularly under conditions of social change. I have been lecturing in the first Australian Applied Science Degree in Health Education, and am now Director of Health Promotion for the Australian Capital Territory.

The current review of CSIRO's external communication activities is possibly the most crucial review to take place in many years because it touches on most if not all of the work of the Organization. ISIC has formed a working party to co-ordinate a detailed submission to this review (incestuous as it may seem I'm also on this review committee, representing the Advisory Council).

We issue a warm invitation to anyone who reads this article to make use of the review. This is more than an invitation — the members of the review are actively seeking and encouraging ideas and opinions on both the strengths and weaknesses of CSIRO's communication activities, with case studies and examples to help build up the picture.

When it comes to communication problems, CSIRO isn't Robinson Crusoe. Research organizations around the world are grappling with setting up that all important two-way link with the communities they serve. New methods of information transfer, and the urgent need for research funding to go through to application have created a revolution in expectations of openness and accountability from publicly funded institutions.

I believe ISIC can offer valuable advice to CSIRO by keeping in touch with communication practitioners both inside and outside the Organization, and by keeping informed of developments in information and communication strategies for science and technology.

Letter to the Editor

Dear Editor,

When the advertisement for senior SIROTECH staff was prepared by the Consultants they naturally took great care with the text which, as it turns out, has attracted a very large response from senior business and professional people.

However, a small but animated debate took place as to what sort of "visual" to put in to highlight the all important text. Should it try to represent some particular aspect of CSIRO work, or all aspects, or should it show the vital role of SIROTECH as the essential link between CSIRO and Industry?

As should happen more often to peripheral and minor issues, it was resolved to its simplest form — the naive microscope that amused Dr Steel of Applied Physics.

SIROTECH can assure all its friends and well-wishers in the CSIRO family that the very simple device served its serious purpose very well and if it also brought some amusement, as we suspected it might, we are doubly satisfied.

Yours faithfully,
Julian Doyle
Manager (Designate) SIROTECH

A high tech. stir

The Chief of the Division of Mineral Chemistry, Dr David Koch, presents the Minister for Science and Technology, Mr Barry Jones, with a tantalum spoon to stir the high tech. pot, at the opening of CSIRO's new minerals processing laboratory in Perth.

The Minister for Science and Technology, Mr Barry Jones, opened CSIRO's new minerals processing laboratory on the campus of the Western Australian Institute of Technology in Perth in July.

Mr Jones said the new laboratory would provide a vital source of local research advice to the expanding mineral processing industry in Western Australia, and would support the Western Australian Government's program of increasing mineral processing and beneficiation before export.

The laboratory was established as a result of negotiations by the WA State Committee with CSIRO and the State Government, and forms part of the Executive's plan to increase CSIRO effort in Western Australia.

Half of all Australia's mineral production comes from WA and the State's leaders are hoping the injection of a CSIRO mineral processing team will help improve the State's R & D capability in this field.

There are 12 staff in the laboratory, led by Dr Len Warren, who transferred from the Division of Mineral Chemistry's Port Melbourne base with three other scientists to form the nucleus of the group.

They are located in a newly-built wing of the Chemistry Department at the Western Australian Institute of Technology. This location was specially chosen to enhance the interaction between CSIRO scientists and staff and students at the Institute.

'The researchers who have transferred to Perth have established themselves as leaders in the field of mineral processing, especially in the chemical and physical processes involved in froth flotation,' Mr Jones said.

'Australia virtually pioneered froth flotation at the beginning of this century, and it is the major method for separating and concentrating finely-divided mineral ores and coal.

'CSIRO has made important contributions in the field, and will be extending its studies to encompass new minerals, and to improve the recovery of others, including gold and the high-technology metal, tantalum.'

Although the laboratory would provide advice to local minerals processors, much of its research would be relevant to the Australian minerals industry as a whole, Mr Jones said.

At the end of the official ceremonies, the Division's Chief, Dr David Koch, presented the Minister with a spoon made from tantalum 'for stirring the high tech. pot.'

Tantalum, a valuable mineral used in high-tech applications such as the aerospace industry, is mined in WA and the Division is developing a process for treating a newly-discovered local deposit.

New Chief for Fisheries

Dr Roy Harden Jones is the new Chief of the Division of Fisheries Research, replacing Dr Shirley Jeffrey, who has been acting in the position for almost three years, and who is returning to full time scientific work.

Dr Harden Jones is a senior principal scientific officer at the fisheries laboratory of the UK Ministry of Agriculture, Fisheries and Food.

He will begin his seven year appointment at the Cronulla laboratories on August 20, but will move to the new laboratories in Hobart in early September.

His research interests are in the field of fish behaviour and their application to fisheries, with particular reference to the use of acoustic techniques in fish migration studies, and the efficiency of gear.

From 1969 to 1983, Dr Harden Jones was editor of the International Council for the Exploration of the Sea's Journal du Conseil, which gave him an exceptional opportunity to know fisheries scientists throughout the world and to develop a wider interest in marine science.

Dr Harden Jones' present interests include guidance mechanisms in fish, spawning rhythms, swim bladder physiology and the history of Government support for fisheries research.

A tale of two Chiefs

The Barossa Valley has produced more than good wines — two CSIRO chiefs being good examples.

At a conference of Chiefs in the Barossa Valley in June, Dr Basil Hetzel of Human Nutrition and Dr John Lowke of Applied Physics found that not only did they share a common birthplace, but a common great grandfather, Carl Hetzel.

Carl Hetzel came to Australia from Silesia in 1848. He was one of a great many German immigrants who came to Australia as farmers and also established the wine industry.

They brought with them the experience of growing wine grapes throughout Europe: as devout Lutherans they had moved through Europe to avoid pressure to change their religion, first in the 18th century from French kings and then in the 19th century from Prussian emperors.

At the last Chief's conference, held in the Valley, Dr Lowke and Dr Hetzel (whose son and daugher-in-law have written the family tree) traced the relationship through Carl Hetzel's eight children.

They also gave impromptu talks at the meeting, Dr Hetzel outlining the historical and social conditions in Germany which led to the farmers settling the Barossa, and Dr Lowke discussing the distinctive aspects of the German culture as strongly preserved by the settlers in the Valley.

New EEO Officer

CSIRO's new Equal Employment Opportunity Officer is Ms Carmel Macpherson, a secondary teacher, lecturer in Education, historian and unionist.

Her appointment followed the major recommendation of the Women's Report, a survey by a sub-committee of the Consultative Council, which made 49 recommendations on equal employment and was endorsed by the Executive. (See CoResearch no. 267).

'I particularly want to put people at ease who think there may be a great influx of unqualified women and disabled,' Ms Macpherson said.

'A lot of people confuse affirmative action with positive discrimination, which is synonymous with the quota system. That is not terribly productive and causes a lot of alienation,' she said.

'EEO policy will not interfere with the merit principle in selection and promotion — any person appointed to CSIRO will be appointed because their qualifications and experience fit them for the job,' she said.

However, ten per cent of apprentice appointments will be female.

'The effect of discrimination here is so great that you need positive discrimination to get it started,' Ms Macpherson said.

Ms Macpherson said the nature of socialization in the school led to discrimination and that her work in three sectors of education, from both an academic and union perspective, had shown her that discrimination grossly hampered the job prospects of certain groups.

'Of course, EEO is not restricted to women. The major benefits of an effective EEO policy should be felt by any individual who suffers from discriminatory practices,' Ms Macpherson said.

BUSINESS SENSE

'EEO isn't just trendy, it makes good business sense. An organization such as CSIRO cannot afford to lose or overlook the expertise of its personnel,' she said.

'It's just not intelligent to publicly commit yourself to the pursuit of research excellence if unconsciously you are constantly side-stepping or down-grading the contributions of certain groups of people.'

She said both direct and indirect discrimination must be addressed if equal employment was to be achieved.

'Direct discrimination is easier to delineate and legislation now makes it quite easy to deal with, but most discrimination is totally unintended.'

'It is based on sexist or racist attitudes so subtly shaped that most people would be shocked, if not outraged, if directly accused of practising discriminatory policies,' she said.

CHANGES AFOOT

Ms Macpherson is devising a Management Plan for implementing the 49 recommendations of the Women's Report. It will be looked at by the EEO sub-committee of the Consultative Council, of which she is the Executive Officer, in September.

Ms Carmel Macpherson

She said each of the recommendations had been allocated high and low cost, high and low administrative convenience and high and low philosophy.

'In light of the budget, we will probably have to go for the low cost and low administrative convenience recommendations first, though all are important because they are part of the whole program,' she said.

In the meantime she is also preparing CSIRO forms, posters, videos and other material to promote equal opportunity, and is working on a database to monitor who is being held at what employment levels, gender statistics, how long people hold positions, where migrants are and what jobs they hold.

'We are implementing positive programs to overcome particular negative feelings and will try to destroy myths that have become truisms and lead to discrimination. For example, at particular job levels, no more women leave jobs than men — men may go to another career, and women may go into child bearing, in itself another career,' she said.

'I'll be running a wide range of workshops and visiting as many locations as I can.'

'My job will be made more manageable by the appointment of EEO contact people in each division and major unit,' she said.

'However, there's nothing more disastrous than just charging in. Equal opportunity must be put in an ordered plan, discussed with management and staff associations and implemented in an intelligent way.'

'A successful EEO program is based on close consultation. Programs that are imposed from above just don't work,' she said.

'EEO will eventually ensure that the skills and talents of all men and women are fully used. Can anyone really object to that?' she said.

EEO NOT HARD

'A lot of people haven't thought about it and don't realise EEO isn't so hard,' she added.

'However, we will have to get through to people that EEO is not a private toy, it's legislation. The core of discrimination will have to change because we are dealing with a workforce that is becoming increasingly aware of its rights and avenues of appeal,' she said.

'As a large publicly funded organization, it is certainly not in CSIRO's interests to be seen to be lagging in the EEO area,' she said.

Ms Macpherson said that anyone could ring her direct about any problems, on (062) 48 4328.

From the Chairman-

A regular column by the Chairman of CSIRO Dr. J. Paul Wild

I believe our Minister, Barry Jones, is doing his utmost not only to elevate awareness in our future dependance on high technology and the human intellect, but also to convert that awareness into action through the budgetary process.

That he has been thwarted in achieving the latter through yet another dismal budget for his portfolio is, I believe, a criticism not so much of the Government as it is of us all — the people of Australia. Had there been a championship in the recent Olympic Games for burying one's head in the sand I believe Australia would, at last, have struck gold. At a time when a general election approaches, as this country technologically recedes further in stagnation among the backward nations of the world, our electorate is obsessed only with the vision of cuts in taxation. This is a far cry from the situation in Canada, which I have recently visited.

The National Research Council is our nearest analogue in Canada. During the 1970s it had suffered much as we have in recent years, losing ground in real terms. But by the end of the decade, by 1980, three things occurred that changed the whole Canadian scene: the world recession arrived; the people became fervently aware of the need for a technological catch-up; and an election campaign was being fought. (Imagine an election in Australia being fought on the issue of technological catch-up!) Since then NRC's budget increases have been dramatic. They include a new Division of Manufacturing Technology with additional capital funds of $40M and $20M per year recurrent; and a new Division of Biotechnology ($60M capital, $30M per year recurrent). In addition there have been massive funds provided to NRC for disbursement to industry and for initiatives in space technology, and numerous other smaller handouts in other areas such as optics and electrochemistry. And another $12M capital with $6M per year has gone to the Ministry of Communications to set up a Division of Information Technology. We were told that all these increases happened in spite of persistent opposition by the senior bureaucracy.

Sleepers Wake! The watchman on the heights is calling . . . And I believe that the reveille can only by sounded by him who stands on the pinnacle of the heights.

★★★

How much is it possible to achieve by a research scientist in three years? I believe a record has been set by Dr Craig Mudge who spent his last day with us on 15 August. During his three years he set up the VLSI unit in Adelaide with a staff of 15, he developed the design facility for the multi-purpose micro-electronic chip which he combined with an Australia-wide industry and university education scheme, and finally he developed and produced Australia's 100k chip — outside a few large multi-nationals, the only group in the world to do so. In the meantime he set up the private company AUSTEK Microsystems Limited in which he and his staff will carry on the good work and establish, I am quite sure, a new flourishing industry for Australia. All these things he intended to do from the outset and all have been achieved with precision timing. His last day saw the official ceremony of the launching of the 100k chip (Barry Jones "God bless this chip and all who sail on her"). People from industry saw this as a red letter day and hoped it would be the beginning of a new era. Congratulations to Craig and his 15 colleagues!

★★★

Yes I did travel in the TGV from Lyon to Paris — and in style: in the driver's cab. The experience was unforgettable as was the beauty of the engineering. After an hour at a steady 260km/hr there is little sensation of motion at all. The French are justifiably proud of their success both from an engineering and financial point of view. They had, a week before, received a delegation of Australian railway authorities. I was told the latter had said, 'Very impressive, but it's not for Australia.' And there, dear friends, again walks the ghost of our malaise.

Paul Wild

Budget (continued)

continue to bring about, a significant redirection of research priorities within the tight budgetary situation which has prevailed in recent years.'

The Chairman, Dr Wild, said, 'Despite all efforts by our Minister this is one of the worst budgets in our history, not only for CSIRO but the whole area of science and technology.

'It comes at a time when the Government declares itself to be looking towards new technology as a source of rejuvenation of industry.

'The staff of the Organization, who have been striving vigorously to comply with Government stated intentions, must be very puzzled.

'The burden on the majority of the Organization's programs not listed as growth areas will be heavy indeed — an effective cut of some 4·3 per cent,' Dr Wild said.

'Despite the severity of the cuts we must now get on with the job of optimizing the use of the funds provided. We shall continue to move resources into nationally recognized growth areas. But what is needed is a flood not a trickle.

'It is important that we do not become disheartened by the present situation, but rather that we try even harder to convince the Government, and the Australian public, of our value to the nation.'

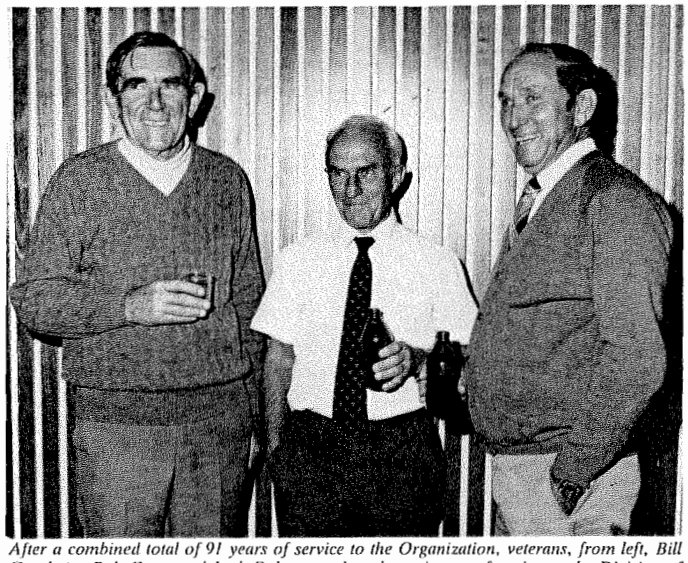
'The past year has been highly successful in terms of our achievements in research and our initiatives to improve relations with industry.

'We must continue to build on that success.'

MAJOR CAPITAL WORKS PROJECTS

The main items in this year's allocation for capital costs are:

- $2·0 million to begin construction of new laboratories at Clayton in Melbourne for the Division of Applied Organic Chemistry, now situated at Fishermen's Bend.
- $2·5 million for the completion of the oceanographic research vessel.
- $4·9 million towards construction of the Australia Telescope, a large radiotelescope array formed by linking new antennae at Culgoora and Siding Springs in New South Wales to the existing Parkes radiotelescope.
- $5·3 million to continue construction of a new laboratory at Clayton, Melbourne, for the Division of Materials Science, now located at Parkville and Fishermen's Bend.
- $3·1 million to complete construction of the $160 million Australian National Animal Health Laboratory at Geelong.
- $0·7 million for the completion of the Marine Laboratories at Hobart which will house the Divisions of Oceanography and Fisheries Research.
- $1·2 million to complete construction of the Division of Plant Industry's molecular plant breeding laboratory in Canberra.
- $0·9 million for a laboratory for the Division of Environmental Mechanics in Canberra.
- $2·5 million to acquire land at North Ryde in Sydney and Preston in Melbourne.



After a combined total of 91 years of service to the Organization, veterans, from left, Bill Goodwin, Bob Gunn and Jock Robertson shared a retirement function at the Division of Water and Land Resources in Canberra last month.

Bill Goodwin's first contact with CSIRO was in the late 1940s when as a young cartographer with National Mapping he helped prepare the first maps based on the Division's survey work in northern Australia. In 1952 he joined Plant Industry, setting up that Division's Illustration Section. In 1967 Bill joined grassland ecologist Milton Moore in Brisbane, where he later became a founding member of CSIRO's Woodland Ecology Unit. When the Unit moved to Canberra in 1972, the emphasis for Bill shifted to collecting data for the Unit's poplar box research. Bill's last cartographic effort for the Unit, which was disbanded in 1982, was the large colour map 'Poplar Box Communities of Eastern Australia' printed earlier this year and now available.

Bob Gunn joined CSIRO in 1962 in London where he had been with a firm of consulting engineers and engaged in agricultural and soils work in many countries, especially in Africa.

He came to Australia to join the Land Research and Regional Survey section which at that time was based in Canberra. Frequently the principal soil scientist on the northern Australian surveys, Bob remained the Division's mainstay in soils until the survey work was wound down in the early 1970's. Over the next few years Bob was engaged, like many others in the Division, on a major study of the NSW south coast, preparing the soils material and editing the second of the four volume report.

With the completion of that project in 1978, he concentrated on the problem of salinization in Australian soils, particularly dryland salinity. His preference for a low public profile did not prevent him from speaking out on the issue and appearing on television to explain the causes and warn of the consequences of rising salt in the Braidwood district of NSW.

Following a holiday in Britain, Bob returns to the Division as a post-retirement Fellow for 12 months to edit a new handbook on soil and land survey.

When Bill Goodwin joined Dr Milton Moore in Brisbane in 1967, Jock Robertson had already been with the team 20 years, having begun in 1947 on the problem of controlling weeds with chemicals. In 1963 Jock moved to the Cooper Laboratories at Lawes, Queensland, to work on the chemical control of woody weeds and the ecology of poplar box woodlands, research which occupied him up until his retirement.

In 'Jock country', which appears to be a particularly large slice of Queensland, Jock is one of CSIRO's best known characters, especially amongst the graziers and the chemical industry. We all know there is no substitute for personal rapport in CSIRO's dealings with the community, and Jock by all accounts has been past master at it up Lawes way. In fact, one not quite anonymous admirer has penned a long poem about Jock, from which the following is taken:

'And what will you do, when you do retire?'
some question rudely, some politely enquire.
'I'll put myself up for auction, I might get a bid,
I can hear the auctioneer shout, 'What, not even a quid!"

A quid would be the price and I'd advise you to buy,
'cos he'll keep turning over, like that cross in the sky.

Now tomorrow you'll start on a new campaign
so uncork the bottle, and pour the champagne.
Let's exchange our good wishes, for today I go too,
thank you, Jock Robertson, and good health to you.

— Peter Martin

Fred Skaller dies

Mr Fred Skaller, one of the pioneers of the Australian poultry industry, died in Sydney in June after a long illness.

He was Officer-in-Charge of CSIRO's Poultry Research Centre at Werribee, where he produced a great deal of valuable information for breeders and poultry producers. He was the first post-war practising geneticist in poultry breeding in Australia and played an important role in encouraging Australian poultry breeders to adopt scientific genetic principles. He played an important part in laying down guidelines for Australian Random Sample Poultry Tests.

After leaving CSIRO he was General Manager and Geneticist for Scientific Poultry Breeders Pty Ltd. Even after his retirement, his authoratative contributions by way of technical and popular articles, his many lectures to poultry groups and his participation in seminars and conventions made an outstanding contribution to the continued development of the poultry industry.

In 1967 Mr Skaller was awarded the Australian Poultry Award for 'truly outstanding and meritorious service most worthy of the highest award the Australian industry can bestow'.

He was the first Australian Councillor of the World's Poultry Science Association and foundation President of the Australian Branch.

He will be sadly missed by his many friends in Australia and his advice and assistance will be well remembered.

The Division of Energy Technology and its predecessors for the last thirty years farewelled experimental officer **Mr Ted Czarnecki** in late July.

★★★

Anwar Hossein is spending a six month Fellowship of the IAEA at the Division of Mineralogy. He is a principal geologist of the Bangladesh Atomic Energy Commission, and is visiting the laboratory to learn laboratory methods for studying uranium mineralization.

★★★

Mr Ern Biddiscombe, a principal research scientist at the Division of Groundwater Research retired recently. He worked at the Division of Plant Industry in Canberra for nearly half of his 38 years with CSIRO, transferring to Perth in 1966.

★★★

Mr Ron Ballantyne, a specialist in architectural physics, has retired from the Division of Building Research but has remained as the Division's first post-retirement fellow.

★★★

Dr Alan Newsome of the Division of Wildlife and Rangelands Research has been awarded a DSc from the University of Queensland for a thesis which emphasized the strong influence of the environment on the population ecology of species with different food requirements, different levels of sociality and from different bioclimatic zones. His thesis presented studies on the red kangaroo, agile wallaby, house mouse, dingo and the response of forest fauna to wildfire.

★★★

Dr Jan Anderson of the Division of Plant Industry and **Dr Bruce Cornell** of the Division of Food Research are the President and honorary secretary respectively of the Australian Society of Biophysics, which is holding its 1984 meeting in December at the University of Wollongong.

Sir Otto Frankel, a former chief of the Division of Plant Industry, member of the Executive from 1962 to 1966, and since then an Honorary Research Fellow in the Division of Plant Industry, was elected an Honorary Member of the Japan Academy at its Annual General Meeting in 1983. Recently the Academy invited him and Lady Frankel to visit Japan for a fortnight, as the guests of the Academy.

The Japan Academy has a membership of about 150, consisting of some of the most distinguished natural and social scientists of Japan. It also elects a small number of Honorary Members — at present sixteen — the natural scientists among them including George Beadel, Melvin Calvin, James Crow, Arne Muntzing and Lord Todd.

Sir Otto is also a Fellow of the Royal Society, the Australian Academy of Science and the Royal Society of New Zealand.

Raymond Gorringe

★★★

Mr Len Herbert of the Meat Research Laboratory in Brisbane and the Managing Director of K Visser and Associates, **Mr Klaus Visser** have received the Best Paper Award for a paper in the Australian Institute of Refrigeration and Air Conditioning Journal.

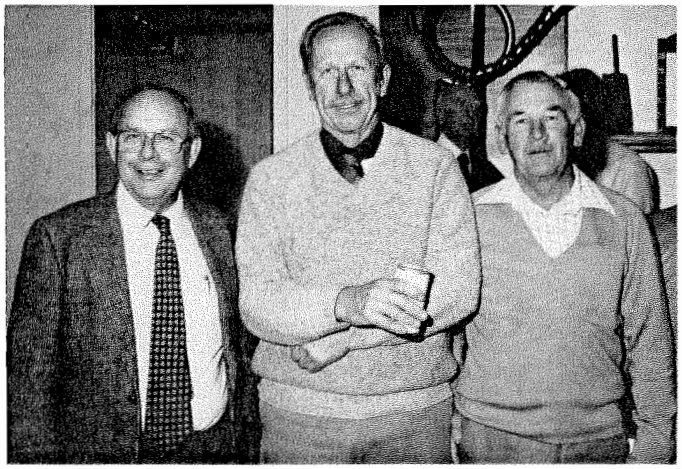
Mr Visser received a $1·5 million grant from the Department of Science and Technology to develop a new technique to freeze meat in cartons. At present cold air is blasted over the cartons in a long and expensive freezing process. Mr Herbert is testing, analysing results and collaborating with Mr Visser's developmental plate freezer, which freezes cartons between two refrigerated plates.

To the meat industry, which exports 300 000 tonnes of boneless lean beef meat to the United States annually, this would be a much cheaper and more satisfactory method of freezing.

★★★

Alan Stewart of the Agroindustrial Research Unit retired in July, but will retain a continuing and active interest in his research program as an Honorary Research Fellow.

Making a century



Three members of the Division of Entomology whose combined years of service in CSIRO exceeded 100 years, recently retired. Shown above, from left to right, are Dr Tom Grace, Dr Murray Wallace, and Mr 'Bubbles' Lewis, Entomology's century makers.

During his distinguished career Tom Grace was responsible for, among other things, developing the technique of insect tissue culture. He also served for a time as Counsellor (Scientific) in the Australian Embassy, Tokyo. Murray Wallace worked on animals from lucerne flea to dung beetles, with an especial affection for mites which he will continue to study as an Honorary Research Fellow in the Division. He was recently awarded a Doctorate of Science by the University of Sydney for his work on the ecology and control of some insects and mites associated with pastures and forests. 'Bubbles' Lewis was associated with a range of the Division's research programs during his long technical career, most recently in work on the biological control of weeds. Despite intensive interrogation, correspondents have been unable to determine the origin of the epithet 'Bubbles'.

— Photograph by Allan Edward AIAP

Mountain men

By the rules for the Black Mountain Fun Run, the annual dazzling display of physical prowess and cardiac capacity by CSIRO staff in Canberra, the Division whose first four runners clock up the lowest total time wins the trophy. This year the Division of Water and Land Resources took out the Black Mountain Fun Run. With the winning group for the 1984 event held last month is previous Combined High Schools and Great Public Schools runner, as well as school athletic champion (1943), a mere shadow of his former self, Dick Millington, Chief of the Division, far left. The team, from left, is Lee Belbin, Chris Barnes, Gordon Burch and Trevor Dowling. Photo by Glen Luck.

— Peter Martin

Latsi Fresco, from the Groningen University in Holland, is visiting the Division of Water and Land Resources to complete papers on the comparative ecology of thistle species with **Dr Mike Austin.**

★★★

Omkar Sharma, from the National Physical Laboratory in New Delhi, is being sponsored by ADAB to spend three months at the National Measurements Laboratory and study acoustic measurement as practised at NML. The two laboratories have already collaborated in a 'round robin' microphone calibration exercise conducted as part of the Asia Pacific Metrology program, and NML would like to extend this service to cover the full audio frequency range.

★★★

Dr Stephen Collocott, from the Division of Applied Physics, is spending seven months overseas attending conferences in Europe, visiting laboratories and working at the Clarendon Laboratory at Oxford on low temperature materials research.

★★★

A member of the Division of Entomology's locust section for many years, **Lew Chinnick**, died in early July.

★★★

Mr Cliff Gray, from the Division of Mathematics and Statistics in Sydney, has retired after 21 years with CSIRO. He joined the Organization as Officer–in–Charge of the Sydney branch of the Computing Research Section and spent nine years piloting the old CDC 3200. His interest in the theory of response surface designs led to him developing a software package which streamlined their application. He continued this research when he transferred to the Division of Mathematics and Statistics in 1972. His main role was involved in working independently as a consultant to industry clients.

★★★

Mr Roger Morse, AO, has recently accepted the first Honorary Research Fellowship to be offered by the Division of Energy Technology. He will pursue his research interests in the development of solar air heaters and take part in general scientific debate within the Division. The 12 month period begins in September.

★★★

Mr Alan Stewart, coordinator of the techno–economic program of the Division of Chemical and Wood Technology, has retired. He was formerly Chief of the Division of Land Research and Regional Survey and later Officer–in–Charge of the Agro–industrial Research Unit.

