CoResearch

CSIRO's staff newspaper *February 1982* **248**

Brisbane headquarters:

New Division for tropical cattle research

The Officer in Charge of the Long Pocket Laboratories, Dr David Mahoney, will head the new Division of Tropical Animal Science, which comes into being on March 1.

The Division, to be based at the Long Pocket Laboratories, will be made up of research workers and support staff from groups previously working on tropical livestock problems in the Divisions of Animal Health, Entomology and Animal Production.

The new Division has a specific mandate to work on improving the efficiency of tropical cattle production in northern Australia and, though based in Queensland, will be concerned with the problems of the cattle industry throughout tropical Australia.

Work on animal health will be concentrated at the Long Pocket Laboratories, while work on animal physiology and genetics will be centred at Rockhampton and the nutrition work at Townsville.

The three Laboratories will work closely together and will develop collaborative programs with scientists in the Division of Tropical Crops and Pastures, the James Cook University in Townsville, and the Queensland Department of Primary Industries.

The new Chief joined CSIRO in 1958, and holds a degree in veterinary science and a PhD from the University of Queensland. He has been Officer in Charge at Long Pocket since 1978.

Dr Mahoney is a leading world authority on tick-borne diseases of cattle. Over the past 13 years, he has participated in a number of conferences and seminars and has been a guest lecturer on ticks and tick-borne diseases in developing countries.

BHP Science Prize awarded next month

Twenty-five young science students from all over Australia will come to Canberra next month for the presentation of the BHP Science Prize.

The winner will be presented with a gold medal by the Governor-General, Sir Zelman Cowen, at a ceremony at the Australian Academy of Science on March 2. A silver and a bronze medal will be given to the second and third placegetters. The Chairman of CSIRO, Dr J. Paul Wild, will represent the Organization at the function, which will be hosted by the President of the Academy, Dr Lloyd Evans.

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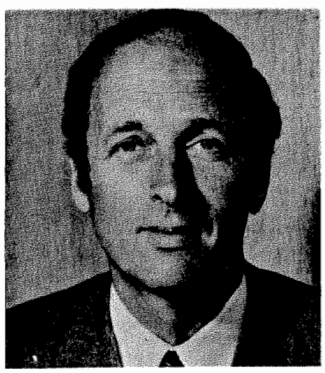
Part-time Executive appointments

The Chairman of the Myer Emporium Limited, Mr Baillieu Myer, has been appointed as a part-time member of the Executive of CSIRO.



Mr Baillieu Myer

Mr Myer is also a director of a range of national companies in the food, life assurance and banking areas as well as serving on committees of management in the arts, science and international relations areas.

His chairmanship of the Commonwealth Research Centre of Excellence Committee has also brought him into contact with scientific research in Australia.

Other Executive appointments are:

- The re-appointment of Dr W.L. Hughes for a nine-month term until September 1982. Dr Hughes, the former Chairman of Walkers Limited, has interests in engineering and manufacturing and this month completed his initial three-year term of appointment.
- The re-appointment of Mr H.M. Morgan for another three-year term. Mr Morgan, the Executive Director of Western Mining Corporation Limited, has a background in mining and commerce.

Mr Myer's appointment follows the retirement from the Executive of Mr R.K.R. Morris.

Institute Director from industry

A leader in industrial research and development in Australia, Dr W.J. (Bill) Whitton, is to head CSIRO's Institute of Industrial Technology.

His appointment as Director of the Institute for a five-year term was announced by the Chairman of CSIRO, Dr J. Paul Wild.

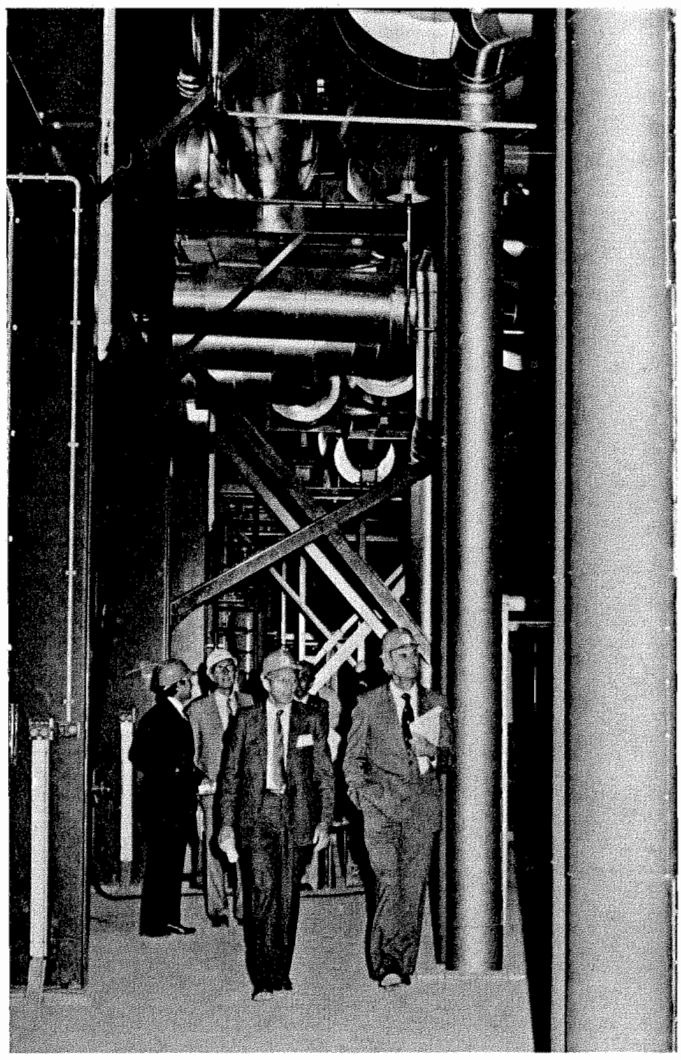
'Dr Whitton, the Research and Technology Director of ICI Australia Ltd, has had wide experience in the application of research to industry in Australia,' Dr Wild said.

'At ICI, for example, he played an important role in guiding the company through a significant phase of innovation in the Australian chemical industry.

'He has also made significant contributions to industrial research and development in Australia through his involvement in the Academy of Technology Sciences, the Consultative Committee on Research for Development, as a past President of the Australian Industrial Research Group, various university faculties, and many other national bodies.

'He will bring to the Institute Director's role a strong background in both management and the role of research aimed at increasing the efficiency and competitiveness of Australian industry,' Dr Wild said.

Dr Whitton will retire from ICI Australia Ltd early in 1982, and will succeed the Institute's present Director, Dr Hill W. Worner.



Visitors to the main machine hall at ANAHL's Geelong complex were dwarfed by the massive steam, gas and hot water pipes which will service the building. Dr Des Hore, right, Deputy Director of the Victorian Department of Agriculture, is being shown over the building by Dr Ian Parsonson, the Deputy Officer in Charge of ANAHL.

Australia Day awards to four employees

Three men and a woman associated with CSIRO were among recipients in the recent Australia Day awards.

Dr Brian Cooper, formerly with the Division of Radiophysics in Sydney and Mr Lindsay (Flip) Phillips of the Division of Tropical Crops and Pastures at Katherine in the Northern Territory, each received the Australia Medal.

Miss Margaret Mills, recently retired from the Division of Land Use Research in Canberra, and Mr Bernard (Bunny) Fennessy of the Division of Wildlife Research in Canberra, each received the Order of Australia Medal.

Brian Cooper joined the Division of Radiophysics in 1940, and during World War II, worked on many developmental aspects of ground and airborne radar. In the immediate postwar period, he was responsible for the design of the distance measuring equipment used so successfully in Australia from the late forties.

In 1973, he headed what was then a newly formed applied research group which played a major role in the development of Interscan. Brian retired from the Division in 1978.

Flip Phillips joined CSIRO in Canberra in 1947, and transferred to the Katherine laboratory the following year. In 1960, he became Officer-in-Charge of the laboratory, a position he held until 1976. He has remained at the laboratory, in charge of the seed program involving tropical grasses and legumes.

Over the years, Flip has made an important contribution to agriculture in the Northern Territory, and is also well known for his sense of humour.

Margaret Mills, now living in retirement in Reid, ACT, was Divisional Editor at the Division of Land Use Research from 1958 until 1981. She was a member of the management committee (ACT) of the CSIRO Benevolent Fund from 1980 and held the position of Chairman.

Bunny Fennessy joined CSIRO in 1950 as a Research Officer with the Wildlife Survey section. He is at present Scientific Assistant to the Chief of the Division.

Over the years, Bunny has established an important liaison with veterbrate pest control authorities in the various States, and in 1977, was awarded a fellowship of the Australian Institute of Agricultural Science for his contribution to agriculture.

Institute Director at seminar

The Director of the Institute of Animal and Food Sciences, Dr Ken Ferguson, with the Acting Chief of the Division of Fisheries Research, Dr Shirley Jeffrey, at the Division's first research seminar which brought together in Sydney 70 scientists from Perth, Brisbane, Adelaide and Cronulla laboratories.

Mr Socrates Paschalidis, graphic designer at CSIRO's Division of Computing Research in Canberra, has submitted the logo reproduced above as his offering in the discussion regarding a new, more modern logo. He invites comments.

Fisheries holds its first research seminar

The new Division of Fisheries Research held its first Divisional Research Seminar in December, bringing together 70 scientists from its laboratories in Perth, Brisbane and Adelaide and from headquarters in Cronulla, Sydney for the first time ever.

Co-ordinated by the Acting Chief of the Division, Dr Shirley Jeffrey, the seminar was opened by the Director of the Institute of Animal and Food Sciences, Dr Ken Ferguson. The meetings comprised talks, discussions and poster displays covering the entire range of the Division's research activities. These activities, wider than suggested by the name of the Division, include crustacean biology, coastal reef ecology, macro-algae and seagrasses, the open sea—phytoplankton, the open sea—zooplankton, fish distribution and community structure, population analysis and fishery resource assessment, sampling techniques, and fish biology and physiology.

The Division occupies the same site at Cronulla as the Division of Oceanography. The two Divisions were formed when the old Division of Fisheries and Oceanography was split in March 1981. The Division of Fisheries Research collaborates closely with the Division of Oceanography under its first Chief, Dr Angus McEwan, in the study of the physical and biological environment of the sea's animal and plant life.

The Division is not only diverse in its scientific disciplines, but also in its geographic range: fish stocks are being studied in the 200-mile zone of the Great Australian Bight to the North West Shelf; prawns in the Gulf of Carpentaria; rock lobsters in Western Australia and the Torres Strait; coastal ecology is being studied intensively in Perth; marine pollution in South Australia and the biological aspects of the eddy systems of the East Australian Current are being studied from Sydney.

The Division is making enormous efforts to understand not only the presently important commercial fisheries species such as prawns, rock lobsters and tuna and the potentially important species of the 200-mile economic zone, but also to gain a knowledge of other marine species and processes in an effort to understand not only what species are there, but also the manner in which they interact.

The three-day seminar was so successful in stimulating communication between scientists, a proposal is being considered to make it an annual event.

Executive vacancy filled

Professor Emeritus Hill W. Worner is filling a vacancy on the CSIRO Executive caused by the resignation from the Executive of Dr Greg Tegart who is now Secretary of the Department of Science and Technology.

Dr Worner was a member of the Executive between 1976 and 1978. He was appointed foundation Director of the CSIRO Institute of Industrial Technology in December 1978.

Dr Worner is a former Professor of Metallurgy at the Universiity of Melbourne.

As the first Director of the Institute of Industrial Technology Dr Worner played a central role in the development of that Institute as an important interface between CSIRO and industry in Australia.

He will fill the vacancy until April 30 when he reaches retiring age.

Geelong wool-textile conference

Wool-textile research is probably an area of science in which worldwide co-ordination of effort is at its highest.

Through the Research and Development Committee of the International Wool Secretariat (IWS), Chiefs from the CSIRO Divisions concerned with wool textiles meet regularly with research leaders from New Zealand, South Africa, the U.K. and the U.S.A. to discuss research priorities and orientation of effort in the various international laboratories.

At the program level also, international meetings are held to discuss results and future directions to follow. One good example of this was the symposium held on November 23 and 24 by the Division of Textile Industry at Geelong. The two-day event brought together 'shrinkproofing' researchers from the Wool Research Organization of New Zealand, the South African Wool Textile Research Institute, the Technical Centre of the IWS in the U.K., technical management from IWS branches in Europe and Japan and grower-country marketing boards, including the Australian Wool Corporation, and scientists from the Divisions of Textile Industry, Protein Chemistry and Textile Physics.

As well as current research results, future marketing plans for wool and their likely influence on research strategies were discussed.

CSIRO hands over control of P3T to Indonesian Govt.

Dr Keith Boardman, of CSIRO's Executive, and Dr Harry Wharton, OIC, Project for Animal Research and Development, were among guests at a ceremony in Jakarta on November 27 when Australia's Ambassador to Indonesia, Mr Rawdon Dalrymple, signed a Memorandum of Understanding which passed control of a major Australian aid project to the Indonesian Agency for Agricultural Research and Development.

The project, previously known as the Centre for Animal Research and Development or P3T, but whose Australian contribution is now known as the Project for Animal Research and Development (PARD), has been one of Australia's largest overseas aid commitments.

In the first phase of the project, more than $A24 million was contributed to the Centre with CSIRO acting as the managing agent for the Australian Development Assistance Bureau. Under the new agreement to last until 1989, a further $A8 million will be contributed, with CSIRO continuing to maintain a presence until at least 1984.

During the just completed phase of the project, the research centre was developed from an animal husbandry field station with limited facilities, to a modern, well-equipped research institute regarded as one of the most advanced of its type in the tropics.

Dr R.H. Wharton, the Australian Officer-in-Charge of the project for three and a half years, and who retired from the position on November 27, said that although the research institute had not been functioning long, it had already produced significant findings of benefit to Indonesian livestock owners.

SIGNIFICANT BENEFITS

"Our studies have shown the benefits that will follow the preparation and use of fish silage for chickens and pig rations, and the great potential for increased productivity of local sheep and goats. A method of preserving buffalo semen to aid in the upgrading of buffalo stocks has also been developed", Dr Wharton said.

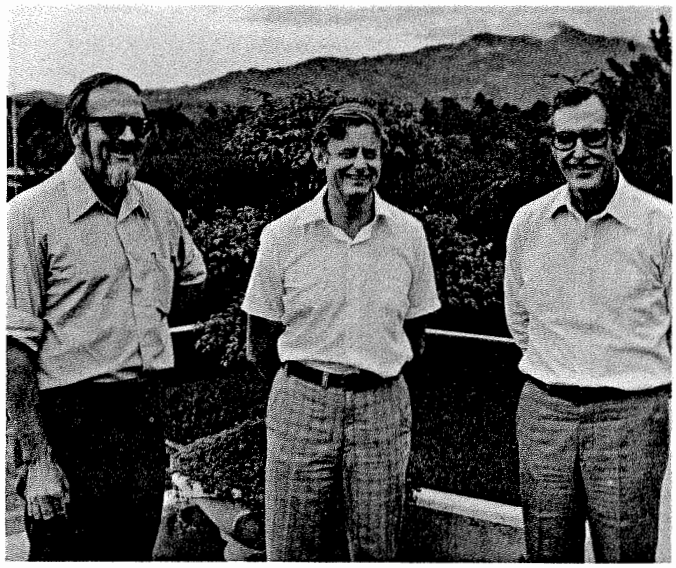
"Perhaps the most important finding relates to the use of Leucaena (Lamtoro) as an additive to cattle feed. The results of this experiment were presented to the recent Indonesian national cattle contest and livestock exhibition".

SECOND PHASE

The second phase of the project is mainly concerned with the organization of research methods and research management plus on-site training of staff. During this time the number of CSIRO staff will steadily decrease as Indonesian graduate scientists return from training in Australia.

An Australian and Indonesian scientist will share responsibility for direction of the research program from now until 1984, when the centre's work will be fully integrated into the Indonesian Research Institute for Animal Production. A senior Australian scientist will retain an advisory role from then until the conclusion of the Australian commitment.

The present Australian Project Manager is Mr Barrie Purser who will return to the Division of Animal Production, Perth, in February 1982, when his replacement Dr John Wheeler arrives from the Division of Animal Production, Armidale.



Dr Keith Boardman of CSIRO's Executive, centre, chats with Dr Barrie Purser, left, and Dr Harry Wharton after the signing ceremony at Bogor.

'Hydrocarbon' plants not a commercial proposition

Liquid fuels from 'hydrocarbon' plants in Australia could cost several times as much as other liquid fuels, a national study has found.

The results of the study, conducted by a CSIRO task force and funded by the National Energy Research Development and Demonstration Program, were announced by the Minister for Science and Technology, Mr David Thomson.

He said the study focused on the 'hydrocarbon' plant species Euphorbia, Asclepias and Calotropis—species which had not been exploited on a commercial scale.

"Although known as hydrocarbon plants they produce a resinous extract which can then be converted to hydrocarbon fuels", Mr Thomson said.

"The study concentrated on the production of these resins and not on feedstock production for ethanol or vegetable oil.

"The results showed that none of the crops investigated would be commercially viable as fuel crops—given the cost of alternative fuels."

Mr Thomson said the study had estimated that the equivalent of a barrel of oil from resin extracts would cost more than $100 to produce—if a credit value could be assigned to crop residues.

"This compares with $32 a barrel for Arabian light oil landed in Australia, and $75 a barrel for oil from rapeseed.

"In the more likely event that no credit can be assigned to the crops residue, then resin production cost might be more than $150 per barrel", he said.

The regular column from the Chairman, Dr J. Paul Wild, will resume in the March issue of Co-research.

Mountain ecology conference in May

Scientists from the Divisions of Land Use Research, Plant Industry, Forest Research, and Mathematics and Statistics will be presenting papers at the Ecological Society of Australia's biennial Symposium, 'Mountain Ecology in the Australian Region'.

The theme of the conference will be directed towards ecological features of past and present upland environments, together with resource aspects such as inventory, conservation and management.

The meeting will be held at the Academy of Science, Canberra on Saturday and Sunday, May 8 and 9. This timing will allow delegates to travel to Sydney for the start of the ANZAAS Conference on Monday, May 10.

Alternatively, they may join the field excursion to the Snowy Mountains, which will take place on Monday and Tuesday, May 10 and 11.

Further details and registration forms can be obtained from Dr Trevor Booth, Division of Land Use Research, PO Box 1666, Canberra City, ACT 2601.

ASLO in London ceases to exist

New Year's Eve 1981 was not a joyous day on the fifth floor of Australia House, London, as files were carted out and final letters sent.

It was the day that CSIRO's London post—the Australian Scientific Liaison Office—closed.

This day meant no more direct CSIRO representation in England since CSIR's first representative, Mr F. McDougall, opened 'shop' in 1927.

The smooth running of ASLO over the past 14 years has been the responsibility of the Chief Clerk, Bob Heginbotham, who will still be looking after CSIRO's interests 'from somewhere in Australia House'.

The last Minister Scientific, Dr Alan Pierce, is slowly making his way back to Australia via a 1000-mile cruise down the Nile and a visit to Machapitchio in South America. He will be returning to Canberra and retirement in May 1982.

The last official visitor to use the ASLO was the Division of Building Research's Industry Communications Officer, David Zerman, who was visiting London as part of a five-week holiday.

Dr Pierce is gathering material to write a short history of ASLO and any current or former staff members who would like to put down their recollections should send them to Dr Pierce after his return to Australia at 50 Endeavour Street, Red Hill, ACT, 2603.

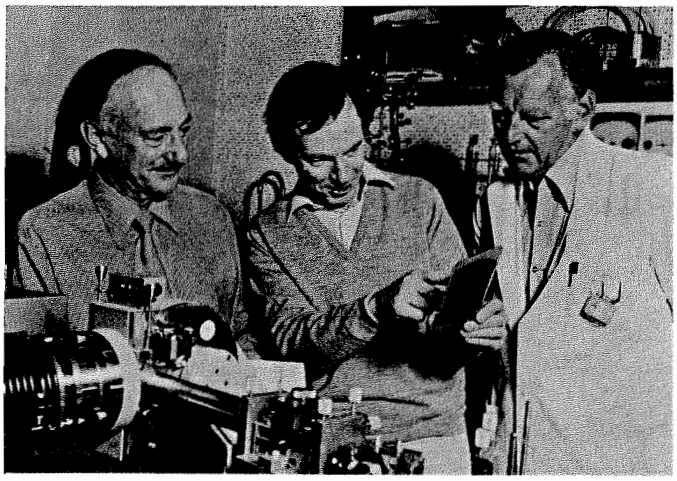
CSIRO's last Minister Scientific in London, Dr Alan Pierce, signs a letter on the last day of business, while the Chief Clerk, Mr Bob Heginbotham, looks on.

Dr Andrew Miller of the Molecular Biophysics Department of Oxford University, recently spent two weeks in Australia reviewing progress in a joint research venture between the Oxford group and the Structure Group of the Division of Protein Chemistry.

Collagen is the principal protein component of connective tissues such as tendon, cartilage and skin, and information on its structure is of basic interest to scientists engaged in leather research.

Dr Miller's visit was supported by a special grant from the British Council. Last year the British Science Research Council awarded a Senior Research Fellowship to Dr Bruce Fraser to travel to Oxford to discuss coordination of the research programs of the two groups.

Dr Miller held a Post-Doctoral Fellowship in the Division from 1962–1965 and worked subsequently at the Medical Research Council Laboratory in Cambridge and the Molecular Biophysics Department at Oxford. He was Director of the European Molecular Biology Laboratory in Grenoble from 1975–1980.



Dr Andrew Miller, centre, discusses the structure of collagen proteins with Dr Bruce Fraser, left, and Tom MacRae. Dr Miller visited the Division of Protein Chemistry in Melbourne to review progress on a joint venture between the Division and the Molecular Biophysics Department of Oxford University.

Two new faces at the Division of Applied Physics in Sydney are **Dr Lawrence Cram** and **Dr Lewis Whitbourne**, both senior research scientists.

Dr Cram spent some years overseas, most recently as Deputy Director at Sacramento Peak. As a CSIRO Postdoctoral student, he studied and lectured in Europe. Lawrence plans to work in the area of electrical discharges.

Dr Whitbourne was previously at the Australian National University where he was working in the Plasma Research Laboratory in the Research School of Physical Sciences. Lewis will work in the areas of thin-film technology and millimetre-wave techniques.

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It's two years in Papua New Guinea with the Volunteers Abroad for **Mike Sandy** of the Division of Building Research in Melbourne. Mike will work as a geologist and his wife, Penny, as a theatre sister.

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Bark, the newsletter of the Division of Forest Research in Canberra, offered a bit of advice on the eve of The Year of the Tree: Preserve Australia's Eucalypts—eat koala bears.

Although records are made to be broken, two December 1981 retirees from CSIRO have set a record that will be hard to top. **Jean Cameron** and **Wally Hastie** from the Division of Building Research in Melbourne have accumulated nearly a century of service between them.

After joining CSIRO as a junior in 1934, Jean's varied career included positions in administration, library, and publications. She ended her 47 years and 2 months service to the Organization as an assistant in the Division's Information Centre, where her ever-smiling face and helpful manner led to the solving of many visitors' building problems.

Starting in December 1931 as an office boy at Head Office when it was located at Albert Street, Wally accumulated 50 years and 2 days service under seven chiefs before his retirement.

To many in CSIRO, Wally will be remembered as the 'Father' of CSIRO photography, his craftsmanship in building boats, growing beautiful roses and keeping the films in focus at the annual Melbourne Film Festival.

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Dr Harry Wharton returned to Long Pocket Laboratories on November 29 after three and a half years in Indonesia as Officer-in-Charge, Centre for Animal Research and Development, now known as the Project for Animal Research and Development.

More than 400 Indonesians and Australians attended a farewell concert for Harry and Helen Wharton on November 21. Among the many items presented was a choral tribute to the couple from an Australian group 'The Project Phases'.

Members of the group were introduced as Enthusiasm, Disillusionment, Panic, Search for the Guilty, Punishment of the Innocent and Praise and Honour for the Non-Participants.
Non-Participants.

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The first of a series of meetings on specialist topics held under the auspices of the Institute of Physical Sciences took place at the Division of Applied Physics in Lindfield, NSW, late last year.

The seminar, dealing with ion implantation, was opened by the Chief of the Division of Chemical Physics, **Dr Lewis T. Chadderton**, and was attended by representatives from the CSIRO Divisions of Applied Radiophysics and Chemical Physics, and the Royal Melbourne Institute of Technology.

Staff at the Division of Computing Research in Canberra have been offered an energy saving alternative on their journeys between Black Mountain and Canberra's Civic Centre. The Division has an 'official' bicycle, available to staff on 'official' business.

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Stuart Smith, who in the 1960s was a Technical Officer at the Division of Tropical Crops and Pastures north-western laboratory in the Kimberleys, has returned as the Centre's new entomologist. Stuart has spent the last ten years as a research entomologist in Papua-New Guinea. His new task will be to work with colleagues in assessing the effects of insect damage on grain yield of various crops.

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Dr J.V. Possingham, Chief, Division of Horticultural Research, has accepted an invitation to serve a three-year term on the Australian Academy of Science National Committee for Agriculture, Forestry and Soil Sciences.

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Mr C.A. Herring, Senior Draftsman with the Division of Chemical Physics, retired recently. Claude joined the Central Services of the Melbourne-based Chemical Research Laboratories in 1961. In 1970, following the re-organization of the CRL, he transferred to the Division of Chemical Physics at Clayton. A farewell function was held at which all had an opportunity to wish Claude a long and happy retirement.

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Dean Graetz, from the Division of Land Resources Management, Deniliquin, is in Cairo presenting two papers to the International Symposium on Remote Sensing of the Environment.

Dean's papers describe the work done to utilize Landsat image data in plotting and predicting herbage production following floods in the channel country and the development of a land imaged-based resource information system to assess and monitor the 'condition of Australia' arid lands.

During the conference Dean will announce details of the 2nd International Rangeland Congress to be held in Adelaide in May 1984.

The 1982 Rivett lecture will be delivered in Brisbane this year by **Professor Sir Geoffrey Allen, FRS**, who was, until recently, Chairman of the United Kingdom Science Research Council. Sir Geoffrey will speak on the topic of polymers, taking as his theme, the use of pure science for technology.

The David Rivett Memorial lecture will be delivered in Brisbane on August 11.

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Dr Dal Swaine, Division of Fossil Fuels, was in Japan recently, where he presented a paper at the First International Waste Recycling Symposium. This Symposium covered a great deal of the technology involved in treating and recycling waste in Japan, Europe, America and Australia.

Dal was also invited to speak at a special colloquium arranged by the Central Research Institute of the Japanese Electric Power Industry on fly-ash, the dust produced when coal is burnt in power stations.

BHP Science Prize from page 1

The judging panel comprised Mr Sam Lattimore, Director of the Bureau of Scientific Services, CSIRO, Chairman; Professor Douglas Lampard, Monash University; Dr Ken Key, Honorary Fellow, CSIRO; and Mr Robin Groves, Australian Science Teachers Association.

Commenting on the standard of the entries, Mr Lattimore said:

'As you might imagine in this first year of the competition, the entries were a mixed bag. Some involved relatively little effort on the part of the student, others a great deal.

'A couple of the projects were so original as to warrant writing up in the scientific literature, and I think it is a significant achievement for the BHP Science Prize to unearth such talent in our schools.'

Sydney retirement

Mr Fred Kewley, of the Division of Applied Physics, with his wife Noreen, at a farewell lunch held in his honour in Sydney. Fred retired from the Division after 25 years' service with CSIRO, latterly working in the radiometry group.

Dr Marshall

Dr Rob Marshall of the Division of Protein Chemistry was recently awarded a Research Fellowship from the Alexander von Humboldt Foundation.

Since he joined the Division eight years ago, Dr Marshall has worked in the field of the chemistry of wool and other keratin proteins and he has recently developed a two dimensional electrophoretic procedure principally to aid his studies in this field. The technique however, because of its ability to identify different keratins, also shows potential for use in the forensic science field.

Dr Marshall will leave in February to work with Professor Helmut Zahn at the Deutsches Wollforschungsinstitut in Aschen, West Germany, for one year.

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Dr Robert Wasson, geomorphologist, and previously with the Australian National University, has joined the Division of Land Use Research as a senior research scientist. Dr Wasson has a particular interest in arid lands, dunes and wind erosion, and his experience includes time in India and Pakistan.

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Working on a CSIRO switchboard has its challenges when the caller asks questions such as those recently faced by a receptionist in Adelaide. A selection includes:

- Why does my cat's meat glow in the dark?
- What is the best weedicide to use on weeds in my almond orchard?
- Can I obtain from your library, a copy of a photograph showing a family reunion in the Ballarat Botanic Gardens, which appeared in the April 4 1962 issue of the *Melbourne Weekly Times*?

Applications for CSIRO study awards to enable staff to undertake overseas study for up to six months, close on March 5.

Up to four awards are made annually to staff over the age of 18 who are in other than research scientist classifications.

The awards are made each year to individuals who show promise of future achievements, or whose achievements are already substantial.

Applications should be lodged as soon as possible with The Secretary, Study Awards Committee, PO Box 225, Dickson, ACT.

Six prominent agricultural scientists, including one CSIRO researcher, have been elected Fellows of the Australian Institute of Agricultural Science.

The Fellowships were announced recently by Institute President, Mr Bob Carraill.

The new Fellows are:

- Dr Yvonne Aitken, former Reader and now Senior Associate in the School of Agriculture and Forestry at the University of Melbourne.
- Dr Ross Humphreys, Head of the Department of Agriculture in the University of Queensland.
- Dr Fred Morley, Senior Research Fellow, School of Veterinary Science, University of Melbourne and former Assistant Chief of the CSIRO Division of Plant Industry.
- Dr Len 't Mannetje, Leader of the Pasture Agronomy and Ecology Section of the CSIRO Division of Tropical Crops and Pastures in Brisbane.
- Mr Peter Robinson, Chief Irrigation Officer in the Victorian State Rivers and Water Supply Commission; and
- Mr Frank Walker, former Chief Horticulturalist in the Tasmanian Department of Agriculture and immediate past President of the International Society for Horticultural Science.

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Planning is under way for the food industry open days being held next month at the Division of Food Research in Sydney. Members of the food industry will be invited to visit the Division on March 24 or 25, to undertake guided tours of research work, and take part in talks with the Chief, **Dr John Christian**, and his Assistant Chiefs.

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Keith Binnington, of the Division of Entomology's Long Pocket Laboratories, recently completed his doctorate at Cambridge University, while on a Divisional Studentship. Dr Binnington's doctorate was a study of the nervous system of ticks.

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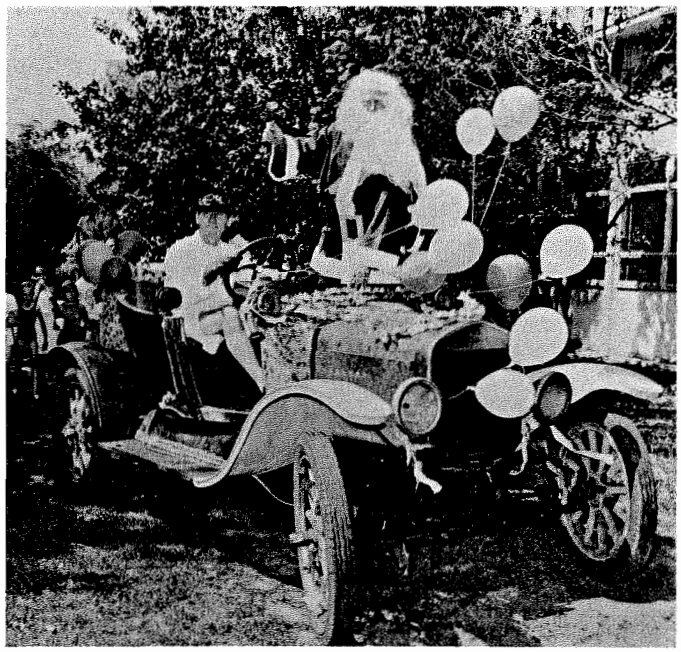
Members of staff at the Division of Plant Industry were saddened recently, at the death of their colleague, **Mr Alex Ironside**, who had been a member of the Division's workshops since 1976.



Ron Gamble's hobby of vintage cars came in useful last year when he supplied the transport for the children's Christmas party at the Division of Food Research in Sydney. Ron who is President of the Staff Association, was Santa for the day while the car was driven by Eric Bourn, a senior technical officer at the Division.

A long-serving member of the secretarial staff who recently retired is **Doris Hunter** of the Division of Entomology at Black Mountain in Canberra, who spent almost 42 years with the Division and can recall, during lunchtimes, playing leap frog with **Ken Prowse** over the sapling poplars in front of the Division.

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George Lorenz, of the Division of Manufacturing Technology, is receiving congratulations on his election as vice president of the International Institution of Production Engineering Research at the 31st General Assembly, held recently in Toronto.

George and his wife Susan have recently moved to Sydney where George has established the Division's new base at the Division of Applied Physics in Lindfield.

Death of a former Chief

The death occurred recently in Adelaide of **John Kingsley Taylor**, former Chief of the Division of Soils for 16 years until his retirement in 1963.

Mr Taylor, 83, was regarded as one of Australia's most distinguished soil scientists, and was awarded an OBE in 1979 for public services in the field of soil sciences.

Mr Taylor was also a significant force in the publication of the 'Australian Journal of Soil Research' and the establishment of the Australian Society of Soil Science in 1956.

Mr Taylor leaves a widow and a daughter.

Apprenticeship award presented

The Arthur Frost Memorial Award for 1980 was won by Terry Bostock, who was an apprentice electrical mechanic with the Division of Mechanical Engineering, Highett.

Terry is seen here receiving the award from Dr Paul Wild and Roger Digby, the President of the Victorian Branch of the Laboratory Craftsmens Association.

The presentation was made at Highett during an Executive visit on December 9 1981.

The award is for the CSIRO apprentice showing the greatest improvement in his final year of training. Terry excelled in his work at the Division and his schooling. He left the Organization at the end of his apprenticeship and after just a short time in industry rejoined and is now working as a Technical Assistant with the Agricultural Engineering Group in the field of instrumentation and electronics.

The award is sponsored jointly by the Laboratory Craftsmens Association and the Organization in memory of the late Arthur Frost, a foundation member of the Association.

From gravelly gully to community asset

Pam Powell, of CSIRO's Long Pocket laboratories in Brisbane, writes of the development of the adjacent rainforest.

The rainforest was planned in the original landscaping through the interest of Len Webb, Geoff Tracey and Jack Woodward of the Rainforest Ecology Section which was located at the laboratories until 1980.

The site was a gravelly clay gully which originally supported spotted gum, ironbark, grey gum and stringybark woodland, but few of the original trees remained.

Plantings of rainforest seedlings commenced October 1969 with site selection based on knowledge of natural conditions in which the species were found.

Seeds collected

Seedlings were grown by the Rainforest Ecology Section from seeds collected in rainforests mainly from North Queensland. The seedlings were originally grown to build up a collection of authentic seedlings for the Herbarium as no such collection existed and identification of seedlings was basic to the ecological work of the Section. Seedlings from other sources were bought from time to time to build up the collection. Understorey species including orchids and ferns were added in niches as the canopy developed.

The synthesis of this rainforest was very much a part-time activity and expanded in stages making full use of cover plants of early successional species including Wild Tobacco (*Solanum mauritianum*). These plants grow quickly and shade out grass which competes with the young rainforest seedlings, mobilize nutrients, encourage fruit-eating birds, and build up wildlife generally, as well as providing a natural bush house for protection of future canopy trees.

In the beginning, some regular maintenance was provided but has been discontinued for the past few years with supervision of the rainforest left to the gardener under supervision of the site committee.

Records of plants have been kept and maps of each individual have been made, allowing census, growth rates, etc., to be measured in future.

More than 300 species still survive in the Long Pocket Rainforest.

Community asset

This rainforest is now in its twelfth year of growth and as you can see by comparing the photo taken in 1973 and one taken in 1981, it has developed into a valuable community asset.

Much public interest has been aroused and the project has prompted development of rainforests at James Cook University and in the grounds of St Peter's Lutheran College, Indooroopilly, Nudgee Junior and Xavier Christian Brothers College, Indooroopilly, and Teachers Training College, Kelvin Grove, and led to the publication of a Kelvin Grove Teachers College monograph, 'Rainforest Gardens' (Marsh *et al.* 1977).

Many garden groups and similar organizations have visited the Long Pocket rainforest, including the curators of Brisbane City and Mt Coot-tha botanic gardens, and the experience gained, e.g., use of succession species, has been applied in the development of rainforest in the new gardens at Mt Coot-tha.

Another public involvement program to grow out of this experience is the creek bank reclamation program on Bulimba Creek in Brisbane, organized by the Australian Littoral Society and supported by the Brisbane City Council, which included donations of hundreds of trees.

Official committee groups have shown interest in the project when visiting the laboratories, e.g., Committee of Inquiry into the National Estate, and Queensland State Committee of CSIRO.

Three views of the Long Pocket rainforest, adjacent to the laboratories.
Top: The rainforest soon after planting, in a photograph taken in 1973.
Centre: This photograph, taken in 1975, shows the trees beginning to establish themselves, while the plants at the rear are forming a closed screen.
Above: The latest photograph, taken in the forest, shows the establishment of the ferns and climbing plants. More than 300 species are surviving in the rainforest.

Use COMTEXT to illustrate your talk

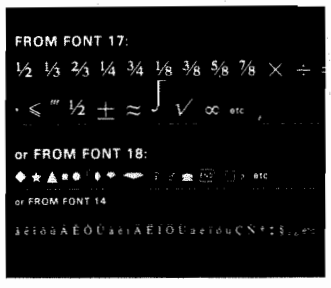
Need some slides to illustrate a talk? Why not try COMTEXT, the computer typesetting system available on CSIRONET.

If only text or tables are involved (no graphics), and you have access to a CSIRONET terminal, you can—with a little practice—easily produce your own slides.

The Division of Computing Research in Canberra has prepared a sample slide set to display the flexibility of the program, a few of the fonts available, and the results of commands used. The sample material includes command codes to suply typeset copy on 35 mm unsprocketed film, with a format specified to fit the 'window' of a standard slide frame. Some frames from the sample slide set illustrate this article.

The film produced is in 'negative' form; when projected on a white screen, text will appear white on a black background. This film of course can be treated like ordinary orthochromatic film for the production of diazochrome (blue) slides, or reversed to same-size positives or to blown-up prints.

If you've never used the computer typesetting facilities before, the booklet 'Introduction to COMTEXT' is a good place to start. You can, of course, use COMTEXT to produce much more than slides—microfiche, full-page camera-ready bromides, and full-page clear (positive) film.



For further information, or a copy of the introductory booklet, contact the Publications Assistant, Division of Computing Research, PO Box 1800, Canberra City, ACT 2601.

Sydney's saints and sinners get together

It is said that when physicists turn to the arts for relaxation, it is the Muse of Music that they espouse, chemists being more prone to paint and to partake of the visual arts.

The theory is that the harmony, order and proportion of musical cadences reflects some sweet music of the spheres which echoes in the souls of all true physicists.

Empirical proof of this theory was demonstrated at the Yuletide Party held at the National Measurement Laboratory complex at Lindfield in December. Physicists turned miraculously into musicians, singers and composers, playing perhaps not celestial music but certainly sweet music to their peers.

The transmogrification was not only in occupation but also in appearance: everyday garb of white coats, grey coats and shorts was shed for vicars' collars, nuns' habits, angels' wings, devils' tails and black net stockings, in keeping with the tone of the party, which was for Saints and Sinners.

Noticed among the throng were such notables as Lady Macbeth, Adam and Eve and Sir John Kerr. Whether Adam and Eve had or had not partaken of the Forbidden Fruit was not clear, which made classification into their Saint or Sinner category difficult at first but as the evening advanced, the consensus swung marginally towards the latter.

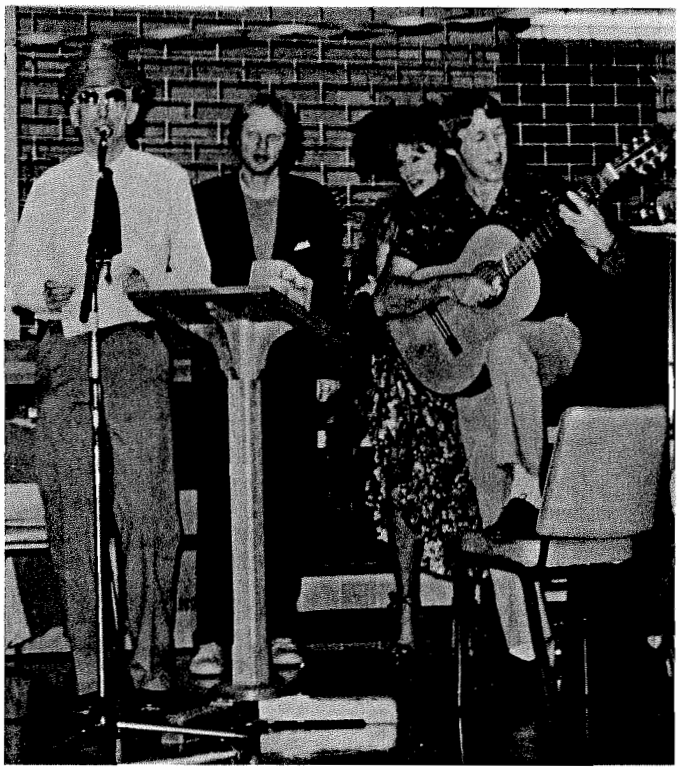
The Number One hit of the evening was undoubtedly the 'Ump-pa-pah Song' written and sung by Dr John Lowke, Chief of the Division of Applied Physics. He was backed enthusiastically by the Slaughterhouse Five Jazz Band, Tony Collings on acoustic guitar, host and hostess for the evening, Stephen Collocott and Yvonne Esplin as the Vicar and Tart Duo, and in the refrain by the whole assembled company of goodies and baddies.

Other singing stars in a star-packed program were: Squeezebox MacFarlane—the Scottish laddie from the wee bonnie brae, lovely Shirley Williams the romantic chanteuse, and Tony Collings the well-known Welsh balladist.

Due to the propensity for music exhibited by physicists, the long-standing NML Jazz Band has grown in number from its original five to seven members: Don Benjamin on piano, Ron Roberts and Vince Waller on clarinet, Phil Lennox on trombone, Peter Somlo on trumpet, Ian Groves on guitar and Steve Gambling on drums. All agreed that physics may be fun but music more so. Had any talent scouts been stalking the wilds of Lindfield that night, CSIRO may have lost these stalwarts to professional stardom. As the music swelled to raise the rafters in the Halls of Holly, Saints and Sinners alike jived and whirled, tripping over their tails to the resonating rag-time. It was a hot time in the old town that night.

Not to be outdone by this outstanding exhibition of musical talent, the local Ballet Group represented by the Lab's long-distance runners, responded by turning on a memorable performance of Swan Lake, supported by an allegorical narrative delivered by John Cook. The prima ballerina was a most fetching Tony Collings, complete with white tutu and feathers, partnered by a handsome, well-structured prince, Norm Bass. (No, he's not a bass player.) Unforgettable moments were the 'Dance of the Little Swans' by

Continued on page eight



Dr John Lowke, Chief of the Division of Applied Physics, singing, with Stephen Collocott, Yvonne Esplin and Tony Collings on guitar.

Rex Thompson, an experimental officer with the Division of Manufacturing Technology in Adelaide, preparing a violin for the triennial world exposition in Cremona, Italy, later this year. Rex expects to spend more than 150 hours constructing the instrument and hopes to make the journey to Cremona in October to take the instrument to the competition.

CSIRO's violinmaker:

Unlocking the secrets of the old masters

Early in 1963, CSIRO researcher Rex Thompson's eight-year-old daughter, Wendy, was chosen to play violin at her Adelaide primary school, and without realizing, introduced her father to an instrument which has become his major hobby.

Some years later, as a promising young violinist, Wendy needed a better instrument, and Rex, a chemist in the Division of Manufacturing Technology, decided to build her one.

His first task was to find some literature and the search for information eventually extended to a London bookseller. Tools had to be purchased from overseas, or crudely made at home, and the instrument was constructed from timber specially imported from Germany by a friendly violin-maker in Adelaide.

After many months of painstaking work, Wendy put her bow to the home-made instrument and, surprisingly, found its tone was better than the old German factory-made fiddle she had been using.

Recalls Rex:

"I became hooked into a world of timbers, glues, violins and varnishes.

"I read avidly all I could lay my hands on regarding the history of the violin as well as violin making.

"I learnt about the Amati family, the Guarneri family, and that supreme master of them all, Antonio Stradivari, who had perfected the craft in the small Italian town of Cremona in the seventeenth century.

"Since that time, many eminent scientists including Einstein, Max Plank, Raman and others have tried to discover the secrets of those old masters.

"Only recently, researchers have begun to discover how modern violin makers can improve their craft to produce consistently better violins", Rex said.

As Rex and his family have become more deeply involved with violins, his daughter Wendy has continued her studies and is now playing with the South-West German radio orchestra in Baden Baden.

This year, when Rex is not working on research into fluxes, he is busy constructing his 29th violin, a model he plans to exhibit this year in a triennial competition in Cremona for violin makers from around the world. Experts will gather to judge the instrument for sound and quality.

He is making the fiddle from European maple and spruce, timber chosen during a visit to Germany in 1977, as a recipient of a Churchill fellowship. The visit also took him to study the art in the United Kingdom and the United States of America, where he met up with researcher Dr Carleen Hutchins, whose article on violin acoustics appears in the October 1981 issue of Scientific American.

Dr Hutchins' paper discusses work which Rex has carried out on varnishes and timbers, comparing tone and quality of sound, along with some research into optimum temperatures and humidity for precise plate tuning.

Rex has had the joy of listening to his daughter play an Alban Berg concerto on one of his violins in an examination concert in Germany last year, and believes that for him, it was the ultimate reward for what has become a time-consuming but fascinating hobby.

CAT

Will Sony's Beta win the ½ inch war in the domestic video market place, or will Technicolor's ¼ inch over-run everyone? Nick Alexander, of CSIRO's Film and Video Centre writes the first exciting episode of 'Quo Video'.

Last year, the Film and Video Centre did a quick phone-around survey to find out what use was being made of video in CSIRO.

We wanted to know what sort of equipment was being used and to what use it was being put, either as a research tool or as a communication medium.

Of the 26 Divisions surveyed, only 11 were using video as a research tool. Most had old black-and-white equipment and were using it to monitor physical processes or natural phenomena or to analyse animal behaviour or other events, using time-lapse techniques.

Only eight of the Divisions surveyed were using video players for information or training purposes. These Divisions had all chosen the now well-established ¾ inch 'U-matic' video-cassette system.

Since 1977, all films produced by CSIRO's Film and Video Centre have been released on U-matic video-cassette as well as in the conventional 16 mm film format. The U-matic system has become quite well established in many non-broadcast areas, especially in schools, colleges and universities.

But now, with the dramatic upsurge in the home video market, the standard U-matic system could be facing extinction.

The 'VHS' and 'Beta' systems, both using ½ inch tape, but physically incompatible with each other, offer many refinements not available with U-matic, such as fast forward and reverse scan, inbuilt timers, remote stop/start and simple editing facilities. These machines cost less, the ½ inch tapes are cheaper and offer longer running times (up to 3 or 4 hours). What's more, they claim signal-to-noise and resolution figures almost equivalent to U-matic.

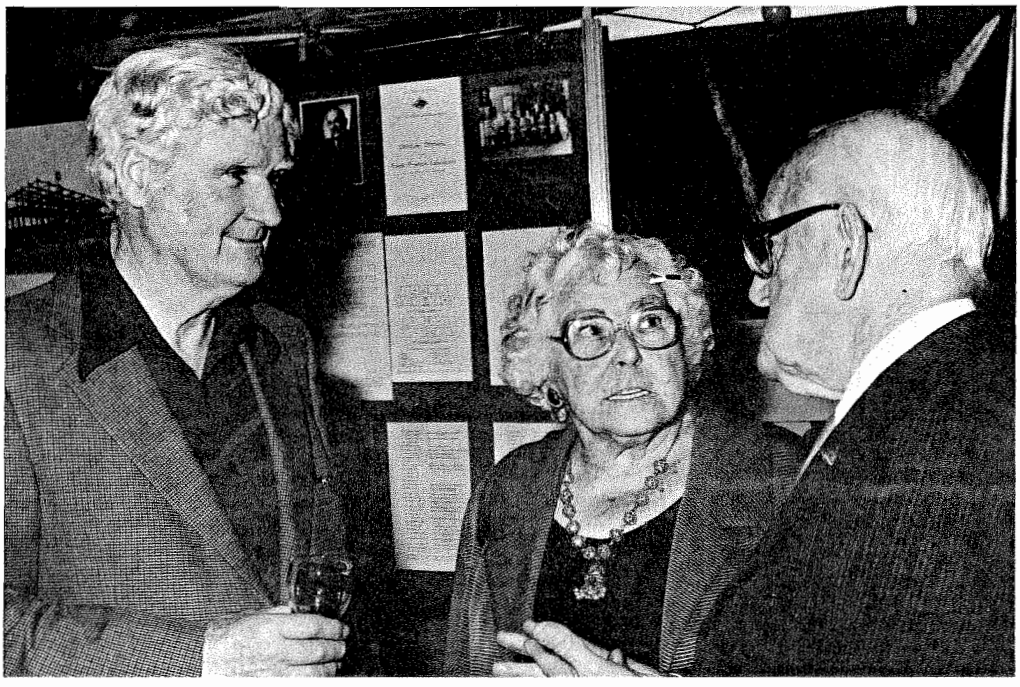
Most experts agree that the Beta system is technically superior to VHS, but only slightly. On the other hand, VHS, with a greater number of manufacturers, has the lion's share of the domestic market. In either event, the movie producers selling everything from 'Sound of Music' to 'Black Emmanuelle' are producing *both* types of cassettes.