★★★

After more than 45 years' service **Mr Les Valentine** is retiring from the Division of Applied Physics' Clayton laboratories. He joined the Munitions Supply Laboratory in 1939, where he was involved in guages and length standards, and joined CSIRO in 1979 when the force and pressure standards group of the Materials Research Laboratories transferred to Applied Physics.

★★★

Mr Charles Franchimon, who joined CSIRO 24 years ago, has retired from the power frequency group at the Division of Applied Physics. His work has been mainly involved with the calibration and testing of ac-dc transfer instruments and in the development of ac-dc transfer standards. He has also researched and developed thermal convertors as transfer standards and has contributed to the development of a new method for determining errors in such devices.

★★★

Mr Mick Middleton has retired from the Division of Building Research after several years with CSIRO. He was involved in all aspects of ceramics and clay technology and worked on the durability and serviceability of building and other materials.

★★★

Professor YT Shah, Chairman of the Department of Chemical and Petroleum Engineering, University of Pittsburgh visited the Division of Fossil Fuels for a month to collaborate with **Dr Neil Foster**. Professor Shah has an outstanding reputation in chemical reaction engineering and has current interests in the application of slurry phase reactors to fossil energy processes.

★★★

Dr Dalway Swaine has been appointed a professorial fellow in the Department of Inorganic Chemistry at the Univeristy of Sydney in recognition of his continued contribution to the University. He has an international reputation for research on the detection, analysis and behaviour of trace elements, particularly in coal fly-ash and vegetation.

★★★

Mr Brian Le Breton has been awarded CSIRO's 1983 Arthur Frost Memorial Award, which was judged on overall merit and improvement in the full term of his carpentry apprenticeship at the Division of Food Research. He also won the Hicks Prize last year.

★★★

Dr Ted Cain, above, has been appointed Secretary of the Advisory Council. He was formerly Assistant Secretary in the Department of Communications in the Space, Telecommunication and Postal Policy Division. Dr Cain has a PhD in Chemistry from the ANU and has worked for ASTEC and the Department of Prime Minister and Cabinet.

Dr Simon Robinson of the Division of Horticultural Research has been awarded the 1984 P L Goldacre Award from the Australian Society for Plant Physiologists for outstanding research in plant physiology by a scientist under the age of 35 years.

Dr Robinson joined CSIRO as a Queen Elizabeth 2 Research Fellow and has worked on the photorespiratory metabolism and associated metabolite transport in chloroplasts for the last three years. He has studied a little known step in the photorespiratory carbon flow which involves the mechanism by which glycerate is transported into the chloroplast during photosynthesis.

As a result of these studies he has elucidated the properties of a previously undescribed and specific transporter of glycerate.

Since 1977, four scientists from the Division of Horticultural Research have received this award.

★★★

Dr Jeffrey Turner of the Division of Groundwater Research in Perth leaves Australia at the end of August to attend, and present a paper to, the International Symposium on Hydrochemical Balances in Uppsala, Sweden. He will also take part in a post conference workshop on Chemical Processes leading to Acidification of the Environment. Dr Turner will also visit the Institute of Hydrology at Wallingford, UK and the Laboratoire D'hydrologie et de geochemie isotopique in Paris.

★★★

CSIRO inventors succeed again

After reading in CoResearch about the car built by Lindsay Derriman which competed in the Shell Mileage Marathon last year, Graham Allen from the Division of Applied Physics in Sydney decided to enter a car in this year's event.

His car came second in the Private Entry Class with a fuel consumption of 1236 miles per gallon, and won the trophy for the most outstanding inaugural entry.

The tear–drop shaped car, named 'Glider Possum', was designed and built by Graham Allen and John Storey, with assistance from Phillip Lennox, also of the Division and Graham's father, Roy. It was driven by his sister, Michelle Allen.

Construction took three months of late nights and weekends and was done in the spare room of Graham's home.

The car has a fibreglass and carbon fibre monocoque body/chassis and weighs 22 kg. It has a 15cc air cooled 4 stroke model aeroplane engine converted to spark ignition, which drives the single rear wheel via chain and sprockets.

The Mileage Marathon was again won by the Ford Motor Company team from Geelong. In a dramatic last minute attempt their car achieved 3133 mpg, breaking their own world record of 2940 mpg set at last year's event.

Lindsay Derriman, who last year won the Private Entry Class and the Australian Automobile Racing Club Trophy for Ingenuity and Enterprise, had a run of bad luck this year. He took two cars to Sydney from Perth, but one's motor failed while the other's gear box failed.

However, undaunted, he is 'definitely' making the long trek from the west again next year, and will be joined by Graham Allen and his team . . . and some other CSIRO inventors . . .?

Pictured above with the car are, from left, Anthony Schinckel, from the Parkes Radiotelescope, Roy, Michelle and Graham Allen and another contestant.

New Chief to extend research

The new Chief of the Division of Textile Physics, Dr Ken Whiteley will expand the Division's wool research and apply the techniques to fibres generally.

Dr Whiteley said that although the Division's work would stay closely related to wool, it will move into related areas, such as particles and fabric filtration.

He is interested in the removal of particulate matter and especially its application in industry.

The Division also intends to forge closer links with manufacturing industries other than wool.

Dr Ken Whiteley, who is well known internationally, became the Chief of the Division of Textile Physics after Dr Robert Haly retired on June 1.

He joined CSIRO in 1980 as a senior principal research scientist at the Division. He has had a distinguished career since completing his doctorate in textile chemistry at the University of Leeds in 1959. He was an associate professor in fibre science at the University of NSW from 1976 to 1980.

Dr Whiteley's research interests include fabric performance and aesthetics, raw wool metrology and fleece characteristics.

CSIRO on display at Brisbane show

CSIRO has again displayed itself at the Royal National Association Exhibition in Brisbane.

The Division of Tropical Crops and Pastures, which is celebrating its 25th anniversary, provided the main interest with display boards depicting some of the work of the Division.

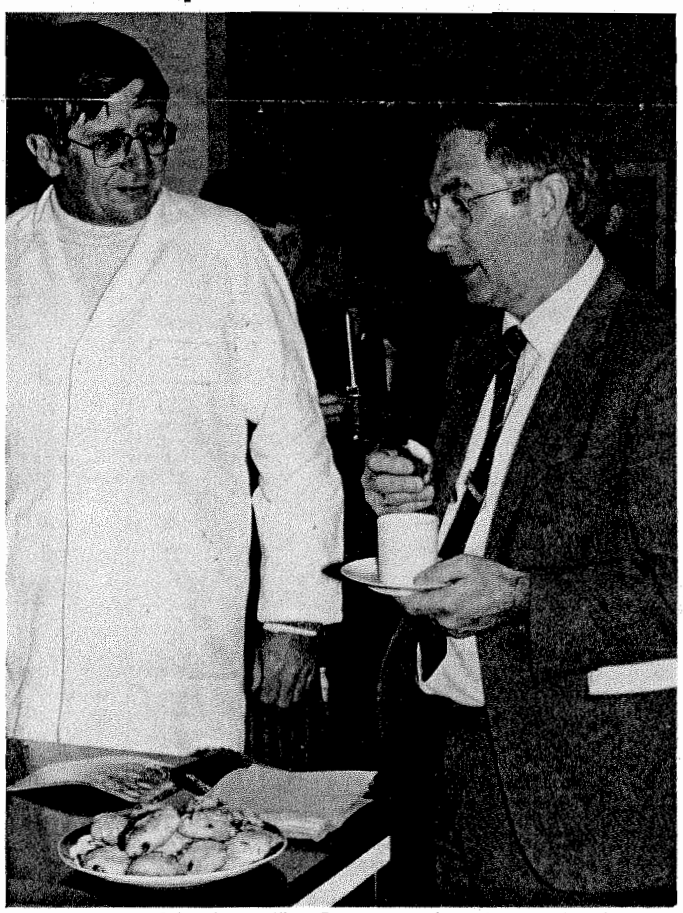
In particular it showed activities related to introduced legumes, grasses and crop species, and the new equipment for automatic data recording which was designed at the Division.

The Division of Radiophysics' display on the Organization's bicentenary project, the Australia Telescope, was popular with visitors.

Other Divisions were also represented, including Applied Physics, Mineralogy, Tropical Animal Science, Groundwater Research, Wildlife and Rangelands Research, Entomology, Plant Industry and Marine Laboratories.

The stand was staffed by the Brisbane Divisions and Regional Office with the emphasis on general information to the public and schools. The popular soils series booklets were also sold.

Fed up with wheat



The Executive were fed up by the Wheat Research Unit during its first visit to the Unit in August. Amongst the several projects shown to the members of the Executive, the use of modified gluten protein was demonstrated as a food additive — and tested in scones, sponge cakes, rock cakes and shortbread.

Above, the Director of the Institute of Energy and Earth Resources, Dr Alan Reid, discusses rock cake quality with Mr John Ronalds of the Unit.

The Executive also learnt about some of the many products made from Australian wheat, how wheat grains are examined for specific compounds, how genetic and environmental factors can effect wheat quality and about quality changes during grain storage.

Birthday party

Celebrating at the Division of Tropical Crops and Pastures' 25th Anniversary cocktail party are, from left, a consultant, Mr Peter Baden Cameron, the Chief of the Division, Dr Ted Henzell, and Professor Norman Lahey from the University of Queensland.

Library link made

An important step in the further development of Australia's information technology has been achieved with the linking of CSIRO's computing facility (CSIRONET) and the National Library's Australian Bibliographic Network (ABN).

The new computer micronode developed jointly last year by the Division of Computing Research and the private company, Office Automation Pty Ltd of Canberra, is a significant component in the link.

ABN is the National Library's on-line national bibliographic service which is based on the cooperative participation of Australian libraries in a shared cataloguing system.

As well as cataloguing, however, it provides an on-line inquiry service, including reference searches, access to bibliographic records and access to alternative locations to facilitate inter-library lending.

ABN will largely replace the present batch-processed catalogues produced on microfiche. The establishment of those catalogues progressively from 1977 has reduced the number of times a particular piece of information must be entered in the library system from as many as 14 down to a maximum of eight.

However, CSIRO is about to place tenders for an on-line interactive system which will eliminate the duplication entirely. Records entered on ABN will be loaded into CSIRO's accessioning, routing, loans and, most importantly, management information that no manual system can supply.

Through ABN the 7500 CSIRO staff, including 3000 rural staff, have immediate access to the ABN database, which comprises more than 3 000 000 'citations for books, journals, films, maps and other types of library material, and almost 2 000 000 non-CSIRO library locations for such material.

CSIRO's system will enable staff not only to know that a CSIRO library holds an item (which will be shown in ABN) but also whether it is available immediately or is currently in use by another officer.

A two way link, which will also allow ABN participants access to CSIRO databases, is the ultimate goal of this gateway. The technical problems in implementing a two-way link are currently being studied.

When the two-way link is established, ABN participants will have access to the massive scientific resources of CSIRO libraries.

TC & P celebrates 25 years

The year long celebrations of the 25th anniversary of the Division of Tropical Crops and Pastures continued in July with two parties for supporters and past connections.

A 'Hungi and Spit' evening was held at Samford for present and former staff of the Division. Ted Henzell presented DSC's, otherwise known as Distinguished Service Certificates, to 15 people who had completed 25 years with CSIRO.

Less serious awards were presented to 31 staff members for their particular idiosyncracies.

At another function, cocktails were held for colleagues from State and Commonwealth bodies, private industry, farmers, graziers and some individuals who had been particularly supportive over the past 25 years.

A specially published volume of 7 articles from recent editions of Rural Research was also launched at the function.

Several activities and functions have been held and are planned for the Division's silver jubilee, including an open day in September and displays at agricultural shows.

Two booklets will be published: 'Pasture Research in Northern Australia — Its History, Achievements and Future Emphasis' by Alan Eyles and Don Cameron; and 'A History of CSIRO Crop Research in Northern Australia 1946-84' by Ian Wood and Jan Basinski.

The latter will contain 'some personal reminiscences' from the memories of those who lived and worked in the north.

Photoportraits and accompanying plaques of three staff members who played a major part in Katherine's history will be hung at the Katherine Research Station Administration building.

Dr Mike Norman, responsible for Katherine from 1959 to 1969, the Chief of the Division of Land Research and Regional Survey up to 1960 and later a member of the Executive, Dr Chris Christian, and the Chief of Land Research from 1962 to 1973, Mr Alan Stewart, will be honoured with the photoportraits.

CORRECTION

The David Rivett Medal is awarded by the CSIRO Officers' Association, and not by CSIRO, as reported on page 3 of the July issue of CoResearch.

Architect retires

The CSIRO architect involved with many Canberra buildings and laboratories in Sydney, Darwin and Indonesia, Mr Phil Relf, has retired due to ill health.

Mr Relf handled most CSIRO architectural work from 1964, including the headquarters building and new annex.

He was responsible for the D F Waterhouse Building at the Division of Entomology which houses the Australian National Insect Collection, the Stored Grain Research Laboratory, the new Crop Adaptation Laboratory at Plant Industry and the extensions to the Division of Computing Research.

Mr Phil Relf.

His ability was recognised by the fact his buildings at the Division of Wildlife at Darwin retained their rooves during Cyclone Tracy and became an important base in the post–cyclone clean–up.

He also spent ten years commuting to Indonesia to oversee the construction of the Centre for Animal Research and Development at Bogor.

Mr Relf is an artist of some note and has had several exhibitions of his watercolours and oil paintings in Canberra.

1915 Lone Pine planted

One of the few progeny of a 'Lone Pine' tree at Gallipoli is thriving at the Tumut property of retired CSIRO officer Mr Ken Prowse MBE.

Mr Prowse, the Regional Administrative Officer in Canberra for many years, and an Army Major in World War 2, obtained the tree from the Division of Forest Research, which manages the progeny.

It was planted by a Gallipoli veteran, Mr Fred Norden, 88, in honour of fallen comrades, and a particular friend of Mr Prowse, Captain Bob Page, DSO.

Captain Page was a member of the Z Special Force which planted mines in Singapore Harbour from the famous 'Krait' and destroyed 44 000 tonnes of shipping in World War 2. However, during a second raid the assault team members were captured, tried and ceremonially beheaded at Singapore.

LONE PINE

The tree Mr Norden planted came to Australia as a pine cone on a pine branch the Turks used to build an overhead cover at Lone Pine in Gallipoli.

It was sent to Mrs McMullen in Inverell in 1915 by one of her sons. Another son had been killed at Lone Pine.

In 1928 Mrs McMullen found two seeds from the cone and raised two trees, one of which was donated to Inverell and the other to the Parks and Gardens section of the Department of Interior in Canberra.

The Duke of Gloucester planted the latter pine at the War Memorial in 1934 in memory of Australians who fell at Lone Pine.

Stefan Mucha of the Division of Forest Research took twenty buds of this tree in 1981 and grafted them onto two year old Pinus root stock from the NSW Forestry Commission. Ten survived and seven have been distributed, the remaining three being held at the Division's nursery.

Mr Prowse has given the memorial pride of place at his small property, which has more than 1 200 trees in its grounds.

Fred Norden, an ANZAAC who actually fought at the battle of Lone Pine, plants a CSIRO grafted tree from Gallipoli, watched by Mr Ken Prowse, right, who organized the ceremony, and Mr Keith Aitken, the President of the Southern Highlands Legacy Group.

Forest peace treaty

The Western Australian Government has a continuing interest in the Division of Land Resources Management (LRM), now part of the Division of Water and Land Resources. Dr David Bennett is involved in a WA Government Committee to allocate conservation areas in the Jarrah forest near Perth. Using expertise gained in a project performed under the auspices of LRM, his role is to achieve compromise between the parties involved.

It's been suggested David's working party is rather like a UN peace keeping force, and so the various parties, pictured above, came appropriately dressed. From left, Mr Chris Kraus of the Forest Products Association, Mr Bill Hare from the Australian Conservation Foundation and the Conservation Council of WA, Dr David Bennett, Mr John Quilty from Alcoa of Australia and Mr Joe Havel of the Forests Department of WA.

— photograph by Bill van Aken

Will the tide come in?

An international workshop on 'Red Tide' was held at the Division of Fisheries Research recently.

Red tides are blooms of unicellular marine planktonic algae which are so dense that they colour the sea red (e.g. The Red Sea).

The incidence of red tide is increasing in semi–enclosed basins such as the Inland Sea of Japan and the Scandinavian fiords where there is little circulation of water and increasing discharge of sewage and industrial wastes.

The organisms which produce Red Tide (usually dinoflagellates) sometimes produce potent toxins which can find their way through the food chain to man causing 'paralytic shellfish poisoning' and 'ciguatera'.

On other occasions, the sheer mass of algae can suffocate fish such as yellow tail by clogging their gills.

About 40 scientists from Australia, Canada, Denmark, Hong Kong, India, Indonesia, Japan, New Zealand, Norway, Philippines, Republic of Korea, Thailand and the USA attended the workshop, which was organized and hosted by the Acting Chief, Dr Shirley Jeffrey.

Discussion topics included: occurrence of red tides in the Indo–Pacific, Europe and North America; biology of organisms; formation of red tides and hydrodynamic processes; consequences of toxic blooms; depuration, prevention and control; detection and monitoring; training and instrumentation; and prediction and economic importance.

Although red tides are not yet a problem in Australian waters, some countries in the Western Pacific area are so concerned about red tide and its associated toxic and suffocating effects that they have appointed scientists to a special Red Tide Study Group to promote further research on the subject.

This group met in Cronulla after the workshop under the Chairmanship of Fisheries Research scientist Dr David Tranter, Technical Coordinator of the 'WESTPAC' Task Team on Ocean Science in Relation to Living Resources ('WESTPAC' is the Western Pacific Program of the International Oceanographic Commission).

The Red Tide Study Group found that there was an urgent need in the Western Pacific area for training in the identification of the many different algal species capable of forming red tide. It was proposed that a training workshop be held, probably in Thailand, on sampling and identification techniques.

Special emphasis was given to the study of cysts, which are resting stages of the red tide algae that settle out of the water column when conditions are unfavourable, and germinate like seeds when conditions alter in their favour.

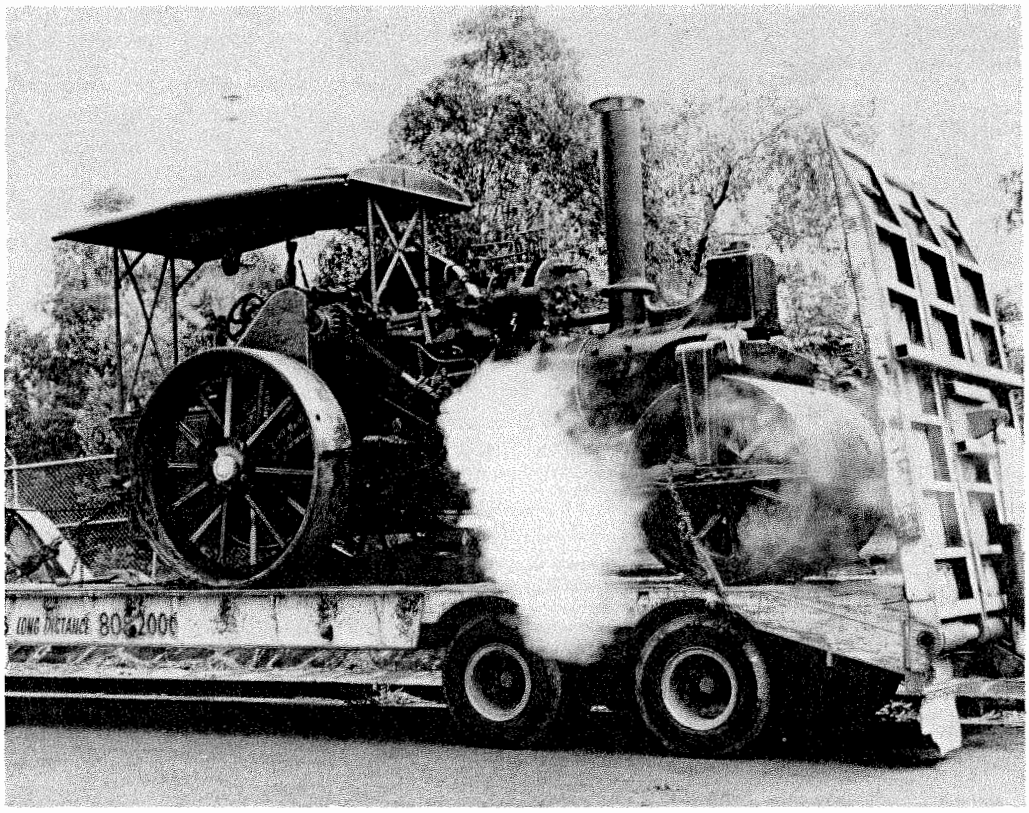
The study group will develop research programs into the processes in the sea which favour red tide development.

A further scientific discussion on this subject will be held next month at Shimizu in Japan and the WESTPAC Study Group will report on the results of the Cronulla workshop. It will also seek further support for an expanded program of research in this part of the world on this important topic.

CAT

The CAT Column is open to all members of CSIRO who wish to comment on communication matters.

Steamrolling the past



This 1921 road roller turned heads when it appeared at the Division of Food Research recently. Restored by Keith Luff, a senior laboratory craftsman at the Division, it was en route to a Local Government exhibition when seen at North Ryde, looking like new.

Mr Luff bought the engine in 1982 and painstakingly restored it to its original specifications, including its 'livery'. The engine was successfully steamed for the first time in 20 years in March.

The engine, a '6 Nominal Horse Power Class F Type Piston Valve Compound Road Roller', was originally ordered in 1921 from Aveling and Porter in Rochester, England, by the Hunter's Hill Council in Sydney. From then until the outbreak of World War 2 it was used for road construction and road repair work at Hunter's Hill, when it was sold to a private road building contractor.

This month's CAT column has been contributed by Bob Marshall of the Office of the Executive who is also secretary to the Review of External Communication activities.

The Executive has commissioned a review of CSIRO's external communication activities which will examine our communication from and to the general public, community groups, professional and technical audiences and industry.

It will be an Organization wide review, looking at the communication activities of Divisions and Units, as well as centrally-based groups. The membership and terms of reference for the review were set out in Information Circular 84/34.

The committee held its first meeting in Melbourne on July 18. It decided to invite submissions from as many interested companies, government agencies, academic bodies, community groups and individuals as possible. Submissions are also invited from CSIRO Divisions and Units and from individual staff members and should be sent to Bob Marshall, Secretary to the committee, at Headquarters, preferably by mid September 1984.

The possibility of using consultancies to assist the committee, particularly in the area of communication with the general public through the mass media, is also being explored. Advertisements inviting consultants to submit proposals have attracted substantial interest.

Members of the committee are keen to visit a representative sample of Divisions and Units but it will not be possible to visit all locations.

A large amount of information on CSIRO's external communication activities has already been collected during recent reviews of related areas and other communication studies. The task of the committee will be to bring together relevant findings from these studies and examine other aspects of our external communication which have not previously been reviewed.

The committee aims to produce a report which provides: an assessment of our current activities; guidelines for improvement or development of these activities; recommendations for a comprehensive communication policy statement; and recommendations on the most appropriate structure and organization of communication activities. The report should be completed by the end of January for consideration by the Executive early in 1985.

The first review of the implementation of the Occupational Safety and Health Report recommendations has begun.

The Chairman of the Craig Report on health and safety and member of the Executive, Professor David Craig, is conducting the review six months after the Executive endorsed the Report's 45 recommendations.

Professor Craig said he wanted to see if the Organization has responded positively to the Report and what improvements had been made.

'This six month review will be seen as going well beyond the normal in importance. It will enable analysis of progress and the shaping of future moves,' he said.

He has written to all Chiefs, Officers-in-Charge, Directors and relevant administrators asking them to provide information on the implementation of the recommendations relevant to each.

His review report will go to the CSIRO Occupational Health and Safety Committee, which includes staff association representatives, and then to the Executive.

Another review will be held in early 1986, two years after the Executive endorsed the Craig Report.

Insect watching

Potential entomologists gathered to gaze in awe at the wondrous insects that grace Australia and its environs during the Division of Entomology's recent open day.

Over 3 250 people queued in the Canberra winter sunshine to see how flies are trapped three kilometres above the earth and moths netted at ground level, then slowly made their way into the Australian National Insect Collection to be dazzled by the brilliant butterflies and beetles, bemused by the tiny ants and giant moths, horrified at the sawfly larvae (live) and termite damage and entranced by some maneating spiders (hardly insects, but interesting all the same).

Artistic success

There had been a far greater collaborative component between scientists and artists in the Artists-in-Residence scheme at the Division of Applied Physics than had been expected.

Mr John Birch, the Scientific Assistant to the Chief, said that despite some early reservations, the program had been most successful.

'I believe there is now a greater recognition that science and art are both modes of inquiry into the nature of the physical world and both artists and scientists can gain from each other's insights,' he said.

'The Australia Council and the Australian Film Commission are currently reviewing the program to determine whether it will continue and in what form.

'The Division has made no decision at this stage about its future involvement in the program,' he added.

A seminar was given recently by the artists so Divisional staff and the Australia Council could see and hear what the four artists had achieved in their residency.

'Alexander, using a video produced by Harry Gillett, gave a lucid account of the development of holograms of his four dimensional sculptures,' Mr Birch said.

'Moya Henderson described the invention and development of her new keyboard percussion instrument, the Alemba, and the contribution made by the Acoustics group.

'Michael Scullion received a mixed response to his account of the linkages between Cezanne, cinema and gravity, and Simon Biggs, who only started his residency recently, described his investigations into computer graphics and robotics applied to sculptural environments,' he said.

CoResearch is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 5th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel 48 4479. Editor: Penny Gibson.

UNION OFFSET CO. PTY LTD. CANBERRA

CoResearch

CSIRO's staff newspaper October 1984 274

Survey: status ↑ morale↓

A survey of the membership of the CSIRO Officers' Association in April and May this year has highlighted some good and some bad areas of status and morale.

The President of the Officers' Association, Mr Roy Bond, said that overall, most respondents had felt their status and morale were steady.

'But, whereas the number who thought status was rising was larger than the number who thought it was falling, the reverse was true for morale,' he said.

'Although these overall figures might not be unexpected, various aspects of the Organization and certainly various Divisions and Units supplied much more varied results.

'For example, respondents at ANAHL at Geelong responded very positively to very nearly all the questions posed, whereas other Divisions and Units responded the other way.

'The Association hopes to be able to visit sites where morale is low,' Mr Bond said.

In an information circular to all members, Mr Bond said morale had been considered by most respondents to be high, especially among Chiefs and Chief Research Scientists, and lowest within the Experimental Scientists (formerly Experimental Officers) grades.

STRESS LEVELS

He said there were indications that stress levels in some Divisions were sufficiently high to inhibit the performance of a significant number of respondents and in only five Divisions and Units the availability of career and performances counselling was considered adequate or good.

'The major message to come through from the written comments on the survey is that no level of leadership and management is free of criticism: Experimental Scientists criticized Research Scientists; Research staff criticized Section and Program Leaders,' Mr Bond said.

More people had criticized Chiefs and Institute Directors while Headquarters and the Executive had received more criticism than anyone else. The understanding by Headquarters' administrative staff of the work and needs of scientists was considered poor.

However, some individual Chiefs and Regional Administrative Officers were regarded more highly than others, showing there was no uniform condemnation.

INDUSTRIAL DEMOCRACY

'The Officers' Association is calling for the implementation of management training and industrial democracy to overcome these problems,' Mr Bond said.

'It hopes that CSIRO will become a model agency within the Australian Government's public sector in the ways that industrial democracy can be incorporated,' he added.

The survey was undertaken by the Surveys Committee of the Officers' Association and members of the Division of Computing Research. Advice was sought from people experienced with social surveys within the Organization.