Adding to the confusion (and excitement) is the recent announcement of Technicolor's ¼ inch video-cassette system —a remarkable development with a cassette not much larger than the compact audio-cassette.

For individual groups in CSIRO, with more sober research purposes in mind, the choice of which equipment to buy is a difficult one. Something recorded on a Beta cassette can, of course, be copied onto a VHS or a U-matic cassette since all systems in Australia use a standard TV signal known as CCIR/PAL. This means that none of our tapes can be shown in the USA, Canada or Japan, which use the EIA/NTSC system.

The current squeeze on money is hastening the swing to the ½ inch formats—but which to choose, is still an open question. A committee of the CSIRO Consultative Council has recommended that all CSIRO remote locations be equipped with video players for recreational use. If this goes ahead, the choice of format could have an important bearing on what equipment is bought for research and other communication purposes.

Taking time to have a chat.....



Dr Huntly Higgins (left) and Miss Isobel Hulme listen to one of Jack Cummins' anecdotes. Both Miss Hulme and Jack Cummins were members of the staff of Forest Products when the Division was still at 314 Albert Street before the acquisition of the South Melbourne site.

Apply now for a Scientific exchange with Academia Sinica

Applications are invited from scientists wishing to participate in the Australian Academy of Science-Academia Sinica scientific exchange program.

Intending applicants should have a specific project in mind, preferably one that has been developed in consultation with the institutes in China that they wish to visit.

Applications may be made by individuals or by groups (up to a maximum of six members) and may be for short visits (3 to 4 weeks) or for a longer term to carry out research projects or field studies. Scientific societies also are encouraged to submit proposals.

In making its selections, the Academy will be influenced by the following considerations:

- the special features of the proposal which make it appropriate for inclusion under this particular bilateral agreement (what is there that is peculiar to China?);
- its scientific merit and importance to science in Australia;
- the potential for developing further collaboration;
- the interest it is likely to arouse amongst scientists in similar fields of research in Australia; and
- evidence of support for the proposal from within China.

Under the terms of the agreement, travel expenses to China are our responsibility and expenses within China the responsibility of Academia Sinica. No additional stipends or allowances are paid.

Application forms and a list of the Institutes of Academia Sinica are available from the Australian Academy of Science, PO Box 783, Canberra City, ACT 2601.

It should be noted that Academia Sinica has difficulty in arranging visits to institutions not under its control and proposals should therefore be confined essentially to projects that can be organized through the Academy's Institutes.

saints and sinners

From page seven

the young and up-and-coming coryphees of the Corps de Ballet, and the final note of drama struck when the Swan, in true Pavlovian fashion, took a flying death leap into the wings, to land mercifully, we're told, on a bed of cushions. John Dunlop, Mick Inglis (>100 kg) and Frank Sharples made a sweet trio of cygnets, hitting the high spots of their career by kicking their way through the chichi choreography.

Later in the program four famous Bastards (one self-appointed) made their appearance to tell their astonishing, bawdy tale and turned out to be none other than the notorious Burton, Inglis, Dunlop and Besley, and finally, festivities climaxed with the appearance of Santa (Jackie Sizeland) in hot pants and boots, to distribute useful largesse such as last year's diaries.

When all the music, laughter and shouting had died, everyone agreed with WS that music may indeed be the food of love and most appropraite for the Love-thy-Neighbour season. Yea verily and we learnt that role playing is a most effective therapeutic occupation for any who may be sorely troubled.

As the psychiatrist said to his patient: "You haven't got an inferiority complex. You are inferior". Y.E.

.....about those 'good old days'

It was a time for reminiscences and meeting old friends at a 'Back to South Melbourne' reunion held during the recent 20th Forest Products Research Conference.

Forest Products Research Conferences have been held since 1946 when the first conference was held at the Division of Forest Products at South Melbourne. The 20th conference is the last of the series which can be held at the original venue before the site is vacated by CSIRO. The present occupant, the Division of Chemical Technology, will be moving to new premises at Clayton in 1982. The 20th conference is also the last one which Dr Huntly Higgins will attend while Chief of the Division and, indeed, before he retires from CSIRO.

Past members of the staff of the old Division of Forest Products were invited to join delegates to the conference (many of whom were Forest Products Conference veterans) at a buffet dinner held in a marquee in the garden area. Yes, there is a garden at South Melbourne these days!

Identities among the guests included Jack Cummins, Isobel Hulme, Harry Wilson, Ian Langlands, Alf Watson, Wally Hastie and Jean Cameron whose careers began with CSIRO before the old division moved to South Melbourne from 314 Albert Street, East Melbourne, in 1937. Many others who were Forest Products personnel before that division's demise in 1971 were also present.

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris.

CoResearch

CSIRO's staff newspaper *March 1982* 249

Chairman responds to critics—

ANAHL IS ESSENTIAL INSURANCE

The Chairman, Dr J. Paul Wild, has hit back at suggestions that the Australian National Animal Health Laboratory (ANAHL) may be a 'white elephant'.

He said the early detection and containment of an outbreak of foot and mouth disease in Australia would recover the $120 million construction cost of ANAHL in less than one month.

The Laboratory, now nearing completion in Geelong (Victoria), was a sound and wise investment to protect Australia's $1400 million a year meat export industry in the event of an outbreak of FMD.

Dr Wild likened the building and operation of ANAHL to the installation in 1938 — a year before the outbreak of World War 2 — of CH radar which gave Britain early warning of German raiders.

ANAHL had the full support of the Commonwealth Government.

Measures being adopted to ensure its microbiological security — to minimize as much as humanly and technologically possible the risk of exotic viruses escape — had been acclaimed by world experts in the field.

'To suggest that the Laboratory may never carry out its intended role as Australia's — and the world's — most advanced microbiological research laboratory is completely irresponsible and unfounded', Dr Wild said.

COMMUNITY SUPPORT

'All shades of the Australian political spectrum have in the last decade supported the building and operation of ANAHL. Also, construction time was accelerated by one year following a Government decision to inject an additional $7 million in funds in December 1979.

'ANAHL is aboslutely essential if Australia is to protect its vast meat export markets, which would be immediately shut off and would remain closed until Australia could prove to the international community that a suspected outbreak of FMD was only a scare, or that a real outbreak had been contained and eradicated.'

Dr Wild said the National Farmers' Federation in a submission to the Senate Standing Committee on National Resources on the Commonwealth's role in rural research and extension services (October 1981) had supported continued Government funding for the building and operation of ANAHL.

Referring to a newspaper (*Sydney Morning Herald* 4/3/82) report that Professor Bede Morris, head of the Department of Immunology at the John Curtin School of Medical Research in Canberra, had claimed that the development of synthetic vaccines 'which do not require the production of disease viruses' is already making ANAHL obsolete, Dr Wild said:

'Professor Morris's much ventilated objections to the establishment of such a high security laboratory are in contrast to the overwhelming weight of scientific, industry and government opinion throughout the world.

'He appears to ignore the vital functions of ANAHL at times when outbreaks of exotic animal diseases in Australia are discovered. Vaccine production will be a minor function of ANAHL. Its major role will be in disease diagnosis, training and research.

'At present specimens from suspected exotic disease outbreaks here have to be sent overseas for initial diagnosis.

UNIQUE FUNCTION

'ANAHL will have the trained staff and the microbiological security to make the initial diagnosis and to do the many thousands of follow-up tests needed if an outbreak is confirmed. These continuing tests are not performed by overseas laboratories.

'The time saved by doing these tests locally could be critical in mounting an effective eradication campaign. Also ANAHL is critical to the continued operations of the Cocos Island Quarantine Station particularly when the import of animals from high risk countries is contemplated.

Continued on page four

Horticultural award to CSIRO researcher

Two horticultural researchers, one operating in the field of greenhouse climate control and another in vegetable crop production are the recipients of awards for 1982 made by the Horticultural Congress Trust.

They are Mr K.V. Garzoli, Experimental Officer of the Division of Irrigation Research, Griffith, N.S.W. and Mr M.E. Titley, Lecturer in Horticulture at the Queensland Agricultural College at Gatton.

The awards are for $1500 each, to assist the recipients to attend the XXIst International Horticultural Congress to be held in Hamburg in August next year.

The Horticultural Congress Trust was set up in 1979 utilizing surplus funds from the successful XXth International Congress held in Sydney in 1978.

Continued on page four

BHP Science Prize to Sydney student

The Governor-General, Sir Zelman Cowen, with Lars Bischoff, the 1981 winner of the BHP Science Prize. Lars won a gold medal and $5000.

Three eminent Australians have called on young people to take up the challenge of the physical sciences to ensure the continued prosperity of Australia.

The Governor-General, Sir Zelman Cowen, the Chairman of CSIRO, Dr J. Paul Wild, and the Chairman of BHP Limited, Sir James McNeill, each told finalists in the BHP Science Prize that the development of this country depended on excellent scientific expertise.

The BHP Science Prize for 1981 was won by Lars Bischoff, a 17-year-old student at St Ives High School, Sydney. His winning entry was a comprehensive research project into silica deposits in native plants. Lars won an inscribed gold medal and $5000 which will be held in trust to assist with further education.

The Chairman of the judging panel, CSIRO's Mr Sam Lattimore, said the winning entry was an outstanding piece of original research.

A silver medal and $1000 was awarded to John Scanlon, 17, a student at Sydney Grammar School, who studied the collerd whip snakes of north-eastern Australia. A bronze medal and $500 was awarded to Mark Ross, of Brisbane Grammar School, who carried out a genetic study of bacteria.

At the presentation ceremony, held at the Australian Academy of Science in Canberra, Dr Wild told the students that Australia, like other countries of the world, had passed through a period following the First and Second World Wars, and then the Sputnik era, in which science could do no wrong—it acquired overwhelming public support and interest and students flocked to its university faculties.

'But the pendulum swung too far and now we are suffering the reaction—a disenchantment with science.

'Instead, alas, it has become a fashion to patronize the soft sciences, when the development of our country demands the real thing', Dr Wild said.

'For a minority of people in this world, science will always be a thing of great beauty, wonder and power.

'But those people have to be encouraged, stimulated and inspired when they are young.

'I believe the BHP Science Prize is a magnificent initiative, designed to do just that, and, I hope, it will contribute towards hastening the return swing of that pendulum so that a new generation of scientists is ready to solve the nation's problems', Dr Wild said.

The Governor-General, Sir Zelman Cowen, congratulated BHP for its initiative in recognizing and encouraging ability for technological development.

'BHP rightly sees that it has a responsibility to encourage a national award for excellence in scientific research', Sir Zelman said.

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

The Assistant Chief of the Division of Applied Physics, **Dr Bill Blevin**, above, has been appointed the fourth Chairman of the National Standards Commission.

The Commission is a statutory authority reporting to the Commonwealth Minister for Science and Technology.

Bill is the second CSIRO scientist to hold the position of Chairman. **Mr A.F.A. Harper**, a former Senior Principal Research Scientist at Applied Physics, was Chairman from 1978 to 1981.

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The Chief of the Division of Entomology, **Dr Max Whitten**, has recently returned from a visit overseas during which he visited stations at Pretoria, Montpellier and Lisbon, to review research and management arrangements. He also visited the United States' DA station in Rome to discuss collaboration in biological control.

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A cheque for $500 has been forwarded to the Community Aid Abroad charity by the Central Library Staff at CILES in Melbourne. The amount is the most raised by the group and represents contributions made on a regular basis.

Colleagues of **Kelvin Loftus Hills** were saddened to hear of his death on Australia Day. Kelvin worked with the Division of Plant Industry, and was an early contributor to *Rural Research*, serving as its Editor during its early years.

□□

Dr Dick Date, and **Dr Carlos Batthyany**, of the Division of Tropical Crops and Pastures, have been named as honorary life members of the Uruguayen Rhizobium Society which was formed in August 1981 to promote rhizobium research and utilization in Uruguay.

□□

Carol Helman, on a South Coast field trip for the Division of Land Use Research in Canberra, flashed her torch at what she thought was a nosy little furry beast snuffling around her canvas bedroom in the pitch dark of a rainforest night . . . surprise . . . it was a freshwater cray, reared in defence, claws at the ready, inches from her face. **Tony Waide** came to the rescue from his tent, only to find that 'claws' was just as interested in his tent. By the time dawn broke, the cray had made two further visits to the tents before eventually withdrawing to the nearby creek.

□□

Spending March on the Korat Plateau in North Eastern Thailand, is **Eric Bettenay**, the ambassador extraordinaire of the Division of Land Resources Management in Perth. Eric is providing the soil fertility and soil salinity expertise in an Australian/Thai advisory team working on an agricultural development project supported by ADAB.

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Fred Darby, formerly information officer with the Division of Energy Technology at Highett, has been seconded for two years to the Victorian Solar Energy Council. Fred will be working with the former Chief of the Division of Mechanical Engineering, **Roger Morse**.

□□

Bill van Aken, photographer at the Division of Land Resources Management in Perth, has taken another step along the road to his dream photographic assignment—a commission from Playboy or Penthouse. His photograph of a *Nuytsia floribunda* in full bloom has been published in the February issue of a Parisian garden magazine. The enquiry followed Bill's presentation of the audiovisual in Paris following a Kenyan assignment.

□□

Dr Don Weiss, Director of the Planning and Evaluation Unit, is the second recipient of the newly established applied research award made by the Royal Australian Chemical Institute.

Dr Weiss, former Chief of the Division of Chemical Technology, has been awarded the K.L. Sutherland Medal by the Council of the Institute for his contribution to applied research in the field of chemistry.

He will receive a bronze medal and, in August, will present a lecture during the Chemical Institute's seventh national convention to be held in Canberra.

Dr Weiss is the second CSIRO scientist to be awarded the Medal which was inaugurated in 1980 to recognize significant contribution by Institute members to the development or innovation through applied research or in industrial fields. The Chief of the Division of Applied Organic Chemistry, **Dr David Solomon**, was awarded the S.F. Cox Medal in its year of inauguration.

□□

A new life in retirement on their property at Lismore awaits **Kees Paijams**, who retired recently from the Division of Land Use Research in Canberra. Kees had been on the staff for 19 years, all of them spent with the Division.

□□

Granny Smith and Jonathan apples grown at CSIRO's experimental orchard at Ginninderra near Canberra, won first prizes at the recent Royal Canberra Show. The apples were grown using a reduced spray schedule and with two predacious mites to control orchard pests, two-spotted mite and European red mite. It was the first time the Division of Entomology had entered the orchard produce and according to **Ken Helm**, who entered the fruit, it was done to test in a practical way, the theoretical success of the research.

The Chief of the Division of Tropical Crops and Pastures, **Dr Ted Henzell**, was delighted to receive a note of thanks from an Australian company which recently won a prestigous Australian export award.

The Murwillumbah-based company, J.H. Williams and Sons Pty Ltd, won the award for developing a large export operation concentrating on agricultural pasture seed, grain and edible seed.

In a letter to Dr Henzell, the Managing Director, **Mr Harry Williams**, recorded his personal thanks to the staff of the Division and CSIRO generally over many years.

"Had it not been for your assistance, we would not have achieved this success", Mr Williams added.

□□

Ron Johnson, of the Division of Manufacturing Technology in Adelaide, would like to hear from CSIRO colleagues interested in the sport of archery. Ron is a member of the Adelaide Archery Club, and invites contact from colleagues with the same sporting interest.

□□

Dr Tom Grace, previously with the Division of Entomology and more recently Counsellor (Scientific) in Tokyo, has returned to research activities in the Division following the completion of his term in Japan.

□□

The new Director of the Bread Research Institute of Australia will be **Dr Bob Orth**, who is currently Manager of the New South Wales branch of the Australian Wheat Board. Dr Orth succeeds **Mr Eric Bond**, the foundation Director, who will retire in February 1983 after 36 years.

Letters to the Editor

Mr Socrates Paschalidis' creation of a logo for CSIRO testifies that Greek civilization flourishes still.

It is brilliantly conceived, although the map and the words 'Australian Science' are superfluous. Is it too much to hope that our Executive will show similar imagination in adopting it?

Graeme O'Neill
Science Commuunication Unit, Canberra

Dear Editor,

I refer to the CSIRO logo shown in CoResearch 248 and congratulate Mr Paschalidis for his professional design.

What struck me as particularly attractive is the switch from the often-seen 'Science for Australia' to the much more appropriate 'Australian Science'.

I enjoy working in CSIRO and considered showing it on a T-shirt again and again, but the reality of CSIRO and its innovations is that they are mostly used by overseas companies, so the slogan 'Science for Australia' did not seem appropriate for me.

There can, however, be no doubt about my work being 'Australian Science', and I am waiting for the first T-shirts to bear the message.

Yours sincerely,
M. Tomczak
Division of Oceanography, Sydney

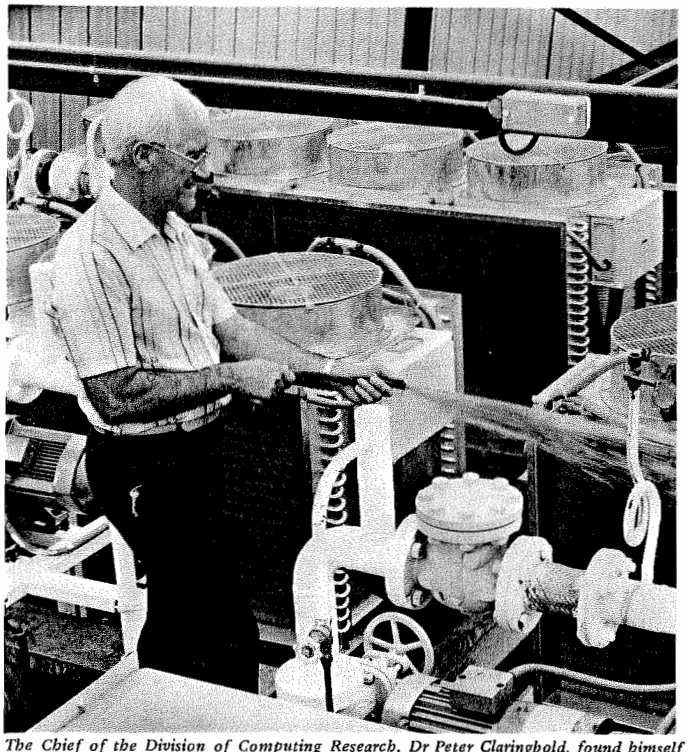
Dr Adele Millerd, Senior Principal Research Scientist, retired from the Division of Plant Industry recently, aged 60.

Dr Millerd gained her degrees from the University of Sydney (B.Sc. 1943, M.Sc. 1946, Ph.D. 1953) and later took up positions as Senior Lecturer, Biochemistry, at the University of Sydney (1953) and Senior Lecturer, Department of Agricultural Chemistry at the Waite Agricultural Research Institute (1959).

She joined the Division of Plant Industry as a plant biochemist in 1963 to work on the C4 pathway of photosynthesis. More recently, she concentrated her research on the storage proteins of legume seeds, especially broad beans and peas, which became part of the multidisciplinary, collaborative Plant Storage Protein Program at the Division of Plant Industry.

On retiring, Dr Millerd donated part of her personal library to the Peoples Republic of China. Professor P-S Tang of the Institute of Botany, Peking has undertaken to distribute the books to those in greatest need.

Peter's cool solution



The Chief of the Division of Computing Research, Dr Peter Claringbold, found himself 'chief on a hot tin roof' during a recent spell of hot weather in Canberra. The air-conditioning system for the new computer hall, like that for the old one, is unable to cope with hot weather, and whenever the outside air temperature exceeds 34 degrees, it becomes necessary to spray the fins of the dry coolers with water to maintain satisfactory conditions in the computer hall. When Canberra's temperatures peaked above 34 degrees on four consecutive days, researchers including the Chief, took turns at wielding the hose on the roof. Spray equipment has now been installed to automate the task.

From the Chairman–

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

Once a year I meet with the Council of the Officers Association and discuss with them significant issues of mutual interest.

The discussions are frank, friendly and, I believe, productive. This month we had our 1982 meeting. One of many matters raised was an expression of concern over our 'dwindling' resources in recent years.

I explained the matter was complicated by the fact that our total resources had actually increased in real terms in recent years; it was mainly a question of what additional responsibilities we had accepted. I undertook to give an analysis of the situation, as clearly as possible, in this column. I have now done this analysis and the results are shown in the accompanying graphs.

Armed with data supplied by Howard Crozier, my starting point was to dig out my HP calculator, blow the dust off it and generate a set of curvilinear coordinates by which inflation could be transformed out of the system. Thus in the top and bottom graphs the vertical axis represents real value at the constant rate of January 1972 dollars. The number of dollars in local time (which means about as much as an external length measurement performed at near the velocity of light from an accelerating platform on the brink of a black hole) is shown by the numbers on the wavy coordinates. The transformation is made strictly on the basis of the Consumer Price Index issued by the Bureau of Statistics and recognized by the Government (in fact, for research purposes this index underestimates the effect of inflation).

For each of the top two graphs two curves are drawn. The lower ones of each pair refer to appropriation-funded activities that have existed for a decade or more, while the upper curves include additional activities transferred to CSIRO appropriation funds by the Government.

These are dominated by the transfer of the Forest Research Laboratory, the Materials Research Laboratory, and 60 per cent of Wool Fund positions. The top curve excludes additional moneys paid to us in 1981/82 to cover the new arrangements for superannuation and the special non-recurrent payment for the twenty-seventh pay day. Also the curves do not show the impact of the transfer of resources from Lucas Heights, which have not yet been absorbed into our financial system.

The following conclusions may be drawn:

1. The top graph shows that the *total* salary/operating fund have remained fairly constant in 'CPI' real terms since 1974/75, increasing slightly as new responsibilities have been transferred to appropriation-funded activities.
2. In 1975/76, following the transfer of the Forest Research Laboratory, our staff ceiling was 5975; since then we have gained 492 staff as a result of transfers or new responsibilities and lost 381 as a result of cuts in staff ceilings.
3. The 'basic' component of the staff is now approximately the same as in 1971/7? The basic component of funds has significantly increased, largely attributable to the 1974 salary rises.
4. In 1971/72 our staff ceiling was 5170; salaries were $35.6M; operating funds $15.1M. In 1981/82 the figures were 6086; $140M; $60.5M. The ratio of salary to operating funds has remained fixed at 70:30.
5. The third graph shows the *total* capital works funding, with two peaks associated with the NML and ANAHL buildings. (The latter facility should be seen to be clearly separate from CSIRO's principal activities.) The sum of the amounts in the top and bottom graphs gives the total CSIRO appropriation excluding a component called 'grants and contributions'. The latter is relatively insignificant totalling $0.78M in 1981/82.

I think this analysis demonstrates how the Organization has been steadily growing while at the same time we have been suffering from cut-backs. The net increase in staff since 1975/76 has been 492-381 = 111. The fact that new responsibilities have been and continue to be transferred to us is a clear sign of the Government's confidence in us. We welcome with enthusiasm the new staff that have joined us in this way. Such people should therefore not misunderstand me when I say that from the point of view of the efficient performance of the Organization, we would have preferred to have zero net gain in the sense of zero new responsibilities and zero staff cuts.

It is staff cuts that do the harm. The Government would doubtless like to think they increase efficiency by reducing 'fat'. In practice, the implementation of staff cuts by the process of wastage is highly detrimental to the performance of a research organization: it causes staff imbalance, and it reduces opportunities both for the introduction of young blood and for starting new programs of high national priority.

● ●

There is much talk of a drift in the composition of the Organization's staff. The effect certainly exists as the following figures show, comparing the June 30, 1972 figures with December 30, 1981 figures in brackets.

Research Scientists grades (excluding Chiefs–17.1% (19.0%).
Experimental Officers and other professional staff–16.6% (19.9%).
Technical staff–29.5% (28.9%).
Administrative and clerical staff–6.6% (6.3%).
Laboratory craftsmen and other staff–30.2% (25.8%).

I hope that the increasing emphasis on Divisions to operate in terms of a total salary budget rather than a given number of positions will help to ensure an optimum staff balance.

● ●

It also happens once a year that I sit down with the Minister, the Secretary of the Department of Science and Technology and heads of other statutory bodies in the Minister's portfolio to rank our budget proposals for new initiatives in a definite order across the portfolio. This is difficult at the best of times, but this year more so because we have now to include major items of our building program as new initiatives, to be ranked with the rest.