Budget

All Divisions badly hit

A *CoResearch* survey of Chiefs has shown staff positions, staff morale, research support and travel to be the main victims of the recent budget cut backs.

The survey showed there will be very little recruitment of staff this financial year, and most Divisions will have to cut back research, be it high priority and/or industry supported or not.

Many Chiefs said industry and university collaboration would suffer, as would efficiency, new initiatives and morale.

Two-thirds of staff at **Plant Industry** have volunteered to take several days leave without pay to save four positions of the 19 due to become vacant this year.

'The response has been really wonderful and reminds me that CSIRO's greatest resource is its staff, their dedication and loyalty,' Chief of the Division, Dr Jim Peacock said.

Staff at the Centre for **Irrigation Research** are considering a similar strategy or the possibility of working nine-day fortnights following cuts which will affect research on: irrigation techniques to help overcome salinity problems; high crop yields combined with economic water use; methods of avoiding water pollution; and safe ways of re-using precious water resources.

This is despite an 80 per cent protection for water/soils related research.

A number of Chiefs have ruled out these options and the **Consultative Council** has passed resolutions that staff should not be required to receive less than their full entitlements, and Division's should not seek their support to such schemes.

The Deputy Chairman of the Council and Assistant Federal Secretary of the Australian Public Service Association, Mr Paul Wright, said some staff were being placed in a position of voluntarily accepting less than their full entitlements in the interest of releasing funds for research activities.

Chief of the Division of **Chemical Physics**, Dr Lew Chadderton, has maintained a high profile in both electronic and print media.

He said the public had not known CSIRO was hit and that there was now strong support from the community, universities and industry.

All programs at his Division, except high priority ones, will be cut back and some will be almost certainly eliminated, such as the project on sharpening diamond blades (for eye surgery,for example), high resolution electron microscopy of ferritin (a protein containing iron found in the liver and spleen) and chemical physics of surfaces. There are no funds for computing or equipment.

Chief of **Materials Science**, Dr John Anderson said, 'We will cut our cloth accordingly and live with it.'

Dr Barry Brady, Chief of **Geomechanics** said staff discussions revealed negative morale among staff and stifling of new initiatives. Although the Division was cushioned somewhat by industry funding and there would be no staff cuts, there would be some equipment cuts.

However, staff had resolved to come up fighting and get into the market place and industry: to have a positive fighting attitude rather than a whingeing one.

Although **Mineralogy** has industry funding, it tends to be directed towards tactical research rather than the strategic research needed to ensure the long term health of the mining industry. Field work will be curtailed at the Floreat Park, North Ryde and Baas Becking laboratories.

The collection of new research materials, and on-site consultation with company geologists will be prevented leading to a risk of stagnation in the entire Divisional research program.

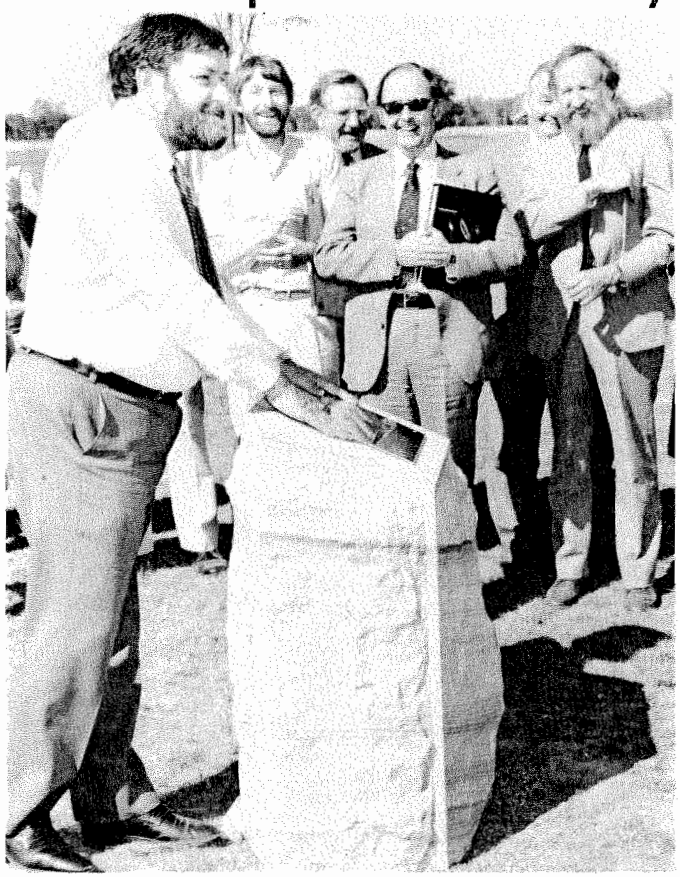
Many key recommendations of the review committee of the Divisions of Mineralogy and Mineral Physics will become difficult to pursue.

Mineralogy was one of the many Divisions which noted the increased difficulty in maintaining advanced analytical facilities. Besides the impact on CSIRO research, this will also reduce their availability to scientists from industry, universities and government departments.

Protein Chemistry will also have a substantially reduced ability to meet commit-

continued on page 3

Telescope under way



Construction of the Australia Telescope officially began when the Minister for Science and Technology, Mr Barry Jones, beat a peg into the ground at the Culgoora site.

The $32 million project which will incorporate the Parkes radio telescope with a new antenna at Siding Spring and a six kilometre array of six new antennae at Culgoora, will be able to be operated as one giant, versatile radio telescope, 300 km in diameter, to probe the southern skies.

Mr Jones said radio astronomy in Australia would allow scientists to pursue curiosity motivated research in order to develop the creative thinking which is the hallmark of science. It would also result in advanced technological spinoffs, many of which were directly applicable to the new information age.

Letters to the Editor

Dear Editor,
It has always been an inherent strength of CSIRO that maximum autonomy has been given to Divisions. In the words of Sir David Rivett, 'Chiefs of Division, if rightly chosen, are the right people to determine their own programs without anything in the way of super-chiefs at Head Office to see that they never deviate from the straight and narrow path'.

This applies specifically, of course, to our research. I also believe that, to a lesser degree, it applies to the question of how we handle the current funding crisis. The Division of Plant Industry has followed the path of voluntarily taking leave without pay. That is their prerogative. The Division of Chemical Physics believes, however, that this Government displays a total lack of understanding as to what inadequate funding of CSIRO will lead to. We believe that an attack on the problem should be twofold. On the one hand, parliamentarians and the public should be educated as to the enormous intrinsic value of CSIRO to society and the future — and this is being achieved both directly and via the media. On the other hand, the ridiculously low funding due to the last budget cuts, and the disastrous effects on vital programs, are being shown for what they are. We believe that to demonstrate that a Division can maintain its efforts, through voluntary leave taking, is not merely obfuscating. It also unfortunately suggests that we can indeed manage with less.

Throughout the Public Service we all know there must be many unproductive individuals. In CSIRO, as is almost certainly the case in, for example, the Departments of Foreign Affairs and the Prime Minister, sinecurists daily arrive and depart, having achieved either little or nothing. There are a few in my Division, and they exist in all. Their complacency is carcinogenic. They consume salary funds. They infuriate the hard working majority, especially the dynamic short term appointees, many of whom ought to be 'new blood' injected into the mainstream of new divisional research programs over a long period. They are beyond the reach of the counselling arm.

The Prime Minister would have us 'lift our game'. My answer is that his Government should lift its own, and provide increased funding commensurate with a properly planned technological national future. Mechanisms should also be introduced swiftly — in CSIRO and throughout the Public Service — for the much more rapid dispatch of unproductive personnel. Such degrees of freedom are badly needed.

Lewis T. Chadderton
Chief
Division of Chemical Physics

Dear Editor,
Each recent issue of *CoResearch* has shown a picture of the Minister for Science and Technology, but never one of the Opposition spokesman. As *CoResearch* is funded publicly, should there not be a proper balance?

R.M.M. Traynier
Division of Entomology

The Editor,
The savaging of CSIRO's budget, the magnaminous grants to Sports, and the call of the PM for greater relevance in CSIRO's operations, leads me to the inescapable conclusion that our efforts should be directed towards the greater glorification of our athletes.

Examination of Divisional and Institute reports reveals a wealth of untapped resources, which, if properly channelled, could rapidly restore our status in the eyes of those who count (votes?).

Starting with the Division of Fisheries Research, they should train a squad of porpoises, those very intelligent animals, to push only boats carrying the Australian flag. Their success with getting prawns into nets suggests they could be admirable advisers to the hockey and water polo teams.

Wildlife and Rangeland's scientists should set out to prove that the boxing kangaroo is not a myth.

Interscan, rather than being wasted on aeroplanes, should be modified to help our shooters and archers home in on their targets while elsewhere it should not be beyond the imagination of Applied Physics to aid our cyclists with a King Wheel (with apologies to Ben Lexcen).

Breeding, using the latest molecular biology techniques, also has a role: Forest Research would do wonders for our oarsmen and pole vaulters by developing trees with super springs down their middles.

If Plant Industry can succeed in moving their 'jumping genes' from plants to animals, there is no knowing what the next generation of pole vaulters, hurdlers and long jumpers could achieve.

As for methane-producing ruminant swimmers, jet propelled in a tight finish, the sky could be the limit.

For our tennis players and discus throwers, Craig Mudge's VLSI chip in their shoulders could literally produce the $6 million person.

No doubt other projects will readily come to mind, apart from the role our soil scientists can play in developing cricket pitches.

All we need is a name change, to CIRSO, or Commonwealth Ingenious Research for Sporting Organizations, and we shall be relevant.

Yours sincerely,
Norm Wimp-Boffin

Dear Dr Wild:
It has taken me a while to get round to it, but I must write to thank you for the most recent copy of the CSIRO Annual Report, 1982-83. As always, it is splendidly produced in addition to all the information conveyed about the scientific projects and programs.

Convey, please, my congratulations to your editorial staff. And tell them that, when I first faced the task of producing an annual report myself, I used the CSIRO report as a model. That was back in 1962-63. Many reports come to my desk now — too many to read! But I always read yours.

I was, by the way, a part of CSIRO many years ago. Fred White and Guy Gresford would know the connections — and the disconnection when the AAEC was formed, separate from CSIRO.

Again, my respect for your report, which is a model of clarity and literacy — and its eye-catching illustrations like the tuna story on page 115.

Sincerely,
Keith B. Mather
Vice Chancellor for Research
and Advanced Study
University of Alaska

'Got any tips?'

The Chief of the Division of Horticultural Research, Dr John Possingham, as the longest standing Chief, welcomes the new Chief of Fisheries Research, Dr Roy Harden Jones, to the recent Chiefs' meeting held in Canberra.

Library opens

The Minister for Science and Technology, the Hon. Barry Jones, MP visited CSIRO in Armidale recently to officially open the site's new library building

The $300 000 building was designed by architects and engineers of the Commonwealth Department of Housing and Construction and was built by a local Armidale firm.

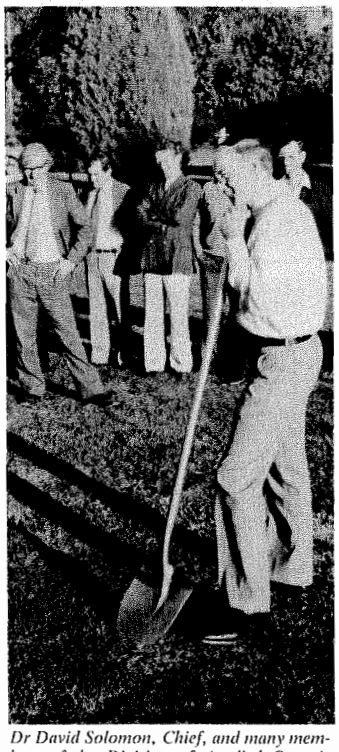
Built of low maintenance materials, to a modern design, it includes access for the disabled and allows maximum flexibility for expansion or internal rearrangement of its 400 sq.m. A wide verandah and corrugated iron roof give the building an outback appeal.

Although the library collection was established in 1948, it has always been housed in temporary accommodation, ranging from fibro sheds to converted shearers' quarters.

At the Opening Ceremony, the Minister spoke of the information revolution and its effects on both libraries and society at large.

Personnel from the nearby University of New England, Department of Agriculture and members of the rural community along with senior CSIRO Librarians were amongst the guests. Dr Keith Boardman and Mr David Wright represented the Executive.

Turning the sod at Clayton



Dr David Solomon, Chief, and many members of the Division of Applied Organic Chemistry made the 25 kilometre and 25 year journey from Fishermen's Bend to Clayton on August 3 to celebrate an event which even the most optimistic local observers doubted would ever happen. Dr Solomon turned the first sod for the Division's new laboratory complex, which will cost over $11M and is scheduled for completion late in 1986. It should be fully occupied by early 1987.

Plant disease priority

A senior plant pathologist will be appointed to assist the Director of the Institute of Biological Resources, Dr Michael Pitman, following recommendations by the Committee of Review of Plant Pathology to the Executive.

The scientist will assist with the coordination of plant pathology research and liaise with State Departments, universities and other research institutions.

Almost half the recommendations of the Review Committee have been endorsed by the Executive, which has, however, delayed their final implementation until it has considered current Reviews of the Divisions of Horticultural Research, Plant Industry and Tropical Crops and Pastures.

Of the 37 recommendations, 15 have been referred to the Director of the Institute of Biological Resources for further consideration, three have already been adopted, two rejected and one will be implemented in the longer-term.

The Executive was not in favour of establishing a separate Division of Plant Pathology as most research is linked to programs within different Divisions.

It assigned highest research priority to molecular biology approaches to plant pathology, root diseases, tropical plant diseases and biological control of weeds.

It also considered longer term development of strategic research on crop loss assessment and epidemiology was needed.

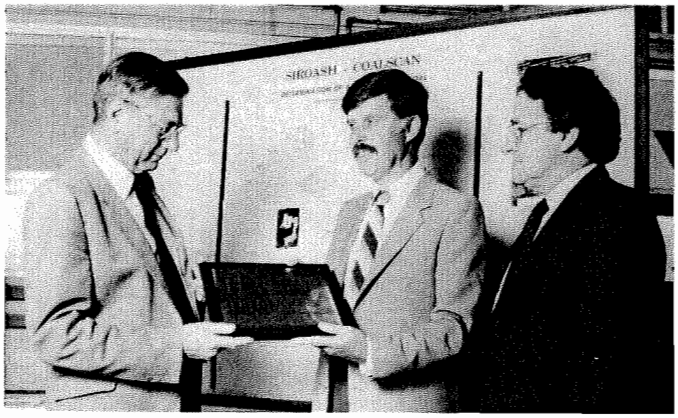
Plant pathology has been designated an area of high priority for CSIRO and the Review was commissioned to provide advice on the priorities for plant pathology research within the Organization.

Although the Committee reported in February 1983, the Executive called a meeting of specialists from throughout Australia to further assess and refine the Committee's priority list and identified problem areas in light of the entire Australian community.

CORRECTION

The Division of Land Resources Management is now part of the Division of Groundwater Research, not Water and Land Resources, as reported in the August/September issue.

Making the top 100



The Chairman, Dr Paul Wild, receives CSIRO's I·R100 award from staff involved with the project, Dr Brian Sowerby from the Division of Mineral Physics and Dr Terry Walker of the AAEC Research Establishment. Dr Wild later gave the award to the Minister for Science and Technology, Mr Barry Jones.

The Division of Mineral Physics' SIROASH gauge is a major component of an Australian invention which recently won a high prestige award in the United States.

The Coalscan On-Line Ash Measurement System, which could save the Australian coal and power industries millions of dollars each year, was chosen by Research and Development magazine as one of the 100 most significant new technical products of the year.

Mineral Control Instrumentation Pty Ltd (MCI), who commercially developed the system, received the award at a formal ceremony in Chicago.

The product was displayed at the Chicago Museum of Science and Industry for a month, along with other award winners such as NASA, Westinghouse Electric and Hitachi.

The Minister for Science and Technology, Mr Barry Jones, said that Coalscan was inherently more accurate than any other gauge of its kind.

'As a high technology development it is a tribute to the expertise of its developers in industry, academia and CSIRO,' Mr Jones said.

'It's a prime example of what can be done when the scientist and the industrialist cooperate and collaborate.'

The Division of Mineral Physics invented the actual SIROASH gauge, which determines the ash content of coal more efficiently than the old fashioned technology. One of its major benefits is that the measuring takes place on the coal line, and therefore samples do not need to be taken to laboratories.

Mr Jones said the University of Queensland was responsible for the ingenious system of coal delivery to the gauge, and that MCI commercially developed the whole instrument and its computer controlled electronics.

'This prestigious award indicates international recognition of Australia's research and development ability, and its capacity to help both Australian and world industries,' he added.

BHP also won an award for the development of a data processing method which determines the significant properties of a material from its infrared spectrum.

From the Chairman -

A regular column by the Chairman of CSIRO Dr. J. Paul Wild

Not since the Rex Connor affair has there been such media interest in the fortunes of CSIRO or such a groundswell uniting our staff — indeed uniting the scientific community — as there is at this time.

It is not merely a question of whingeing over a bad budget, though the budget, a last straw, was indeed the catalyst. It is more a general realization that, to the extent that our country's future is dependent on scientific and technological innovation, Australia is sinking to the bottom of the group of countries that call themselves 'developed'. It is a realization that unless *we* do something about it nobody else will — certainly not the politicians if left to themselves.

The response from Chiefs, staff, staff associations and well-wishers by various means — television, radio, press, letters to the Prime Minister, demonstrations and even voluntary measures involving a decrease in the pay packet — have been magnificent.

I particularly liked a letter to the *Melbourne Age* by our colleague Clive Coogan which showed that our predicament is not new. In 1852 Disraeli advised the British Prime Minister, Lord Derby, that the only possible use he could see for Charles Babbage's invention (the programmable computer) was to calculate the vast sums of public money that had been squandered on it. But 20 years later, older and wiser, Disraeli was to say to the British Association (cofounded by Babbage) that the last 50 years were the most remarkable in the annals of mankind. 'I am not thinking of the rise and fall of empires, the change of dynasties, the establishment of government. I am thinking of those revolutions of science which have had much more effect than any political causes, which have changed the position and prospects of mankind more than all the conquests and all the codes and all the legislators that ever lived.'

Let us hope our politicans also see the light.

Now is the time for all scientists to speak out and explain to the community at large, or to their leaders, the positive effects of their collective endeavours on the future of our country.

***

On 27 September the construction of the Australia Telescope was inaugurated at Culgoora NSW by our Minister, Barry Jones, through the act of hammering in a stake and installing a plaque. It was for me a moment of nostalgia, reminding me of the day back in 1962 when Warren Payten and I found the site which was to become the venue of the radioheliograph — still, after its closure, the only one in the world. Free from the cares of Canberra for a day, it was a festive, sunlit occasion, and Barry Jones was in great form. I quoted to the audience a precise description of how a synthesis telescope worked; they were the words of Barry Jones in 1982 when as Shadow Minister he was addressing the House of Representatives. I believe it is the only occasion in any of the world's parliaments that a description has been given of how a synthesis telescope works. We should be thankful that one, at least, of our politicians does not, like Disraeli, need to be converted.

Paul Wild

Budget cuts affect high priority research

continued from page 1

ments with collaborators as well as be unable to purchase new equipment or replace ageing and unserviceable equipment.

Funds intended for travel, equipment and chemicals will be used to cover shortfalls in salary payments.

'This year's budget exacerbated an already bad funding situation and as a result, the effectiveness of the Division is reduced and staff morale lowered,' the acting Chief, Dr Mort Gillespie, said.

The Division of **Building Research** will have to reduce its transfer of technology and knowledge to industry. Research on the durability of building materials will be cut. Work on risk analysis for building design will be abandoned which could result in uneconomic and unsafe buildings as many major building standards and codes of practice now risk being poorly designed.

The development of 'artificial intelligence' computer systems calculated to save the Australian construction industry millions of dollars in time and effort will be delayed, as will computer programs on building regulation codes designed to greatly reduce the time taken to get planning and building permits through local government.

There has been considerable media coverage and outcry against the lengthy delays in research on home construction in bushfire prone areas — a result of the budget.

The Division of **Forest Research** has also had to cut its bushfire suppression research, Project Aquarius. Research relevant to the Daintree rainforest cannot be expanded to meet the need, dieback research will cease and there will be less money for *Pinus radiata* research.

Environmental research will also suffer at **Groundwater Research** in Perth, where research on environmental effects of mining will cease. Nor will they be able to purchase equipment for research on applications of remote sensing.

Both rural and high technology industries will suffer from cuts at **Atmospheric Research**: a severe cut to drought research will destroy the momentum of research built up over a period of years.

The Division will be unable to complete a study of concern to the airline industry: the study of particles in the stratosphere, such as volcanic dust, which may also have an important impact on the earth's climate. Resource restrictions accumulated over previous years have meant a halt to the urban chemistry program on air pollution.

New building extensions, urgently needed to accommodate staff at Aspendale, have been deferred despite top priority status.

At **Mineral Chemistry**, a 50 per cent cut in research support such as maintenance (including computing), stores and workshop services will mean a drop in efficiency across the board.

Divisional high priority areas are affected, including the zirconia work. Establishment of the new West Australian laboratories will increasingly depend on industry support.

Chief of the Division of **Applied Physics**, Dr John Lowke, said the budget cut would be additional to the 10 per cent cut the Division had sustained in the past four years and would further restrict its ability to help industry develop new technology.

He said redeployment of specialist physicists to priority programs from other areas was next to impossible.

At **Radiophysics**, a 3 per cent cut means that in spite of cutbacks to the astronomy programs, there are difficulties in maintaining the necessary level of development in the high priority areas of research such as antenna, microwave and signal processing areas, all of which are relevant to high technology industries.

The Chief of the Division of **Animal Health**, Dr Alan Donald, said reductions would be extended to some industry supported projects because it was proving impossible to maintain the appropriation-funded side of the projects.

Some of the areas being curtailed include vaccines against important animal diseases and efforts to find methods of preventing poisoning of grazing animals by plant and fungal toxins, both of which cause ill health and suffering in farm animals, as well as reducing their productivity.

They have been forced to reduce research on the resistance of animal parasites to antiparasitic drugs and studies aimed at selection of animals for resistance to parasites and diseases.

'Inevitably, the Division's contribution to alleviating animal disease in Australia is being weakened,' Dr Donald said.

At **Tropical Animal Science**, a Division set up in 1982 to improve nutrition of livestock in northern Australia where poor nutrition is the greatest factor limiting production (and is seen by the industry as the major problem to be tackled by scientists), special funding for equipment and facilities has been cut back to one-third of that originally promised.

Provision of facilities is two years behind schedule and must now be put off for at least another year.

'To get some research at Townsville under way, the Division has had to divert funds from other important projects. The end result is an improvised and grossly unsatisfactory situation for the nutrition unit and a run down in the other research activities,' the Chief, Dr Dave Mahoney said.

At **Animal Production**, biological defleecing and new breeding methods for improved growth rate and wool production are among the programs in jeopardy. Others include programs to develop technologies to improve the economic efficiency of livestock production.

Funding for the development of new vaccines to alter body growth and produce leaner animals will be reduced, as will programs on new methods of livestock breeding, forage quality, reproductive losses and supplementary feeding and management strategies to improve productivity.

The capacity of the Division to continue its policy of transferring technology to industry will be decreased.

At **Tropical Crops and Pastures** a long-term trend over the past decade has led to operating funds being slashed by 45 per cent and staff by 25 per cent. The latest cuts affect a multi-site ecological study of pasture improvement options. Several long-term experiments at Narayan and Lansdown will be reduced to a maintenance only basis, and research on finding non-

continued on page 7

The Radiophysics Cricket Club archives turned up this undated picture which includes the Chairman. The team is, back row from left, J. Botton, R. McGee, J. Warburton, N. Seddon, A. Weir, C. Attwood; front row, C. Fryar, P. Wild, S. Dryden, K. Sheridan and A. Wightly.

The historic Radiophysics Cricket Club has appealed to CSIRO staff for more members, especially batsmen.

Originally formed during World War 2 to play in the City and Suburban Cricket Association, the Club has moved from having entirely CSIRO members to more and more ring ins.

The Association was formed early this century for limited over, one day, Saturday afternoon cricket without the formalities of registered players, premierships or central records of the results of games.

All games are played on turf pitches and many of the Sydney Grade Clubs have a team (often a mixture of veterans and young players) in the City and Suburban Association.

Although the Club prefers to win its matches this desire is not allowed to conflict too much with efforts to distribute the batting and bowling opportunities as widely as possible.

Over the years, the Club has had several members distinguished for their technical or scientific achievements — and a few distinguished for their cricketing records, either in Australia or overseas (Sheffield Shield, NZ Test Team, Ranji Trophy). The present Chairman of CSIRO has served the Club in many ways, including Captain, and is currently a Vice-President.

For the first few years of its existence the RP Cricket Club drew its players entirely from within the Division. Later, some players came from the National Standards Laboratory which then occupied the same building. Later again, players were recruited from other CSIRO Divisions in the Sydney area, Animal Health, Food Research and Animal Physiology, and later Club members included former CSIRO staff, friends of players, Sydney University staff and friends of friends, until there are now few CSIRO employees amongst Club members.

Anyone interested in playing either fairly regularly or only occasionally during the coming season, should contact Stuart Dryden, Division of Applied Physics, 467 6532 or 467 6211 or Mike Green, 29 8401.

Japanese visitor

A Japanese building expert, Dr Akio Baba, above right, recently completed a one year stay at the Division of Building Research under the Japan/Australia Science and Technology Agreement.

Dr Baba, Head of the Construction Technology Division of the Production Department of the Building Research Institute, in the Japanese Ministry of Construction, has research interests in the structural properties of inorganic building materials such as concrete, clay brickwork and ceramic materials.

While at Building Research he researched the durability of reinforced concrete, and conducted theoretical and experimental investigations into the risk of steel corrosion in reinforced concrete masonry. His work involved collaboration with Divisional scientists, in particular, Dr David Ho, above left, and Mr Don Beresford.

Dr Marilyn Sleigh of the Division of Molecular Biology has been awarded the Australian Biochemical Society's Boehringer Mannheim Medal for 1984, which was awarded for outstanding contribution to research in the areas of molecular biology and virology.

***

Dr Toru Tashiro from Japan is spending ten months working with **Dr Ian Wardlaw** at Plant Industry on studies related to the ripening of crops.

***

Dr Loren Lorig and **Dr Barry Brady** of the Division of Geomechanics received the Award for the outstanding paper presented at the recent International Society of Rock Mechanics Symposium held in Cambridge, which attracted 280 delegates from 40 countries.

***

Professor Yoshio Kumura, from Nagoya City University, Japan, is a guest worker at the Division of Building Research with **Dr Paul Lesse**, and is particularly interested in dynamic models and their stability.

***

Mr Ray Giles from the workshop at the Division of Building Research has been elected a councillor for the City of Berwick at the recent Melbourne local Government elections. He stood as an ALP-endorsed candidate.

***

Mr Peter Dawe has been elected a Fellow of the Library Association of Australia. He received the award for his many contributions to Australian librarianship, which began in the South Australian Public Library in 1950. He joined CSIRO in 1958, and became Chief Librarian in 1973. His citation emphasized his interests in the future of the library profession, in the development of training courses, in resource sharing and technological progress.

***

Mr Yu Jialin, from the People's Republic of China, is visiting the Division of Applied Physics for six months to receive training in spectroradiometry under the Australian Development Assistance Bureau's Regional Metrology program.