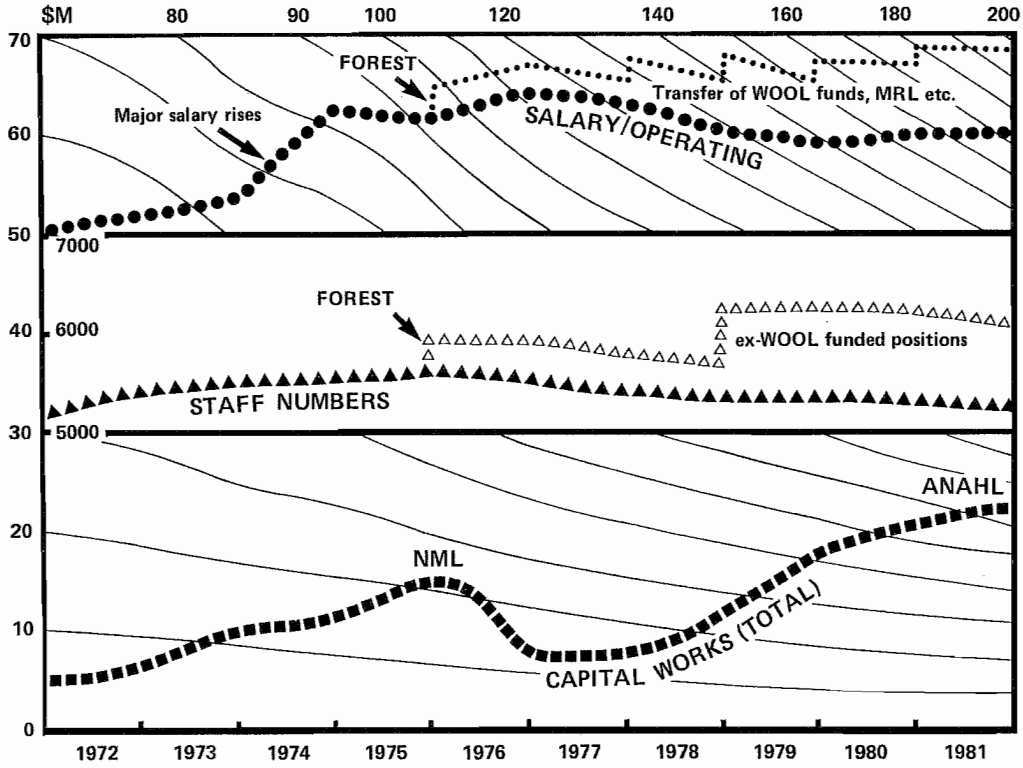
But to me the most curious twist was that although we had to include our buildings for ranking, the Department did not have to include theirs. When I probed into the reason for this state of affairs it all sounded like something out of Alice in Wonderland. This is the line of argument, which I call the 'Global Looking-glass':

Q: Why do we have to include new buildings in our priority listings of new initiatives while the Department does not?
A: Because you operate on a global budget and they don't.
Q: What is a global budget?
A: One that comprehends all funds, which your Executive can use as it thinks best.
Q: But if the Government decides to fund building A and not building B it is surely the Government and not the Executive who decides how to use that part of the appropriation. Therefore, the funds for building A are not part of the global budget to be spent at the discretion of the Executive?
A: Oh no. Should the Government decide to fund your building A it would make provision for it in your global budget.
Q: Then if the Executive can use its funds as it thinks best it presumably need not spend any of its funds on building A should new circumstances arise to change priorities?
A: That would not be right.
Q: Then can we have a more exact definition of a global budget?
A: Well, I suppose a global budget is one that comprehends all the funds that the Executive can use as it thinks best plus the special items which the Government decides to fund.
Q: Ah! Then why do we have to include new buildings in our priority listings of new initiatives while the Department does not include theirs?
A. Because you operate on a global budget.

Alice was talking to the Duchess: 'I think I should understand that better', Alice said very politely, 'if I had it written down: but I cannot quite follow it as you say it'.

Fortunately you, dear reader, enjoy the advantage that Alice lacked.

Paul Wild



Workshop held on electrical discharge

A Workshop on electrical discharge phenomena was held at the University of Sydney and the CSIRO Division of Applied Physics on 1-5 February 1982.

This Workshop was funded under the US/Australia Agreement for Scientific and Technical Cooperation, which facilitates co-operation in civil science and technology between Australia and the United States. The Agreement forms the basis of the US/Australia Cooperative Science Program, the aim of which is to supply funds for seminar/workshops and short-term visits by scientists involved in cooperative research projects. The executive agency for the Program in Australia is the Department of Science and Technology, while in the US the National Science Foundation coordinates the Program.

The Australian coordinator for the Workshop was Dr J.J. Lowke, Chief of the CSIRO Division of Applied Physics, and the US coordinator was Professor D.M. Berenson, Professor of Electrical Engineering, State University of New York at Buffalo. Dr R. Morrow, also of the Division of Applied Physics, was the Workshop Secretary.

CAT

The Institute of Energy and Earth Resources, North Ryde Laboratory, was host for the Seventh Meeting of the Communication Advisory Team, held 22-23 February. The Chairman of CAT, Helen Dornom, has written this report of the meeting.

During the CAT meeting, members presented reports on the communication activities of their Institute. These reports, as usual, will be appended to the minutes of the CAT meeting and widely circulated, thus serving as a briefing document on the communication activities of Divisions and the Bureau of Scientific Services. These reports should be useful, also, as an expertise/experience resource file, identifying those Divisions/individuals who may be able to help other Divisions contemplating undertaking similar communication activities.

Some of the items discussed at the CAT meeting included:

- A letter from the Director of the Bureau, Mr Lattimore, emphasizing Divisional responsibilities for identifying their own target and allocating resources for communicating with them.
- Education Liaison/Science Education Centres. The Science Education Centre at Highett will be officially opened on April 23, 1982, by the Minister for Science and Technology.
- 'Visible Scientist' Scheme. The SCU is looking at ways of upgrading and extending the CSIRO Speakers' Scheme.
- Providing politicians with information. In the light of current financial restraints, it is important that politicians be given relevant and up-to-date information about CSIRO's activities. As equally important is the need for people within CSIRO to recognize the merit of providing this information.

Mr Bob Marshall attended the CAT meeting as Headquarters representative. Bob is CSIRO's Ministerial Liaison Officer and provided a new dimension to the CAT meeting, by giving an insight into one aspect of CSIRO's communication activities which is often overlooked.

Reports on the Melbourne and Brisbane Regional Information Officers' Meetings were provided. Both groups held meetings prior to the CAT meeting and hope to continue doing so to provide an active input to CAT meetings.

After the meeting, CAT members were given a brief site tour and Ms Christine Astley-Boden, of the Institute of Energy and Earth Resources, invited all Sydney information officers to meet CAT members. This was followed by a talk from Jeffrey Watson, of the ABC 'Towards 2000 Show'. This talk was attended by both scientific and non-scientific staff. An edited version of Jeffrey's talk will be published in a future edition of Coresearch.

The next meeting of CAT is scheduled for 5-6 July, 1982, in Canberra.

Executive Member's farewell

Colleagues of Dr Greg Tegart, formerly a Member of CSIRO's Executive and now Secretary for the Department of Science and Technology, recently gathered at a dinner to officially farewell Dr Tegart and his wife Robyn. Among those attending were, at rear, from left, the Chief of the Division of Radiophysics, Dr Bob Frater, Mr A.J. Woods, Secretary of the Department of National Development and Energy, the Minister for Science, Mr David Thomson, Mrs Tegart, the Chairman, Dr J. Paul Wild, and the Chief of the Division of Manufacturing Technology, Mr Bob Brown; front, from left, Mrs Wild, Dr Tegart, Mrs Woods, and Mr Baillieu Myer, a part-time Member of CSIRO's Executive.

Horticultural award to CSIRO researcher

From page one

Mr Keith Garzoli is a Bachelor of Mechanical Engineering and Master of Engineering. In recent years, he has been specializing in low energy greenhouse research, an area in which he has made significant contributions. His attendance at the Congress will enable him to gather information related to energy research in horticulture, particularly greenhouse climate control which he currently estimates to cost the Australian nursery industry about $60 000, per hectare per year.

Mr Michael Titley, a Bachelor of Agricultural Science, was involved with commercial vegetable research and production prior to taking up his present teaching and research position in Queensland. He is currently involved in research dealing with crop scheduling of vegetables. This is an area where there have been significant advances overseas and which are likely to be of benefit to Australian growers.

In announcing the awards, the Chairman of the Trust, Mr G.R. Gregory, said that he and his fellow Trustees were disappointed that income from invested funds was insufficient to permit the granting of more than two awards. There were many deserving applications in the total of 52 received, he said.

ANAHL essential insurance

From page one

'The Bureau of Agricultural Economics in November 1981 estimated that an outbreak of FMD could cost Australia $200 million per month in lost export trade.

'These losses, according to the Bureau, could be expected to continue for six months following eradication, at which time Australia could be declared officially free of FMD again.

'For this reason alone the Government expenditure on the construction and operation of ANAHL is unquestionably sound and wise', Dr Wild said.

On December 3 last year the Minister for Science and Technology had announced further Government support for ANAHL by the provision of an extra 30 staff positions to CSIRO to help man the Laboratory.

The Minister had said then the Government's decision to make the extra positions available 'was a clear recognition of the importance of ANAHL to the primary producing capability of the nation . . . .'

Dr Wild continued:

'There is an overwhelming body of opinion that favours the construction of a high security Animal Health Laboratory.

'However, the question as to whether the FMD virus should be imported before any outbreak is highly controversial.

'Many farmers are naturally opposed to the idea of taking any risk.

'The Government, acting on expert advice, strongly supports the importation of the live virus in order to make the Laboratory fully effective, but has undertaken there would be full consultation with the livestock industries before importation of FMD virus to ANAHL.'

On the possibility that FMD virus or other exotic viruses may escape from ANAHL as had occasionally happened in the past at laboratories overseas, Dr Wild said:

'On November 10, 1981, the Minister for Primary Industry gave information to the Parliament that accidental releases of FMD virus from the animal disease centres at Pirbright (UK) and Plum Island (US) had ceased since the development of advanced high security air treatment systems at those installations', he said.

'I can state without qualification that the systems developed for ANAHL are even more advanced than those in use overseas. Indeed our laboratory is regarded as a prototype that other countries are copying.

'Also, subject to the adoption of appropriate safeguards and proving of the facilities, the proposal that ANAHL be allowed to handle live foot and mouth disease virus was unequivocably supported by two eminent independent authorities whom I wrote to in February 1980.

'These are Sir Gustav Nossal, Director of the Walter and Eliza Hall Institute of Medical Research in Melbourne, and Professor G.L. Ada, Head of the Microbiology Department of the Australian National University's John Curtin School of Medical Research.

'Both believed that the benefits that flowed from being prepared to fight an outbreak far outweighed the risks associated with an accidental escape of virus from the Laboratory'.

April 8 closing date for QE11 fellowships

Scientists interested in applying for Queen Elizabeth II fellowships in the physical and biological sciences, must have their applications lodged by April 8.

Under the scheme, established in 1963, up to 10 fellowships may be awarded each year for full-time research by young scientists of exceptional promise and proven capacity for original work.

These are post-doctoral awards tenable in an Australian university or approved research institution for up to two years.

Persons interested in applying for the fellowships should contact the Executive Officer at the Department of Science and Technology in Canberra.

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris.

CoResearch

CSIRO's staff newspaper *April 1982* **250**

Geoff Taylor to fill vacancy on CSIRO's Executive

A distinguished Australian scientist with a background in energy resources and industry has been appointed as a full time member of the CSIRO Executive.

The Minister for Science and Technology, Mr David Thomson, announced that Professor Geoffrey Taylor, Director of the Centre for Resource and Environmental Studies at the Australian National University would join the CSIRO Executive early next month.

'He will bring to the Executive a well-developed national perspective on the assessment and use of energy resources', Mr Thomson said.

'His responsibilities will include, in addition to the energy area, a major concern for scientific and technological developments related to manufacturing industry.'

INTERNATIONAL STATUS

Mr Thomson said Professor Taylor, 57, was recognized as one of the world's leading coal petrologists.

'Professor Taylor's research interests include fossil fuels, uranium and the assessment and use of energy resources', he said.

'Through his research career he has maintained a close relationship with resource development in Australia and the Australian mining industry.'

Professor Taylor was, until his appointment to the Australian National University in 1980, the officer-in-charge of CSIRO's Fuel Geoscience Unit in Sydney, heading a team of scientists who carried out research into coal petroleum and oil shales.

Continued on page three

New laboratory for Division of Mfg. Technology

The Minister for Science and Technology, Mr Thomson, opened the new laboratory of CSIRO's Division of Manufacturing Technology, Fitzroy, Melbourne, on March 26.

He saw demonstrations of industrial robots at work in an unmanned 'flexible manufacturing cell', and examples of new welding techniques, metals machining and diecasting.

The Division was formed in 1980 to provide a focus for the technological research needs of manufacturing industry. It has another main laboratory in Adelaide.

In his opening speech, Mr Thomson said the Federal Government was seeking a manufacturing industry 'efficient in its use of Australian resources, internationally-competitive and export-oriented, innovative and less reliant on Government support.'

'To achieve this, change and adjustment are necessary', he said.

'The Government accepts that positive assistance measures need to be in place to complement a reduction in tariffs, and many already operate and contribute to change.

'The Department of Science and Technology is playing a part in this process of adjustment by encouraging innovative industrial capability through the Australian Industrial Research and Development Incentives Scheme, and support mechanisms such as the patents system.'

'The role of CSIRO in manufacturing must be seen as a part of this approach', he said.

'The Division of Manufacturing Technology is a concrete example of CSIRO's support for manufacturing.

'As a matter of priority, the Division is tackling a most important and difficult part of manufacturing—metal fabrication.

'It is important because of its size, and difficult because of the large number of small, competing firms involved.'

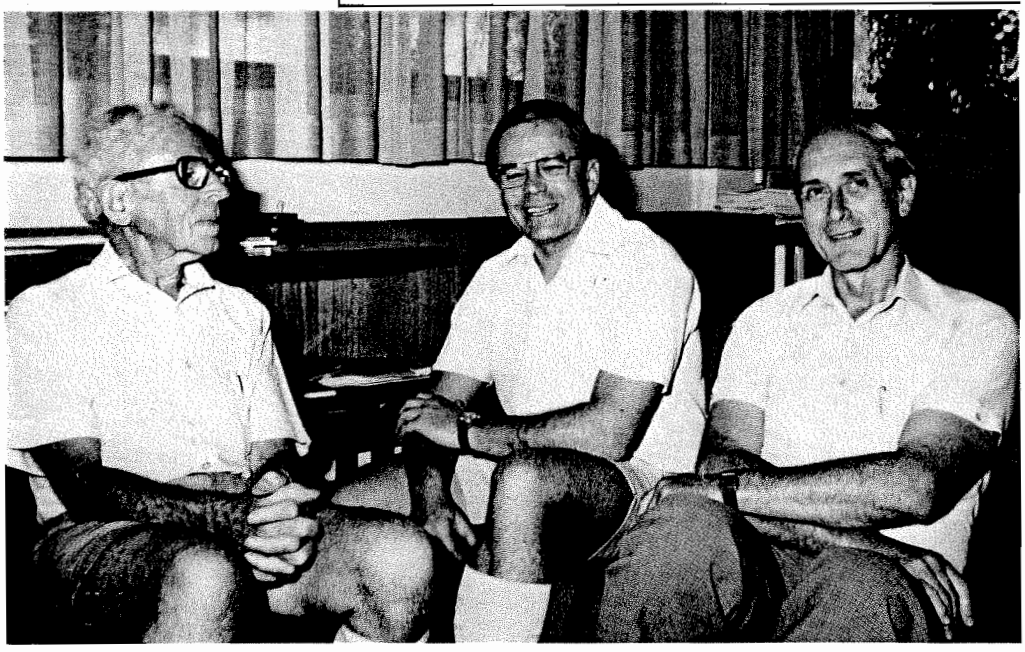
Mr Thomson said the principle of 'key technologies' was receiving increasing attention, and should be explored in Australia—a small country with limited capital.

He said this should not be confused with the term 'key industry'.

'By a key technology, I mean one which is fundamental to a wide range of industries, in which there is room for new developments, and where development is suited to prevailing economic and institutional conditions', he said.

'We are looking for cases where technical opportunity and social demand mesh', Mr Thomson said.

Five Royal Fellows in Plant Industry



The Chief of the Division of Plant Industry, Dr Jim Peacock, centre, celebrates his fellowship of the Royal Society, London, with two of the four other Fellows in his Division, Sir Otto Frankel, left, and Dr Fraser Bergerson. Other Fellows are the former Chief. Dr Lloyd Evans and Dr Hal Hatch.

F.R.S. for P.I. Chief

The Chief of CSIRO's Division of Plant Industry, Dr Jim Peacock, has been made a Fellow of the Royal Society of London. Dr Peacock was one of five Australian Fellows named and the only member of staff of CSIRO.

Dr Peacock, 44, was made a Fellow for his distinguished contribution in the field of genetics and molecular cytology.

He has an international reputation as a molecular biologist and is a Member of the International Board for Plant Genetic Resources.

His research activities involve the analysis of chromosome structure, and the arrangement and function genes in chromosomes.

He has studied the fundamental properties of genetic material in both plants and animals and heads a CSIRO research team devising methods of putting specific genetic material into Australian varieties of wheat and maize.

Filming inside our special effects studio

Later this year, a major Australian distributor will release the CSIRO film 'The Living Soil' as a cinema 'short'.

The film has no spoken commentary, but a specially commissioned music score. It depicts, by the use of striking visual effects, both the life of the soil and the life within it.

Roger Seccombe, of CSIRO's Film and Video Centre in Melbourne, spent over four years producing the images for the 9-minute film. He writes about some of the Centre's little known activities:

For most people in CSIRO, the Film and Video Centre signals its presence to the rest of the Organization by occasional visits to Divisions around Australia to record aspects of research or grab luckless scientists and technicians to stand before the cold eye of the camera and talk about their work.

But there's another side to filming. Tucked away in its headquarters in East Melbourne, cameras have been running almost continuously over the past few years in what is familiarly known as 'Studio B'.

Studio B is synonymous with special effects. No, 'Star Wars' wasn't shot there, nor 'Close Encounters of the Third Kind'. But close encounters between the camera and a vast array of plants, bugs and other assorted species happen there.

The term 'special effects' covers a range of specialized film production.

With time-lapse filming, the camera may be programmed to take one frame every 1.5 seconds, one frame every 45 hours, or, indeed, any interval between.

Intervalometers control the operation—switching on lights, exposing a single frame, and then switching everything off again until the next exposure is required.

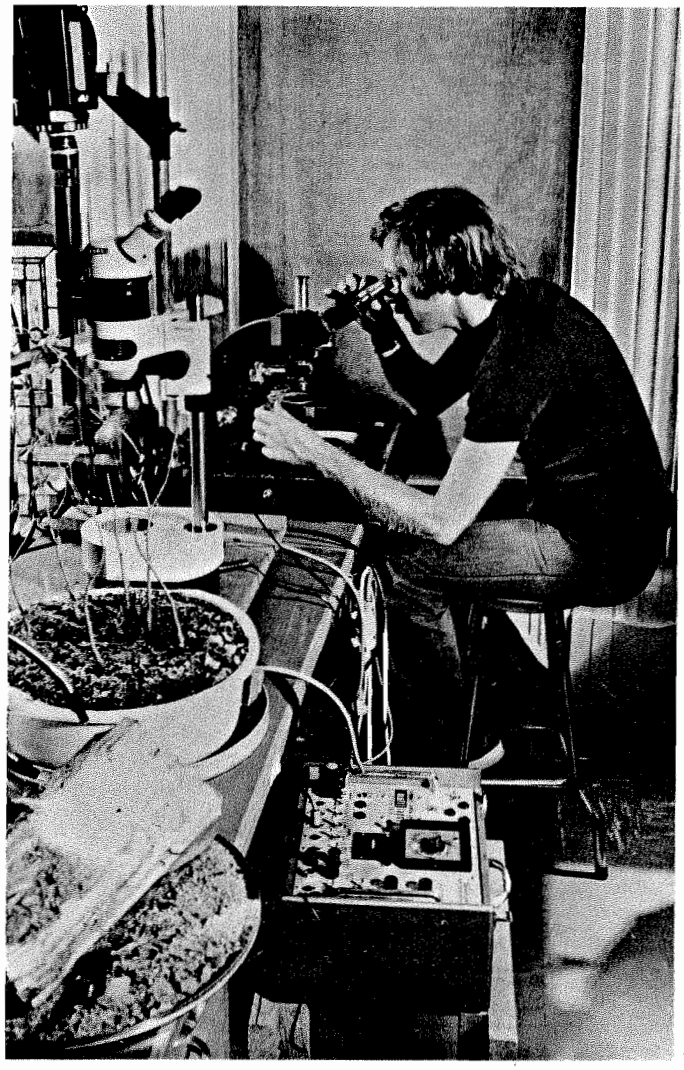
Macrophotography and microphotography are other specialities. By using fibre optic lights, even the most sensitive specimens can be spared the danger of 'cooking'.

High-speed filming has revealed the effect of raindrops hitting the soil, the fracturing of rocks, the stitching process in the manufacture of cricket balls, all at speeds of up to five or six thousand frames per second.

The Centre has also had experience in underwater filming, infra-red and the use of image intensifiers.

To produce specimens for filming, a veritable nursery is at times maintained, to breed up earthworms or mites, germinate seeds or grow plants. Intravenous drips guarantee a constant flow of water and constantly-burning 'growing' lights ensure the electricity bill remains high!

Although special effects of the complexity of those in 'Star Wars' cost millions to produce, the Film Centre in its own more modest way is making its contribution to the use of sepecialized cinematography in science films.



CSIRO film production man Roger Seccombe at work in Studio B, the special effects studio at the Film and Video Centre in Melbourne.

Award for SIROFLOC

The first practical application of 'Sirofloc', the water purification process developed by the Division of Chemical Technology, was honoured last month with the presentation of the Society of Chemical Industry of Victoria's 'Plant of the Year' Award.

The process was developed to full plant scale in collaboration with AUSTEP and first applied, in co-operation with the Perth Metropolitan Water Board, at the Mirrabooka Water Treatment Plant, W.A.

It is a fully Australian innovation in which the colour and turbidity particles in a water supply source are absorbed on a finely divided magnetite, which is precipitated in a magnetic field. The magnetite can be recovered and recycled.

The process sequence produces a very high quality water supply with less capital expenditure for the plant. No sludge is produced and only a small volume of liquid effluent.

The award was received by Mr Ralph Tobias of the Department of Science and Technology, who sponsored the development of 'Sirofloc', at a dinner on March 17 when a Plaque was presented and a lecture describing the plant and process given by Dr Ted Fish the manager of AUSTEP.

SLICE OF SCIENCE AT THE CANBERRA SHOW

A small slice of science was recently served up to the people of Canberra and surrounding districts at the 1982 Canberra Show, when Peter Martin of the Division of Land Use Research and Bill Hordern of the Australian Landsat Station organized a joint display.

Operating on a stringy budget, the effort was notable for the number of research scientists who participated. The best feedback from the public, in fact, concerned the pleasant and helpful manner of the staff.

The subject which attracted most interest was the recent application of the Division's SIRO-PLAN to the local Yarrowlumla Shire. Also on display was an account of how the Division's Australian Resources Information System could be used in planning the site of a new Australian city, and how Landsat can be used in surveying resources as different as crops and the Great Barrier Reef.

The Australian Landsat Station provided some impressive imagery of Australian cities, a classic sequence showing the Diamantina coming down, and sold posters of the Canberra Landsat scene.

The Division of Computing Research provided an item on CSIRONET, Canberra's television station, Capital 7, helped out by copying three 'Researchers' films onto a single cassette, and the Victorian Water Commission supplied a quantity of free project posters on Landsat images of the Murray which were popular with school children and teachers.

CSIRO annual report is tabled in Parliament

CSIRO's 1980-81 annual report was tabled in Federal Parliament on March 23 by the Minister for Science and Technology, Mr David Thomson.

In his introduction to the Report, CSIRO's Chairman, Dr J. Paul Wild, said the year saw the start of a new phase in the evolution of the Organization.

This was a deliberate policy to stop certain activities and switch the resources to new ones.

'The CSIRO Executive's current policy may be summarized as follows', he said.

'Whatever we do we must do well. If the resources are reduced then we must reduce the number of our activities, not the quality.

'We must be selective in our fields of research and concentrate on nationally important and scientifically rewarding areas.

'We must maintain our tradition of scientific excellence and remember that the maintenance of excellence depends on the performance of and the encouragement given to the individual.

'The needs for controlled objectives on the one hand and the scientists's freedom to follow his nose on the other must be carefully balanced.'

Dr Wild said the efficiency with which CSIRO could adapt and respond to the needs of the times depended critically on consistent and dependable funding.