***

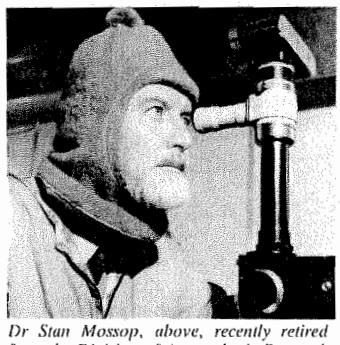
Dr Colin Perrott, O-i-C at the Adelaide laboratory of the Division of Manufacturing Technology, has resigned from the Division to take up a senior post on the International Executive of Sola Optical. He will be responsible for technology in the company in Australia and overseas.

***

The Division of Energy Technology's second overseas research fellowship has been awarded to **Mr Ian Shepherd**, who will work for eight months at Stanford University in the United States on combustion aerodynamics experiments using laser diagnostics.

***

Mr Elijah Tauber, who retired from CSIRO in 1977, has won the second Australian Ceramic Society Award in recognition of his contribution to ceramic research. He joined the Division of Building Research in 1962 and helped develop the local ceramic industry: he was a keen advocate of the use of local materials and their use in industrial products and substitution for other materials. He also helped industry find uses for what had originally been treated as waste.



Dr Stan Mossop, above, recently retired from the Division of Atmospheric Research in Epping.

Stan joined CSIRO in 1961 with the Division of Radiophysics and almost immediately became involved in stratospheric particle research using the US U-2 aircraft, then in Australia, for his sampling. One of the largest volcanic eruptions of the century occurred on Bali during this period and Stan's description of the way in which the particle content of the stratosphere changed is still widely quoted. In fact, as a result of the current debate on the effects of the atmospheric effects that might occur after a nuclear war, this work is more topical than it was in 1963.

Stan then became involved with counting the particles on which ice forms in cold clouds and this led on to looking at the ice crystals in clouds. His work brought a complete change to our understanding of how ice crystals and rain form in cold clouds.

At a farewell luncheon given in his honour cables were read from the Royal Meteorological Society, UK, the American Meteorological Society and the National Center for Atmospheric Research in the USA and the International Cloud Physics Commission in Canada, thanking him for his contributions and wishing him well in his retirement.

Stan plans to go trekking in the Himalayas with his son David during his retirement.

***

Mr George Lorenz of the Division of Manufacturing Technology in Sydney, who 'put Australia on the manufacturing map' two years ago when he was elected President of the world-wide manufacturing research organization, College of Production Engineering Research, has retired, although he will retain an office at the Division and contribute to interaction with industry in NSW.

***

Mr 'Phlip' Philips has retired after 37 years with CSIRO. He first joined the Division of Plant Industry then transferred to Katherine Research Station in 1948. Apart from researching the agronomy of rainfed crops and pastures, plant introduction and tobacco, he was farm manager for several years, then O-i-C between 1962 and 1976. In 1982 he was made a member of the general division of the Order of Australia for services in the Northern Territory to primary industry and the community.

***

Dr Kathleen Dunna from the University of Colorado, is working at the Division of Plant Industry for a year on regulation of gene expression.

***

Mr Bill Gordon has retired from the Division of Wildlife and Rangelands Research after 26 years at Deniliquin.

***

Mr Phil Allen, the Education Officer at CSIRO's embryo Science Education Centre in Adelaide, has been awarded a CRA Science Teachers' Fellowship to visit the United States and Japan in December/January to look at science centres.

H & S appoints hygienist

CSIRO's new Occupational Hygienist said recently she had enough work to keep her busy for several years.

Dr Cherilyn Tillman is the third professional appointment to the Occupational Health and Safety Unit, and has already visited several Divisions.

She said she would be advising on safety in general, and emphasizing chemical and dust hazards. She is also interested in allergies to animals and insects.

'I will alert the scientists and other CSIRO employees to the hazards, and advise them on how to reduce or eliminate the risks,' Dr Tillman said.

'As well as site visits, I'm also available for consultation by telephone, and will disseminate information to safety officers, arrange training courses and seminars, and write policy documents on occupational hygiene. Asbestos is one example.'

Dr Tillman said there was a difference in levels of awareness between Divisions about occupational hygiene, and also in how far Divisions had advanced in tackling the problems.

'In the short term, everybody should at least get up to the highest standard of the moment, though even the best Division has plenty of room to improve,' she said.

Dr Tillman graduated in Physics from the University of NSW and completed a PhD in Materials Science at the University of Newcastle-on-Tyne. She has been researching at the National Board of Occupational Safety and Health in Sweden for the last eight years.

She has travelled extensively and reviewed other occupational and health systems, and said Sweden is probably the most advanced system in the world.

Urrbrae Award to Ray Jones

Dr Ray Jones has been awarded the 1984 Urrbrae Award for outstanding scientific achievement in agriculture.

Dr Jones, acting Chief of the Division of Tropical Crops and Pastures, received a gold medal and $1000.

Research on the development of permanent improved pastures which showed that trailing tropical legumes such as Siratro were more susceptible to heavy grazing than low growing legumes such as white clover, led to the definition of critical grazing levels to maintain a strong legume component in tropical pastures.

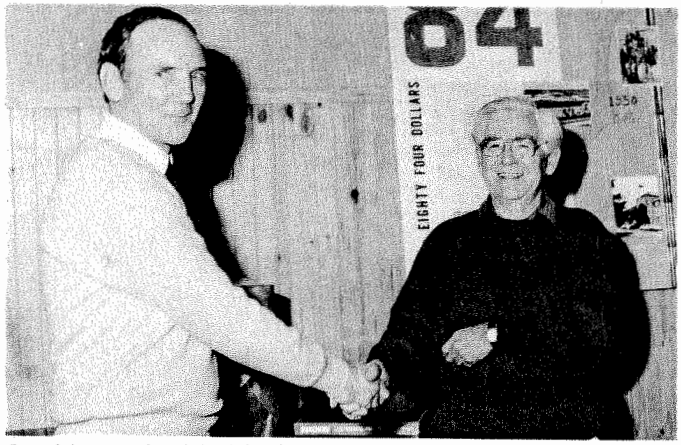
Dr Jones has received wide recognition for his discovery of a biological solution to leucaena toxicity in cattle.

Leucaena, a tropical legume shrub which produces large amounts of protein fodder, contains a toxic amino acid, mimosene, and Dr Jones discovered Australian cattle lacked some microorganisms in their rumen that break it down.

Experiments with goats in Indonesia and Hawaii led to the discovery that microorganisms could be transferred from overseas animals with the bacteria to Australian animals.

Dr Jones is conducting further research to identify the bacteria involved, determine the best conditions for its growth and devise techniques for commercial production and use.

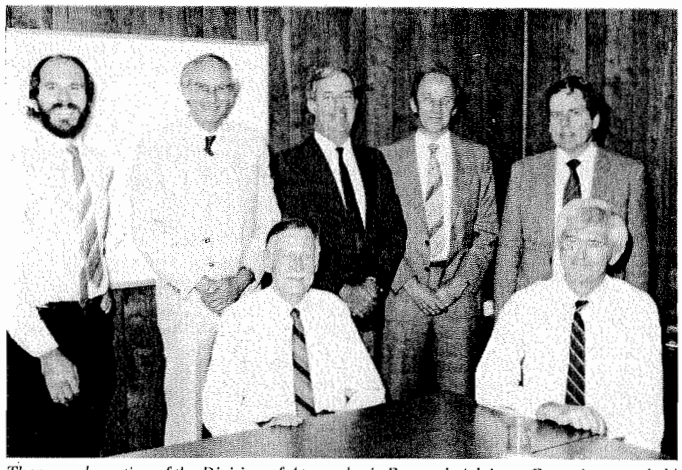
Widespread interest has been shown in leucaena by farmers and graziers, and in the Ord, a consortium has purchased farms to establish a cattle fattening enterprise based on leucaena.



One of the researchers behind the plastic banknote, Mr Jack Ross, retired recently. Jack joined CSIRO in 1948 as a technical officer in the then Division of Industry Chemistry, then moved on to become a research officer and then site engineer at the Chemical Research Laboratories. As a result of his ten years' work on the plastic banknote, he became a principal research scientist.

Jack is pictured above at his farewell with the Chief of the Division of Applied Organic Chemistry, Dr David Solomon.

It's all up in the air



The second meeting of the Division of Atmospheric Research Advisory Committee was held in Aspendale recently. From left, seated, Mr Hal Holmes, Chairman Monsanto Australia Ltd, Dr Brian Tucker, Chief of Division, and standing, Dr Willem Bouma (Secretary), Dr John de Laeter, Dean of Science, WA Institute of Technology, Captain Geoff Molloy, Qantas Airways Ltd, Mr Richard Llewelyn, Manager, Research and Development, SEC of Victoria, and Mr Bob Chynoweth, Federal MP for Flinders (Observer).

Wool expert retires

With the retirement of 'Jim' James the Division of Textile Physics has lost yet one more of its 'foundation' members.

He worked, with others, on the interaction of wool and moisture, more particularly the problem of producing absolutely dry wool without damaging the fibre. For part of this time, Jim acted as Technical Secretary for the Unit, and organized the first International Wool Textile Research Conference at Ryde in 1955.

In 1956 Jim went to WIRA (Wool Industries Research Association), the founthead of wool research at that time, as an exchange.

He returned to Ryde in 1958 and began a study of the tensile strength of wool fibres.

In 1960 the Division offered lodging space to an 'orphan' section of CSIRO specializing in research into the physical and chemical effects of extremely high pressures. Jim was intrigued by the apparatus and took advantage of it to compress a sample of wool to a density much higher than those applying in the dumping process (a second compression of wool bales to conserve shipping space) at the time. This, one suspects, was a world 'first' and Jim was able to show that the wool suffered no damage and one objection, at least, to the concept of high-density baling was removed.

In 1964 the recently-established Australian test laboratory for wool and wool products (the now prestigious Australian Wool Testing Authority, Ltd) ran into trouble. CSIRO was asked to provide a temporary director and selected Jim.

On returning to the Division he began an association, which has persisted to the present day, with metrology of greasy wool. With his assistant, Mike Bow, he developed a method for measuring average fibre diameter which had previously been applicable only to wool in 'top' form.

The method has been adopted worldwide and forms an essential part of the 'core-test' which is so closely allied to the market system for wool, not only in Australia but in other wool-producing countries.

On his retirement, Jim will be giving up the position of Chairman of the Committee of the Standards Association of Australia (TX/12) which deals with all measurements of raw wool, a position he has held since 1973.

In 1971 Jim was one of a triumvirate which led to the Australian Wool Measurement Standards Authority, and Jim was seconded for four years to be its foundation director.

During this period he added to his international reputation when the international supervising body Interwoollabs selected him as their inspector of core-testing laboratories throughout the world.

He has since returned to work on packaging and transport of wool, a field he had cultivated in 1968/69 when with Alan Richardson, he produced the definitive report on stresses and strains in the bands and ties used to secure dumped bales.

Jim has also always been closely associated with the extra-curricular activities of 'The Hermitage', notably the famous Reviews.

Farewell from Armidale

The President of Armidale Siroclub, Mr Tim Bower, presents Mr Alan Kennedy, right, with a farewell gift on his retirement recently. Mr Kennedy joined the Division of Animal Physiology (now Animal Production) in 1962, and has worked on projects varying from animal behaviour to fertilizer uptake and nutrient cycling studies using radiotracers. Mr Morrie Royal, also based at Armidale, has also retired, after 36 years with the Organization.

Photograph by Chris Barnden

Why science needs more money

The following is the text of a talk, delivered on ABC's 'Science Show' on October 29, by Dr Lew Chadderton, Chief, Division of Chemical Physics. The opinions expressed are his. They closely reflect, however, the attitudes, concerns and opinions of many of the officers of CSIRO, and of the lay public.

'Sleepers Awake!' was the exhortation. And we thought they had! The charismatic Barry Jones was appointed Minister. A national Science and Technology conference confirmed the need for the harnessing of science for the nation. At last — a government of consensus — a government with the guts to gear up technologically for a real Australian future!

Can it truly be a cause for wonder that Australian scientists should so vehemently vilify Mr Keating's budget? It is unprecedented, and uncharacteristic, that with one voice, scientists from both CSIRO and the universities should howl with fury at such mean myopia. A leading newspaper columnist has alluded to some well orchestrated and most successful publicity campaign on the part of CSIRO. It's simply not true! The spontaneous outrage expressed revulsion at the sacrifice of a brightening Australia on the altar of short term political gains.

Australia's science establishment is desperately concerned for the scientific and technological health of the nation; for the land of our children.

The budget figures tell the story. A 15% increase for Defence; 14% for Aboriginal Affairs; 8% for the Australian Atomic Energy Commission (Will we ever have that energy?); and a 1.6% increase overall for science and technology. By the time that hidden costs for repairs and maintenance, for inflation, and for insufficient salary funding are included, the CSIRO research effort is cut — YES, I DID SAY CUT — by 3.2%. In the so-called unprotected areas— and there are quite a number in my own Division — the cuts are up to 4.3%. I emphasize too, that this particular budget is the culmination of a number of years of financial neglect. Previous government slashes, including that delivered by the 'razor gang' have left your national research organization deeply wounded. Cumulative effects can also kill!

From Sydney to Perth; from Darwin to Hobart; it is the duty of CSIRO's Divisions to conduct research and development in the national interest. From, say, the Division of Tropical Crops and Pastures, to the Division of Mineral Engineering; from the Division of Building Research, to the Division of Manufacturing Technology, CSIRO's research programs take in the rural sector, secondary industry, and fundamental research.

Effects of cumulative cut-backs can be illustrated for the case of the Division of Chemical Physics at Clayton, Victoria. The number of permanent employees of all kinds has shrunk by 18, to a total of 81, in four years. None may be replaced. The workshop is at one-third strength. There is no electrician! What price safety, then? There is no stenographic secretary. An automatic telephone answering machine has been installed. Hardly the most supportive environment for a high technological breakthrough!

Despite these adverse factors; despite the obsolescent equipment; until now the Division of Chemical Physics has somehow far exceeded the discharge of its basic community obligations. By adhering, like university research departments — also badly hit — to the basic tenet that the best high technology springs from fundamental research, the Division has been able to pass export-stimulating, and job-creating innovations on to manufacturing industry. There is now *no way* in which that momentum, nor that degree of versatility can be maintained.

The example which I have illustrated, for a single Division, is quite representative. Longtime critics of CSIRO see the parsimonious funding as an opportunity to tell us to 'trim the fat'. We have been doing that for years, dear friends, whilst the balance of research was shifting from the rural to the manufacturing sector! These budget cuts mean amputation! Vital and viable projects are being severed.

RESEARCH TRANSFER

Critics also frequently propose the transfer of all fundamental research out of CSIRO into the universities. That proposal is about as sensible as suggesting the opposite, namely that all university applied research should be removed to the CSIRO. Really! The ignorance of research methods revealed in such proposals is profound indeed. Pure research leads to applied research, which leads to innovation and invention, which leads to high technology, industry, export markets, and job creation. This line of flow is clean, continuous, and incontestable!

It was a recommendation of the Birch Report that CSIRO's Divisions should more and more employ young scientists on a short term basis. That recommendation has been implemented, and some of the most brilliant brains have been at work — on a three year basis — for Australian science. Now, the prospect of *no possibility* of permanent employment is frustrating them beyond all measure. They are joining their university colleagues. The present 'brain-drain trickle' will shortly become a 'brain-drain torrent'. With a scenario comprising employment insecurity, insufficient funding for both salaries and projects, and the disbanding of internationally competitive research teams — who will stand, and dare to blame them? We may never see them again! What a national waste.

Technology, say the wags, is the knack of so arranging the world that we don't have to experience it! High technology, on the other hand, is said to be dominated by those who manage what they do not understand! They say that *any* sufficiently advanced technology is indistinguishable from magic!

TECH. SALVATION

The Minister for Science *and Technology* knows full well that what REAL high technology offers is nothing less than salvation for this nation. It is vital that the transfer of emphasis from primary to secondary industry be continued in CSIRO, and that proper funding of essential projects be resumed. If this country sacrifices its long-term economic health for measly short-term gains it will — quite simply — find itself rapidly propelled into fourth-rate nationhood. Committed generally to exporting indigenous raw materials, Australia will become a backwater, both isolated from and yet dependent upon our industrious Asian neighbours for reimportation of earlier mineral wealth, fabricated anew into expensive high-tech. needs.

Mr Jones takes every opportunity to compare the technological export tally of Australia with that of other OECD countries. We occupy position 21 — out of 24! Yet even the stark reality of *that* goes quite unheeded.

What of industry? The 80/20 ratio for government vis à vis industrial R and D in Australia speaks volumes for mismanagement. A finger has been pointed to the silence at this time of the consumers of research. Why aren't they rallying to the CSIRO cause? Could it be that, unwilling to invest in their own R and D, they now maintain the silence of guilt?

The picture is, of course, somewhat more complex. The spectrum of abilities and entrepreneural skills is almost as broad and deep in certain parts of industry, as it is in CSIRO. And a case can be made for proper government incentives to inventive industry. In addition the CSIRO, it is conceded, must be tougher and more persuasive in selling its industrial wares. An aggressive CSIRO — to which the word 'wimpy' can *nowhere* be now applied — has emerged. It is a CSIRO which will more vigorously explain and sell itself to the public!

CUTBACK COMMENTS

The cutbacks in science funding for CSIRO and the universities have attracted widespread comment. One political scientist, Professor Don Aitkin from the Australian National University writes — 'Governments are elected to make wise decisions, not necessarily popular ones, and they have a special responsibility for thinking about the nation's future. It is time the present Government took its eyes off the polls and focused them on the last decade of the 20th Century'.

Finally, there is a problem, peculiar to CSIRO, which simply has to be addressed. It is that the Organization is sometimes seen as monolithic. This must be corrected, and in the current context. An ill-informed observer once referred to CSIRO as 'a grand old battleship, too expensive to convert and too valuable to scuttle'. This naughty nautical analogue is not nice. If we must have maritime models, then 'CSIRO's 43 Divisions and Independent Units are a flotilla of frigates, corvettes and MTBs, whose mission is to identify Australia's submerged technological problems — and to search and destroy'.

For science and technology, Mr Keating's budget has launched a devastating wave of Exocet missiles at our own Australian fleet!

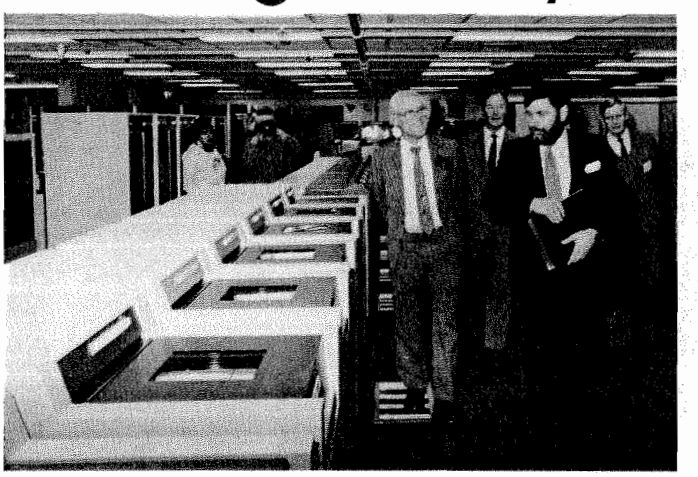
CSIRO has justly deserved the reputation of being the best such national research body in the world. It remains one of this country's finest assets, and a justifiable source of pride. At another time I would like to speak, positively and with enthusiasm, about the exciting programs, aims, objectives and achievements of CSIRO.

For now, however, we have this budget handed down. CSIRO must cancel vital projects, lose its best young staff, face stifled creativity, export rather than develop ideas and innovations, and accept a growing inability to respond to community and government initiatives.

It would seem, for science and technology, to be the threshold, of a New Dark Age!

If the sleepers ever wakened — then they slumber once again! So would the last sleepwalker pause, for pity's sake, and snuff the candle out?

Assisting industry with Cyber 205



The Minister for Science and Technology, Mr Barry Jones, casts an eye across the new Cyber 205 supercomputer at the Division of Computing Research. He is accompanied, from left, by the Chief of the Division, Dr Peter Claringbold, the Chairman of the CSIRONET Board of Management, Mr Denys McCullough, and Member of the Executive, Dr Keith Boardman.

Photograph by Socrates Paschalidis

The Australian industry and research community has been urged to exploit the full potential of CSIRO's new $8 million supercomputer.

The Minister for Science and Technology, Mr Jones, launched the Control Data Cyber 205 in Canberra in August and said it would become the lynchpin of the Australia-wide CSIRONET computer network.

The Cyber 205, with its 16 million byte memory and ability to perform 400 million calculations per second at peak operating speed, enables researchers to tackle a diverse array of problems which are impeding both industrial and scientific progress in Australia.

CSIRONET has already had expressions of interest in using the Cyber 205, which is regarded as the most powerful computer available in the world at present.

Research projects include scene simulation for films, seismic modelling for oil and mineral exploration, meteorology and weather prediction, fluid dynamics, structural analysis and design, simulation of complex manufacturing plants and large scale economic modelling.

'The strength of the supecomputer lies in its ability to manipulate very large numbers and to perform many calculations simultaneously with great precision,' Mr Jones said.

'It can simulate the behaviour of fluids, which involves simultaneous calculation of multiple values for a very large number of points within a three-dimensional space — something which would take hundreds of hours for a small computer.'

Mr Jones said the Cyber 205's ability to solve fluid dynamics problems offered applications in vehicle, aircraft and yacht design — it would be possible, for example, to predict the behaviour of a new keel design for an America's Cup defender without using expensive scale models and large testing tanks.

There were now about 100 supercomputers in use elsewhere in the world, mainly in the US and Europe, with several in Japan.

The Cyber 205 would give Australia a lead in computing power over its Pacific neighbours, but it was up to science and industry to identify the problems that it was designed to handle, or to generate ideas that could later be turned into products and profit.

Budget:

continued from page 3

toxic legumes from four potentially important genera will be terminated. Earlier research led to the release of a new non-toxic pasture legume.

Loss of key specialists has meant the termination or scaling down of work in nutrient ecology, study of adaptation mechanism of legumes in semi-arid environments and animal behaviour research. Research initiatives on native grasslands is extemely difficult due to lack of staff. The visiting scientists program has had to be curtailed, reducing links with relevant overseas research.

There will be a loss of staff at **Wildlife and Rangelands Research's** small centres — Deniliquin, Darwin, Alice Springs and Helena Valley.

Acting Chief, Dr Allan Wilson, said the Division's already small groups, including those with highest priorities, have taken the immediate reductions. In the longer run, though, some more extensive reorganization would be required, including the closure of one program.

The Chief of **Water and Land Resources**, Dr Dick Millington, said the Division continued to be constrained in its ability to carry out Executive-nominated high priority research.

Despite the Executive's policy of excluding high priority projects from cuts, six vacant positions in the high priority catchment hydrology program will not be filled.

'Such restrictions impact both on the morale of dedicated staff and the credibility of the research program being able to fulfil its objectives,' Dr Millington said.

Oceanography, although a 'protected' Division, will remain at least 15 per cent below establishment strength. The Chief, Dr Angus McEwan, said the Division enjoyed unusual flexibility through positions vacated by personnel declining relocation from Cronulla, but that the number of replacement appointments would be reduced by the budget cuts.

Over the last seven years the Division of **Food Research** has lost 48 staff, and this year has suffered a reduction in its appropriation budget of 3.4 per cent.

'Staff retiring from key core research programs on food technology and food safety will not be replaced and the existing very low ratio of support to professional staff will not be rectified,' the Chief, Dr John Christian said.

'Efforts are being made to compensate by increasing the level of contributory funding, but this already exceeds 20 per cent of the budget and 40 per cent in some individual programs. Such funding cannot restore deficiencies in the basic-strategic area of the research spectrum,' he said.

In attempts to overcome this funding crisis, discussions are being held with food industry representatives to determine the action to be taken at industry, CSIRO and Government levels.

The **Wheat Research** Unit receives over half its funding from the Australian Wheat Council, though this research is complicated by being on a year to year funding basis.

The Division of **Manufacturing Technology** is also largely protected with a significant amount of research funds coming from industry, though staff are concerned about the cuts to the Organization.

Because of the strong recommendation of the recent external review, the Division of **Human Nutrition** has received assistance from the Institute of **Animal and Food Sciences** to help with financial difficulties.

'Our position is therefore better than a number of other Divisions within the Institute,' the Chief, Dr Basil Hetzel, said.

Other Divisions, such as **Entomology**, are still examining the extent of the problem, the nature of the solution and the effects of possible solutions on research programs.

The Chief of **Environmental Mechanics**, Dr John Philip, said: 'We are directing more time and resources towards imaginative and pioneering research, and economizing on resources spent in responding to the importunities of Headquarters'.

Credit Union's birthday

The original CSIRO Credit Union, the Laboratories Credit Union Limited, has just completed its 30th year of operation.

Based at the Regional Administrative Office, it has made some 9 500 loans totalling in excess of $13·5 million to CSIRO staff in NSW.

The Director of the Credit Union, Mr Trevor Clark, said the active marketing campaign of the Victorian Credit Society meant the other two credit unions were sometimes overlooked.

'The NSW Laboratories Credit Union has established an enviable financial record and rates as one of the most secure credit unions in Australia,' he said.

'The staff of CSIRO in NSW have access to very low cost loans compared to other credit unions and financial institutions, though unfortunately the NSW Credit Union Act precludes lending to CSIRO staff outside NSW except where members have moved interstate,' he said.

Three of the current directors — Kevin Loughry from the Division of Applied Physics and Stan Ryan and Trevor Clark from the Regional Administrative Office — have been associated with the Credit Union since its inception in 1954, and Rod Taylor from the Division of Applied Physics has been a director for 29 years.

They were also foundation directors of the CSIRO (NSW) Terminating Building Society, which wound up last year after assisting many CSIRO staff to build their own homes with low interest finance.

'Mrs Joan Ryan has been Secretary/Manager of the Credit Union since 1960 and she is as well known in NSW as Dr Wild,' Mr Clark said.

'Just to show that the Board is not totally entrenched, the other directors are Bruce Sheldon, Doug Shaw, Ian McDonald and Garry Rae, who have 12, ten, two and one year of service respectively,' he added.

Bored piles

Each year, at least $25 million dollars are spent on the maintenance and repair of marine wharves in Australia.

Much of this money is spent on marine timber piled structures which are relentlessly attacked by animal borers in the sea.

Researchers at the Division of Chemical and Wood Technology, concerned at the extent of degradation and damage caused by marine organisms burrowing into timber structures, helped to organize a highly successful workshop, 'Marine Timber Piled Structures — the Technology and Management of Timber Structures', at Monash University in September.

The workshop, attended by engineers and representatives of the timber industry, academic institutions, professional associations and forestry departments, looked at the causes of degradation of the structures and the technologies for their preservation and protection.

The participants recommended that more information was needed on the distribution of marine borers in Australian waters, on methods of inspection and testing, and on the protection methods for timber piles and other structural members.

A follow-up workshop is to be held in about 18 months, and in the meantime, researchers at the Division are assisting in the preparation of a manual of practice for increasing the service life of existing marine timber piled structures.

Support for PNG research facility

CSIRO will co-sponsor the Christensen Research Institute in Madang, Papua New Guinea, the Officer-in-Charge of the Centre for International Research Cooperation (CIRC), Dr Barry Filshie said.

The Institute is being established by the Christensen Fund, a charitable organization, as a non-profit research facility for marine and terrestrial studies.

The president and founder of the Fund, Mr Allen Christensen, a former president and director of Utah Mining and Construction, invited CSIRO to be the fourth sponsor of the Institute, joining Stanford University, the Californian Academy of Sciences and Oxford University.

Dr Keith Boardman, a member of the Executive, will represent CSIRO on the advisory scientific board, which will coordinate the Institute's scientific studies by approving applications or nominations for projects, Dr Filshie said.