'We believe a distinction should be made between an organization such as ours, on which the future growth and prospects of the nation vitally depend, and the administrative arms of government', he said.

'It is the Executive's belief that the national interest requires a larger government commitment to science and technology rather than a reduction.'

Dr Wild also said in his introduction to the Annual Report that the Organization's broad priorities were determined in the light of close interaction between CSIRO scientists and representatives of industry, government and the community.

'Our current areas of research include many that have formed our traditional base and continue to be as important now as in past decades', he said.

Following the Minister's tabling speech, the Opposition spokesman on Science and Technology, Mr Barry Jones, said the Federal Government was impeding the development of CSIRO because the Organization was being funded to maintain its traditional role of rural research and had not moved forward.

'It has not moved to assist in the development of new employment areas which will grow in the 1980s and the 1990s.

'This makes CSIRO a conservative organization, its annual reports showing how much of its budget services the areas of its traditional strength.

'But science and technology, like the Australian labour force, are changing with dramatic speed and the scrooge-like approach of the Treasury has inhibited CSIRO's capacity to adjust and adapt to the winds of change that are blowing', Mr Jones said.

He said that although CSIRO's total funding for pure and applied research was far greater than that applied to universities, the universities had proved to be more flexible in adapting to new scientific areas, but have probably produced a great output relative to the total research and development funds available.

Mr Jones said Australia needed a four-fold increase in research funding if it was to keep its relative position to other countries in the area of science and technology.

A spate of science on ABC television

ABC television viewers are in for a spate of science in the coming months, with news of several new programs planned for release.

Next month, ABC will begin a new series named 'Genesis' which will go to air on Saturday May 22, at 10.00pm for 13 one-hour episodes, and a second series of 'Towards 2000' will go to air in July at 7.30pm on Wednesdays. Coming up after that, probably in September, will be 'Discovery', a 13-part documentary series similar to the BBC's program, 'Horizon'.

AMBITIOUS PRODUCTION

In the 'Genesis' series, viewers will see 'The story of life on earth that David Attenborough didn't tell you.' Executive producer of the series, Michael Daley, said film had been shot in India, Egypt, Rome, Paris, Cambridge, New York, San Francisco, New Zealand and around Australia. 'The program "Genesis", a seven-part, 30-minute series, is one of the most ambitious productions undertaken by ABC-TV's Science Unit', Michael said.

'It is the story of human evolution told in a way that has not been previously attempted on television in Australia.

'The series uniquely blends the story of the basis unit of life—the gene—with the moral and cultural evolution of the human', he added.

The series is presented by Dr Daryl Reanney, a microbiologist at Melbourne's La Trobe University. The program ranges far and wide in its search for the real meaning of life—from the Valley of the Kings in Egypt, through the Vatican in Rome, an organization in San Francisco which stores bodies in deep freeze against a day of scientific resurrection, to Rotorua in New Zealand, to Marble Bar in Western Australia, the site of the oldest known fossils on earth.

HUMAN EVOLUTION

The early episodes examine the origins of some of the important mechanisms of evolution: natural selection and the survival of the fittest; the notion of the selfish gene, the idea that all life forms, humans included, are merely packages for the survival of the gene; the invention of death and of sex as strategies in evolution.

Later episodes examine the rise of characteristics peculiar to man, and the implications to his own evolution of the direction of cultural evolution.

The series will be provocative, challenging conventional wisdom. At the same time it will be visually and intellectually entertaining.

Dr Reanney, a New Zealand-born scientist, has a particular facility in popularizing the sometimes difficult concepts of modern molecular biology. He is internationally known for his work on the evolution of DNA, and he is familiar as a contributor to 'The Age', Melbourne.

The evocative music for 'Genesis' was written by Brian Mackness and performed by the Queensland Symphony Orchestra.

The series makes extensive use of microphotography and animation.

'Genesis' is produced by Craig Collie, who made four of the of the programs, and by Brian Nicholls, who made three.

DISCOVERY

The series 'Discovery', due for screening around September, will be a 13 part documentary series. Among the Australian segments will be 'The Third Eye', the story of the pineal gland, 'The Naked Breast', 'The Hunt for Hepatitis B', 'The Information Society', about computers, 'Sugar in the Blood', about diabetes, and 'Sweet Solutions', about sugar and its multifacious uses and alternatives.

It is hoped to include in the series a profile of Lewis Thomas, and the asteroid theory for the extinction of the dinosaurs.

Prominence was given in the last issue of CoResearch to the Australian National Animal Health Laboratory (ANAHL) now in a late stage of construction at Geelong.

The main functions of the Laboratory are the diagnosis and testing of virus samples following an outbreak of exotic diseases, and training of staff to cope with such outbreaks. These functions, which support a multi-billion-dollar-a-year industry, largely prescribe the scale and cost of the building. Other functions that capitalize on the facility but do not add greatly to its capital cost are vaccine production and research. CSIRO's past interest has centred on producing, in collaboration with the Department of Housing and Construction, the right kind of building. Its future interest centres on research.

You can tell, if by no other means than reading the newspapers, that ANAHL is creating a storm of controversy at the present time.

In a letter to the 'Sydney Morning Herald', published on March 29, I wrote 'Although the live virus issues is controversial the laboratory itself has the overwhelming support of the community—political, industrial and scientific. To imply that boffins had fallen out over it is something of an exaggeration when the opposition from academia comes from a single voice.' A reply came next day from Mr Andrew Robb, Executive Director of the Cattle Council of Australia, taking me to task for saying that opposition came from a single source. He says, 'I have identified many scientists who strongly oppose the introduction of FMD' and points out that these include senior people in CSIRO. This reply is typical of many: I had emphasized that the live virus issue was controversial but that the **laboratory itself** (built to diagnose and combat exotic diseases) had overwhelming support; the reply was that many oppose the **introduction of FMD**. Thus a point of agreement between us (that the virus issue is controversial) is used to imply disagreement.

Since, by Mr Robb's letter, it has been publicly stated that some CSIRO scientists have concerns about ANAHL, I take this opportunity of airing the matter, and invite any staff member not satisfied with what I have to say to write to me and argue the matter out. And, contrary to another implication of Mr Robb, their career prospects will not suffer by expressing a contrary view!

There are a number of distinct reasons for scientists and farmers being concerned about ANAHL. These are the issues as I see them:

1. **Resources**: The capital cost (1981) of ANAHL is $120M; the estimated future annual operating cost is $7M. The concern is that these funds are being provided at the expense of other CSIRO activities or other science activities.

If this turns out to be the case, I certainly share that concern. The evidence so far indicates that the capital cost is completely additive to the budget of CSIRO and science in general. As regards the operating costs to support some 200 staff, our staff ceiling has been increased to accommodate the first batch of 30 staff with the implication that the rest of the positions will be treated in the same way. If they are not we shall have to review our involvement with ANAHL.

2. **Overkill**: Even the most zealous critics admit that Australia should have a high security animal laboratory to diagnose exotic disease and carry out the necessary tests following an outbreak. The criticism then is that ANAHL is too big and too costly. Whether this be true or not, the simple fact is that such criticism is too late by at least five years: it should have been made to the Parliamentary Public Works Committee in 1974 or in 1977 when the Committee re-examined the matter. As things are, we find ourselves with a magnificently conceived and constructed laboratory which is the envy of the world and a prototype being copied by others. The secret of success has been consultation between architects, engineers, and users at all phases.

3. **Live FMD virus**: The question that is the most controversial, and understandably so, is whether, after establishing the high security integrity of the Laboratory, we should import live FMD virus for research purposes before the virus reaches Australia by accidental means. Those in favour of importation claim that the potential benefits far outweigh the risks; those against say we should take no chances.

The Government's decision is that the virus should be imported into ANAHL but that farmers will be consulted before any importations are made. The Executive of CSIRO supports this approach. It also believes that the evidence should be objectively presented to the farmers without distortion of the facts or confusion of the issues. The issue is an open question and it is understandable that there may be scientists, whether within or without CSIRO, who hold differing views. My only plea is that this issue not be confused with whether or not ANAHL should exist for its main purpose: it is that kind of confusion which recently led a Sydney journalist to write that ANAHL may turn out to be a 'white elephant'.

4. **Research**: There are, quite properly, searching questions being asked about what our research program will be, what priority it merits and whether we have the talent to conduct it.

A research program for ANAHL was written down a decade ago. In the meantime, the face of molecular biology, including virology, has completely changed and so have the research goals. (I can recall the research plan that was drawn up to justify the construction of the Parkes telescope; ten years later the programs being worked on bore no resemblance whatever to the original plan: such is science). So I suggest at this stage we should simply recognize that we have a superb facility in which research can be conducted in the future. But, of course, our scientists can do research only on those organisms that they are permitted to possess. CSIRO's future role, or indeed presence, in ANAHL will therefore depend on what these organisms are. I hope that whatever research is done in ANAHL will be a fully national effort involving scientists from universities and other institutes as well as CSIRO.

I have done enough anahlysing (sorry about that). I now throw the matter open for debate. If the response is substantial I will report back to you in this column.

* * * *

I would like to say a special word in support of the CSIRO Benevolent Funds, which operate in Canberra, Sydney, Brisbane and Melbourne. These funds were established in 1972 to provide financial support for members of staff who, through no fault of their own, are experiencing personal hardship. The funds derive their income from a voluntary subscription from staff at the rate of 10 cents per pay (deducted at source). Over the years the funds have provided relief in many deserving cases, all on a completely confidential basis. I would commend the funds to members of staff who are not already contributors.

* * * *

If you take a black spherical balloon covered with white spots and steadily blow it up, the speed at which any two spots recede from one another increases in proportion to the great-circle distance between them. To generalize this phenomenon from a two-dimensional surface to a three-dimensional hypersurface is a process for the mathematician and not one readily capable of visualization. Nevertheless, when you perform the generalization, you finish up with a description of the expanding universe in which we live: galaxies recede from us at a speed that increases in proportion to their distance. By measuring the Doppler shift ('red shift') of spectral lines you can measure the speed of recession and hence the distance of the galaxy. Thus, for an object whose distance from us is one million light years, the red shift is about $\Delta\lambda/\lambda = .0001$ (λ is the wavelength and $\Delta\lambda$ the wavelength shift). Last week it was announced that a team of astronomers in Australia had discovered a quasar with red shift $\Delta\lambda/\lambda = 3.78$. According to the above 'cosmological' interpretation of red shift, this object has a distance of some twenty thousand million light years and is the most distant known object in the Universe. The statistics of such objects provide us with the only observational means of studying the limits of the Universe. The previous record, which stood for ten years, was 3.53.

The method of discovery is a model of collaboration. The first step is to study the Parkes catalogue of radio sources (quite the most comprehensive catalogue in the world) and look for spectral characteristics that indicate a quasar. The second is to determine an exceedingly accurate radio position using the two NASA dishes at Tidbinbilla as an interferometer—these facilities are used part-time by the Division of Radiophysics for this purpose. The third is to find the visual object on the sky charts provided by the U.K. Schmidt telescope on Siding Spring Mountain. The fourth, final and most suspenseful step is to slew the nearby giant (3.9 m) Anglo-Australian telescope onto the object and record the optical spectrum.

Congratulations to those who pulled it off; and to you, John Bolton, now in retirement on the Queensland coast, for pioneering the way.

Paul Wild

From the Chairman—

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

Executive appointment

From page one

His overseas experience includes periods in West Germany and the United Kingdom on coal research projects.

A geology graduate from the University of Melbourne in 1950, Professor Taylor graduated MSc in economic geology from the University of Adelaide in 1953. He was awarded a DSc from the University of Melbourne in 1968.

Professor Taylor is a former member of the Australian Research Grants Committee, and a present member of the National Energy Research Development and Demonstration Council.

He will fill a vacancy on the Executive created by the retirement of Dr Hill W. Worner.

Mr Thomson said Professor Taylor's availability to take up the appointment in May had been made possible following discussions between CSIRO and ANU.

'I should express my appreciation to the University for its consideration in those discussions', he said.

CSIRO has a Finnish student working in the Division of Mineralogy in Perth. **Miss Pirjo Korhonen**, 28, is the recipient of an Australian-European Award from the Commonwealth Department of Education. She is a science graduate from the University of Helsinki and is currently studying for her masters degree. She is spending her nine months with the Division comparing the pre-Cambrian rock associations between Australia and Finland, working with **Dr Russell Hudson**.

☆ ☆

Dr Dick Brock, formerly Counsellor Scientific with the Australian High Commission in Washington, is now filling the post in Tokyo, vacated by **Dr Tom Grace**, who has returned to the Division of Entomology in Canberra at the completion of his term. The Tokyo post is one of several overseas missions undergoing a review by the Australian Public Service Board, and Dr Brock is filling the position pending the outcome of the review.

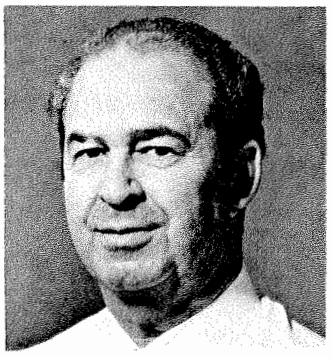
☆ ☆

Vic Benfold, recently retired from the staff at the Regional Administrative Office, Melbourne, was farewelled at a dinner party given in his honour at the South Yarra Club. Vic had been on the staff for nearly 40 years, and while most of this time was spent at the Regional Office, Melbourne, he did spend a period of time at the Horticultural Research Station, Merbein.

Vic, a very keen golfer hopes in his retirement to spend more time on the golf course and his colleagues presented him with a golf bag.

☆ ☆

Janette Thompson, in the purchasing section of Entomology, is wrestling with a problem not normally found in the Division—a wooden hawk. The Customs Department has possession of the bird at present, and insists that someone from the Division ordered it. Bird fanciers stand up.



The retirement from the Division of Applied Physics of **Mel Thompson**, above, marked the end of an era for the laboratory. Mel was the last of the original nine scientists of whom the National Standards Laboratory was originally constituted. Mel joined the Lab after graduating with honours in physics from the University of Adelaide, and over the years has made major contributions to his scientific discipline, including capacitance metrology and resistance measurement with particular application to resistance thermometry.

Mel's work has been honoured by the Sperry Award, which he shared in 1965 with **Doug Lampard**, his election as a Fellow of the Australian Academy of Science in 1972, and the Morris E. Leeds Award in 1977 for outstanding contribution in the field of electrical measurement.

Mel will continue to work as an Honorary Senior Research Fellow until the middle of the year when he will go to the U.S. to deliver a paper on the precise calibration of ratio transformers.

Retirement for Rachel

The retirement of Dr Rachel Makinson of the Division of Textile Physics in Sydney, brought to an end nearly 34 years' association with CSIRO and its predecessor, CSIR.

Among the 70 guests who gathered to farewell Dr Makinson was former Chairman, Mr Victor Burgmann, who was foundation Chief of the Division. Other former members of the Division among the guests included Professor Malcolm Chaikin, Professor Max Feughelman and Professor Ron Postle, Mr John Downes and the Chief General Manager of the Australian Wool Corporation, Dr Arthur Farnworth, and his colleague Mr Bruce Mackay. A close colleague, Dr Helen Newton Turner, formerly of the Division of Animal Genetics, was also among the guests at the function which was held at the Macquarie University Club.

The Chief of the Division, Dr Bob Haly, gave the farewell address, and Mr Burgmann made the presentation of an inscribed silver platter and goblets. Dr Makinson's speech in reply took the form of a piece of verse, describing her colleagues' work with wool.

Dr Rachel Makinson, who recently retired as Assistant Chief of the Division of Textile Physics, after nearly 34 years with CSIR and CSIRO.

The Chief of the Division of Land Resources Management in Perth, **Mr Ray Perry**, was one of a team of Australian scientists who attended an international seminar on sheep and wool which was held last month at Islamabad, Pakistan. Other members of the team were **Dr G. Callay** of the Department of Primary Production, Darwin, **Mr R. Howe** of the Animal Breeding Research Institute at Katanning, Western Australia, **Dr D. Saville** of the Wool Research Laboratory at Trangie, and **Professor David Lindsay** of the University of Western Australia.

☆ ☆

World research into mastitis control is receiving a boost from the visit to CSIRO's Chiswick research station of **Dr K. Larry Smith**, who is an Associate Professor in the Department of Dairy Science and Veterinary Science at the Ohio Agricultural Research and Development Centre.

Dr Smith is working with **Dr D. Watson** and **Mr I. Colditz** from the Division of Animal Health on research related to imminization. He arrived earlier this year for a six-month visit.

☆ ☆

Ian Common, of the Division of Entomology, has been elected an Honour Member for Australia, of the Sociedad Hispano-Luso-Americana de Lepidopterologia, for his outstanding work on the insect Lepidoptera. The honour president of the Society is the King of Spain.

☆ ☆

Yet another new Division has emerged, according to **Peter Martin**, of the Division of Land Use Research in Canberra. A recent letter from Micro Pro, California, arrived addressed to the Division of Hard Use Research, Canberra, Australia.

☆ ☆

The final of the CSIRO Black Mountain cricket competition was a real cliff-hanger. The favourites, P.I. Crop Adaptation, made 160. In reply, the Rest, who were rank outsiders, scored 7 for 162. The visitors were helped along by a dashing 88 from **Dr Peter MacNicol** (P.I.); and by **Dr John Philip** of IPS (oldest man on the ground!), who took a hat trick and four wickets in all (three clean bowled and one L.B.W.).

Hudson Memorial Awards presented

Two university researchers became the first recipients of the Sir William Hudson Memorial Awards for welding research, at a ceremony at Sydney University on March 31.

The Minister for Science and Technology, Mr Thomson, presented the awards to Miss G.N. Heintze of Monash University and Mr M.J. Blackler of the University of Sydney under a scheme sponsored by the Australian Welding Research Association, through the Sir William Hudson Memorial Trust.

During his years as Commissioner for the Snowy Mountains Hydro-electric Authority, Sir William took a strong personal interest not only in the engineering aspects of the project, but in its environmental aspects as well.

CSIRO's own alpine ecology research program was an outgrowth of the Snowy Mountains Scheme, and ultimately resulted in publication of the book 'Kosciusko Alpine Flora' which became the most definitive study of any ecological area in Australia.

Sir William's concern for the environment was remarked upon by the Minister during his speech, who said the environmental impact of the massive engineering project had been rigorously minimized, long before environmental impact statements were required by legislation.

Mr Thomson said Sir William had also been instrumental in establishing the Australian Welding Research Association, one of eight industry research associations which provided a valuable technology-transfer service to their member companies.

The Sir William Hudson Awards take the form of grants to researchers working on projects relevant to the welding industry. They may be made either to researchers in the public or private sector.

The Award to Miss Heintze was made as a supplementary grant to a project she is conducting on grain refinement and solidification cracking of steel during submerged arc welding.

Mr Blackler received a grant to help him initiate research into the behaviour of steel silos, tanks and related structures.

Cricketing win to D.I.R.

Under a clear blue sky and temperatures in the high 30s, Division of Irrigation Research won the 1982 Cricket Challenge Match against ICI, Griffith.

Batsmen starring for Irrigation Research were Wayne Meyer (21 n.o.), Greg Humphries and Ron Locke (both 22 n.o.). Notable efforts were made by Gary Garland (6 n.o.) and Ken Parker (8).

Winning the toss, ICI elected to bat, and put 123 runs up, before Irrigation Research wielded the willow and overcame nervousness and nausea to exceed ICI's total in the limited over match, with one wicket in hand.

The team for DIR was Wayne Meyer 21 n.o., John Lockhart 7, Peter Hocking 1, Greg Humphries 22 n.o., Mick Meyer 10, Ron Locke 22 n.o., Ken Parker 8, Bob White 1, Philip Orr 9, Gary Garland 6 n.o., John Adeney 2, and Stuart Paterson 4 n.o.

Irrigation Research offers a challenge to any CSIRO team to a match at Griffith, using Irrigation Research rules. Arrangements for visiting teams to tour wineries on Saturday and to play cricket on Sunday, starting at 10 am, can be made.

No quiet retirement for Fred

This year is not one of quiet retirement for Fred Lehany, the former Director of the National Measurement Laboratory.

He has taken on the task of chairing the Organizing Committee for the 52nd ANZAAS Congress, to be held at Macquarie University next month.

The last 12 months have seen Mr Lehany raising funds, chairing meetings, solving problems and attending to the hundreds of details which are part of Australia's largest science conference.

More than 2000 scientists from Australia and New Zealand, Asia, America and Europe will gather at Macquarie to debate major current issues and discuss the theme: *Australia's Industrial Future.*

Apart from leading overseas speakers, many CSIRO researchers will take part in the Congress: organizing, convening, chairing, and speaking.

According to Mr Lehany, Australia is one of the most highly urbanized societies, experiencing crippling problems of unemployment and inflation common to most western nations.

'At the same time we find ourselves rich in mineral resources in a resource-hungry world. What is our attitude to our nation's resources? What is industry's attitude?"

RESOURCE CONFLICT

Mr Lehany pointed out that the exploitation of minerals and their future refinement requires immense capital investment, both in the private and public sectors, in order to provide the supporting infrastructures of power, transport and export facilities.

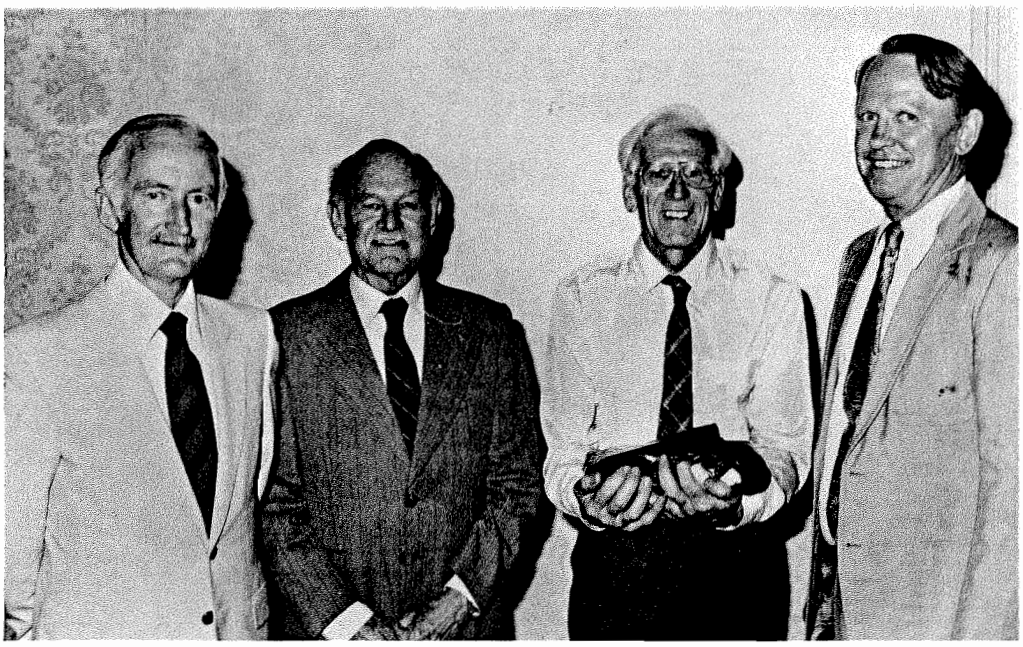
Inevitably, the main parties directly involved are large corporations, together with the Federal and State Governments. Their decisions and actions will have profound effects throughout the community.

At the same time, the more traditional industries will be affected and the way of life of all Australians and New Zealanders will be changed in varying degrees.

As well as the more traditional sections, in which trends are discussed and dissected, ANZAAS 1982 will have some new ones. Two in particular which reflect the all-pervading nature of science and technology are: Section 42: *Law* (which deals with such legal problems as those arising from human tissue transplants and extra-uterine fertilization) and Section 43: *Robotics* (which looks at the different aspects of robot technology).

Has Armidale on the New England tablelands got an undeserved reputation for an uncomfortable climate? Researcher Jack Hilder has conducted his own enquiry, based on figures going back 80 years, and has come up with the finding that the reputation is undeserved. Jack's research showed that Armidale was sunnier than Melbourne, especially during winter, has fewer wet days than Sydney or Melbourne, and is less humid than the State capitals of Melbourne and Sydney. Mean maximum temperatures show that Armidale is 0.6 of a degree warmer than Melbourne and 1.0 degree cooler than Sydney. To be comfortable in Armidale, Jack says you need a warm, well-insulated house with glassed walls on the northern side to catch the winter sun.

Wool scientist retires



Dr George Wood (second from right) is pictured at a function held in his honour by the Division's research staff. With him are from left, Dr Bert Anderson, Senior Principal Research Scientist at the Division, Dr Menzie Lipson, formerly Chief of the Division, and Dr Don Taylor, present Chief of the Division.

Dr George F. Woods, O.B.E., a Chief Research Scientist at CSIRO Division of Textile Industry, Geelong, Australia has retired after a long and distinguished career in research on wool textiles.