'CSIRO will have the right to nominate a scientist or scientists and projects to be undertaken at the Institute from both CSIRO and other Australian research institutions,' Dr Filshie said.

'Approximately four scientists, one from each sponsoring institution, will be in residence at the Institute at any one time.

'The Fund will provide five return air fares each year, which means Australia can perhaps have four projects of three months duration each year,' he said.

Several CSIRO scientists have already expressed interest in using the laboratory as a base for field experiments in Papua New Guinea.

The Chairman, Dr Paul Wild, has offered the advice and assistance of the Building and Property Section in planning facilities at the Institute, Dr Filshie said.

The Institute will be built next to the Jais Aben diving resort, which is also owned by the Fund, and will be essentially completed in early 1985.

The Christensen Fund is a corporation set up in California in 1957 to fund religious, charitable, scientific, educational and literary purposes. It has been active in Australia for ten years, mainly aquiring art collections and lending them indefinitely to galleries and museums.

It has also initiated a series of video interviews of prominent Australians, and is sponsoring a book, 'A Modern Exploration', and art collection about the Kimberley and Pilbara region.

People interested in further information on the Institute can contact Dr Filshie on (062) 48 4495.

Need for control of viral disease

The need for close cooperation between countries in the fight against diseases of livestock and other animals was stressed strongly and repeatedly at the Virus Diseases Conference held at the Australian National Animal Health Laboratory in Geelong recently.

Thirty-two countries were represented and over a hundred papers were presented on all aspects of animal diseases such as rabies, fowl plague and foot-and-mouth disease.

The delegates discussed animal diseases of economic importance in the South-East Asian and Western Pacific region, and aimed to identify the major disease problems in the region and to encourage cooperation between countries in solving these problems.

'Infectious disease is a major limiting factor in livestock production in the developing countries of South-East Asia and the Western Pacific', the Chairman of the conference, Dr Eric French, said.

'These diseases reduce the availability of animal power for production of food crops and the availability of animal protein itself.

'Besides affecting traditional agriculture, diseases can also prevent a country from improving its livestock industry through adopting better husbandry methods or introducing improved breeds.

'Developed countries also suffer from sudden outbreaks of serious animal diseases and their losses can be very high. The recent avian influenza outbreak in the USA, where 17 million chickens were slaughtered to eradicate the disease, has so far cost the USA Government $34 million in compensation payments alone.

'Work with human diseases such as smallpox has shown that some serious diseases can be wiped out altogether. However, this can occur only where there is a high level of cooperation between countries.

'It is through the meeting together of scientists to discuss mutual problems that a cooperative spirit is developed.'

Over 100 presentations were made to the conference, covering all aspects of animal virus diseases, from development of new vaccines using genetic engineering to the problems of accurately surveying the extent of a disease outbreak.

Diseases of bees and fish were covered as well as those of more traditional livestock such as sheep, pigs and cattle. One session was devoted to diseases of poultry.

Twelve keynote papers on recent advances were given by eminent international scientists from Australia, UK, USA and West Germany. They presented the most recent developments across the whole spectrum of veterinary virology.

During the conference, representatives from each country in the region described the disease situation in their country.

It became clear that the major problems associated with disease control and eradication were common to almost all of them.

These problems were especially great in countries with land borders. In many cases, they lie in inaccesible territory for part or all of their length, and it is extremely difficult to prevent movement of even domestic animals across them.

A joint approach to the solution of disease problems was stressed at the final session, which was attended by the major Australian aid organizations involved with animal health.

In his closing address, Dr Eric French, Chairman of the Conference, stressed the link between animal health and human welfare and urged all Delegates to maintain contact with the colleagues from other countries that they had met during the week as an important step in the promotion of cooperative initiatives within the region.

The conference was part of the Australian Development Assistance Bureau's (ADAB) 'Research for Development' series of seminars and ADAB money was largely responsible for enabling many of the overseas delegates to participate.

Other major sponsors included the Australian Centre for International Agricultural Research (ACIAR) the Commonwealth Foundation, the Australian Bureau of Animal Health, John Holland Constructions Pty Ltd and Hewlett-Packard Australia Ltd.

CAT

The CAT Column is open to all members of CSIRO who wish to comment on communication matters.

This month's CAT column has been contributed by Peter Husband, the Meat Research Laboratory extension officer for Western Australia.

Communication activities in CSIRO are as diverse in nature and objective as the Organization's individual divisions and units.

Few of the Organization's communication personnel could claim as vast an area of responsibility, so to speak, as the Perth based extension officer for the Meat Research Laboratory.

The Division of Food Research's Meat Research Laboratory in Brisbane has three extension officers in the field, all of whom cover large areas maintaining contact with the Australian meat processing industry. The Perth based extension officer, Peter Husband, with the assistance of his secretary, Maxy Berkmann, is responsible for Western Australia and the Northern Territory. The meat industry in this region is as diverse as the area is vast, ranging from the intensive grazing industry in the south-west to the pastoral industry in the top end.

The Officer-in-Charge of the Meat Research Laboratory, Dr Des Walker, recently accompanied Peter Husband on a routine extension exercise which included all export processing operations in the Kimberleys and the Northern Territory. One of the objectives of this particular exercise was to assess reaction to, and seek comments on, MRL's 'alternative slaughter technology project' (featured recently on the ABC program 'Countrywide'). Developments in this field so far include automated handling, separating and capturing of animals; for the system to have universal application it has to be capable of handling the often extremely wild pastoral cattle in the top end.

The 12 000 km round-trip by road took three weeks and included visits to eight establishments. With the aid of video tape, the alternative slaughter technology project was discussed in consummate detail with management, plant engineers and union representatives and several constructive and important points were made about aspects of the system in relation to northern cattle. These points will be relayed to Dave Kerr, the engineer in charge of the project, along with opinion that the system should be capable of handling wild pastoral cattle. The Meat Research Laboratory, largely through its extension officers, maintains a close working relationship with the meat industry and this is strengthened with ad hoc visits by the Officer-in-Charge and other members of the laboratory staff where appropriate. These extension visits also have their lighter sides and the Kimberley and Northern Territory are no exception. The rigors of the journey and the contact with the personalities in those remote meat processing operations make these visits rather enlightening experiences. The many inevitable incidents are often recalled long after the last of the bulldust has finally been removed from the car.

***CoResearch* is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 5th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel. 48 4479. Editor: Penny Gibson.**

Ian Paton retires

The founder of the Personal Counselling Service, Mr Ian Paton, has retired after helping it grow from three counsellors to six in two years.

'The Service will look after itself from now. It's going quite nicely and we have a built-in self-awareness of its efficiency,' he said.

He said the Service had been used quite widely, and that people now understood that it could be used easily and in many ways.

'I was impressed with CSIRO, as a large organization, being very human. People are concerned about each other and that is very heartwarming,' he said.

However, he said he was a little disappointed that people had been slower to realize that the Service could be used for family counselling and problems outside work.

The Service had received support from staff associations, which had been encouraging given initial misgivings about the cost of a counselling service during a period of tight budgets.

Mr Paton said it was good to have the Service because the tight budgets meant more stress, and the need to have strategies to cope with it. Stress workshops were very popular.

NEW COUNSELLOR

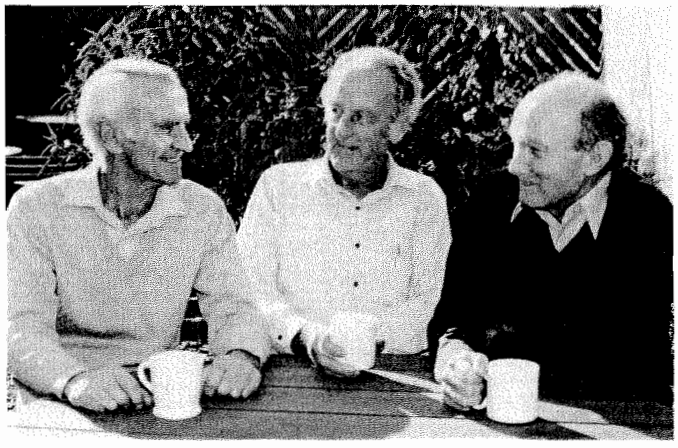
The new counsellor, Ms Maxime Fern, said she had been very busy since taking over from Mr Paton, though she would find time to visit the regional Divisions.

'I'm particularly interested in families and relationship work, and especially in parenting after separation. But I'm also interested in communication skills and stress management,' she said.

Ms Fern has worked in staff development and counselling for several years, at the Capital Territory Health Commission, Canberra Marriage Counselling Service and as a private consultant and counsellor.

The new Senior Counsellor is Curt Fisher, in Melbourne.

A light atmosphere



Three long-serving members of CSIRO with more than one hundred years of service between them retired recently from the Division of Atmospheric Research. From left, Bill Shepherd (Agricultural Meteorology, and, lately, Technical Secretary), Tony Evans (Urban Air Pollution) and Derek Reid (Meteorology).

Why is it so?

The unique features of wool as a textile fibre have long been recognized by consumers all over the world.

Warm in winter, yet cool in summer, wool is a rich resilient fibre with remarkable qualities of drape, wrinkle recovery, absorbancy and flame resistance.

Just how good the wool fibre is, and exactly why, is revealed in non-technical terms in 'Wool — Nature's Wonder Fibre', a book by Dr John Leeder of the Division of Textile Industry.

Dr Leeder's approach to the fibre is unashamedly partisan. He begins with a number of simple questions: Why is wool so good? How is it able to absorb so much moisture yet feel dry? How can it repel stains yet be dyed by a wider variety of dyes than any other fibre — natural or man-made? What makes it resist wrinkles so well, yet be artificially pleated to readily? Why is it so comfortable?

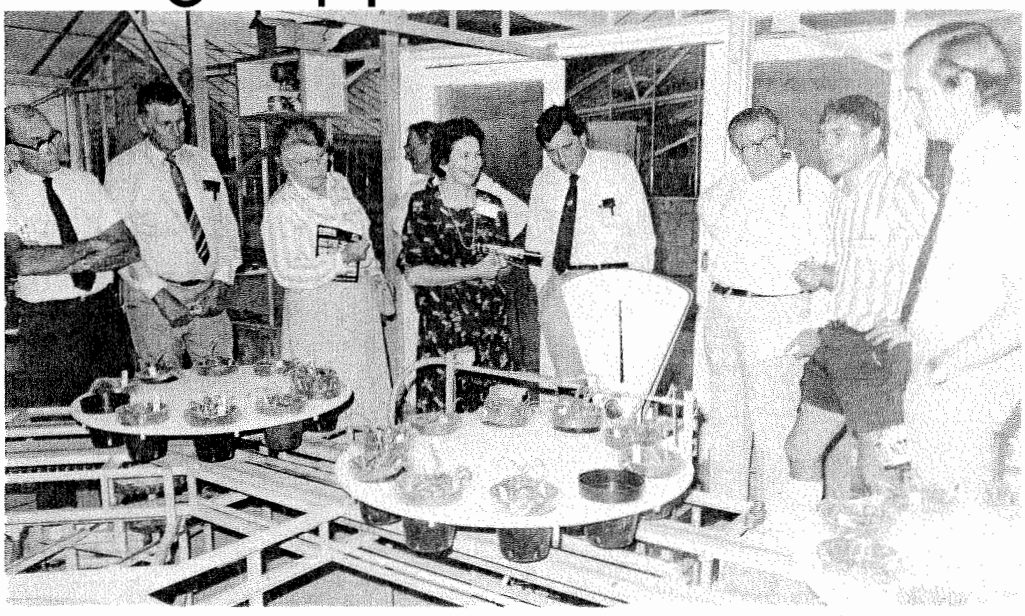
Dr Leeder then answers these and other questions, by revealing the unique natural structure of the wool fibre in non-technical terms.

He then shows how these good properties have been put to good use in many textile end-products.

The text is amply illustrated with simple diagrams, photographs and cartoons, some by John Howcroft, well known cartoonist for 'Stock and Land'.

In his forward to the book, former Australian Prime Minister the Rt Hon. Malcolm Fraser C.H. said, 'I believe this book serves a very useful purpose in that it is educational and informative and is written in such a manner as to be easily understood, and even enjoyed, by the layman. I found the book both interesting and entertaining'.

Going troppo at Davies



An Open Day at the Davies Laboratory in Townsville in early September to help celebrate the Division of Tropical Crops and Pastures 25th anniversary attracted some 3000 members of the public and much interested comment. Displays by most of the Divisions of north Queensland were mounted and manned throughout the laboratory and grounds, and a new brochure on the laboratory was produced especially for the occasion. More than 300 school children also visited the laboratory for guided tours, and a special VIP function was held.

Above, Dr Merv Probert, Division of Soils, shows some of the VIPs how the automatic watering machine works. From left, Mr Pat Meehan and Mr Dick Kelso of the Davies Laboratory Advisory Committee, Mrs Barbara Meynink and Mrs Joan Sheridan of the Queensland State Committee, Mr John Heussler of the CSIRO Advisory Council, Mr Ken Turner of the RAO Brisbane, Dr Probert and Mr Bruce Frank of the Queensland Department of Primary Industry.

CoResearch

CSIRO's staff newspaper November 1984 275

African famine: no quick answer

While the world's rich swallowed hard and reached for their wallets in a gut reaction to the horrific scenes of Ethiopian famine, shown as we ate our dinners, a CSIRO scientist has warned that emergency relief will still be needed for decades.

Dr Bob McCown from the Division of Tropical Crops and Pastures, co-director of a new $3.85 million Australian aid project in Africa, has warned developed countries may have to provide emergency relief to Ethiopia, Kenya and other drought stricken countries in the region until well into the next century.

The Australian Council for Agricultural Research (ACIAR) is funding 21 CSIRO aid projects in developing countries to the value of about $5 million a year, with several projects applicable to Africa. Another 15 project proposals are still being developed.

Dr McCown said the problem in sub-Saharan Africa was not simply that drought occurred, but that its consequences were worse today than before because of population pressure and the inadequacy of traditional methods of farming.

'What is needed is the evolution of new methods of farming which can cope with these new circumstances,' he said.

'Our project is a positive step in helping to attack the root problem of famine in Africa, and provides an opportunity to use research expertise gained in northern Australia to very good effect,' he said.

Even so, the problems being faced in the broad sweep of semi-arid tropical territory south of the Sahara desert were so intractable that it would be unrealistic to expect a satisfactory solution within our own lifetimes.

His project will be looking for more ecologically sound and economically viable ways people in the region can farm in the future.

The three year project to improve dryland crop and forage production in the African semi-arid tropics includes funding for direct collaboration with the Kenyan Ministry of Agriculture and Livestock and the Nigerian Institute of Agricultural Research.

The other project co-leader, Dr Roger Jones, also from Tropical Crops and Pastures, left for Kenya last month. He is the first of four Australian scientists who will be based in that country during the project.

Dr McCown said methods to produce more from the same amount of land would include using leguminous plants to fix fertilizer nitrogen direct from the atmosphere, using some other fertilizers and developing appropriate technologies.

'We have some clues as to what might work, but it will take decades to pursue, test and implement satisfactory new methods,' he said.

'We're looking for what are now non-existent technologies that are appropriate for the region. Although it might seem logical to assume that what works for northern Australia will work for sub-Saharan Africa, our experience suggests that it is not very fruitful to talk of transferring technology from Australia to Africa.

'What we can contribute is our expertise in analysing the problems of the environment, particularly those related to water and soil nutrient deficiencies.

'The emphasis will be on intermediate technology which relies on energy and resource-conserving practices found in traditional farming systems, and which mimics stable natural ecosystems,' Dr McCown said.

The project will take social and economic factors into account and investigate such techniques as: mulch farming with minimal tillage; reliance on legumes to minimise the need for nitrogen fertilizers; mixed cropping; integration of crops and livestock. The research will be done in the Kenya midlands and the Nigerian lowland savannas.

VISITING ETHIOPIAN

A leading scientist with the Ethiopian Ministry of Agriculture, Mr Ato Mengistu, is currently visiting the Davies' Laboratory, with ADAB funding, to study research being carried out in pasture agronomy.

Ethiopia has the seventh highest animal production rate in the world, and the highest in Africa, and he said the grasses CSIRO

cont. page 2

PM: Work more with industry

Following the Federal Budget, the Chairman, Dr Paul Wild, wrote twice to the Prime Minister, Mr Bob Hawke, about the difficulties caused by CSIRO's allocation, and particularly the failure to provide for inflation in basic operating funds.

Here is Mr Hawke's reply:

Dear Dr Wild

Thank you for your letters of 24 August and 21 September 1984 in which you expressed your concern over the level of funding provided to CSIRO for 1984/85.

I am sure you will appreciate the need for the Government to constrain the growth in outlays to effect a reduction in the Budget deficit. The Government faced a very difficult task in determining expenditure priorities within the 1984/85 Budget. In the event many worthy proposals had to be ranked against other competing proposals with the inevitable result that it was simply not possible to implement all our commitments as quickly and completely as we would wish.

As far as the Science and Technology portfolio is concerned the Government is satisfied that the very substantial level of funding allocated for Government research and development will ensure a continuation of the high level of achievement reached in recent years.

In concluding, I would add emphasis to the Government's commitment to the development of science and technology in Australia and the important role that CSIRO has to play in the area. Part of this role, though, must always be a critical evaluation of ongoing activities and a willingness to re-organize resources to meet priority needs.

As I have indicated previously, I consider closer links between industry and research to be integral to our industry policy. CSIRO's continued effort to undertake relevant research and to attract increasing funds from industry to fund additional research will contribute to this process.

Yours sincerely
R.J.L. Hawke

Dr Wild responded:

Dear Prime Minister,

Thank you for your letter of 15 October setting out your Government's position on CSIRO and its funding.

I would like to assure you that the Organization is doing, and will continue to do, all that it can to address the matters you raise. Building on earlier initiatives, we have in the past year or so: become involved in more successful industrial collaboration than ever before; set up a commercial company, Sirotech, to improve our interactions with industry, particularly manufacturing industry; revised our promotion guidelines for research staff to take greater account of successful collaboration with industry; and revised our manufacturing industry policy to put more emphasis on short-term tactical research to help bridge the present gap between the industry and our research.

We will continue and extend our efforts through a set of management strategies for CSIRO in the period 1985–1990 which the Executive adopted at its meeting this month. Our future objectives will be:

- to increase CSIRO's responsiveness to the goals of governments, industries and the community, and to enhance its contribution to the formulation of those goals;
- to promote flexibility in transferring resources to new areas of research and to the rapid build-up of priority growth areas;
- to realise larger and more apparent public benefits in areas selected for CSIRO effort;
- to motivate staff in every possible way to achieve excellence in their work;
- to measure and improve the cost effectiveness of CSIRO's research; and
- to increase public awareness of and support for the Organization's work.

cont. p.3

'Five Star Rating'

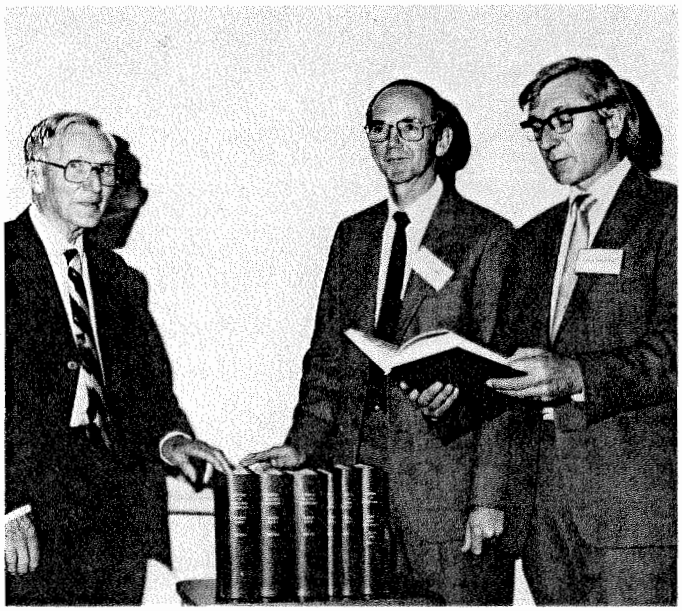
The Prime Minister, Mr Bob Hawke, congratulates the Chief of the Division of Building Research, Dr Lex Blakey, on his Division's input to the 'Five Star Design Rating' for Australian housing.

The Rating was launched by Mr Hawke, and is an endorsement system which enables home buyers to identify houses which incorporate five main features: comfort, quality, value, energy efficiency and low maintenance.

Glass, mass and insulation are the three main features of the Rating, and the GMI Council of Australia sponsored CSIRO to determine the optimum and appropriate balance between these for each form of construction and for five different locations, covering 80 per cent of the population.

The Rating can only be issued to houses already built, though provisional ratings can be given to allow Five Star homes to be built to order.

Ian Wark Labs named



At the naming of the Ian Wark Laboratories, Sir Ian Wark, left, received bound copies of the annual reports of the Division of Industrial Chemistry, the Chemical Research Laboratories and their descendants from the Chiefs of Chemical and Wood Technology, Dr Warren Hewertson, and Applied Organic Chemistry, Dr David Solomon.

Photograph by N. Prosser

The Minister for Science and Technology, Mr Barry Jones, paid tribute to Sir Ian Wark as both a personal friend and scientist when formally naming the Ian Wark Laboratories recently.

The Clayton laboratories already house the Division of Chemical and Wood Technology, and will house Applied Organic Chemistry. They replace the hazardous and outdated Fishermen's Bend laboratories.

Sir Ian, who established the Division of Industrial Chemistry, developed the Chemical Research Laboratories and retired from CSIRO as a member of the Executive.

Mr Jones said Sir Ian was far thinking and progressive, and had recognized the importance of an efficient industrial set-up and the crucial role of the Australian scientist as long ago as World War 2.

In his speech, Sir Ian said both his personal and professional family had helped build his reputation. The following is an edited version of his speech, which outlined his philosophies on being a CSIRO Chief.

'Until recently there has been a convention that honours such as this come only as memorials. Apparently it is now considered that I am long past blotting my copybook — alternatively the CSIRO powers-that-be may have become tired of waiting.

'My staff was chosen carefully, especially my section leaders. I tried to delegate responsibility and with that responsibility, I hope, the credit. This method of staff development was followed right down the line. The system worked well, as has been demonstrated by the careers, both within and beyond CSIRO, of many of my early recruits.

I was determined to do the work of one person only — that of Chief — and my picturesque colleague Dick Thomas declared that I was the only one on site who did not need to be versed in chemistry. There was more than a vestige of truth in this, for I would say, 'You must talk with Lloyd Rees, who is a noted authority on that subject' — or it might have been David Solomon, or Don Weiss, or any of a dozen others.

No head of any chemical research laboratory anywhere in the world was more fortunate or enjoyed greater freedom than I ...

Adopting the philosophy of David Rivett, I was determined that in my area of the Organization the S for Scientific and the I for Industrial should rank equally. It paid off handsomely, and I still believe that to be the correct balance. Though nobody else then seemed to realize it (except perhaps the Chairman, Sir George Julius, who was far to astute to say so) I knew that not one but several Divisions were in the making.

This leads me to comment on current suggestions that CSIRO has become too big. That is nonsense. Bigness is good — and can be economical — if management delegates to the right people. The criticisms come mainly from those with an eye to takeovers from academics wanting more of the funds available for research but often not appreciating the importance of staff continuity in major research projects, and too often lacking the compelling sense of urgency that is so important. It is proper and comparatively easy for planners to establish priorities and to list areas needing investigation, but it is an art to discern which of the problems, scientific or technological, are solvable within a reasonsable time scale. This art is possessed by the Executive, by the Directors, and by the Chiefs of CSIRO. Only the scientists know how best to utilize its human and material resources. The economists, forever voluble, and advancing their hypotheses as facts, only think that they do.'

Unions may join

The three CSIRO Credit Unions may be amalgamated to give a better service to members.

A working party has been established to study the feasibility of closer associations between the Sydney, Canberra and Melbourne unions, with the possibility they may be amalgamated.

The study will concentrate on the desirability of various forms of association between the unions, with particular emphasis on the benefits to members.

The working party was set up following an annual meeting of the Chairmen of the Credit Union Boards to discuss mutual problems.

It is chaired by former CSIRO officer and long time associate of the Melbourne and Canberra unions, Mr Martin Combe, and comprises the Chairmen of the Melbourne and Canberra unions, Mr John Nicholas and Mr Howard Crozier respectively, and Mr Trevor Clark from the NSW Credit Union Board.

Aid for Africa

cont. from p.1

has been researching are ideal for Ethiopian conditions.

Another CSIRO/ACIAR project relevant to sub-Saharan Africa concerns Australian hardwoods and their use for fuelwood and agroforestry, and will be undertaken by the Division of Forest Research in collaboration with the Queensland Department of Forestry, the Forest Commission of Zimbabwe and the Kenyan Agricultural Research Institute.

The project will provide seed, silvicultural information and data on the suitability and adaptation of a wide range of potentially useful Australian hardwood species for use in community wood lots.

In sub-Saharan Africa the need for fuelwood is creating ecological disaster areas: the clearing of trees and vegetation has exacerbated erosion with a subsequent decline in soil fertility and food production. The burning of dung and other wastes as substitutes for wood further reduces the amount of natural fertilizer available to the soil.

Australian trees grow quickly, survive in dry salty lands and are helping rescuscitate treeless areas from Africa to the Middle East and Nepal. Extensive and thriving populations of eucalypts already exist in many parts of sub-Saharan Africa, but there are at least 50 species of nitrogen-fixing Australian acacias, 15 species of native Australian pines (such as casuarinas) and possibly some other Australian genera which could greatly help Africans.

Mr Alan Brown of Forest Research, in collaboration with other researchers in Australia and Africa, will search systematically for additional species of all these trees and determine their useful characteristics.

A second project involving trees will be conducted by Dr Glyn Bowen from the Division of Soils and others in Australia and Africa to select the most efficient bacteria strains for nitrogen fixation in casuarina.

Casuarina produce excellent firewood and grow well in the range of climates in Africa. It should be possible to ensure that casuarinas planted anywhere in the world produce the maximum possible growth.

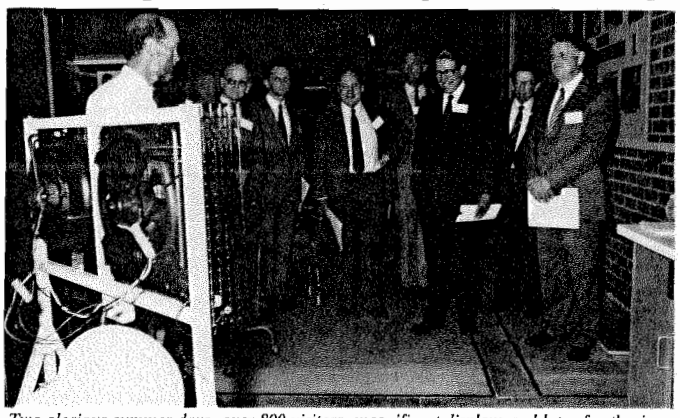
Yet another CSIRO/ACIAR project will study ticks and the diseases they carry: the main constraints to improving domestic animals in Africa. This project will be built around the experience of researchers at the Long Pocket Laboratories in Brisbane, who are collaborating with researchers in Zimbabwe, Kenya, Zambia and Burundi.

With further research, it should be possible to develop biologically based tick controls which will reduce the quantities of expensive chemicals at present required.

Although the ACIAR projects currently approved for Africa will not yield useful results for some years, they provide examples of how Australia can use its particular areas of expertise to help developing countries at relatively little cost.

In the meantime, it's nice to know immediate help is being given to the starving children in the form of high protein milk biscuits — a CSIRO development.

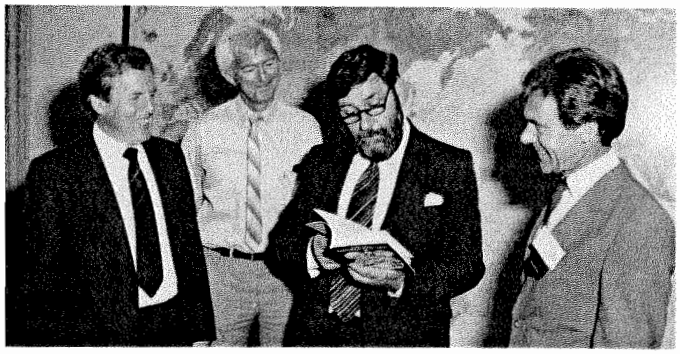
Energy Tech open day



Two glorious summer days, over 800 visitors, magnificent displays and lots of enthusiasm were featured at the recent Energy Technology open days. General Manager of CSR, Mr Bryan Kelman opened them at a function attended by leading industrialists, government officials and representatives from professional associations and universities.

Examining an exhibit are, from left, Dr Peter Cooper and Dr Geoff Taylor from CSIRO, Major General John Stevenson from the Department of Defence, Mr Robin Ritchie from Pratt and Co., Mr Bryan Kelman, Dr John Nixon from Comalco and Mr Bob Dunkerley from Victa.

Jones up in the air

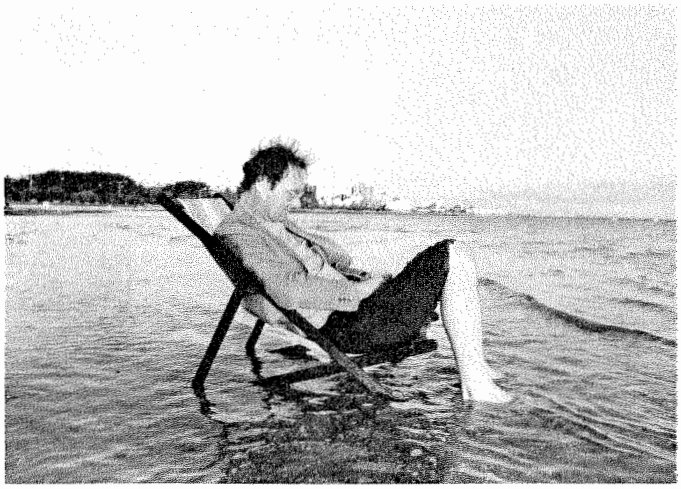


The Minister for Science and Technology, Mr Barry Jones, addressed an international meeting of atmospheric scientists at the Division of Atmospheric Research in early November. The meeting brought together scientists who are monitoring changes in the earth's atmosphere, and are researching the sources and transport of atmospheric particles.

Above, Mr Jones examines a book on the climatic consequences of an increase in the atmospheric carbon dioxide level with, from left, the Federal MP for Flinders, Mr Bob Chynoweth, Chief of the Division, Dr Brian Tucker, and convenor of the meeting, Dr Graeme Pearman.

Photograph by David Whillas

What to do about CO_2



Geoff Watson, presenter of the new CSIRO program on the effects of carbon dioxide is caught napping as the sea level rises, itself an effect of increased carbon dioxide in the atmosphere. (NB. Simulated scene).

The term 'greenhouse effect' is becoming commonplace — part of our catalogue of doomsday catchcries.

It concerns the global problem of increasing carbon dioxide (CO_2) in the atmosphere, but beyond that it's hard to find concise, accurate information about it.

WHAT TO DO ABOUT CO_2 is a new documentary film made by CSIRO which explores all the main aspects of the question: what is CO_2, why is it increasing, what effects will it have and what are the options for dealing with it?

The program will be shown on ABC on 29 January as part of the ABC's *Discovery* series, which begins on 4 December.

Many scientists believe that by the middle of next century the climate of the world will have been significantly changed due to human activity.

Since the industrial revolution began, we have burnt some 150 billion tonnes of fossil fuels — oil, gas and coal. This has caused the level of atmospheric CO_2 to rise by 30 percent. By about 2050, it is likely to be double the pre-industrial level.

This increase, it's predicted, will produce a warming of the earth's atmosphere — the 'greenhouse effect'. In addition, altered rainfall patterns could profoundly affect the world's agriculture, and the global warming could even cause a partial melting of the polar ice, raising the level of the sea by several metres.

The program looks at a diversity of fascinating research projects, from experiments with plants growing in artificially increased CO_2 atmospheres to studies of 'ancient air' trapped in Antarctic ice.

The film also presents the views of some of the most eminent scientists in the field, both from Australia and overseas.

Botanist and TV personality Dr David Bellamy brings his own unique perspective to the debate.

The complexities of the problem are closely unravelled by the presenter Jeff Watson, fresh from the ABC's *Towards 2000* series.

The film was produced by CSIRO's Science Communication Unit in order to raise the public awareness of the carbon dioxide question, and to encourage public discussion of its implications.

PM's letter

cont. from p.1

I frankly believe that CSIRO's performance in assisting industry and the Australian community is far better than some people imagine — our performance is so often judged by popular rumour and hearsay rather than fact.

I understand from the Office of the Minister for Science and Technology that you would be interested in receiving some information on CSIRO's achievements and services to industry. Accordingly, I enclose two just-completed documents listing some of our contributions, and a copy of my recent 'Years of Change' report which indicates the rate at which CSIRO has changed over the past 5 years.

I am grateful for your reassurance of the Government's commitment to the development of science and technology in Australia and recognition of CSIRO's special role.

You may count on our continued and increased efforts towards a better Australia.

Yours sincerely
J.P. Wild

The Prime Minister replied:

Dear Dr Wild,
I was most interested to receive your summary of CSIRO's record and achievements in assisting industry in Australia.

As I mentioned in my letter to you of 15 October the Government recognises the need for clear links between industry and research, and the need for institutions to critically evaluate their ongoing activities. I note from your report 'Years of Change' that CSIRO has actively adopted such an approach in drawing up its future management strategies.

Yours sincerely
R.J.L. Hawke

Ockham's Razor

The ABC Radio Science Unit is looking for script ideas for its new program, Ockham's Razor.

The program, which began in September, is a series of 12-minute critiques by scientists and others of science and technology policies or scientific theories and concepts.

Subjects covered to date include: particle physics and meta physics, the Slatyer report on the nuclear fuel cycle; funding of the Australian Research Grants Scheme; botanical nomenclature; how budgets and politics influence Britain's Open University.

The program takes it name from the principle formulated by the 14th Century English scholar, William of Ockham (or Occam), which, roughly interpreted, states 'the simplest theory that fits the facts corresponds most closely to reality'.

It is broadcast on Radio 2 on Sundays at 8.45 am, and repeated on Mondays at 7.15 pm on Radio 3 and on Thursdays at 5.15 pm on Radio 2.

Those interested in broadcasting on the program should send a draft script, or script outline, to Robyn Williams, ABC Radio Science Unit, GPO Box 9994, Sydney, NSW 2001.

From the Chairman-

A regular column by the Chairman of CSIRO Dr. J. Paul Wild

Three notable developments of the past month have been —

- A meeting of the Executive with the Minister for Finance, Mr Dawkins, in which we had a frank and fruitful exchange on the effects of the recent budget. As a result of this meeting we set up a CSIRO/Finance working party to look at the whole question coolly and objectively. The CSIRO representatives to take part in this welcome development are — Geoff Taylor, Justice Michael Kirby and Howard Crozier.
- The Executive spelt out a strategy defining the most urgent general tasks which the Organization faces in 1985. I have outlined these in my letter to the Prime Minister and will talk about our plan of action for handling these tasks on a later occasion.
- SIROTECH was inaugurated and has held its first meeting. Congratulations. I hope all Divisions will give their full and enthusiastic support.

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As you know, during the middle part of this year I was moving round the country talking to staff and industry groups on the changes in and achievements of CSIRO during the last few years. Then came the budget, and since September I have become embroiled in a campaign to increase public and political awareness of the need to strengthen Australia's efforts in science and technology if we are to prosper in the decades ahead. This campaign began with the media and spread to invitations to address industry groups, as a consequence of which there have been many enquiries from industrial companies anxious to enhance their technological base. Others in CSIRO, especially Chiefs of Divisions and staff associations have been commendably active and there is no doubt that a message is being transmitted both to the government and industry. But there is still a long way to go before even a small part of the population becomes aware of the real contribution and value of science in general and CSIRO in particular. So please, keep up the good work!

My personal part in the campaign has been greatly helped by the drive and support of Richard Eckersley who heads our media group. Yesterday Richard gave me a list of public and industry events in which I have been involved during the months of September to November 1984. He suggested I might publish it to give an idea of the scale of activity in progress. Here is the list:

SPEECHES:
Industry and funding—
- Australian Manufacturing Council
- Australian Electrical and Electronic Manufacturers' Association
- Victorian State Committee
- ACT Enterprise Workshop Presentation Dinner
- National Press Club
- Borg-Warner Annual General Meeting
- BDH Chemicals Australia Opening

Specialist and other topics—
- ACT Science Fair
- Royal Aeronautical Society
- AINSE Radiation Chemistry Conference
- Canberra Association for Regional Development
- Conference on Solar and Stellar Atmospheric Physics

MEDIA:
Contributed articles—
- Sydney Morning Herald
- Canberra Times
- Medical Journal of Australia

Personal Interviews—
- Sydney Morning Herald
- Robyn Williams — ABC Science Show
- Readers Digest
- 7 network's '11 AM'
- 9 network's 'Today'
- ABC's 'City Extra' in Sydney
- ABC's Terry Lane program in Melbourne

Numerous phone interviews with commercial and ABC radio and newspaper journalists.

MEETINGS:
Australian Manufacturing Council to set up working party to explore ways of improving industry links with CSIRO.

MTIA, to discuss establishment of reseach council to improve links between industry and research bodies.

Managing Director, Ford Motor Co., resulting in discussions on setting up CSIRO — automotive industries study group.

Chief Executive, ICI Australia, and others resulting in decision to hold CSIRO — ICI discussions to define future of chemical industries in Australia.

I might finally mention another occasion on which I did not have to perform. It was a ceremony in Melbourne involving the building industry, Lex Blakey and the Division of Building Research. The honours were being done by the Prime Minister. During his speech the Prime Minister made reference to his Government's support for technology, innovation and research. Seeing me in the front row he declared 'Things are going to get better, Paul, don't worry'. At the conclusion of the ceremony the assembled throng stood, Bob Hawke descended, grabbed hold of me and talked enthusiastically — about railways!

Paul Wild

Standing For Science

Emile Brunoro, photographer at the Division of Plant Industry, has decided that politics is too serious a matter to be left to the politicians.

The Budget cutbacks were the last straw — he resigned to stand for the coming elections strongly supporting Science and Technology.

'I believe the present government is ignorant, short-sighted and immoral by cutting back on scientific research and development,' he said.

'Their action is causing Australia to stagnate even further among the backward nations of the world. Our economic health depends on our ability to foster inventions and innovations; to translate new discoveries into commercially viable new activities of greater benefit to everyone,' he added.

Mr Brunoro is standing as an Independent in the Canberra electorate of Fraser

Photograph by Colin Totterdell

People... People
People... People

Executive Secretary of CSIRO, **Mr Gratton Wilson**, has been invited to be an Executive Member of the Australian National Commission for Unesco, which is responsible for advising the Australian Government on Unesco's international program and associated activities undertaken in Australia. Members are appointed for two years in recognition of their experience and specialized knowledge of the various fields covered by Unesco's programs: education, natural sciences, social and human sciences, culture and communication.

***

Mr Paul Lynch, the Manager of the Printing Unit, has been awarded the Collie Trust Scholarship for the second time. The scholarship is to bring an American typesetting expert to Australia for a lecture tour.

***

Mr Maurice Puttock, Division of Applied Physics has retired after 32 years. He was involved in radiotelescope technology, with the engineering community and standards administration and with the design and construction of the Lindfield laboratory.

***

Mr Ron Kemp has retired from Applied Physics after 40 years with CSIRO and a distinguished career in temperature standards. He was involved in founding Australia's thermometry group and developed the first cryogenics facility in the country.

***

Mr Tom Cousins has also retired from Applied Physics after designing and building many instruments for the Division, some of which have attracted overseas interest.

***

Dr Robert Sleigh of the Division of Food Research has taken up an Overseas Fellowship for 1984/85 to work in Uppsala in Sweden. He will also visit research laboratories in Japan, USA, Canada, UK and Europe.

***

After 35 years with CSIRO, **Mr Joe Pellegrino** was farewelled from Wildlife and Rangelands in Canberra recently. At various stages he was animal house attendant, gardener, cleaner, painter, carpenter, mechanic and electrician at the historic Gungahlin Homestead.

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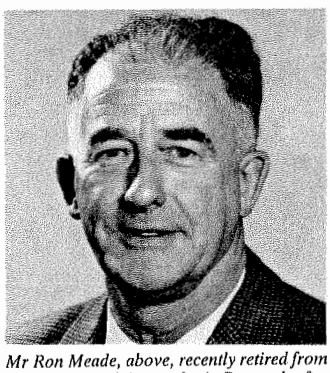


Mr Ron Meade, above, recently retired from the Division of Atmospheric Research after 40 years with CSIRO. He first joined Radiophysics in 1944, but moved to the cloud physics group in 1956.
Ron will be remembered not only for his ingenious and successful designs and constructions of laboratory equipment, but for his famous, if not always repeatable jokes.

CSIRO's plane put to use

The little known Research Aircraft Facility is a group in Sydney with a lot to offer scientists, from monitoring air pollution and underflying the space shuttle to mapping the earth for minerals, mountains or molehills.

Many researchers hire aircraft unnecessarily and incur further expense modifying them. The aircraft group is free with its consultancy, operates CSIRO's Fokker F–27 VH CAT and modifies it for specific projects. Use of the aircraft is subsidised by Head Office.

The F–27 is a scientific observation platform equipped to accept a wide variety of sensors and data aquisition instruments. All research equipment can be quickly removed and rearranged to cope with specific needs and experiments.

Naturally the Department of Aviation places certain limitations on aircraft which are not necessarily compatible with scientists' needs, but the group is aware of these. They design modifications to the correct specifications and then clear them with the Department.

One significant program the F–27 is known for is Project Aquarius: in 1982 the Division of Mineral Physics used it in the development of heat sensing, infrared techniques to map the spread of experimental fire-fronts. These techniques were later used during the Ash Wednesday fires.

During the 1984 Project Aquarius trials in south-eastern Victoria it was again fitted out to monitor conditions and experiments during the testing of aerial bombing of fires with water and fire retardants.

The Division of Mineral Physics is currently using the F–27 to test another kind of scanner, a linear-array multi-spectral scanner, and two spectroradiometers, designed to discriminate different rock types associated with certain mineral deposits.

The Division's remote sensing group extensively modified existing commercially available equipment and built their own, tailoring them all to mineral exploration applications. They designed and modified one of the airborne spectroradiometers, which is one of only two such instruments being used for mineral studies in the world.

SPACE SHUTTLE

The modified scanner system was recently tested by underflying the space shuttle which was imaging parts of Australia with a SAR Synthetic Aperture Radar system.

The Division of Atmospheric Research in Sydney is using the F–27 for a number of studies at different altitudes at places as varied as Tasmania and Papua New Guinea, Sydney and Perth. Glass slides mounted in pods on the aircraft 'trap' the particles and can be changed during flight.

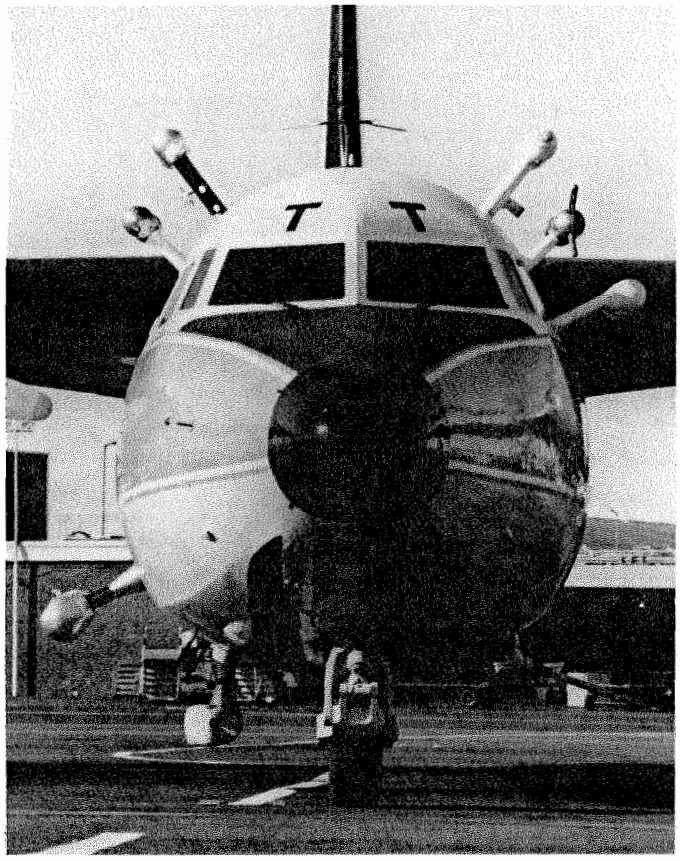
In October it was equipped by Dr Keith Bigg of the Cloud Physics Laboratory to measure the complete size distribution of particles in the atmosphere from those below one hundred millionths of a metre to more than 20 hundred millonths of a metre.

The flights went up to 7000 metres and results were used to compare the particle measurements with those from lidars (high technology, ground-based optical radars). Lidars give signals which depend on number, size and shape of particles and cannot be fully interpreted without simultaneous collections by the researchers.

NUCLEAR WINTER

The October expedition also collected data on the effects of bushfires on weather and climate, which is also particularly relevant to the current debate on the climatic effects of the many huge fires that would follow a major nuclear war.

Calculations leading to the prediction of a 'nuclear winter' (a global temperature drop that could make life difficult over most of the world) depend very much on how many particles would be produced that could act as centres for droplet formation or ice crystal formation in clouds, and how quickly they would coagulate and be removed from the atmosphere.



Bristling with scientific equipment, CSIRO's specially modified Fokker F-27 is used for a variety of projects, from trapping atmospheric particles to bouncing beams off land and sea.

Confusion with man-made particles make these measurements very difficult, but Dr Biggs found suitable cloud free conditions in the unpopulated area north of Broome in West Australia. Vigorous fires in the area allowed measurements to be made in both old and new smoke.

The trip also led to revision of estimates over much of Australia about the concentration of droplets needed for cloud formation and which droplets are most important in determining the ability of clouds to rain.

Another Atmospheric Research project is in its third and final stage in south eastern Australia and involves CSIRO, a number of universities and the defence forces.

WEATHER PREDICTION

As the largest joint meteorological field program ever mounted in Australia, it is assisting meteorologists and research scientists determine the characteristics of cold fronts, usually associated with most weather changes.

The program will examine the structure of the fronts in terms of temperature, moisture, wind and behavioural changes, and should result in improved forecasting of the intensity of fronts and the timing of their arrival.

Not only does the average person in the street like to know the weather forecast is accurate, it could be critical during major bushfires and for agricultural and aviation purposes.

The F–27 has been an integral part of this three year study, as have been the CSIRO and Navy research ships, a RAAF Orion, several weather stations across the country, balloons, radar and buoys.

Mr David Williams of the Division of Fossil Fuels is using the F–27 to investigate the dispersal of pollutants from places such as power stations and smelters.

This is relevant for finding ways of improving predictions about the pollutants people breathe around these pollution sources. Longer range studies on the dispersal of pollutants are providing an insight into the atmospheric chemistry responsible for acid rain. Mr Williams has chased the pollutants from Mount Isa to Broome in the latter studies.

RESEARCH HELP

The aircraft group not only helps with the design of the research tools used on the aircraft and provides associated support equipment, but helps with the logistics and organization of field trips using the aircraft.

It can extrapolate from the scientists' research needs to design and effect major aircraft modifications when these are needed. Such modifications are expensive, but one of the principal reasons behind the aircraft facility is to permit as wide a range of use as possible of the specially modified F–27.

The versatility of the F–27 means separate research groups can keep their research equipment in the laboratory when not using it on the aircraft. They can develop, test and calibrate it before installation and the same personnel who designed and developed the equipment can use it in-flight.

To allow researchers maximum access to the F–27, the aircraft group runs an observer program where people interested in using the aircraft can observe, without cost, a field operation.

For more information and details of other services provided by the Facility, contact Jan Smith on 02 868 0421 or 868 0222.

CoResearch is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 5th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel 48 4479. Editor: Penny Gibson.

UNION OFFSET CO PTY LTD, CANBERRA

CoResearch

CSIRO's staff newspaper Dec '84/Jan '85 276

New space office set up

CSIRO has set up an Office for Space Science and Applications (COSSA) to co-ordinate and expand its space research and development.

The Chairman, Dr Wild, said the office would concentrate CSIRO's effort on areas where Australia had particular needs or advantages, including communications, meteorology and remote sensing.

'Our program will be designed to assist Australian industry to establish itself in specific areas of the international space market,' Dr Wild said.

'Australia's space effort is lagging badly. While Canada, Europe, Japan and USA spend from US$2.50 to US$25 per head on space research and development, Australian expenditure is about 33 US cents per head.

'By the end of 1985, Australia will have spent about $500 million on operational space systems such as Intelsat and Aussat, but relatively little of the satellite equipment associated with these systems has been manufactured in Australia.'

cont. p.7

Changes:

New planning strategy

The most significant changes to CSIRO's research planning and management since those resulting from the Birch Inquiry will come into effect in 1985.

The changes stem from two decisions by the Executive late last year. They are intended to improve CSIRO's ability to respond to the changing environment in industry and the community and to cope with periods of little or no growth in funding.

The first decision was to set up Executive working parties to advise on five difficult issues:

- the distribution of CSIRO resources across industry sectors, research areas or technologies
- the concentration of its research effort into fewer programs
- the redeployment and retraining of staff
- how to measure the benefits of CSIRO research
- how to transfer most effectively the results of CSIRO research to industry and the community.

In a letter to Chiefs and O-i-Cs the Chairman, Dr Wild, said the conclusions reached by the five working parties, which comprise Executive Members and Directors, would be considered by the Executive in the first half of this year.

'These deliberations will form the basis of an Organizational strategy for coming to grips with these challenging questions in the years ahead,' he said.

'Before such a strategy is finally decided upon, the Executive will circulate a draft document to all Divisions and Units inviting comment and discussion from all staff.'

The second decision was to accept the recommendations of the committee which reviewed CSIRO's strategic research planning activities. The Committee said CSIRO should adopt a system of corporate planning similar to those used in the private sector but adapted to its special needs. The Committee was chaired by Dr Keith Boardman and included a science policy expert, corporate planner and nominees of the Advisory Council and the Australian Science and Technology Council.

RESEARCH PLANNING

The Committee said the recommended corporate planning system should be primarily concerned with the planning of research.

Its aims would be to ensure continuing relevance of CSIRO's work by fostering close co-operation between users, scientists and research managers; to identify and assess new research opportunities with special relevance to Australia; and to free resources from lower priority areas for new opportunities so that CSIRO stays at the leading edge of technologies most relevant to Australia's future.

The Committee said the corporate planning system should decentralize research planning and define more clearly the planning responsibilities of the Executive, Directors, Chiefs and senior administrators.

Chiefs, with the assistance of their program leaders, were best placed to develop most plans for research expansions, contractions, terminations and re-orientations at the program level, the Committee said.

'Institute Directors and full-time Members of the Executive should be responsible for integrating Chiefs' plans into Institute and Organization-wide plans, and for injecting into these plans broader perspectives and ideas, taking account of industry and community needs and government priorities.'

'The Executive and the CSIRO Advisory Council should continue to interact on the most important strategic issues relating to the planning of research and the management of the Organization.'

cont. p.8

And mind you don't lose it

A theoretical physicist turned atmospheric scientist has won this year's David Rivett Medal.

Dr Jorgen Frederiksen of the Division of Atmospheric Research was awarded the Medal by the Officers' Association for his work on atmospheric dynamics.

He provided the first comprehensive theory capable of providing a unified explanation of the formation of a very wide range of atmospheric disturbances.

Dr Frederiksen has developed a three-dimensional theory on atmospheric instability and incorporated it into a mathematical model that seems to reflect the real-life situation.

The theory is rapidly becoming accepted internationally as an explanation for 'blocking' — the scourge of the TV weather person who has to explain why predicted weather changes do not occur.

Dr Frederiksen has also successfully applied statistical mechanical methods for the first time to a number of problems in atmospheric science, such as growth of errors in numerical weather prediction models.

A Principal Research Scientist, Dr Frederiksen, 38, has an international reputation, collaborates extensively both nationally and internationally and has an extensive publication record.

He was awarded the David Rivett Medal as a young CSIRO officer doing outstanding research within the Organization.

The Medal is given every two years, alternately for work in the biological and physical sciences, and commemorates Sir David Rivett, Chief Executive Officer and later Chairman of the Council for Scientific and Industrial Research (CSIR).

The President of the Officers' Association, Dr Roy Bond, appears to be telling Dr Jorgen Frederiksen not to lose his David Rivett Medal, which was awarded to him at the Division of Atmospheric Research recently.

Photograph by David Whillas

Letters to the Editor

Dear Editor,

Is CSIRO Capable of Change?

We have heard much in recent months about how CSIRO has changed, and will continue to change. We have been told that CSIRO is becoming more responsive to the needs of the Australian community at large, and that it is now better able to develop to commercial reality its numerous inventions and discoveries.

Let us hope that this is all true and that indeed these worthwhile changes will be made so that CSIRO is even better than the generally excellent organization it now is. I for one, however, treat some of these recent pronouncements with a degree of scepticism. On past performance I find it difficult to believe that public servants of the types we appear to have in parts of our Canberra administration will be able to muster even a fraction of the entrepreneurial skills and drive needed for the commercialization process to be carried out successfully. The example on which I base this scepticism is as follows.

The eight *Discovering Soils* booklets, produced by the Division of Soils, have collectively been sold in numbers now exceeding 300 000 copies. I don't know what the profit has been from the sales of these booklets but if it were very conservatively put at $0.50 per booklet, that is a lot of money.

Despite these sales figures, there was no money available for the printing of No. 8. We had to *give* the manuscript to an outside publisher in order to get it printed at all.

With recent pronouncements, notably in Policy Circular No. 84/22 (CSIRO Revenue), one would have thought that success would not have been further penalized. Not so, as we have recently found out during the production of booklet No. 9. The money for printing this booklet has been provided, but despite earlier verbal assurances from Finance Section, it now transpires there is no money for other preproduction expenses or for a modest (ca. $2500) expenditure on publicity.

Thus, despite the probability that a reasonable amount of publicity will generate profits of at least $25 000 in the first year of publication (the booklet is about potting mixes and the care of plants growing in them), the 'system' is so unimaginative and conservative that it cannot commit a fraction of this or past profit to generate further profits. At present, therefore, the general rule seems to be that the more successful you are in producing popular publications, the poorer you become. Some incentive!

I suggest that Finance Section adopt the Chairman's recent discussion theme and create some years of change. One outcome of their forced activity would be for them to set up a Publications Fund. The capital of this fund would be used to produce saleable publications (other than the journals). Part of the money collected from sales would maintain this Fund with the rest going to Treasury as at present. The Fund would be used to pay publication costs (drawings, artwork, typesetting, printing). Any CSIRO author wanting to publish a saleable publication could approach the trustees of the Fund for finance — surely a much simpler procedure than that currently in vogue.

I understand that our Editor-in-Chief, and some of the people in BOSS have been trying for years to get something like a Publications Fund established, so far without success.