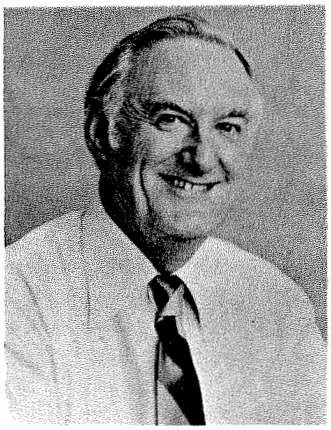
Dr Wood—a world authority on wool scouring—was born in England, and graduated with B.Sc. Hons. in Chemical Engineering from the University of Birmingham in 1942. He received his doctorate from the University in 1944 for work on the performance of flame-throwers.

In 1955 he was appointed as a Senior Research Officer at the Geelong unit of CSIRO's Wool Research Laboratories (now the Division of Textile Industry), where he quickly established himself as an authority in both the science and the technology of wool scouring. In particular, he played a leading role in a number of the Division's industrially applied developments, including Si-Ro-Mark scourable branding fluids, shrinkproofing processes, and jet scouring.

Through the late 1970s, Dr Wood's work on the behaviour of grease and dirt emulsions in scouring waste waters at high concentrations of dissolved solids (suint, soda, etc.) led to the development of the Lo-flo process—a process that uses the chemicals already present in scour liquors to facilitate the removal of grease and other impurities from the liquors. The process was awarded the Engineering Excellence Award of the Institution of Engineers, Australia, in 1978.

In 1981, Dr Wood was awarded the Order of the British Empire for services to science and the wool industry.

Although in retirement from CSIRO, Dr Wood intends to spend part of his time in future acting as a consultant for the wool industry.



Dr Merv Hegarty, above, Officer-in-Charge of the Cunningham Laboratory for the Division of Tropical Crops and Pastures, has been appointed a member of the Queensland Board of Advanced Education. Dr Hegarty has had a long association with tertiary education in Queensland and was Deputy Chairman of the Queensland Institute of Technology College Council.

☆ ☆

Dr Bob Brown, Chief of the Division of Manufacturing Technology in Melbourne, is a co-recipient of the Blackall Machine Tool and Gage Award, which was presented recently in Washington. Mr Brown received the award for 'investigations of complex dynamic problems of chip segmentation during metal cutting, using high speed photography and quick-stop techniques.'

☆ ☆

Harry Graves, of the Division of Building Research, has been awarded a Doctor of Science (D.Sc.) from the University of London, for publications previously published in the areas of wood products pathology and wood preservation.

John Adeney, an experimental officer with the Division of Irrigation Research in Griffith, has added to CSIRO's reputation for having representation at some of the world's more unusual conferences. John is currently attending the Wedgwood International Seminar in the U.S. where he will present a paper on Wedgwood Wares related to Australia.

According to John, the research involved was most fascinating. He discovered a wide range of plates produced by the Wedgwood factory, of both cream ware and bone china, with Australian wildflowers on them. Other Australian aspects in his paper relate to the Sydney Cove medallion, produced in 1789, figurines of the kangaroo and cockatoo, and a portrait medallion of Sir Ross Smith, the only Australian yet represented on a Wedgwood medallion.

☆ ☆

Dr John Mott, of the Division of Tropical Crops and Pastures, is spending almost six months overseas on a study tour. He is at present at Oxford University working with **Dr Roger Hall** in the field of plant competition. In September, he will leave to spend two months in Africa before returning home, with his family, shortly before Christmas.

☆ ☆

A new home in Adelaide for **Dr Geoff Beckman**, of the Division of Tropical Crops and Pastures, who has moved from the Brisbane Laboratory. Geoff joined the Brisbane soils group first in 1950, returning after completing his Ph.D. in Hawaii.

☆ ☆

The retirement of **Mr Ron Reeve**, from the Division of Soils this month, brings to an end 32 years of work with CSIRO. Ron was one of the early occupants of the 'temporary' chemistry building in George Street when the CSIRO Brisbane group was the Plant and Soils laboratory. In retirement, he plans to pursue his hobby of furniture restoration.

A visitor to the Division of Mineralogy's Perth laboratories is **Dr Eric Tordiffe**, of the Geochemistry Department of the University of the Orange Free State in South Africa. Dr Tordiffe will be working with **Dr Ray Smith** and **Dr Ernie Nickel** looking at the secondary distribution of ore-related elements in calcrete environments. He'll be spending almost three months with the Division.

Parents with a problem

A group of Queensland parents who form a support for an intellectually handicapped persons group, has appealed to CSIRO for assistance in helping to solve a problem for handicapped people in Australia.

Mr Lionel Rackley has appealed to CSIRO scientists through *CoResearch*, following an article early last year on the Organization's contribution to the Year of the Handicapped.

Writing to Mr Peter Osman, of the Division of Applied Physics in Sydney, Mr Rackley said his group, Friends of Challinor Aid Leage (FOCAL), were concerned that many handicapped people who lived independently in the community were unable to readily discriminate between similarly packaged items so that they did not buy unwanted items due to their inability to understand the package.

'They are also confused by instructions on items, or facilities for their use, or cautions, etc.', Mr Rackley said.

He said research had shown that some of the groups of items similarly packaged and alike in appearance which were confusing included liquid detergents, disinfectants, floor cleaners, cooking oils, cordials and fabric conditioners.

They were confused between shampoos, conditioners, hand and body creams, toothpastes, face creams and shaving creams.

Other edible foods, similarly packaged, which caused confusion, included pet mince and ordinary mince, tinned petfood and tinned edible fish, and liquids such as kerosine, turpentine, shellite, distilled water and methylated spirits.

Mr Rackley said important instructions on packages were also unable to be read by many handicapped people who were in other ways, quite independent.

These instructions included 'Do not inhale', 'Do not drink', 'Do not thaw', 'Cook before eating', 'Shake well before using', 'Use in a ventilated area', and 'Do not allow contact with skin or eyes'. Mr Rackley said a project team had already investigated the possibility of picture labelling using pictograms symbols, but had discovered that there were no universally accepted visual illustrations which would become quickly understood.

'We would be most appreciative if your colleagues at CSIRO could give consideration to the possibility of simplified labelling so that the increasing number of intellectually handicapped people in the community can occupy a life of comparative independence', Mr Rackley said.

Researchers with suggestions to offer could contact Mr Rackley, care of the Senior Community Liaison Officer, Intellectual Handicap Services Branch, Legacy House, 56 Mary Street, Brisbane.

Honour for Dr Bill Blevin

The Assistant Chief of the Division of Applied Physics, **Dr Bill Blevin**, has unanimously been elected to the International Committee for Weights and Measures (CIPM).

The Committee is composed of 18 eminent scientists and metrologists of different nationality, chosen from the 45 countries that are signatories to the Convention of the Metre. These members are appointed in a personal capacity and not as representatives of their countries.

Music under the trees

A series of three 'Music under the trees' lunchtime concerts were held during April by the Division of Plant Industry at Black Mountain. The concerts were presented free by students from the Canberra School of Music and attracted a large number of CSIRO staff from the Canberra-based Divisions and administrators.

Calling all researchers interested in the Hunter Valley region

Researchers with projects centred on the Hunter Valley region of New South Wales have been invited to contribute towards a publication of resources and environmental research in the region.

The Australian National University's Centre for Resource and Environmental Studies in Canberra will publish the directory which aims to improve communications among research workers and users of Hunter Valley information. The decision to publish the directory arose from a broadly-based research project entitled 'Factors Limiting Coal Production' which the centre is undertaking.

This project will devote a considerable part of its focus to coal and related developments in the Hunter Valley and encompasses research into economic, social and environmental issues associated with development.

'As the definition of our research progressed, we became aware of the number of other researchers and institutions with interests in common with our own', explained Mr Peter Waterman, who is associated with the project.

'From wide discussions, we have discovered that this concern is shared by many others and the publication will aim to give research objectives, availability and the form of presentation of results as well as contact procedures', he said.

Individuals within CSIRO who are working on projects in the Hunter Valley region are invited to contact Mr Waterman at the University, PO Box 4, Canberra, ACT, or telephone (062) 49511.

CSIRO films for N.S.W. high schools

The New South Wales Department of Education has accepted 19 five-minute films in "The Researchers" series for use as an educational aid in secondary schools.

The Department is providing teachers notes to accompany each film and these will be available for use as discussion starters in science lessons.

Topics covered in the films include energy, crops, agricultural machinery, oceanographic research, wine growing, solar energy for home and industry and pollution.

The Science Communication Unit is now negotiating with the Victorian Department of Education for a similar choice of films to be made available for use in that State's secondary schools.

Food research industry visit is highly successful

From page eight

They were addressed by the Director of the Institute of Animal and Food Sciences, Dr K.A. Ferguson, and the Chief of the Division, Dr J.H.B. Christian, on the functions of CSIRO and the aims and ideals of the Division.

Mr Lawrie Muller then outlined the role and work of the Dairy Research Laboratory, Dr Des Walker explained the purpose of the Meat Research Laboratory, Dr Alan Johnson described the research structure at the FRL touching on the philosophy of the research, how research programs are initiated and developed and overseas aid, and Mr Keith Richardson spoke on the importance of industry liaison.

After lunch, participants were divided into five groups to tour the laboratories, spending half an hour at each of five stations.

The tour took in plant physiology, food structure, food safety and nutritional quality, chemical bases of food acceptance, and food transportaton and processing.

On the second day, about 100 food technicians took part in a similar program, but rather than following a formal tour of the laboratories, they spent the afternoon visiting research areas of specific interest.

Those attending the Food Industry Days expressed appreciation at being invited and enthusiasm for the work being done by the Division while the Division was encouraged by the interest shown and felt time and effort had been well spent.

Parkes plays vital role in Quasar discovery

Two CSIRO scientists are part of a team of Australian and British astronomers who have discovered a quasar at the edge of the Universe.

The quasar was found by Dr Bruce Peterson (Mount Stromlo and Siding Spring Observatories), Dr Ann Savage (U.K. Schmidt Telescope of the Royal Observatory, Edinburgh) and Dr David Jauncey and Dr Alan Wright (CSIRO Division of Radiophysics).

The discovery, at the very fringe of the known Universe, culminated an intensive, six-year search, using radio and optical telescopes in Australia.

The discovery has created an enormous excitement among astronomers.

It will open up a whole new debate on the extent and age of the Universe, and rekindle the controversy about the nature of quasers.

Quasers are the most distant and most luminous bodies known, producing enormous energy from a comparatively small source.

More than 200 have now been discovered, but the source of their intense radiation remains unkown.

The newest quasar, code-named PKS 2000-330, has been calculated by the scientists as pouring out the energy of 100 million million suns, making it the most luminous known object in the Universe.

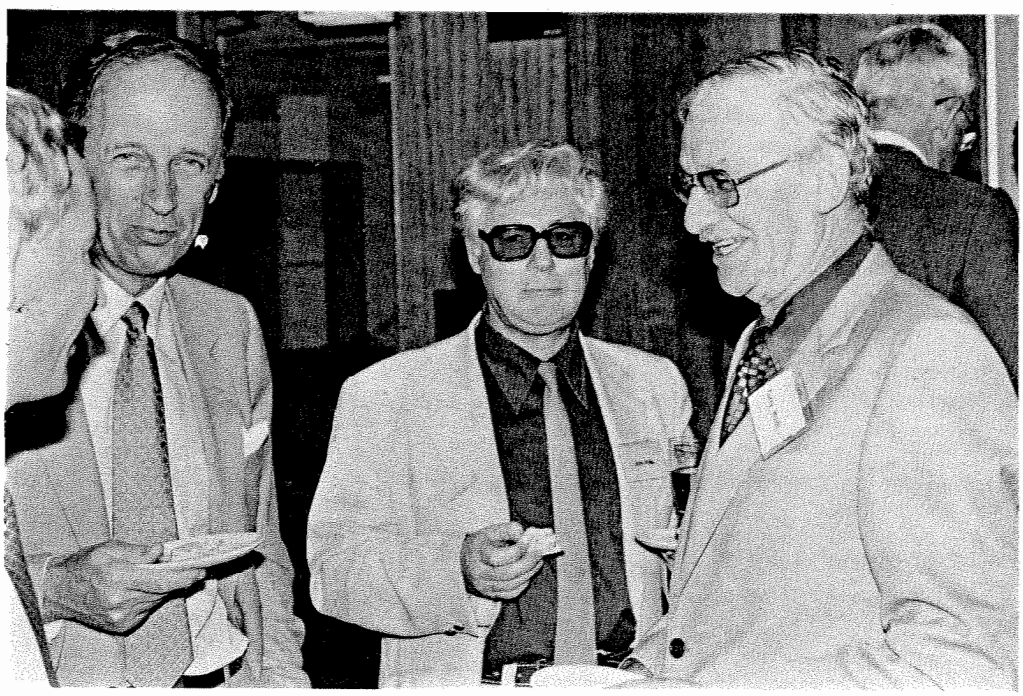
It is rushing away from the earth at almost 300 000 kilometres per second, making it 20 000 million light years away, and the light now detected by the scientists would have left the quasar long before the formation of the earth.

PKS 2000-330, was discovered using CSIRO's 64-metre radiotelescope at Parkes.

An accurate radio position was measured using the Tidbinbilla radio interferometer of the Deep Space Network near Canberra, while the U.K. Schmidt telescope at Siding Spring Mountain near Coonabarabran was used to identify the optical object.

Finally, the optical spectrum obtained on the Anglo-Australian telescope also at Siding Spring, proved conclusively that this quasar was further away than any other known object within the Universe.

Executive visit to Computing Research



The Division of Computing Research's laboratory at Black Mountain in Canberra was recently visited by members of CSIRO's Executive and representatives of the Institute of Physical Sciences of which the Division is a member. Chatting informally over lunch during the visit is, from left, Mr Baillieu Myer, a part-time member of the Executive, the Director of the Institute of Physical Sciences, Dr John Phillip, and the Assistant Chief of the Division of Computing Research, Mr Terry Holden.

Urrbrae agricultural award offered for jubilee year

An Urrbrae Award, normally offered biennually by Urrbrae Agricultural High School in South Australia is being awarded consecutively this year to coincide with the school's golden jubilee celebrations.

The Award consists of a gold medal and $1000, and is given to an old boy of the school who qualifies in one of five categories. Two CSIRO scientists have recently won the award, Dr K. Whitely of the Division of Textile Physics in Sydney in 1981, and Dr P. May of the Division of Horticultural Research in 1977.

The Secretary of the Award, Mr R.D. Schultz, said nominations were invited of individuals who had made an outstanding contribution to any aspect of Australian agriculture.

Nominations must have been received by June 29, 1982, and should include a description of the nominee's work and its impact on industry.

'When considering nominations, the Board normally places emphasis on work done over the last 10 years, but for the 1982 Award, there will be some relaxation of this emphasis', Mr Schultz said.

The winner of the Award will be announced on August 31, 1982, and the Governor of South Australia, Sir Donald Dunstan, will present a medal and cheque at a ceremony at the school on October 18. Further information is available from Mr Schultz by contacting him at 505 Fullarton Road, Netherby, South Australia.

Environmental review of Murray-Darling Basin

CSIRO has begun a review of the environmental problems in the one million square kilometre Murray-Darling Basin.

The Minister for Science and Technology, Mr David Thomson, said the review was aimed at:

- identifying those areas and issues most in need of scientific investigation; and
- determining how CSIRO's research programs could best provide useful answers.

The Murray-Darling Basin is bounded by the Darling Downs in Queensland and Murray Mouth in South Australia, and is centred on the 2200 kilometre Murray River.

Mr Thomson said CSIRO recognized that the development of the Basin's land and water resources was such that management problems and aspects of environmental degradation are of general public concern.

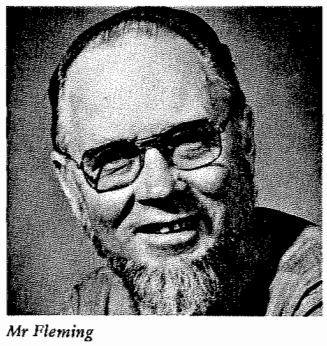
It is common knowledge that parts of the Basin are severely affected by salinity, water logging and accelerated erosion, and that these are causing damage to flora and fauna, reducing land productivity and degrading water supplies, especially those for Adelaide.

'Some problems require a political solution, and others engineering or agronomic solutions', he said.

'But the first step is to clarify where research is needed as a prelude to solving the problems.'

A study team is headed by Mr Mick Fleming, an hydrologist with the Division of Land Use Research in Canberra, and includes scientists from a wide variety of disciplines.

It will be covering the whole Basin but not those aspects presently being examined by other bodies such as the River Murray Commission.



Mr Fleming

The study will not be attempting to replace such studies as the Maunsell Report on salinity mitigation.

'The review will provide a summary overview of the resources of the whole Basin and include an annotated bibliography of major reference material and a list of other reports, published and unpublished', Mr Thomson said.

'The CSIRO team plans to complete its report by mid-July and to convene a public conference later in the year.

CSIRO Executive's 1982 program of visits and meetings

Executive and Executive committee meetings, executive seminars and visits have been arranged for the following times and venues for the remainder of this year.

May 17. Executive Seminar 'The Atmosphere and the Oceans', to be held in Melbourne, followed by an Executive visit to the Aspendale and Clayton laboratories, on May 18, and an Executive meeting in Melbourne on May 19.

May 27. Executive Committee meeting in Canberra.

June 6. Executive meeting in Canberra.

June 24. Executive Committee meeting in Canberra.

July 7. Executive visit to Lucas Heights in Sydney, followed by an Executive meeting in Sydney on June 8.

June 22. Executive Committee meeting in Canberra.

August 11. Executive visit to Long Pocket, Cunningham and Cleveland laboratories in Brisbane and the presentation of the David Rivett Memorial lecture, followed on August 12 by an Executive meeting in Brisbane.

August 26. Executive Committee meeting in Canberra.

September 8. Chiefs' meeting in Canberra.

September 9. Executive meeting in Canberra.

September 23. Executive Committee meeting in Canberra.

October 10. Executive visit to North West Australia extending until October 15 and including an Executive meeting in Darwin on October 14.

October 28. Executive Committee meeting in Canberra.

November 11. Executive meeting in Canberra.

November 25. Executive Committee meeting in Canberra.

December 9. Executive meeting in Canberra.

CAT

The Director of the Bureau of Scientific Services, Mr Sam Lattimore, has spelled out his views on communication in a letter received by CAT at its last meeting.

Mr Lattimore was responding to a request by CAT to establish a working party on communication policy. The request was denied on the basis of low priority because, Mr Lattimore said, the Office of the Executibe was considerably stretched for resources.

'I believe we should be careful that communication is not seen as something valuable for its own sake, and that every opportunity should be taken to link it with the Organization's principal function of carrying out research', Mr Lattimore said.

'There is no doubt in my mind that one of the very basic implied policies of the Organization is that communication activities are aimed at either supporting research or its utilization.

'And so it should come as no surprise that Chiefs have a big say in setting up communication policies.

'Most of the matters raised in the report from the Melbourne Regional Group of CAT seems to fall clearly within the decision-making area of individual Chiefs (and any overall communication policy is likely to restrict the Chief's freedom to act and to be seen as restrictive)', Mr Lattimore added.

Mr Lattimore said there were some communication activities which were most efficiently carried out centrally and this was the reason for grouping together a range of functions within the Bureau. 'I believe one of the main problems facing divisional information officers and liaison officers is not the lack of a communication policy, but the lack of peers in the Division with whom they can discuss their work.

'I welcome an opportunity to discuss some of these issues at the meeting of CAT to be held in Canberra in July', Mr Lattimore added.

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CSIRO's Science Communication Unit will be playing an important supporting role in the ANZAAS Congress to be held at Macquarie University next month.

Three members of the unit will be members of a team of information specialists who will manage and staff the Congress Media Centre.

The three are Tom Parkes, from the Unit's Media Liaison Group, who will manage the centre for the week of the Congress, Natalie Provis and Jeff Culnane.

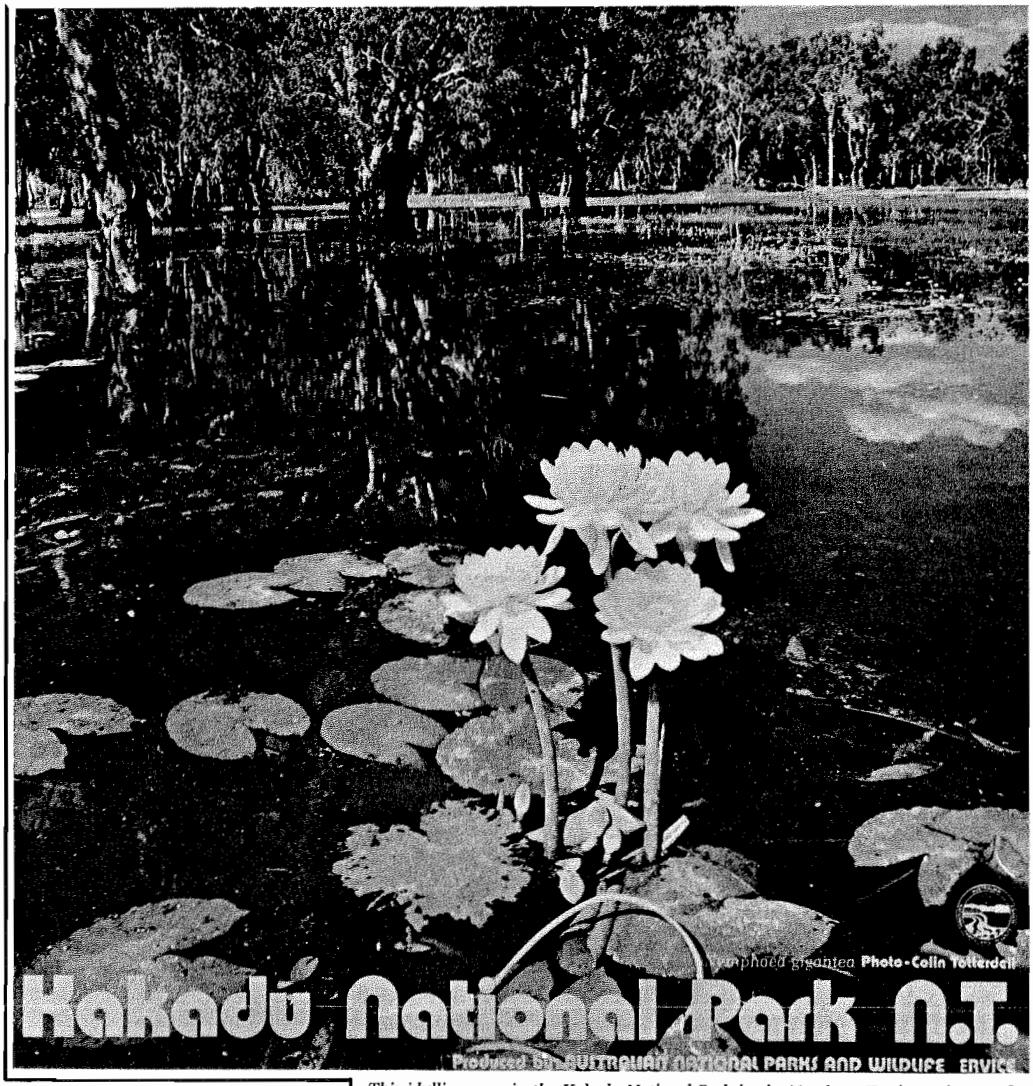
Other staff for the Media Centre have been drawn from the Information Section at Macquarie University, the Information Section of the University of NSW and the Public Relations Section of the Department of Science and Technology.

At last year's ANZAAS Congress at the University of Queensland, the Media Centre was planned and operated by the Science Communication Unit in cooperation with the Congress Organizing Committee.

The Media Centre assists media representatives to cover the Congress. It will provide a 'find and deliver' service for Congress papers; stage press conferences, hold daily briefings and generally act as the point of contact between the media and the Congress.

All Congress speakers are being asked to call in at the Media Centre before they present their paper so that a copy of the paper can be made for the use of media representatives.

CSIRO speakers could send advance copies of the papers to Tom Parkes, CSIRO Media Liaison Group, P.O. Box 225, Dickson, ACT 2602.



This idyllic scene, in the Kakadu National Park in the Northern Territory, is one of two posters recently produced by the Australian National Parks and Wildlife Service, using photographs taken by Colin Totterdell of the CSIRO Division of Plant Industry in Canberra.

The photograph is one of a lagoon on the Jim Jim Creek, showing the pink-tipped white water lilies, Nymphaea giganta. It was one of hundreds of photographs taken by Colin when he visited the park in 1980. A number of other photographs taken at the same time form part of a display on the walls of the recently opened visitors' centre at Kakadu.

Food Research loses two senior scientists

Two senior scientists who between them had almost 90 years' service to CSIRO, retired recently from the Division of Food Research.