With the current emphasis on change, efficiency and accountability, it appears reasonable to bring these elements to the saleable publications area. If not, we will be justified in concluding that the pronouncements from HQ are nothing more than a lot of hot air from a bunch of small-minded chair-warmers.

K A Handreck
Scientific Liaison Officer, Soils
19.12.84

The Editor,

Within the final two paragraphs of his letter to the Editor, (October, 1984), the Chief of the Division of Chemical Physics suggests that mechanisms ought to be introduced in CSIRO for accelerating the removal of unproductive permanent staff. I should like to point out that to wield an axe within the Organization's 'dead-wood' would be to strike at the very structure of its foundation.

A H Reisner
Molecular Biology
13.12.84

Computers demystified

Eminent physicist, Vice President and Chief Scientist of IBM, Dr Lewis Branscomb, delivered this year's David Rivett Memorial Lecture.

He examined the most significant elements of evolving information technology, both at the microelectronics and systems levels, and how these changes were ushering in a whole new working environment for scientists and engineers, university faculties and students.

He also discussed 'Distributed Science': the sharing of not only research equipment, but the knowledge and ingenuity of scientists themselves. He explained how these same trends will ultimately affect end users in all kinds of commercial and public institutions and how expert systems and other 'Artificial Intelligence' may further reinforce the rising demand for computing power.

For all those who struggle with computers, word processors or even just small hand calculators, Dr Branscomb went unerringly to the crux of the matter:

I'm sick and tired of this machine; I wish that they would sell it.

It never does just what I want, but only what I tell it.'

Above, Dr Branscomb, centre, speaks with guests at a luncheon held in his honour in Perth. From left, the WA Attorney General and Minister for Budget Management and Prisons, Mr Berinson, the Chief of Groundwater Research, Mr Perry, Dr Branscomb, the Chairman of the Advisory Committee for the David Rivett Memorial Lecture, Professor Craig and Professor Cole of the University of Western Australia.

Photograph by Bill van Aken.

But what's it for...?

In the lead up to the Federal Election in December, Senator Fred Chaney, Leader of the Opposition in the Senate, examined car parts of the future (metal/ceramic reaction bonded joints) which were developed at the Division of Chemical Physics. Senator Chaney said he was surprised and pleased at the diverse nature of the many applied research projects he was shown, and at the enthusiasm of staff.

Experts to co-ordinate topical research

A new form of research co-ordination that crosses divisional boundaries in the Institute of Biological Resources has been initiated.

Institute Director Dr Michael Pitman has appointed specialists in the fields of plant pathology and root/soil biology to co-ordinate research in those areas.

Dr Albert Rovira from the Division of Soils in Adelaide will work on integrating the Institute's plant pathology research and will liaise with State Departments, universities and industries which use that research.

Both he and Dr John Passioura, who will take the same position for root/soil biology, will advise the Director and Chiefs on their areas of research and on opportunities for the development of that research.

Dr Pitman said this was the first time such a step had been taken in the Institute's research management. He hoped that it would help communication between scientists in similar areas throughout the Institute, as well as provide useful advice to the Chiefs and himself about potential for development in these areas.

Dr Rovira said he would carry on his research program on soilborne root diseases of the pasture cereal rotation system in southern Australia, but would step down as head of Soil Biology at the Division. He would visit Canberra and Brisbane to familiarize himself with CSIRO's plant pathology research early in 1985.

His appointment follows the Review of Plant Pathology, which decided not to set up a Division of Plant Pathology because the research was so diverse and widespread in the Institute.

Dr Passioura said he would take about six weeks each year to visit those parts of the Institute involved with root/soil biology and would organize an annual workshop for the Institute. Although these would involve some non-CSIRO researchers, and he would take every opportunity to study work done outside CSIRO, his area did not involve as much outside liaison as Dr Rovira's.

He would also continue his research at the Division of Plant Industry, which is about the physiology of drought and salinity affected plants; and particularly their roots.

Health and safety policy revised

The Executive has reviewed and revised the Organization's policy on Occupational Health and Safety.

Dr Wild said the new policy statement stated that it was a fundamental requirement that CSIRO's activities be carried out in a healthy and safe way.

'The objective is the elimination of all incidents which could result in personal injury, occupational health problems or adverse effects on the environment.

'A prime responsibility of all the Organization's staff is to ensure that their jobs are performed safely and without detriment to themselves, other members of the staff or the community.

'The Organization will provide healthy and safe working conditions, define and implement safe working practices, and provide information on, and control measures for, hazards in the workplace.

'Staff with responsibility for the management or supervision of other staff will be held accountable to the Organization for the occupational health and safety of people working under their direction.

'Conformity is required with relevant Commonwealth legislation and with the provisions of the Code of General Principles on Occupational Safety and Health in Australian Government Employment.

'In the absence of appropriate Commonwealth legislation, it shall be the Organizations's aim to conform to the standards prescribed by the laws of the State or Territory in which each site or location is situated.'

The Manager of the Health and Safety Unit, Mr Gary Knobel, said that all Directors, Chiefs and O-i-Cs would arrange for a review of all their current health and safety policies and practices to bring them into line with the new policy.

Every staff member will be accountable for ensuring her or his work environment is conducive to good health and safety, though Chiefs and O-i-Cs will be responsible for setting and maintaining safety and health standards and practices.

The new policy was developed by CSIRO's Health and Safety Committee and Mr Knobel will discuss its implementation at Institute meetings of Chiefs and O-i-Cs.

A full policy statement will be released later this month.

Publishing:

Aid for Indonesia

CSIRO Editorial and Publications Service is now involved in publishing an agricultural research journal for the Indonesian government.

Based in tropical Bogor, in the hills outside Jakarta and near CSIRO's animal research station in Ciawi, an editor is establishing and running the *Indonesian Journal of Crop Science* (IJCS) for three years.

The Australian Centre for International Agricultural Research (ACIAR) is funding the project and the Editorial and Publications Service with its extensive experience in publishing the national journals of research, was chosen to manage it.

Mr Paul Stapleton, an experienced editor, is helping the Indonesians set up the journal and establish the refereeing, editing and production procedures necessary in a research-level publication. He has worked for CSIRO and has more than 10 years experience in science publishing in Australia and Europe.

The Indonesians first suggested the project as a contribution to their agricultural research system. With the country's rapidly growing population, there is a desperate need to increase agricultural production, and a primary research journal is seen as one way of disseminating major advances in the field.

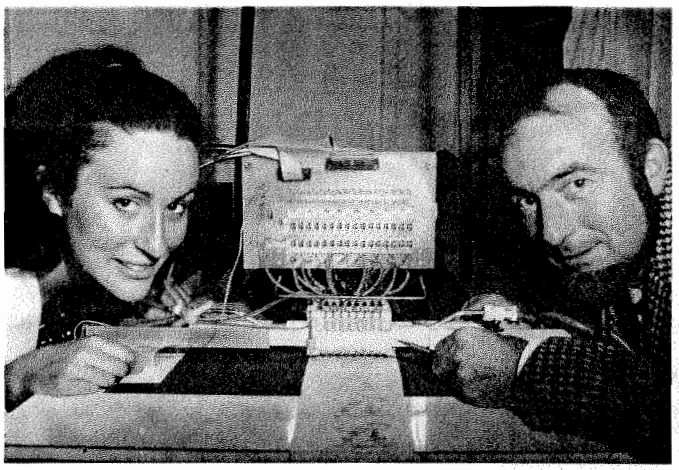
'Everyone here agrees that this is a worthwhile project,' Mr Stapleton said, 'but it is a major undertaking for an Indonesian scientist to write a paper in English. Australian scientists have trouble doing it and they are working in their own language!'

'As a result of Indonesia's ambitious education programs, more and more trained research personnel are entering the agricultural area, and starting important research programs. In the future IJCS will be a perfect means of publishing the results from these.'

'As well as running the journal I have now run three science-writing workshops. They are well-received but experience is showing that the existing science-writing manuals have not been written with a foreign audience in mind. Consequently I am writing a 'guide to science writing' aimed at non-native English speakers.

'I will also be teaching a print communications course at the Bogor Agricultural University as part of an extensive 'Rural Communications' MSc course that aims to produce agricultural extension workers to interpret the primary research results for the farmers and managers, who can best use the knowledge,' he added.

Printed wool for all



Mr Les Wills and Ms Miranda Devine of the Division of Textile Physics pose with the essential machinery of a new computer controlled technique which should bring printed woollen fabrics out of the exclusive high-fashion bracket into more general availability. The technique will reduce the preparation time for new print designs from two months to two hours.

Invented by CSIRO over eight years, the exclusive rights to develop the new 'jet printing' technique were signed over to Wilcom Pty Ltd in Sydney recently.

Sprightly to the end

RV Sprightly *arrived in Hobart under the CSIRO banner for the last time in mid-December. Dr Angus Mc Ewan, Chief of the Division of Oceanography was on hand to welcome* Sprightly's *Captain George Cavill, left.*

Photograph by Thor Carter

***Research Vessel Sprightly* finished her last marine science cruise when she docked at the new Marine Laboratories on 13 December.**

Captain George Cavill, who commanded *Sprightly* for the 11 years she was chartered by CSIRO, was at the helm. Later, the Laboratories gave him a champagne and chicken farewell and a photograph album of his part in the *Sprightly* era.

Sprightly began service with CSIRO in 1973 during oceanographic and fisheries studies off the West Australian coast. Oceanographer Mr Frederick Boland was on board, as he was during the last cruise, and witnessed just one of many *Sprightly* incidents.

On that very first voyage, as she was returning to Fremantle, the oil stove in the galley caught fire, flooding the wheelhouse with smoke. Captain Cavill didn't turn a hair, but the pilot panicked somewhat and threw all the windows open.

On another occasion, a crew member broke his leg, necessitating a return to harbour. In his haste and enthusiasm, another crew member leapt overboard to tie the boat to the wharf...and broke his leg. The previously radioed ambulance arrived and carted him off to hospital but had to be recalled to collect the original casualty.

Since 1978, *Sprightly* has been involved mainly in oceanographic research and has logged almost 100 cruises, from single day excursions through the Sydney Heads to collect pre-placed current meters, to a month long trip to the Solomon Islands, where she took part in studies for the Intergovernmental Oceanographic Commission of UNESCO.

During the same year, 1982, *Sprightly* circumnavigated Australia in a series of cruises during Aurorex (the Australian Regional Oceanographic Research Expeditions).

Her last cruise had scientists from the Marine Laboratories, the Division of Atmospheric Research and Victorian Institute of Marine Science, and made conductivity, temperature and depth (CTD) profile surveys near the oil platforms in Bass Strait and off the NSW coast near Eden and Merimbula.

The *Sprightly* era began 41 years ago, when she was used as a salvage tug by the British Navy.

After being transferred to the RAN in 1944, *Sprightly* rescued a number of ships, including *SS Ormiston*, which was torpedoed by a Japanese submarine off the NSW coast near Coffs Harbour.

After the War, she was used for salvage and rescue work and general duties until mothballed by the RAN.

Purchased in 1969 as a salvage rescue tug by Tom Korevaar and Sons Pty Ltd, a marine contracting firm, she was a weather stand-by ship in Bass Strait for a year.

The Bureau of Mineral Resources chartered *Sprightly* for a round Tasmania survey and several oil exploration companies used her for survey work before she was again laid up for a year and chartered by CSIRO.

Since *Sprightly* was converted to scientific research purposes, she has covered nearly half a million nautical miles from the Antarctic Circle to the Equator.

However, she is now likely to be laid up once again, though Tom Korevaar said he was keen to keep her working as a survey research vessel.

'She's not young, but she's in peak condition and there are at least four and probably ten years of work left in her,' he said.

The Chairman is on holiday

Two to answer to and for

In the Ministerial reshuffle following the Federal election, Senator Button has taken over the technology component of the science and technology portfolio to become Minister for Industry, Technology and Commerce.

His new Department will absorb the technology responsibilities of the old Department of Science and Technology.

The former Minister for Science and Technology, Mr Jones, becomes Minister for Science, with responsibility for CSIRO, the new Department of Science and the Commission for the Future.

He is also Minister assisting the Minister for Industry, Technology and Commerce.

Animal welfare c'tee set up

CSIRO has established a special committee to advise the Organization on ethical and social issues associated with the care and use of animals in research.

Dr Keith Boardman, Member of the Executive and chairman of the new committee, said the committee would include leading proponents of animal welfare, representatives of the livestock industries and academics.

'The Executive decided to set up the committee in response to the growing community concern for the welfare of animals used in research,' Dr Boardman said.

'What we are seeking to do in setting up the committee is to avoid the polarization between animal welfare groups and scientists that has occurred in some other countries.

'The specific issues we tackle will be determined at the committee's first meeting in February. But clearly a central issue is the continued use of animals in experiments.

'Related to this is the importance of developing and, where possible, using alternatives to the use of animals, such as cell culture techniques.'

The terms of reference of the new committee, called the Advisory Committee on the Ethics of Animal Research, include advising the Executive on:

- ethical issues and changing public perceptions about the care and use of animals in research,
- the views of animal welfare groups on the care and use of animals in research,
- the principles to be followed in the development of codes of care and practice,
- the principles of operation of CSIRO's existing Animal Experimentation Ethics Committees,
- the education of the public about the use of animals in research.

The committee members are:

Dr Keith Boardman;

Dr Alan Donald, Chief of the Division of Animal Health;

Professor Peter Singer, Director of the Centre for Human Bioethics at Monash University;

Professor John McCloskey, of the Department of Philosophy at La Trobe University;

Mr John Strachan, President of RSPCA, Australia;

Ms Christine Townend, Secretary of the Australian Federation of Animal Societies;

Mr Warren Starick, Chairman of the National Farmers' Federation's Livestock Industries Group;

Mr Peter Taylor, a veterinarian and grazier;

Dr Margaret Rose, of the School of Surgery at the University of NSW.

Sun man honoured

Solar physicist Dr Ron Giovanelli, who played a dominant role in Australian physics for more than 40 years, was remembered with a colloquium, 'Past progress and future developments in solar and stellar atmospheric physics' in Sydney recently.

Dr Wild told the international meeting of Dr Giovanelli's passion for the sun and how two of his original concepts — the origin of solar flares and the discovery of the temperatures of free electrons in the sun's chromosphere — had a profound influence on the development of solar physics.

Dr Giovanelli's widow is pictured above at the colloquium with a sundial dedicated to her husband.

Experts to visit under new scheme

Distinguished overseas scientists will be able to visit CSIRO in a new Fellowship scheme announced recently.

The Sir Frederick McMaster Fellowships will enable around three very senior and distinguished scientists in agriculture, veterinary science and related areas to come to CSIRO for three to 12 months each financial year.

Sir Frederick McMaster, a prominent NSW grazier, bequeathed a substantial proportion of the shares in his pastoral company to CSIRO for research in the fields of veterinary science and agriculture.

Following the sale of the shares, the Executive decided to create a number of Sir Frederick McMaster Fellowships to support eminent overseas scientists to work in Divisions and Units in the Institutes of Biological Resources and Animal and Food Sciences.

Selection will be made by the full-time Member of the Executive responsible for these areas of research, the Directors of the relevant Institutes and a part-time Member of the Executive who has some involvement with veterinary science or agriculture.

Selections are also made in consultation with the Chiefs of proposed host Divisions.

The Fellowships have been advertised world-wide and applications close 1 March.

Institute rewards workers of excellence

Two positions to support work of excellence have been granted to Division of Plant Industry scientists, the Director of the Institute of Biological Resources announced recently.

Dr Pitman said Dr TJ Higgins and Dr Jeremy Burden would each be able to appoint a research scientist to support his research for three years.

'These awards are intended for younger scientists who demonstrate the potential for work of excellence,' Dr Pitman said.

'They were awarded competitively under an annual system operated through the Institute.'

Dr Higgins, a Principal Research Scientist working on seed proteins, won the Officers' Association's David Rivett Medal in 1983. The scientist will work with him on directed mutation of one of the protein sequence genes to try and modify the amino acid composition of the legume storage proteins so they provide a better diet for humans and other monogastric animals.

Dr Burden, a Senior Research Scientist, researches rust diseases of cereals and oil seed crops and has recently returned from the major wheat rust laboratory in the USA. The new appointee to work with him will experimentally test the hypothesis of mixed resistances as a basis for disease control in agricultural crops.

Mr Ian Eustace from the Meat Research Laboratory in Brisbane has been granted a twelve month Australian Meat Research Council Overseas Study Award to study new and rapid methods for identifying and enumerating the microbiological contents of meat and meat products. He hopes to visit both the United States and United Kingdom.

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Ms Doris Leadbetter, well known Librarian and initiator of the extremely successful *Scanfile*, has retired. *Scanfile*, CSIRO's science policy abstract newsletter is used Australia-wide both outside and inside the Organization. Doris was also a familiar face at the organizing end of National Science Forum, and regularly addressed outside organizations. One of her more recent exploits was to organize, along with others, the widely reported Budget protest by scientists outside Parliament House. In retirement she intends to continue working on *Scanfile* and to perhaps initiate similar newsletters on high technology, or economics/politics.

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The Board of the Institution of Engineers, Australia, has awarded its 1984 Warren Medal for the best paper in civil engineering to several researchers from the Division of Water and Land Resources, namely **Mr Neil Body, Dr Peter Laut, Dr Mike Austin, Mr Jim Goodspeed** and **Dr Dan Faith**.

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The Chairman of the WA State Committee, **Dr John de Laeter**, has been made a Fellow of the Australian Academy of Technological Sciences. Dr de Laeter is associate director of the Western Australian Institute of Technology's engineering and science division and Chairman of the WA Science, Industry and Technology Council.

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The Manager of the Printing Unit, **Mr Paul Lynch**, has been admitted to the Institute of Printing (UK) as an Associate Member in recognition of his Collie Trust report on developments in short-run printing and his work in the printing industry in Australia.

Mr Harry Heath has retired from the Division of Chemical and Wood Technology after a career studying sawmills and researching particleboard and 'clean creosote'. He was the information officer for the Divisions of Forest Products, Building Research and Chemical and Wood Technology, and has been active in the Technical Association in Victoria.

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Dr John Taylor of the Division of Wildlife and Rangelands Research in Darwin was recently awarded the Howard Memorial Trust to attend the 15th International Grasslands Congress in Kyoto, Japan, in 1985.

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Dr John Tothill, Division of Tropical Crops and Pastures, is joining the International Livestock Centre for Africa in Ethiopia for two years. Other Divisional staff, **Dr Ray Jones, Dr John McIvor** and **Dr Bob Lawn** recently visited East Timor to consult on an Australian project which will use Australian expertise to develop appropriate technology for an integrated livestock/cropping system to replace the current shifting 'slash and burn' agriculture.

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Mr George Holan from the Division of Applied Organic Chemistry has been made a Fellow of the Australian Academy of Technological Sciences.

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Dr John Russell, Assistant Chief at the Division of Tropical Crops and Pastures, has been elected a Fellow of the Australian Academy of Technological Sciences.

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Professor David Craig, part-time member of the Executive, has retired from the Australian National University, where he was the foundation Professor of Physical and Theoretical Chemistry. Professor Craig played a major role in setting up the Research School of Chemistry at the ANU.

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Mr Frank Sillato of the Division of Applied Organic Chemistry is the 1984 recipient of the Royal Melbourne Institute of Technology (RMIT) Beazley Award for work in Sheet Metal.

Dyeing to be President

Division of Textile Industry Principal Research Scientist, Mr Ian Angliss, has been elected President of the 600 member Society of Dyers and Colourists of Australia and New Zealand (SDCANZ).

The SDCANZ is a professional body which advances the interests of its members in the dyestuff manufacturing industry, and the dyeing and finishing sectors of the textile industry.

Mr Angliss has had a long involvement with textile science. He joined the Division of Textile Industry in 1960 and has carried out research on wool in the areas of setting, shrinkproofing, wrinkle recovery, and continuous dyeing of loose stock, sliver, and fabric. He is currently the project leader of research into continuous high-speed dyeing of wool yarn.

Above right, Mr Angliss is congratulated on his election as SDCANZ President by the retiring President, Mr Fred Schafer.

One time O-i-C of the Wheat Research Unit, Dr David Simmonds, right, was presented with copies of his publications by Dr Colin Wrigley when he recently retired to rejoin industry.

New Chief is very impressed

The new Chief of Wildlife and Rangelands Research is an ecologist with wide experience in both aspects of the Division's research.

Professor Brian Walker, who takes up his appointment in July, has spent the past twenty years working on wildlife and rangelands research in southern Africa.

'That's why I like this Division,' he said on a preliminary visit to Canberra recently.

'It's the first occasion I know of in the world where these two disciplines have been brought together. Everywhere else ecologists and rangelands people have recognized this need of each other.

'It's a tremendous marriage as far as I'm concerned.'

Professor Walker, 44, holds the Chair of Botany at Witwatersrand in South Africa and is the Director for the Centre of Resource Ecology.

'My main interest is ecological — the dynamics and stability of rangelands. How much can they be used without fundamentally changing?' he said.

'Internationally it's a huge problem. The whole desert of the Sahel, China and everywhere else stems from a lack of understanding of the dynamics of rangelands under animal usage.'

Theories developed in the 1930s for temperate regions had not worked in tropical, sub-tropical and semi-arid regions such as Africa and Australia.

'Australia and South Africa have always had a great interest in each other's work because they have the same general kinds of problems.

'We can aid each other. By examining the differences we can try and understand how both of them work and that's partly why I'm keen to come and look at these rangelands and wildlife systems. Although the animals are different, the principles are the same.'

Professor Walker currently has four projects with Botswana and he sees Australia and CSIRO as being a great help to Botswana and other African countries through ACIAR, ADAB and other aid bodies.

'Funnily enough I'll almost have a better chance of doing things from Australia than I did in South Africa,' he said.

'One of the things this Division attempts to do is maintain links internationally with other wildlife and rangeland groups and I would like to see the link with southern Africa strengthened because of our close similarities.'

While in Australia Professor Walker visited many of the Division's locations.

He said he found it tremendously exciting at the moment as many groups were starting new programs.

For example, Helena Valley in Western Australia has just begun a program to understand how a system of small nature reserves conserves the flora and fauna.

In Darwin the Division is arranging with the National Parks and Wildlife Service to expand tropical research.

'The Australian tropics in the past haven't received their fair share of attention in terms of ecological research and have a lot to offer. We hope to encourage people from universities and other divisions and have a long term ecosystem study.'

At Deniliquin an ecological study, from the graziers' viewpoint, on the interactions of kangaroos, sheep and rabbits is just beginning.

'I've been really excited scientifically by my visit, but depressed by the budget cuts.

'There is always a bit of fat in any project that you can afford to cut off. It was cut off very early on and we are now hurting. We have had to tell staff to cut the number of trips in half, which means missing certain important things because we can't get to the areas.'

'We are asking much more sophisticated questions today than 20 years ago and those questions are only answerable using modern equipment. Without it, we have to actually slow down the pace of Australian science,' he added.

The Division receives little industry funding because, Professor Walker said, it is a national concern.

'That's the whole problem of long term ecological research. It's not to any one person's immediate interest and therefore they do not want to pay for it. It really has to be considered as a national problem and paid for from national sources.'

BOSS boss retiring

Mr Sam Lattimore, Director of the Bureau of Scientific Services, was farewelled at Headquarters' Christmas party.

Mr Lattimore spent fifteen years with CSIRO: more than twice as long than he had stayed in any other job. He said it demonstrated how much he had enjoyed working in the Organization.

Photograph By Ross Mackenzie

He joined the Industrial and Physical Science Branch of Head Office in 1970; in 1977 he became Secretary (Research), and Director BOSS in 1978. In these positions he got to know many people throughout CSIRO and acquired such a detailed knowledge of the research programs that he probably knows more about what research is going on in the Organization than anybody else.

Some would say that 'lateral thinking' should really be 'Lattimore thinking'. Many of his ideas have been far ahead of their time. An invention of his waiting in the wings is a set of traffic lights which, when changing from green to red, would first show red to the more distant vehicles, but the closer ones would continue to see green long enough for them to get through (at normal speed). More time and distance in which to pull up would reduce the frequency of people shooting red lights; and the advantage to all drivers would be that once in the 'green zone' they would know positively that the lights would not change against them — unless they were travelling at subnormal speeds.

Donations for a farewell gift came from all parts of CSIRO and amounted to the largest sum ever collected in the Organization — as a result Mr Lattimore now has airconditioning in his 'tank', as he calls his Toyota 4Runner. He plans to visit the more remote (and hotter) parts of Australia in his retirement.

Graham Warden

Obituary: John Downes

Mr John Godkin Downes, former Chief of the Division of Textile Physics, died suddenly at age 67 on 12 December while holidaying with his family.

He was windsurfing with his daughter Caroline when he died.

John Downes was Chief from 1969 and then served 1976-1979 as the first Counsellor (Scientific) ever appointed to the Australian Embassy, Moscow.

Few Australian scientists have had the opportunity and the ability to serve their country in such diverse ways and with such distinction.

He joined AWA in 1938 and worked as a development engineer on a communications receiver for the Army while also obtaining, by correspondence, a science degree from London University.

In 1945 he joined the CSIR Division of Radiophysics to work on the application of Wartime radar technology to Australian Civil Aviation. He played a conspicuous part in the successful introduction of Distance Measuring Equipment for aircraft in Australia, many years ahead of the rest of the world.

He then became interested in research, initiated by the Executive as a major activity, to support the wool growing industry in it's competition with synthetic fibres.

In 1951 he joined the Unit which became in 1959 the Division of Textile Physics.

As a research scientist and later as Chief, he helped develop the concepts and techniques of objective measurement of wool. His influence on this work both in the scientific research needed and in the introduction of new technologies was a major factor in the success of the program.

His judgement was trusted and respected by wool growers and wool brokers as well as by his scientific colleagues. The transformation in the packaging and marketing methods which followed are a tribute to his unique ability to work with people to achieve the successful application of the results of research.

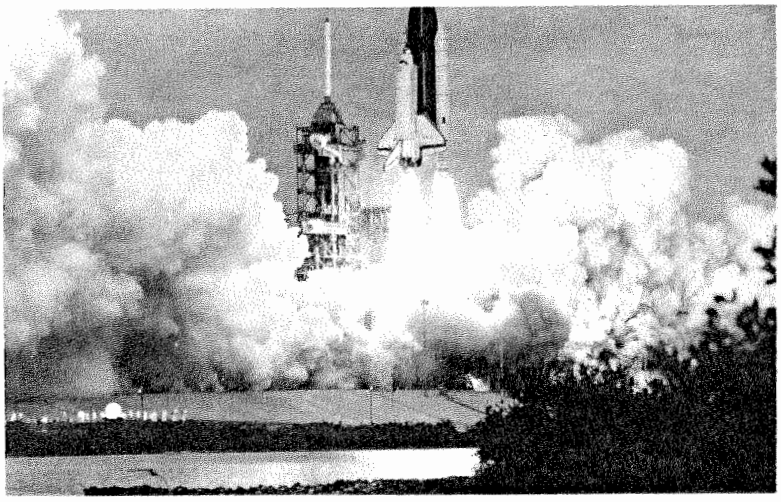
The final appointment in Mr Downes career showed the widespread esteem in which he was held. He accompanied CSIRO's Chairman on a visit to Russia in 1975 as scientific colleague and interpreter. It was recognized that he contributed to the success of the visit in many ways. This was followed by him serving for four years as Counsellor at the Embassy in Moscow where he did much by his friendly attitude to assist collaboration between scientists under the USSR-Australia Science Co-operation Agreement.