Mr Jack Kefford and Mr Jack Mellor both joined the Division in 1938 and remained with the Division for the whole of their working lives with the exception of some war service.

Jack Kefford retired as a Chief Research Scientist, with a most enviable reputation in food science and technology, while Jack Mellor retired as a Principal Research Scientist whose expertise lay in the field of freeze drying of food.

Jack Kefford is a scientist with strong international connections, and his service to the international scientific community was recognized in 1978 by his election as Secretary-General of the International Union of Food Science and Technology. He has served as Chairman of the Editorial Committee of the Food Research Quarterly since 1977. He is continuing at the Division of Food Research as an honorary research fellow.

Jack Mellor's contribution to the science of freeze drying was recognized when he was elected as President of the Vacuum Physics group of the Australian Institute of Physics in 1969. More recently, he has been working as the Australian representative on the International Institute of Refrigeration.

Jack Mellor will also continue his association with the Division as an honorary research fellow.

Industry visits Food Research Laboratories

Food is a subject area in which most of us believe we are expert.

So rather than be inundated by thousands of 'experts' at a conventional laboratory open day, the Division of Food Research recently held two Food Industry Days at its Laboratory in Sydney.

The aim of the days was to introduce people working in the industry to the Division and its laboratories, to show them what type of work was undertaken and to encourage them to contribute ideas or problems to be solved.

The Division invited about 100 food industry leaders to participate in the first day.

Continued on page six

SCANFILE IS AVAILABLE

Scanfile, the weekly newsletter from the Headquarters Library, is available to individuals in Divisions throughout the Organization.

Scanfile contains a synopsis of a selection of published material from leading international journals not widely circulated within CSIRO. Subscribers wishing to receive full reports on each item can fill in an attached form and the article is returned promptly.

Articles are aimed at science policy and management issues. Its Editor, Ms Doris Leadbetter, tries to keep the content flexible, and include new areas of interest within the science field.

Individuals interested in receiving Scanfile each fortnight should contact the Headquarters library in Canberra.

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris.

CoResearch

CSIRO's staff newspaper *May 1982* **251**

A 'hands on' approach to science education

CSIRO has embarked on a new venture—a Science Education Centre at its Highett site in Melbourne.

The Centre was officially opened last month by the Minister for Science and Technology, Mr David Thomson.

Aimed at secondary school students, it has been designed to fire their imaginations with the relevance of science—its past and present achievements and future possibilities.

At the official opening of the Centre, the Chairman of CSIRO, Dr J. Paul Wild, said the Science Education Centre was to be a place where high school students and teachers could immerse themselves in a particular area of science for a morning or afternoon.

'There will be a very strong emphasis on the active involvement of the students in the range of experiments, working models and exhibits, and demonstrations that will be provided', Dr Wild said.

The theme chosen for the Centre's first year of operation is 'Energy', so all the films and videotapes, demonstrations and experiments, projects and working models relate to that theme.'

Dr Wild said the Centre would not have been possible without the substantial assistance of the Victorian Education Department which had seconded a science teacher to CSIRO to establish and operate it.

The Minister, Mr Thomson welcomed the establishment of the Centre.

'I see it as an interface not simply between CSIRO and schools but between science as a whole and the education system', he said.

'I hope that in the Centre's future, the treatment of various scientific areas such as 'Energy' will involve not only CSIRO but other research institutions and private enterprise', Mr Thomson added.

It was planned that groups of up to 35 students with their teachers would spend half a day at the Centre.

Following consultation with the class teachers, appropriate experiments would be selected for the students to work on.

The current list of experiments includes solar collector design, various efficiency experiments, production of ethanol mixture and friction.

The students would also be able to examine working models and exhibits, watch demonstrations and tour some research projects at CSIRO's Division of Energy Technology which is housing the Centre.

Organizers of the Centre hope that visits to the Centre will not be looked upon as isolated outings but rather as an integral part of the students' course.

They expect the theme of the Centre to change every 12 to 18 months.

Looking ahead, they hope to be able to expand the Centre, and with possible sponsorship, to develop a travelling component for country students.

Two CSIRO researchers elected to the Australian Academy of Science

Two CSIRO scientists were among 10 Australian scientists who were recently made Fellows of the Australian Academy of Science.

The honour of Fellowship is conferred upon scientists for distinguished contributions by research to the advancement of the natural sciences.

The Chief of the Division of Oceanography, Dr Angus McEwan, and Dr Allen Reid, Chief Research Scientist in the Division of Mineral Chemistry, were created Fellows when the Academy of Science held its annual meeting in Canberra late last month.

Dr McEwan's FAA was for his contributions to geophysical fluid dynamics, particularly the processes of the atmosphere and ocean, such as fronts, waves, convection, stratified and rotating flows, and the quasi-biennial oscillation.

Dr Reid is distinguished for his work in the physical chemistry of the solid state, particularly in the crystal chemistry of oxide compounds, and in solid state chemistry.

Other Fellows elected were Mr Alex Boden, author and publisher of a series of chemistry textbooks, Professor Richard Brent of the Australian National University's Science Faculty, Dr Jacob Israelachvili of the ANU's Research School of Physical Sciences, Professor John Lovering of the University of Melbourne's School of Earth Sciences, Professor Ian McCarthy, Professor of Physics at Flinders University, Professor Wilfred Simmonds, Professor of Physiology at the University of Western Australia, Professor Norman Walker of the University of Sydney's School of Biological Sciences, and Dr Wesley Whitten of the University of Tasmania's Department of Zoology.

Captured by a computer

Three pupils from Parkdale High School in Victoria 'operate' a nuclear power station on the Apple computer at CSIRO's newly opened Science Education Centre at Highett in suburban Melbourne. The pupils are being observed by, from left, the Director-General of Education in Victoria, Dr Norman Currie, the Centre's Science Education Officer, Mr Graham Wallis, the Minister for Science and Technology, Mr David Thomson, the Chairman of CSIRO, Dr J. Paul Wild and the Principal of Parkdale High School, Mr John O'Brien.

Birch is Academy president

The new President of the Australian Academy of Science is Professor Arthur Birch, formerly Professor of Organic Chemistry at the Australian National University in Canberra.

Professor Birch succeeds Dr Lloyd Evans of CSIRO's Division of Plant Industry.

Professor Birch, a Fellow of the Royal Society, will serve as President for a four-year term.

Professor Birch is well known for his work on the organic chemistry which contributed to the development of the contraceptive pill.

Professor B.W. Holloway of the Department of Genetics, Monash University, was elected Secretary (Biological Sciences).

A new challenge for Textile Industry scientist

The Victorian State Election of April 3 not only resulted in a change of government for 'The Garden State', it also marked the end of Chief Research Scientist David Henshaw's service with the Division of Textile Industry.

Mr Henshaw was the successful Labor candidate for the Legislative Council seat of Geelong Province. His resignation ends a lengthy and successful career with CSIRO.

Born and educated in Perth, Mr Henshaw graduated in physics from the University of Western Australia. After some years of lecturing and researching in X-ray crystallography at the University, he joined the Division of Textile Industry at Geelong in 1958.

Mr Henshaw originated the concept of self-twist spinning, which became the basis of the self-twist spinning machine developed by the Division in collaboration with Repco Ltd, and in 1970 he was awarded the MBE.

The self-twist system was developed by a group in the Division and the final version dramatically increased the speed at which two-ply worsted weaving yarns could be produced. It employed a machine that is smaller, quieter and uses less power than conventional spinning equipment.

In recent years Mr Henshaw has been the leader of the Division of Textile Industry's research group concerned with topmaking and spinning.

The Chief of the Division of Textile Industry, Dr Don Taylor, right, congratulates Mr David Henshaw, Chief Research Scientist in his Division, who was recently elected to the Victorian Legislative Council for the Labor Party as the representative of Geelong Province.

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Dr Wilf Crane, of the Division of Forest Research, has been selected as a winner in a recent competition run by the Hewlett-Packard company. Wilf's computer program, fire danger, enables fire authorities and men on the land to have an automatic fire danger index, a hazard rating and potential rate of fire spread. Information on weather conditions, fuel loads and terrain can be entered into a hand-held HP programmable calculator which will give an immediate printout in English.

Wilf's prize is a choice of a piece of computer equipment.

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Globetrotters **Peter and Barbara Schachenmann** recently arrived to spend 18 months in Townsville where Peter is a visiting research worker at the Davies Laboratory.

Peter, a veterinarian, and his wife are Swiss, have lived in Kenya, northern India, and Tanzania. Before their arrival in Australia they had travelled in Ethiopia and Egypt, and have Africa and South America on their itinerary when they leave Townsville.

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The Chairman of CSIRO, **Dr J. Paul Wild**, has been awarded an honorary degree of Doctor of Science by the University of Newcastle.

Dr Wild accepted the degree in recognition of his outstanding contributions to science in Australia, at the University's graduation ceremony on April 24. He was also occasional speaker at the ceremony.

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Botanist **Dr Helen Hewson**, a guest scientist at CSIRO's Herbarium Australiense in Canberra, has written the notes which accompany each of the paintings in a new book named 'Flower Paintings of Ellis Rowan'.

The book features 20 of **Ellis Rowan's Australian wildflowers** from a collection of 947 of her works now held by the Australian National Library. Ellis Rowan, who died in 1922, travelled the world painting wildflowers, insects and birds.

Cosmos comes to Australian television

Cosmos, a weekly series of 13 hour-long broadcasts devoted to astronomy and space exploration, premieres on ABC television on Wednesday June 2, at 10.05pm.

The series is hosted by Dr Carl Sagan, the distinguished Cornell University astronomer and Pulitzer-Prize-winning author.

Cosmos covers a wide range of topics related to space exploration, including, in the first program, 'The Shores of the Cosmic Ocean' in which Dr Sagan embarks with viewers on an immense cosmic journey which begins half way to the edge of the known universe, eight billion light years from Earth.

Aboard this spaceship of his imagination, Dr Sagan takes audiences to the wonders of the Cosmos: quasars, exploding, spiral and elliptical galaxies, star clusters, supernovas and pulsars. Piercing the clouds of Earth, viewers will find themselves in Egypt, atop a 2000-year-old lighthouse near Alexandria, where Eratosthenes first measured the size of the Earth. Dr Sagan enters a stunning re-creation of the long-vanished Alexandrian Library, the seat of learning of the ancient world, to illustrate the fragility and preciousness of knowledge.

Other programs in the series include 'One Voice in the Cosmic Fugue', an examination of how life on Earth began, 'The Harmony of Worlds', in which Dr Sagan examines the life of Johannes Kepler, the first modern astronomer, and 'Heaven and Hell' when Dr Sagan looks at the future of the world.

Funrunners get going in Melbourne

Melbourne's inaugural 'Great CSIRO Run', held on March 26, attracted 117 entrants from 13 Divisions, with 102 runners completing the 7.25 km course around Royal Park.

Neil McKern from Protein Chemistry was the winner in an excellent time of 22 minutes 44 seconds. Ken Lewins from Textile Industry was second in 23.26. Third, and winner of the over 40 section was Peter Hannaford from Chemical Physics.

First woman home was Kerryn Schulze, also from Textile Industry, in the time of 28.34.

The competition was very keen with seven Divisions being represented in the top 10 individual placings. The team trophy was convincingly won by Protein Chemistry with Animal Health second, just ahead of third-placed Materials Science.

Runners and spectators relaxed at the post-race BBQ and presentation put on by the race organizers from the Division of Animal Health. The organizers are hoping that next year's run will attract representatives from more Melbourne Divisions and even a few country and interstate runners.

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The Division of Land Resources Management in Perth has recently farewelled **Aggrey Ekirapa**, who has returned to Kenya after six months working with **Frank Honey's** remote sensing group on Landsat imagery. He will rejoin the Kenyan Ministry for Agriculture in Nairobi.

Mr and Mrs Gurnett-Smith at their farewell function held recently at Headquarters, Canberra. 'Smithy' retired as Officer-in-Charge of CSIRO's Centre for International Research Co-operation after almost 35 years' service. He began his career in Griffith after World War II, and during his years with the Organization, spent time in Washington and at Bogor in Indonesia. In 1978, he was appointed to head CIRC. The Gurnett-Smiths plan to spend their retirement living in Canberra but with overseas visits to fulfil international commitments.

Five radio telescopes in linkup

Five radio telescopes straddling half of Australia are to be synchronized for the first time to form a single powerful radio telescope to track radio sources in the southern sky.

The experiment, brings together telescopes operated in Australia by five separate authorities. It was the result of two years intense planning and co-operation, based on an idea from scientists in CSIRO's Division of Radiophysics.

The five telescopes are sited at the CSIRO's Radio Observatory at Parkes, the University of Tasmania's Radio Observatory near Hobart, the NASA tracking station at Tidbinbilla near Canberra, the University of Sydney Fleurs Observatory near Sydney and the Landsat tracking station at Alice Springs.

The technique, using five telescopes in unison, is known as very long baseline interferometry (VLBI).

The researchers are planning a number of important experiments using the enormous resolution of the telescopes operating in unison.

These include an attempt to map the binary star system, CIRCINUS X-1, located on the far side of the Milky Way, where violent explosive events are occurring in a relatively small area of space on time scales as short as fractions of a second.

Other experiments planned include a study of the structures within the nucleus of Centaurus A, the nearest giant radio galaxy, and a testing of the use of VLBI as a new geophysical mapping technique using radio sources as reference points.

In the experiment, the scientists will be able to measure the distances between the telescopes at Parkes, Tidbinbilla and Fleurs with an accuracy of 10 centimetres, while the distance of the Tidbinbilla telescope from those at Hobart and Alice Springs can be measured with an accuracy of one to two metres.

This aspect of the experiment is of great interest to surveyors and geophysicists since it provides a means for making accurate survey measurements.

The results will be used by a number of university researchers and the Division of National Mapping as a pilot run designed eventually to measure crustal movement in Australia.

The experiment has attracted international interest, and its results will be closely monitored by the Jet Propulsion Laboratory of the California Institute of Technology.

The Laboratory has provided considerable support because of their interest in crustal movement and their need to accurately determine the position of southern hemisphere radio sources for use as navigational markers in the NASA Space Program.

The data collected in the series of experiments will be processed by the Jet Propulsion Laboratories because there is as yet no facility in Australia where this type of data can be processed.

Final analysis of the processed data will take place in Australia using the computer facilities of the CSIRO Division of Radiophysics.

From the Chairman-

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

The second and third parts of the Chairman's article are extracts from his speech to the seminar 'CSIRO and Manufacturing Industry' held at the National Measurement Laboratory on April 21 under the auspices of the NSW State Committee.

During the last few months there has been in progress a game of musical chairs at the Executive Committee level. It all began last December when Greg Tegart left us, after three years of valuable service on the Executive, to become the Secretary of the Department of Science and Technology—where we wish him well. His place was immediately filled by Hill Worner, though of necessity Hill's appointment had to be of short duration because the impending anniversary of his birthday was the 65th. Meanwhile Don Taylor acted in the Director's vacancy left by Hill until the new Director, Bill Whitton, formerly of ICI, took up his position early in April.

On the last day of April came Hill's retirement and his replacement by the new member of the Executive, Geoff Taylor, who came to us from the ANU following a long period in CSIRO in which he became Officer-in-Charge of the Fuel Geoscience Unit. We extend to Bill and Geoff a warm welcome and consider ourselves very fortunate to have their services.

To Hill Worner, who retired after a 42 years association with CSIRO, I can only refer to his special qualities in the terms I used in my farewell letter to him: a splendid scientific record; a desire for unqualified excellence; a sense of style; a cool head; and a manner of dealing with people that combines gentleness and toughness yet always demands and obtains respect.

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Should CSIRO do research for manufacturing industry at all?

Let me first put the 'NO' case.

CSIRO should not be involved in research for manufacturing industry at all, mainly because the results are not likely to benefit Australia. Australian firms are slower to take up local inventions than are overseas firms and the benefit of an innovation lies in its commercialization, not its invention. Contrast the situation in agriculture, minerals, resources, etc. where Australian problems exist, and Australia directly reaps the benefits of research to overcome those problems.

There are difficulties in communication with industry. CSIRO's role of strategic research on problems of wide benefit to an industry requires accurate identification of those problems. This in turn needs close communication with industry, at the 'general' rather than the 'single firm' level. Industry has difficulty getting together at this level, due to inter-firm competition and reluctance to share problems and opportunities; the necessary communication is lacking.

The success of other industries (rural, resources, etc.) militates against CSIRO going too far (if anywhere at all) into manufacturing. Should the taxpayer's dollar not be spent more in areas where there is a higher probability of positive social return? Australian manufacturing is on the decline, as measured in terms of share of GDP, employment, and profitability. The wise money is going into resources and energy, and that is where the profits and social returns will be found. The Government, through rejection of a 'key industry' approach, won't go along with 'backing winners'. Why should the taxpayers' money be wasted on propping up losers?

Why is Australian industry so resistant to innovation (and, some would say, enterprise)? Presumably industry's decisions are made rationally, with an eye on the 'bottom line'. If industry prefers to concentrate on buying capital equipment from overseas, or engaging lobbyists, at the expense of its own research and innovation, then this reflects industry's rational response to the environment in which it operates. A substantial part of that environment is set by Government's general economic and industry policy, on matters such as trade barriers, availability and cost of capital, rates of depreciation, investment allowances, and so on.

It can be argued that a lot of this policy is contrary to producing or sustaining an innovative enterprising, risk-taking manufacturing industry, in spite of these being the sorts of goals the Government pays lip service to. Without such an innovative industry, CSIRO's work on manufacturing, along with schemes like the AIRDI scheme, are just so much wasted effort. There may be individual successes, but the tide generally is against R & D in manufacturing.

I have spelt out this 'NO' case at some length—because it specifies all the problems which must be faced and overcome if the 'YES' case is to triumph—as triumph it must. The growth of manufacturing industry is of enormous importance to the nation's economy. And I believe innovation and self-reliance provide the key.

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The principal function of CSIRO is to be Australia's main government agency and carry out scientific and technological research on behalf of all industry—primary, secondary and tertiary—and on behalf of the community at large. The emphasis of our research is strategic research with long-term application in mind. At the same time, it is only healthy that we do a certain amount of fundamental research at one end of the spectrum and a certain amount of short-term tactical research at the other. We do not want to do the short-term research that ought to be done by industry itself, but we do want to get involved with it to help us get closer to industry and its problems, and to help stimulate industry into a mood of greater innovation. Strategic research is our main role and scientific excellence our untiring quest—excellence devoted to the long-term national good.

The sort of research scientist we like to have within our ranks is exemplified by one who lived long before our time—Michael Faraday. Here is a scientist who began his career working (mainly on the wrong job number) at the most fundamental level of this strange thing called electricity, who discovered the phenomenon and the law of electromagnetic induction and who went on to invent the electric motor and so provide the means of a revolution in technology. I would like to think that had Faraday been a Research Scientist in CSIRO he would have enjoyed accelerated promotion, and would not have shared with me—and my colleague Keith Boardman—the indignity of being held at the efficiency bar of Research Officer.

To those people who are always pressing for us to be concentrating on solving problems of the moment, I say that that is not always how science works and I point to Michael Faraday as one of many. Four weeks ago, the Minister for Science and Technology, the Hon. David Thomson, made a speech in the House of Representatives on the occasion of the tabling of the CSIRO Annual Report. He used a quotation to conclude his speech. The quotation is very appropriate to what I have been saying. It is by one Thomas Spratt, the first historian of the Royal Society, and it was written in 1667:—

'It is stranger that we are not able to inculcate into the minds of many men the necessity of that distinction of my Lord Bacon's, that there ought to be experiments of light, as well as of fruit. It is their usual word, what solid good will come from thence? But they are to know that in so large and so various an art as this of experiments there are many degrees of usefulness: Some may serve for real and plain benefit, without much delight: Some for teaching, without apparent profit: Some for light now and for use hereafter: Some only for ornament and curiosity. If they will persist in contenming all experiments except those which bring with them immediate gain and a present harvest, they may as well cavil at the providence of God, that he has not made all the seasons of the year to be times of mowing, reaping and vintage.'

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The Minister's concluding remarks, which preceded the above quotation, were his own words:—

'I applaud their pursuit of excellence. In CSIRO, Australia has a first rate research organization of world renown, a leader in many areas of industrial and scientific research. I believe that now, more than ever before, CSIRO is strictly enforcing a policy of selectively and carefully chosen priorities. The national interest must always come first but we should not become obsessed with looking at the short term to the exclusion of planned strategic science Good science is a very subtle thing.'

I thank him for putting his thoughts on the record.

Paul Wild

Geophysical award to Dr John Philip

The Director of the Institute of Physical Sciences, Dr John Philip, has been awarded the 1982 Robert E. Horton Medal by the American Geophysical Union.

He is the first non-American scientist to receive the Medal which has now been awarded four times.

Dr Philip was given the award for his significant contributions to a number of fields of geophysics.

His most widely known work is pioneering development of the physical theory and mathematical analysis of the processes of water movement in unsaturated soil. Dr Philip identified and explained, for the first time, the physics of infiltration. Infiltration, the process of entry of water into the soil, plays a central part in the hydrologic cycle. It needs to be understood by everyone concerned with water: water engineers, agriculturalists, and ecologists.

Dr Philip's innovative researches led previously to his election in 1967 to the Australian Academy of Science, and in 1974 to the Royal Society of London.

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CAT

The CAT Column is open to all members of CSIRO who wish to comment on communication matters. The following column was written by Ms Sue Harvey of the Commonwealth Regional Renewable Energy Resources Information System (CRRERIS), CILES.

CAT would welcome any comment on this vital issue.

Last month's CAT column contained extracts from a most interesting letter from the Director of the Bureau of Scientific Services. There are many points in this letter that invite discussion, but the need for a communication policy suitable for the Organization is of major importance. I would like to briefly discuss this.

Historically, communication activities carried out by CSIRO have been straightforward and easily defined. Communication activities were essentially designed for exchanging information between research scientists. The method of undertaking such activities is equally well defined, scientific papers, conferences, personal contact—the invisible colleges—are all accepted scientific communication methods.

However, times have changed. Rapidly evolving technologies are changing communication methods, priorities within the Organization are changing, the composition of the general public is changing and in the national context of the non-existence of an Australian scientific and technical information system, the very broad information transfer functions conferred on CSIRO under the amended Science and Industry Act combine with all these changes to produce a fluid and complex communication environment.

The effect of some of these factors is not difficult to predict. For example, the Organization now has a set of priority areas, so presumably some priority should be given to information and community activities in these areas. The level of general education is rising gradually and it is not difficult to foresee that this will produce a situation in which information enquiries received by the Organization will come from a wider range of people and become increasingly sophisticated. Technology will continue to change rapidly for some time to come. However, it is possible to make some assumptions about the way in which this technology will affect communication activities.

Indeed, if some observers can be believed, communication technology will change the face of our society. Any rapidly changing environment is difficult to cope with. Yet this is the environment in which CSIRO finds itself.

To date, most of the Organization's research and communication activities have been carried out within Divisions and, as Mr Lattimore points out, 'Chiefs should have a big say in setting up communication policies'. However, most Divisions have one or two staff carrying out wider communication activities.

In the light of the complex, changing situation, the question must be asked as to whether this level of activity is appropriate. Mr Lattimore seems to feel this is solely a matter for Divisions but does he really agree that the level and form of resources provided by Divisions leads to effective and efficient communication?

These comments are not meant to imply that Divisions are doing a poor job of communicating information about the research carried out in their Divisions. All do an excellent job, given the level of resources available. But the way in which Divisions react to the changing communications world will depend to a large extent on the Chief and by the encouragement or otherwise given by the Executive.