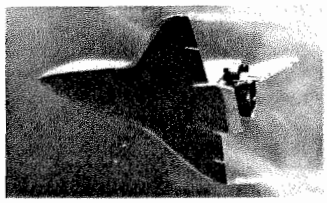
Following his retirement in 1979, Mr Downes spent much time sailing his catamaran in the Mediterranean area with his wife Dorothy. They have three children and seven grandchildren.

The elusive dream

In a brave attempt to weather the budget cuts and replenish the Divisional coffers, Sydney members of the Division of Mineralogy and Geochemistry plus friends and relations made a trip to the old mining areas of Majors Creek and Araluen for a spot of gold panning. There was much excitement as glittering specks appeared in gold pans, frying pans and even plastic plates. The photograph shows Dave Whitford and Graham Carr admiring the 'Carr Nugget' (fully 1 mm long!) while Ray Binns waits to attack the rich Majors Creek gravel.

However, 'all that glisters is not gold' and, although highly successful as a kindergarten show-and-tell, the yield for the weekend was calculated as 5 cents per man, woman and child hour.





The space shuttle Columbia *photographed from the chase plane as it descends, above, and leaving the launch pad, left.*

CSIRO and the space shuttle

The Space shuttle radar system could have picked up 'beautifully' the high seas that decimated this year's Sydney-Hobart fleet, according to Dr Carl Nilsson at the Division of Oceanography in Hobart.

Dr Nilsson is one of a number of CSIRO scientists working closely with the US Jet Propulsion Laboratory (JPL) on Shuttle Imaging Radar (SIR), a new way of looking at the Earth's surface from space that is turning out to be more useful than many people thought.

So far there have been two NASA flights carrying JPL's Shuttle Imaging Radar — SIR A and SIR B — and both have collected a rich harvest of data as they have passed over the Australian oceans and continent.

What is revealed by the radar is the 'roughness' of areas of land or ocean. With a resolution of 25 metres, it can pick out variations in the texture of forest canopies, or turbulence on the ocean surface caused by submerged submarines.

In the Sydney-Hobart yacht race, competitors faced high seas all the way — but the seas were highest when the current, flowing south past Sydney down as far as Montague Island, met with strong winds blowing north.

The current can often be shown by infrared weather satellites because it is warmer than surrounding waters, but this was not possible during the race because of cloud cover. Some of the yacht crews told Dr Nilsson that it was very clear whether they were in or out of the current, without taking temperature readings.

'They could tell just from the steepness of the wave pattern,' he said. 'That's precisely what the shuttle radar shows, and that's precisely why we're interested in it as a new scientific tool to tell us more about what's going on in the oceans.'

CSIRO scientists in the Divisions of Mineral Physics, Groundwater Research and Oceanography are foremost among those working on SIR.

When combined with other satellite information, such as visible and infrared, SIR forms a powerful tool, yielding information about soil types, erosion, vegetation, salinity, possible mineral environments, and ocean behaviour.

The different kinds of information can be matched by computer, and enhanced to bring out special features, which appear colour-coded on a video monitor.

The shuttle generates information by bouncing radar waves off Earth and measuring how the waves have changed during the fraction of a second it takes for them to return.

OCEANOGRAPHY

During last October's SIR B flight, the Division of Oceanography co-ordinated the total effort of the Australian marine science community, comprising projects costing about $300 000 and comparable with the ground-based effort.

In addition, the Division ran a cruise in the now-retired research vessel *Sprightly* in Bass Strait, and collected information from the NOAA satellite with the aim of providing a 'surface truth' for the radar.

'We are really just trying to see what the radar shows,' said Dr Nilsson.

'It gives information about the demarcation zones between different current systems, but it's still early days, and we're using known features of the ocean current structure to calibrate radar from space so that it will be of maximum use.

'One of the greatest virtues of SIR is its ability to see through cloud, which nothing else can match. Its ability to detect wind velocity and direction over the world's oceans will make it a prime tool for meteorology over the next decade.

'Certainly, meteorology is one of the major applications behind the European plans to put SIR into the ERS-1 satellite, due for launch in 1988. As yet, Australia has no capacity to receive data from this new generation of satellites, but it is important for us, at least, to have some expertise in handling the data.

'Navigation is another application that interests the Europeans, particularly the potential for fuel savings by routing ships around areas of high seas.

With the ability to pick up ships and their wakes, and even probably the surface manifestations of submarines, it also has defence applications.'

MINERAL PHYSICS

The largest 'remote sensing' group in CSIRO, and probably the largest in geology in Australia, consists of 14 scientists and engineers in the Division of Mineral Physics, based in Sydney.

The function of the Division is to identify and solve exploration problems in the mineral industry. Consequently, the remote sensing group is involved in a wide range of projects including aerial mineral exploration techniques, the fundamental physics of remote sensing, and the development of new instruments.

The co-leaders of the group are Dr Andy Green and Dr Jon Huntington. According to Dr Huntington, it will take up to three months to analyse the data acquired by the SIR B mission over their test site at Weipa in far north Queensland.

'Analysis of the radar data will be a follow-up of some exciting work we did a few years ago using data from the Landsat satellite, which looked at the visible and near infrared spectrum,' he said.

'With Landsat, we established a correlation between what the satellite 'saw' and the aluminium and silica content of the bauxite deposits at Weipa.

'This was exciting because most of the deposit at Weipa is forest-covered. As a result of the work we formed a theory that the vegetation type and condition, as revealed by Landsat, were related to the underlying bauxite soil.

'Comalco was sufficiently interested by this idea to make maps of the bauxite distribution available so that we could correlate the satellite and ground data. Now, with the radar data, we will look at a different phenomenon, the structure of the forest canopy, to see whether that too correlates with the underlying bauxite. In forested terrain, most of the radar energy is back-scattered by the vegetative canopy. No true penetration takes place.

'To help us relate the SIR B radar to our previous experience at Weipa we underflew the space shuttle with an aircraft thematic mapper scanner, studying the vegetation and soils in greater detail at visible and near-infrared wavelengths.

'In the long run, the work could have important implications for mineral exploration along Australia's eastern coast, where vegetation cover is dense.

'Remote sensing is as much about increasing the efficiency and cost-effectiveness of explorations as it is about actually locating an ore deposit site.

'In Australia, however, we can't just take this technology and apply it willy-nilly. We've had a lot of success with remote sensing from aircraft precisely because we've adapted the technology to Australian conditions, and we will have to do the same with shuttle data.'

GROUNDWATER RESEARCH

Scientists in the Division of Groundwater Research in Perth are similarly concerned with investigating the fundamental properties of radar imaging data.

Senior Technical Officer, Mr Ian Tapley, says that the major task is to evaluate this new sensor, to gain an insight into what its capabilities are.

'In the long term there will be permanently orbiting satellites with radar sensors on board. We need to know as much as we can about radar, relevant to the wide range of terrain types in Australia, so that we can take full advantage of such satellites when they come along. Indeed, Japan will be launching a satellite with radar in 1986, and there is a chance that Australia may be able to obtain imaging data from that.

'Our work in Groundwater Research covers the whole geologic and geomorphic content of the data, but we are particularly interested in evaluating radar for its ability to delineate agricultural land affected by secondary salinity.

'Saline soils are a big problem, especially in cleared areas. In our effort to work out what is happening to our soils, it is vitally important to categorize areas of salinity.'

The remote sensing group was selected by JPL to analyse SIR B data on the basis of a well accepted paper prepared by Mr Tapley after a six-month evaluation of SIR A data over a 50km-wide swathe from Onslow in the north-west of Western Australia to the Serpentine Lakes in the south-east of the State.

Their current work will cover the Pilbara and south-west regions of WA, the Eucla and Officer Basins in South Australia and the Northern Territory, and a line over Alice Springs, the Simpson Desert, and the Barkly Tablelands. An attempt will be made to correlate the SIR B data with features observed in data from the (high resolution) airborne multispectral scanner and the (low resolution) NOAA satellite.

THE FUTURE

Researchers in remote sensing are already attracting funds from the private sector, and predict a heavy commercial demand for their services in future.

However, they say, their ability to assist Australian industry will depend on more funds being made available now to develop the required expertise. They have expressed the hope that such funding can be made available through the recently endorsed CSIRO Office for Space Science and Applications (COSSA).

Blooding the shuttle

As this issue of *CoResearch* went to press, a CSIRO-developed instrument package was due to be carried into orbit aboard the space shuttle *Discovery*, making history as Australia's first scientific experiment in space.

The instrument package, developed by Mr Peter Osman of the Division of Applied Physics, is expected to answer some basic questions about the relation between human blood viscosity and disease, and could also shed new light on problems associated with weightlessness in space.

The project leader is Dr Leopold Dintenfass of Sydney Hospital, who has been working on aspects of blood viscosity in various diseases for the past twenty years.

Mr Osman travelled to Cape Canaveral as one of a six-member Australian team required to supervise last-minute preparations and assess the result.

The Chief of the Division, Dr John Lowke, describes the experiment as a landmark in Australia's development in the space age. He says there are likely to be many more opportunities for Australian involvement in space technology, such as the development and manufacture of space hardware and scientific instruments.

The instrument package in the *Challenger* was developed over five years by Mr Osman, an electrical engineer, in collaboration with Mr Brian Maguire, a private scientific instrument maker.

Situated on the shuttle's mid-deck, just underneath the astronauts, the package will analyse eight blood samples, two from healthy donors and six from donors with histories of disease including cancer, diabetes, hypertension and kidney diseases.

The aim will be to learn more about how red blood cells in diseased people clump together. Dr Dintenfass believes an understanding of the 'architecture' of the clumping process is extremely important. He and his team developed a special microscope for taking microphotographs of the clumps — but one of the problems of doing such experiments on Earth is that under the force of gravity, the red cells sink to the bottom of the sample. Under the weightless conditions of space this does not occur, and a much clearer picture of the clumping process can be gained.

Mr Osman started developing instruments for Dr Dintenfass as an MSc student in 1980. He was subsequently appointed co-investigator in charge of technical design and construction, and the team developed a parallel plate viscometer to measure the viscosity of the blood samples, an optical and photographic system to record the aggregation of red blood cells, and an electronic control and automation system to record the results.

The equipment underwent stringent flight qualification tests at the Marshall Space Centre in Alabama for vibration, acceleration and electromagnetic interference.

Despite its prestige value for Australian science, there have been many difficulties in obtaining support for the project. Dr Dintenfass has obtained support from many sources but the project couldn't have gone ahead without last minute support from a real estate group, Jones Lang Wootton. This company was approached by Mr Osman after advertising that it had put more people into space than the Americans and Russians combined'.

Looking for a saner world

More and more CSIRO scientists are getting involved with issues concerning Australian society, the President of SANA (Scientists Against Nuclear Armament), Dr Raymond Haynes, said recently.

'I see an increasing trend for members of CSIRO to be actively engaged in issues of concern to Australian society and not just on their own area of professional expertise,' he said.

'An increased level of concern by all scientists in issues such as the effects of technological change, 'high technology' and the international scientific pursuit for knowledge for peaceful means, are fundamental to our survival not only in Australia, but on this very fragile ecosystem we call Earth.'

SANA (Australia) began in 1982 as a group of scientists working for the dissemination of scientifically accurate information about the effects and capability of nuclear weapons, chemical and biological warfare, the socio-economical impact of such weapons, the ecological and biological effects which would result from their use and their fundamentally destabilizing effect on the world's economy.

It now has over 800 members across Australia working in all branches of the physical, natural and social sciences, with some 80 CSIRO researchers and 15 members of the Australian Academy of Sciences, including President Professor Arthur Birch.

Dr Haynes said that while the primary aim of SANA to halt and reverse the arms race may seem to some a utopian dream, its procedures were definite and practical.

ARMS RACE

'At present some 60% of the world's trained scientists are working either directly or indirectly to support the arms race.

'It is essential that scientists who condemn this stockpiling of the weapons of mass destruction should not appear to give tacit professional approval to the insane competition for nuclear superiority.

'SANA concentrates on specific areas where scientists as a collective voice can be most effective,' he said.

These areas include increasing public awareness about the real facts of the arms race, such as the probability of 'nuclear winter' or 'war by accident', and publicly denouncing non-scientific propaganda such as the contention that the majority of people would survive a nuclear war and resume a normal life.

Other aims are to advise politicians and policy making bodies and speak out on issues which immediately affect Australia's role in the nuclear arms race.

Dr Haynes said SANA wants further communication between scientists in all parts of the world to break down the hostile stereotype which even educated people hold of those who live under other political systems.

SANA has an extensive educational program to provide unbiased information to the general public, school and tertiary students and staff, the media, members of parliament and other decision makers.

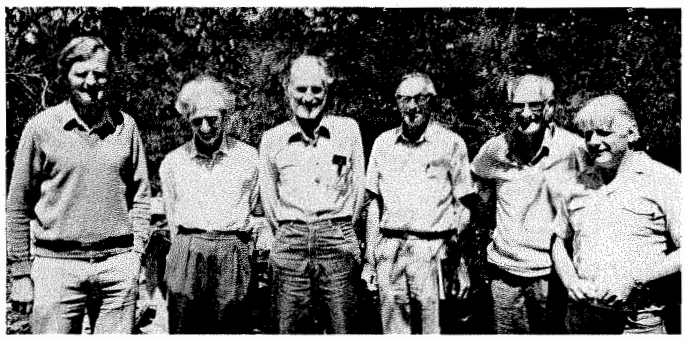
These include public lectures and films, participating in developing course outlines for Peace Studies curricula, developing an on-going series of educational radio programs and accumulating an extensive education resource centre and library.

Dr Haynes said various groups undertake detailed scientific projects on topics related to SANA's aims and to the study of conflict resolution both in our society and internationally. The results are to be published in scientific and popular journals and disseminated to the public.

A group of agricultural scientists is investigating the consequences for the Australian agricultural economy of a nuclear war in the northern hemisphere. This team has already advised the NSW State Minister for Agriculture on its findings.

The atmospheric and climatic effects of nuclear winter are being studied and an Australian scientific conference is being organized by the Victorian branch of SANA.

SANA submits in-depth scientific investigations for Government fact-finding enquiries such as the Slatyer Committee on 'Issues Relating to Australia's Role in the Nuclear Fuel Cycle' where they investigated the cycle's effects on Australian society and the environment and the possible links between Australian export of uranium and the escalation of the nuclear arms build up.



The foundation group of SANA were drawn from a wide scientific spectrum. From left, Raymond Haynes, astrophysicist, Russel Routh, psychologist, Ken Watson, engineer, Maston Beard, SANA founder, engineer and physicist, Robert Horn, physicist and Phillip Williams, agricultural scientist.

The Tasmanian branch is undertaking an analysis of conflict resolution at a number of levels, and they have submitted their findings to date to the Joint Parliamentary Committee on Foreign Affairs and Defence.

A study of the effects of the British nuclear tests in Australia, which also criticized previous reports on plutonium contamination, was submitted to the current Royal Commission into the Maralinga tests by the South Australian branch.

The ACT branch is currently organizing a scientific symposium on Australia's involvement in the Nuclear Non-Prolification Treaty (NPT) and is investigating the whole NPT issue beforehand. One member will be an accredited representative at the international conference on the NPT to be held this year.

Both Western Australia and NSW branches are researching a possible peace studies curriculum for their states, and SANA is already involved in the peace studies course introduced at Macquarie University this year.

SANA also publishes a newsletter, *Update*, and a series of information leaflets for the community on SANA interests.

Dr Haynes said scientists make many international contacts in both the Western Alliance and the Eastern Block.

'We believe that many scientists on both sides of the Iron Curtain do not wish to see the international use of nuclear and other weapons of mass destruction,' he said.

'Scientists' international contacts could help in finding solutions to this current global crisis that now faces mankind. If the scientific principle of the search for knowledge means anything then it means that every scientist has a responsibility to be involved in finding lasting solutions to this problem and we invite them to become part of that process within SANA.'

'SANA (Australia) was begun by Dr Maston Beard, who retired in 1978 from the Division of Computing Research. In Scotland on holiday, he read about SANA and on returning to Australia quickly enthused a group of other scientists who also believed that scientists have a responsibility, in the world crisis to which they or their colleagues have so substantially contributed, to do more than merely write papers and keep their eyes averted — left or right, as the case may be,' Dr Haynes added.

If you would like some more information about SANA, contact:
The Secretary, SANA
Box 370, Lane Cove, NSW, 2066

Maths in industry

The communication gap between mathematicians and industry closed a little with the recent inaugural Mathematics-in-Industry study group meeting.

SIROMATH and the Division of Mathematics and Statistics organized the meeting to show industry that SIROMATH could help solve their problems, which included: when the side of a quarry is blown up, where is the material thrown; how does painted metal corrode; or how do you predict what type of molten particles reach the ground if unshielded electric wires touch during a storm?

These and six other industrial problems were chosen and examined in as much detail as possible to find the best, or most economic, way of doing a particular industrial process.

Like statistics, it was largely a matter of using well established formulae.

Organizers of the meeting said progress had been made with most of the problems discussed by the 109 participants from CSIRO, tertiary institutions and industry, and that industry would benefit directly.

In particular, new rules of thumb were derived for the heat treatment of metals.

They said the mathematicians had gained new insight, motivation and experience with the nature of industrial mathematics and had developed mutual respect for and friendships with industry scientists.

SIROMATH, an offshoot of CSIRO, had developed new industrial contacts and gained more explicit commercial visibility.

In organizing the meeting, the most important thing had been to obtain genuine problems from industry and to ensure that sufficient background and expertise was available at the meeting to provide an effective examination of these problems.

Helping build industry

The Australian Building Systems Appraisal Council (ABSAC) last December celebrated its 50th Technical Opinion at the Division of Building Research.

ABSAC is in its seventh year of operation, and is a good example of successful co-operation between the building industry and CSIRO in assessing and promoting new building technologies.

The Council carries out appraisals of innovations of any kind related to building, and publishes findings in the form of Technical Opinions. These Opinions help ensure that new quality products and systems find their way into building practice without undue delay.

The 50th Technical Opinion is for a polyurethane-coated cork-tile lining system for installation in bathrooms, shower recesses, toilets and laundries. The cork-tile lining system was developed by House of Cork Pty Ltd, a small Australian company in Lismore, NSW.

Some other interesting building products issues with Technical Opinions include: plastic-coated steel-roofing tiles; plastic siding for re-cladding old timber houses; steel-fibre reinforcement concrete products; two complete housing systems; a system for reinforcing brickwork; and 70mm clay brick.

ABSAC, which was originally established in 1978 by CSIRO, the Australian Institute of Building Surveyors and the Master Builders' Federation of Australia, is a non-profit company limited by guarantee. The Housing Industry Association joined in 1979, and the Insurance Council of Australia in 1980.

A Technical Advisory Committee (TAC) has been set-up by ABSAC to arrange for the appraisals in detail and to write the Opinions.

The members of TAC come from CSIRO Division of Building Research, Experimental Building Station (Department of Housing and Construction), Standards Association of Australia, National Association of Testing Authorities, Australian Institute of Building Surveyors, and builders' organizations.

Submissions are examined by TAC to see whether they are really innovations or merely modifications of some existing product or service. Sponsor-applications are advised of the type of information and test results needed to allow a complete assessment of their innovations, having in mind the likely uses of the product or system. The sponsor-applications are also advised of appropriate laboratories to carry out the required tests.

Of the 50 Technical Opinions appraised so far, 38 have been drafted by researchers at the Division of Building Research, 11 by officers at the Experimental Building Station in Sydney, and one by the building industry.

space office

cont. from p.1

Dr Wild said Australian companies found themselves in a Catch 22 situation at present: 'A company can get a contract to build a part of a commercial satellite if it has built a part of a satellite before. No prior experience — no contract.

'By contracting Australian industry to build equipment for CSIRO space experiments, CSIRO will break this vicious circle,' he said.

'It is intended that 70 percent of the expenditure by CSIRO on space activities will be contracted out to Australian industry.

'If approved by Cabinet for this year's Budget, we envisage an expenditure of $7M in 1985-86, rising to $20M per annum at the end of the decade.'

Dr Wild said the space program would have a substantial spin off to Australian industries, in areas such as new materials, new electronics, and new project management skills.

The director of COSSA will be Dr Ken McCracken, at present Chief of Mineral Physics. Dr McCracken has been involved in space research and development since 1959.

The establishment of the office was the key recommendation of a space science and technology study group set up in March last year. The study group was chaired by Dr Wild and included CSIRO and other scientists and representatives of the Federal Government and Australian industry.

Button: Too much science for science' sake

There is perhaps still too much of an attitude of science for science' sake in Australian research institutions, including CSIRO, according to the Minister for Industry, Technology and Commerce, Senator Button.

Senator Button told the National Science Forum in December that Australia had a 'dreadful problem' in the gap that existed between talent and performance, between research and experimental development.

Part of the reason for this state of affairs lay in industry attitudes and practices, and government policies and incentives, he said.

'I believe also that there is room for improvement within research institutions, particularly in defining objectives, in organizing to meet those objectives and in critical evaluation of programs.

'Perhaps there is still too much of an attitude of 'science for science' sake' abroad, when the real objective seems to be to obtain prestige with one's peers in the field, whatever that may be.

'I sometimes wonder whether CSIRO, for instance, would not be better organized sometimes on a project basis rather than a Divisional basis. The very existence of Divisions implies a subject approach to a discipline; they do that because that is their subject area.

'It rather seems to me that a project basis in some areas at least, with defined objectives, with preset stages and 'go' or 'no go' decision points along the way, might be more efficient, but it would of course require greater participation by industry and would have meant a joint industry-science control of projects.

'One of the features of some areas of agricultural research in CSIRO is a large measure of industry influence which has been very significant.

'It is unfair in a sense to say these things as criticism; I don't offer them as criticism. I only offer them as thoughts because a number of things which CSIRO recently programmed for the future may well deal with some of these problems in another way,' he said.

Senator Button's remarks have fuelled rumours that the Government is considering major changes to the management structure of CSIRO.

However the Chairman, Dr Wild, said there had been no hint of any such changes during his meeting with Senator Button on the morning of the National Science Forum address. They had had a good, open discussion and Senator Button had been very positive, he said.

In his address, Senator Button noted the strong support for agricultural research in Australia, but added: 'I don't myself envisage significant changes in this area and I'm not even persuaded that they should happen.'

He also said the Government's decision to allow firms to deduct 150 percent of eligible research and development expenditure from their taxable income should benefit government and university researchers as well as industry.

'It is not only designed to reduce the costs of R&D to industry to a level comparable to other countries; it is designed in the longer term to free up the relationships between private industry and existing institutions,' Senator Button said.

'So it is hoped that it will lead to an increase in contracted research using some of the facilities of government institutions and universities,' he added.

Changes

cont. from p.1

The Committee said that during much of its life CSIRO, and CSIR before it, had been growing; planning had consisted largely of identifying major areas needing research on a national scale and creating new Divisions to conduct research in these areas.

The review system developed by CSIRO in the 1960s and 1970s appeared to cope reasonably well with modifications in the roles of Divisions and the development of responses to major new technological advances cutting across Divisional boundaries, the Committee said.

'However, it did not cope well with the need to examine the balance between major areas of CSIRO's research effort and the need to reduce work in some Divisions to provide resources for work in other existing Divisions or completely new ones.

'The latter problem was especially difficult where Divisions were well managed and highly productive in their allotted areas but the areas themselves have become of lower national importance than others needing additional resources.'

CoResearch is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 5th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel 48 4479. Editor: Penny Gibson.

Social clubs help needy

CSIRO may be helping science and industry every day, but the direct humanitarian aspect often seems to be missing.

However, several divisions go beyond research assistance and their staff support local or international charities and aid organizations.

Textile Industry's Sirovilla elderly people's housing complex at Geelong has featured in *CoResearch* before, but the five people it has employed under Government employment schemes are less well known.

The experience these people have gained from working at Sirovilla has enabled all of them to gain subsequent employment.

Applied Physics contributions to Community Aid Abroad (CAA) over the last 13 years has seen some 40 projects completed in ten countries with funds totalling $21 000.

Mr John Shaw at the Division said funds were raised by a number of methods, including subscriptions, a continuous bookstall, plant sales, Melbourne Cup sweepstakes, handicraft sales, Christmas tree sales, catering at Divisional sporting events and theatre parties.

'The CAA group invites visiting indigenous organizers from its project areas to give lunchtime talks. Appropriate films are screened to illustrate and explain CAA's experience in and approach to community development.

'CAA supporters from the Division have visited the countries and regions in which projects are operating to see at first hand how the local people have successfully implemented the CAA 'self-help' approach,' he said.

Members have studied Australian Government aid policy and lobbied local Members of Parliament on appropriate directions aid should take. They have also contributed to relevant Parliamentary Committees of Enquiry through CAA and are represented on the NSW Committee of CAA.

CAA has been supported by a group at the Divisions of Mineral Chemistry and Mineral Physics for more than 15 years.

The group supports one project to its finality, which may take a few years. Recent projects have been in India while in the past they have been in Indonesia.

The money is raised by fortnightly donations by staff, and the CAA group also participates in CAA's annual 'Walk Against Want'.

Following a request by a retiring staff member, Mr Teddy Trickett, that donations for his present be given to CAA, the Centre for Irrigation Research has also supported CAA.

Ms Donna Mulry presents a cheque representing five months of cake baking, selling and eating at Animal Production in Sydney to Ms Valerie Crampton of the Leo Leukaemia and Cancer Research Trust.

Secretary of the social committee, Mr Philip Orr, said their most recent contribution was $250 to a well drilling program in Tigray, Ethiopia.

'CAA requested this donation and a staff vote on the issue was almost unanimous. The staff Christmas party was not subsidized by the social club and was therefore effectively the fund raising function,' he said.

Perhaps the longest running staff charity function is at Chemical and Wood Technology, which since 1959 has raised the equivalent of about $800 each year for local charities.

'Fortnightly donations by staff and functions such as snowball drives and a hot cross bun drive mean about $100 can be donated to such charities as Melbourne City Mission, Claremont Home for the Aged, Association for the Blind, Children's Protection Society, Outreach and others.

Staff at Animal Production recently presented a cheque for $250 to the Leo Leukaemia and Cancer Research Trust after holding a weekly cake stall for five months.

The Executive Vice-Chairman of the Trust visited the Division to talk to staff about how the donations benefit cancer and leukaemia sufferers.

ANAHL and Textile Industry both support the Geelong United Way, an association which raises money for a wide range of community groups.

Staff have contributed financially to the Way and some have voluntarily worked in the community to promote its aims.

ANAHL's administrative and personnel officers have both worked as loan executives for the Way by visiting local industries and companies each year to speak about the Association and its beneficiaries and to encourage people and companies to make donations.

In 1984 the Way raised about $572 000, which has been divided amongst the beneficiaries, including family and child care groups, services for the elderly, health and rehabilitation centres and community group services.

Three children are being supported in developing countries through the Foster Plan by staff at Atmospheric Research.

One group began supporting a child in Indonesia 12 years ago and another has been assisting in the upbringing of two children, in South America and Africa, for ten years.

Ms Val Jemmeson of the Division said some 40 staff members make a small contribution each month which assists the families to rear the children.

'The children respond by communicating their progress through school and in their letters informing us about the families' lifestyle, customs etc,' she said.

Foiling the supertrain

A light fruity (and slightly nutty) melodrama that had a cast of thousands in stitches and an enthusiastic audience cheering the hero and booing the villain was performed to a packed house at the Division of Building Research.

The fabulous melodrama formed part of the Division's Christmas celebration, and was produced by Joe Flood and directed by Karl Armstrong. In this scene, our hero Rip Cord [Paul Bowditch] overcomes the archvillain Bluetongue [John Watkins] as vague scientist Dr Preservative Treatment [Julie Penn] rescues the heroine Serenity Seventeenweeker [Madeline DeLacy] from the jaws of Paul Wild's Supertrain.