There are many decisions and problems facing Divisions and the Executive in this area. But before any decisions can be made there are some basic questions which must be answered by the Organization as a whole. For example:

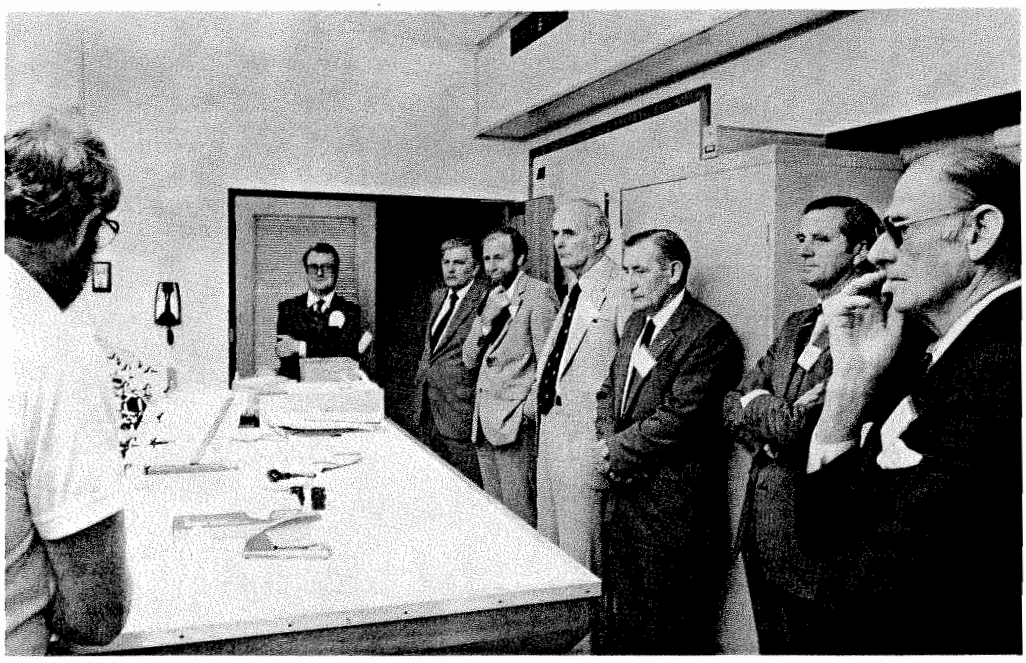
- What is the Organization trying to communicate? Is it just CSIRO research and its uses as Mr Lattimore says or does the existence of the Science Education Centre and the BHP Science Prize imply that the Organization is interested in the general encouragement of science?
- With whom is the Organization trying to communicate? Is it just other research workers, is it industry, or should it be the general public?
- What priority level is to be set for communications activities? It can be argued that information is the final product of research and that communication of information therefore is a major function of the Organization.

These questions can only be answered by the Executive in consultation with Chiefs and Directors.

When these questions have been answered, then and only then, can the Chiefs satisfactorily determine their communication priorities and, perhaps in conjunction with central Bureau services, their communication methods.

This is what CAT is requesting. Not a restrictive overall policy, but a set of goals and priorities so that the communications activities of the Organization can be carried out effectively and efficiently.

State Committee at Chemical Physics



Members of the Victorian State Committee recently visited the Division of Chemical Physics in Melbourne, and are pictured here listening to researcher Dr Peter Humble, extreme left, explaining his work. The Chief of the Division, Dr Lewis Chadderton, is at the far end of the laboratory bench. Members of the Committee were joined by invited guests from industry to hear an outline of the Division's work given by Dr Chadderton, and to see some of the research in progress. This included research on the reaction bonding process and on ion implantation and fission track analysis. They were also shown work on crystal defects in acids and inspected scanning microscopes now in use including the JEOL 200CX electron microscope.

Australian science loses a friend and supporter

Australia's leading television producer of science programs, Mr Michael Daley, died in Sydney on May 6. He was 42. Michael had been suffering from leukaemia.

Michael had headed the ABC television science unit since 1972 and had previously spent five years with the science unit of ABC radio.

During his years with radio and television, Michael established many contacts with scientists in Australia, and within CSIRO.

Most recently, he worked with CSIRO researchers on the production of the outstanding documentary 'Vela X, the Supernova Story', which he wrote, produced and directed.

He was also the executive producer of 'Genesis', a series on evolution now running on ABC television on Sunday nights.

Michael was born and trained as a journalist in New Zealand and came to Australia in the early 1960s to work for the 'Sydney Morning Herald'. His interest in scientific and medical research led to his joining 'The Australian' as its first science and medical correspondent.

Mr Alan Bateman, the director of television features at the ABC, said Michael would obviously be missed by his colleagues and the ABC for the major contributions he made toward the success of science programs in Australia.

Michael leaves a widow, Anne, and a 14-year old son, Jonathan.

CSIRO Chiefs at the National Science Forum

Two CSIRO Chiefs will address separate meetings of the National Science Forum in Canberra next month.

The Chief of CSIRO's Division of Radiophysics, Dr Bob Frater, will speak on the future of radioastronomy in Australia at the National Science Forum in Canberra on June 2.

Dr Frater's speech is entitled 'Radioastronomy in the balance: Can Australia remain a world leader?'

The speech will discuss the future of the research in Australia and will emphasize the importance of the Australia Telescope in the future of radioastronomy research.

Later in the month, the Chief of the Division of Mineral Physics, Dr Ken McCracken, will speak at a National Science Forum lunch at the National Press Club. Dr McCracken's lunch will be on June 22 and he will speak on Landsat and the importance to Australia of the Landsat facility.

This function is being organized by INDUSAT, an industry group connected with Landsat users, and the National Science Forum.

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris. Printed by Pirie Printers Pty Limited, Canberra, A.C.T

CoResearch

CSIRO's staff newspaper *June 1982* **252**

Two new Divisions formed:
High priority for water research

CSIRO has carried out a reorganization to enhance its water research capabilities.

Announcing this, the Acting Minister for Science and Technology, Mr D.T. McVeigh, said the moves—decided by the Organization's Executive—were of importance to all sectors of the Australian community.

'Sensible and sensitive management of our water resources, founded on soundly researched knowledge, are basic to Australia's prosperity', he said.

'CSIRO has redeployed a significant part of its scientific workforce to intensify its research effort in these critical fields. This is an important initiative by the CSIRO Executive.'

Dr Dick Millington.

HIGH PRIORITY

The areas of water research identified by CSIRO's Executive as being of high priority are:

- the hydrology of catchment areas;
- salinity and other water quality aspects; and
- groundwater and particularly how it is affected by land use.

CSIRO's new water research teams will initially be concentrating their energies in these fields.

The reorganization, which goes into effect progressively during June, and is scheduled to be fully operational by July 1, involves:

- creation of a Division of Water and Land Resources in Canberra concerned with catchment and water quality research, including salinity—from the existing Division of Land Use Research, whose Chief, Dr Dick Millington, will head the new Division;
- creation of a Division of Groundwater Research in Perth concerned with groundwater and certain salinity aspects—from the existing Division of Land Resources Management, whose Chief, Mr Ray Perry, will lead the new Division;
- redeploying some staff engaged in water resources currently located in the Canberra-based Divisions of Plant Industry and Forest Research—to the new Division of Water and Land Resources;
- strengthening of the existing water research activities of the Division of Soils in its Canberra laboratory;
- providing the new water Divisions with staff and support from within the resources of the Organization.

Also under the reorganization, the Division of Irrigation Research no longer operates as a separate Division.

Its facilities at Griffith (NSW) are to be known as the CSIRO Centre for Irrigation Research.

Two existing research programs at Griffith are to be strengthened and will continue there.

They are concerned with:

- the physics and biology of the soil/water/root zone system; and
- management of irrigation water in rural ecosystems.

Other water activities in CSIRO are centred on:

- water purification studies located in Melbourne; and
- the Division of Environmental Mechanics in Canberra.

CO-ORDINATION

These activities will be co-ordinated with those of the new water Divisions by a special group within CSIRO.

Mr McVeigh said: 'The new arrangements are the result of extensive planning over a period of 18 months.'

Increased focus on W.A. rural science

Rural research in Western Australia is to be given a stronger focus by the creation of a new grouping of scientists in Perth, the Chairman of CSIRO, Dr J. Paul Wild, said.

He said the 'CSIRO Laboratory for Rural Research (Perth)' would be located at the Organization's complex at Floreat Park.

Initially it would contain elements of the Divisions of Animal Production, Entomology, and Forest Research. It was possible that a branch of the Division of Soils, whose main laboratory is in Adelaide, would also be established in the Perth laboratory.

The creation of the Laboratory coincides with the decision of the Organization's Executive, announced by the Acting Minister for Science and Technology, Mr D.T. McVeigh, to create from the Perth-based Division of Land Resources Management a new Division of Groundwater Research.

The new Division has as its nucleus, 70 scientists and support staff from the former Division of Land Resources Management already involved in groundwater research. Some of these staff members will be located at Floreat Park.

Continued on page eight

New home for the Australian National Insect Collection

The new home of the world's largest collection of Australian insects was officially opened in Canberra last month.

The new D.F. Waterhouse Laboratory of Insect Taxonomy will house the Australian National Insect Collection, which contains about a million insect specimens representing 65 000 different species.

Built at a cost of $800 000, the laboratory is named after the recently retired Chief of CSIRO's Division of Entomology, Dr Douglas Waterhouse, in recognition of his services to the science of entomology.

In his address at the opening, the Minister for Science and Technology, Mr Thomson, said Australia still had a long way to go before the cataloguing of its insect fauna was anywhere near complete.

The Australian National Insect Collection, which contained little more than half of the estimated 100 000 or more insect species in Australia, would probably never be fully complete, Mr Thomson said, because of the likelihood that many species were becoming extinct after two centuries of European settlement of Australia.

The persistence of insect pests in the face of eradication campaigns made it difficult for people to believe insect

Continued on page eight

The new Member of the Executive, Dr Geoff Taylor, left, inspects one of the exhibits in the Waterhouse Building at the Division of Entomology in Canberra. Dr Taylor was accompanied by the Chief of the Division, Dr Max Whitten, centre, and the Liberal Senator for the ACT, Senator Margaret Reid. Their inspection followed the official opening of the building by the Minister for Science and Technology, Mr David Thomson.

Obituary

Kelly Kelsall: A Chief and a character

CSIRO lost one of its most colourful figures when 'Kelly' Kelsall died on 19 April 1982 after a long illness. He joined the Chemical Engineering Section of the Division of Industrial Chemistry in April 1958 to lead the Unit Operations Group of the Chemical Engineering Section which had been formed a short time previously, under the leadership of Dr H.R.C. Pratt.

Kelsall's distinguished career commenced in the late 1930s when he graduated from Cambridge with First Class Honours.

After a short period with I.C.I. he volunteered for duties with the Royal Air Force and served as a pilot in coastal command.

After the war he joined the Atomic Energy Establishment at Harwell and was seconded to work on isotope separation techniques at Chalk River, Canada. This was followed by another secondment to the Canadian Bureau of Mines where he was introduced to the mysteries of mineral separation techniques.

INTERNATIONAL RECOGNITION

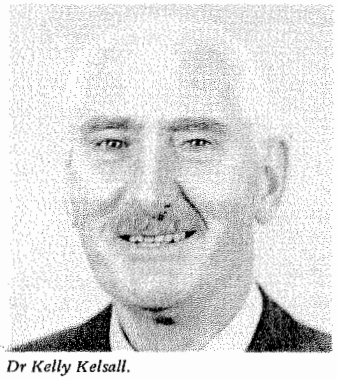
Returning to A.E.R.E. at Harwell, he commenced his studies on hydraulic cyclones and he was awarded the 1952 Moulton Medal of the Institution of Chemical Engineers for his first paper on the subject. That institution recognized his scientific worth but, as he often pointed out to aspiring chemical engineers, it would not accept him as an Associate Member at that time due to his lack of experience.

He was later given the 1977 Robert Richards Award of the American Institute of Mining, Metallurgical and Petroleum Engineers, principally for his work on cyclones, the only time this award has been made to a non-American.

In 1953, he left Harwell to work for Rhoanglo Mines Services in Rhodesia and during the next five years he worked at the Kitwe Laboratories where he gained a deep appreciation of the constraints imposed when working in an industrial environment. During his career at CSIRO he constantly sought to expose the research staff to similar rigours in order to temper their esoteric thoughts with the realities of the commercial world. Whilst in Rhodesia he studied flotation processes to such effect that Professor Aplin, Professor of Metallurgy and Mineral Processing at Pennsylvania State University, has said that this work alone would have also justified the Richards Award.

EARLY CSIRO STUDY

On joining CSIRO, in 1958, he was put in charge of the Unit Operations Group and was thus responsible for research in a diversity of problems such as non-Newtonion mixing, water desalination, wool dyeing and cheese drying. After his appointment, the character of the Group's work slowly changed. With the assistance of McAdam, he first developed the cyclosizer to enable the determination and isolation of size fractions in the sub-sieve range. This having been accomplished, he turned his attention to studying breakage in grinding mills, the cyclosizer being an essential tool in these investigations. In collaboration with Reid, Stewart, Weller, Restarick and Heyes, he published some 17 papers, the contents of which formed the basis for mathematical models of grinding. These models were subsequently



Dr Kelly Kelsall.

used for in-depth analysis of mineral beneficiation plants throughout Australia by his own team and internationally by many other workers.

In his early years with CSIRO he was expressly forbidden from working in the field of flotation despite his previously demonstrated competence in the area. He did not regard his freedom to study desalination and cheese drying as adequate compensation, and often pondered the somewhat tortuous logic that imposed this constraint on his activities. In 1970, the transfer of some of the staff from the Ore Dressing Section to the Division of Chemical Engineering coincided with the removal of this constraint and flotation studies were combined with the grinding work to produce a more logical research scenario which is now known as diagnostic metallurgy.

APPOINTED CHIEF

In 1974, he was appointed Chief of the Division of Chemical Engineering which, by that time, was attempting to cover too wide a research field with limited resources, both mental and physical. He countered this by concentrating the research effort in a strictly limited number of fields where achievement was being demonstrated and the work was relevant to the stated aims of the Mineral Research Laboratories. Research in other areas rapidly declined as, to quote one of his many cliches, 'people got the message'.

The result has been the creation of a highly productive Division, working at the difficult interface between scientific research and industrial application, an achievement recognized both nationally and internationally. Using another cliche from the amateur theatrical field in which Kelsall participated, 'It will be a difficult act to follow'.

In 1979, Dr Kelsall accepted an additional challenge by becoming Chief of a second Division—Applied Geomechanics.

Deterioration in health forced him to relinquish that post in 1981 and thereafter he gave full attention to mineral engineering.

'SCIENTIFIC MISSIONARY'

In the 1970s, he became an Australian citizen but this action in no way diminished his espousal of the twin advantages of being born in the north of England and attending 'The University', Cambridge being the only one worth considering. Indeed he remarked to the Duke of Edinburgh during a recent visit that he, Kelsall, regarded his status in Australia as being that of a 'scientific missionary'. By all accounts His Royal Highness did not smile. However it may be of some consolation to native-born Australians that when talking to 'Poms' both here and overseas, he was very much the Australian, deriding warm English beer, south of England accents and parochial British attitudes, with all the vehemence of an Ocker Earls Court expatriate Australian.

He fought against his long illness with the same grim determination that characterized his conflicts with hierarchies, both scientific and institutional. It was unfortunate that in this, his final battle, as in some of his other fights, the odds against him were too great. —Alan B. Whitehead.

ANZAAS students visit Radiophysics

One hundred and fifty final year high school physics students who attended the recent ANZAAS Congress at Macquarie University were given an extensive tour of the CSIRO Radiophysics Laboratories at Epping as part of their Congress activities.

The tour, organized by the recently formed Communication Group at the Division, consisted of an introductory lecture and films featuring the nature of research activities at the Division, as well as inspections of the 4-metre mm-wave telescope, the workshops, anechoic chamber, the receiver development labs and displays on the Culgoora operations, and supernova remnants.

The purpose of the tour was to give the students some insight as to the range and nature of activities available in a career in physics.

Some of the students are shown here in the anechoic chamber inspecting a scale model of the antenna feed horn designed by the Division of Radiophysics for the Overseas Telecommunications Commission (OTC) ground station at Moree.

Astronomers visit CSIRO's Division of Radiophysics

The Division of Radiophysics played host to the annual Winter School for Astronomers run by the Astronomical Society of Australia from May 15 to 19.

Thirty-five students from universities in Brisbane, Sydney, Canberra, Melbourne and Hobart heard talks on three themes—the Solar-Stellar Connection, Breakthroughs in Instrumentation, and Stellar Nurseries.

Two thirds of the students were already involved in research for MSc or PhD degrees and as part of the School they gave reports on their research projects.

Of the thirteen tutors, five were from the Division of Radiophysics (one of whom is visiting the Division under the Distinguished Visitors Program) and one from the Division of Applied Physics.

For the evenings, the Division made the Lunch Room available and the Staff Club of Radiophysics and the Anglo-Australian Observatory (which is in the same grounds) loaned their gas barbecue so that students and staff could eat together and continue their discussions of current areas of research in astronomy.

By request of the students, one evening was devoted to a discussion of the justification for undertaking research in astronomy. This discussion emphasized the need to publicize the results of research so that the public were aware of what was being achieved.

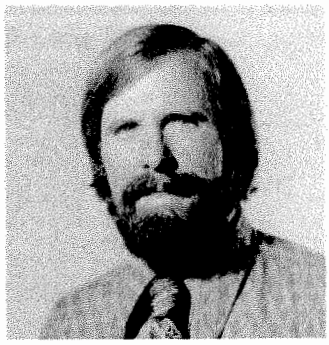
CSIRO counsellors can offer you friendly advice

Three personal counsellors, two men and a woman, have been appointed to the Canberra, Melbourne and Sydney areas by CSIRO.

They have each been appointed for 12 months initially and will be available for 25 hours each week to any member of staff requiring face-to-face counselling.

Ian Paton

The senior counsellor is Mr Ian Paton, who is based at the Division of Entomology building at Black Mountain in Canberra. Mr Paton's early professional background included industrial chemistry and textile research. More recently he was Director of the Canberra Marriage and Personal Counselling Service and has been a tutor in Communication in Science at the Canberra College of Advanced Education. The Sydney counsellor is Mrs Acey Choy, who will work from an office at the Division of Food Research, North Ryde.



Curt Fisher

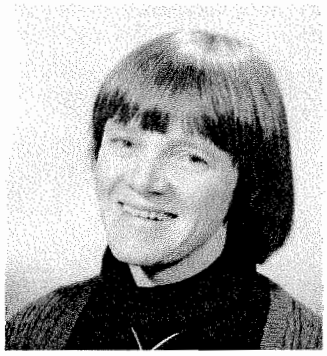
Acey was, until recently, a counsellor to the nurses at the Royal North Shore Hospital in Sydney. She is a BA graduate of the University of Sydney and has a Master of Education from the University of Toronto.

The Melbourne counsellor, Curt Fisher, will operate from an office at the Division of Building Research at Highett in Melbourne.

Curt is a BA graduate from Michigan State University in the United States and has a Master of Social Work Administration from the University of Michigan. Most recently, he has been senior psychiatric social worker at the Austin Hospital in Melbourne. Ian explained that the counsellors would undertake individual face-to-face counselling for a broad range of employee problems and would liaise with appropriate community agencies as necessary.

'The work of the counsellors will be completely confidential; no records will be kept and each individual can be assured of total privacy in their consultations', Ian said.

'The three counsellors are not part of the normal administrative structure of the Organization, and there will be nothing from their service which will go into CSIRO's personal history records on employees', he added.



Acey Choy

The counsellors will fit into an informal network already established within CSIRO and will complement the work already being undertaken by ombudsmen in some Divisions, and the Personnel Branch.

Ian Paton, Acey Choy, and Curtis Fisher will work as a team, offering the service to individuals and their families on related problems without charge.

Update for the Parkes Visitors Centre

Ever since it was built 21 years ago, CSIRO's 64-metre radiotelescope at Parkes, NSW, has been like a magnet, attracting tourists off the Newell Highway to take a closer look. The telescope is operated by the Division of Radiophysics.

About 80,000 visitors a year come to a Visitors' Centre at the telescope run by the Science Communication Unit. About 40 per cent of the visitors are school groups on educational tours, while the remainder comprise adult coach tours and individual family groups.

The main attraction at the Centre—apart from the magnificent instrument outside—is an audiovisual presentation called 'Listening to the Stars'. It lasts for about 30 minutes, and leaves the audience with a sense of wonder for things astronomical and CSIRO's achievements in this field in particular.

The Centre is now being developed as a science centre. Visitors will be offered things to do as well as see, along similar lines to the newly-opened CSIRO Science Education Centre at Highett, Victoria.

The Unit hopes to strengthen the Centre's role as an extension service for the Division to promote astronomy and as a major contact point with the public.

NEW EQUIPMENT

The Centre's Astronomy Liaison Officer, David Krumlauf, is devising a series of simple models and experiments which tourists and students can use to gain a fuller appreciation of modern astronomy.

Scientists at the Division's Epping headquarters are also helping. For example, they are looking at ways to link a recording of a pulsar's noise to a pen recorder so that visitors are able to take away a permanent reminder of this phenomenon.

An Apple computer has been ordered, for use by educational groups. Students will eventually be able to dock their own space craft and chase each other around the rings of Saturn!

From the Chairman-

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

One of the pleasanter tasks that my job entails is meeting the staff of the Organization while visiting Divisions or smaller groups in outlying parts—either when I travel as an individual or during Executive visits.

Sometimes there is an opportunity to talk to people one or two at a time either at the laboratory bench or over a drink during a social hour at the end of the day. Sometimes it happens that I talk with larger groups, perhaps a Division, when I always encourage people to ask questions or say what is on their minds. By these means it is possible to learn at first hand what people are thinking, where their enthusiasm and aspirations lie and what their concerns are. Certain subjects recur again and again, and I thought I would discuss a couple of the hardier perennials now.

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One of the commonest topics is retirement, a vital matter that is going to affect all of us sooner or later. For many years the formal position has been that the Executive can decide to retire any person between the ages of 60 and 65, and that anyone can decide to retire in this age bracket; in each case the retiring person receives appropriate superannuation benefits. Last year, after some delays due in part to opposition by staff associations, the Government began to operate *within Government departments*, the 1979 Commonwealth Employees Redeployment and Retirement (CE(RR)) Act. (It is a matter of taste whether you pronounce CE(RR) with a hard or soft C). This provides for early retirement both compulsory, at the discretion of the management, and voluntary from age 55, at the discretion of the individual. The Government invited statutory authorities to join the scheme if they desired. If we were to join, we would lose a degree of independence from the Public Service Board. For this and other reasons, and with the full support of staff associations, we have declined to join the scheme, at least for the time being. Nevertheless, we would have liked to have adopted one part of the CE(RR) scheme—voluntary retirement at 55—without the rest. But the Government insists that the two types of retirement, voluntary and management-initiated, are to be firmly linked.

The inability to retire at age 55 with appropriate superannuation benefits comes as a disappointment to many people. The Executive will continue to strive to persuade the Government that we should be allowed the option of early retirement and to this end we have already begun informal discussions with the Chairman of the Public Service Board. For planning purposes, however, my firm advice to you is to play for safety and assume that the present conditions will continue.

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There continues to be doubt about the policy of the merit promotion system. It appears the doubt has arisen through a combination of the current tight financial conditions and the new budgeting system by which Divisions have greater freedom to handle the funds allocated to them. It is true that during the current financial year, as a result of a cash problem that developed late in the year across all Government funded operations, Divisions and all sections of the Organization had to tighten their belts and, among other things, find the money to pay for increments and reclassifications. Nobody's promotion was disadvantaged by this circumstance and the recurrent funds required to pay for these promotions will be supplied in future budgets. Also in future, we intend to supply all additional funds for promotions from a central pool. The merit promotion system is a cornerstone of CSIRO which must be jealously preserved.

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What's in a name? Quite a lot if one is talking about the purple plant which spreads through the Australian countryside during spring: enriching it and beautyifying it or poisoning it, depending on your point of view. One camp calls it Salvation Jane; the other, Paterson's Curse. In 1980 the Division of Entomology, with the full authority of the Australian Agricultural Council and strong backing from the rural community began releasing a leaf-mining moth imported from Europe to get to work on the plants. Then came a High Court injunction, initiated mainly by bee keepers, to stop further releases. The matter was to be determined by the processes of common law. An initial hearing was held on May 31 1982, following which a sensible decision was taken to precede any further court action by an independent inquiry which will look at the pros and cons of the case from a national benefit point of view. The outcome will be of profound significance to our whole program of biological control but like many Australian activities the whole business is confused by the interrelationship between Commonwealth and State responsibilities. It seems that ultimately some new form of legislation may be needed to cover biological control.

There are considerable advantages in separating such determinations from the paraphernalia of court proceedings. I often wonder where we'd be now if questions such as the flatness or roundness of the Earth or the invariance of the velocity of light had been determined by common law. Which reminds me of Einstein's definition of common sense: one's accumulation of prejudices at age 18.

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I have received only two letters, both helpful and constructive, from staff members on the 1980/81 Annual Report: Both contained criticism:-

1. "What puzzles me is the thirty-page section on 'Research'. . . This doubling up on Institute Reports is hard to justify. . . "
2. ". . . far too much emphasis on administrative matters . . .about 85 pages are devoted to 'Research Policy and Administration whilst only 40 pages gave information about achievements in 'Research'."

If you cannot please everybody, should one feel satisfied if criticisms are equal and opposite?

Paul Wild

Two familiar faces missing from the Division of Applied Physics are those of **Malcolm McGregor** and **Jim Gosling**.

Malcolm retired on April 15 after 33 years' service with CSIRO, completing his service as an experimental officer. During his time with the Organization, Mal established a solid reputation for his efficiency and responsibility in the development of component and techniques for the precise measurement of impedance at audio frequencies.

Jim Gosling resigned from the Division after 14 years' service. In CSIRO, he assisted in the long-range mercury pressure standard program, the development of techniques for the measurement of high vacuum and calibration of various measuring techniques, working with **George Bell**.

□ □

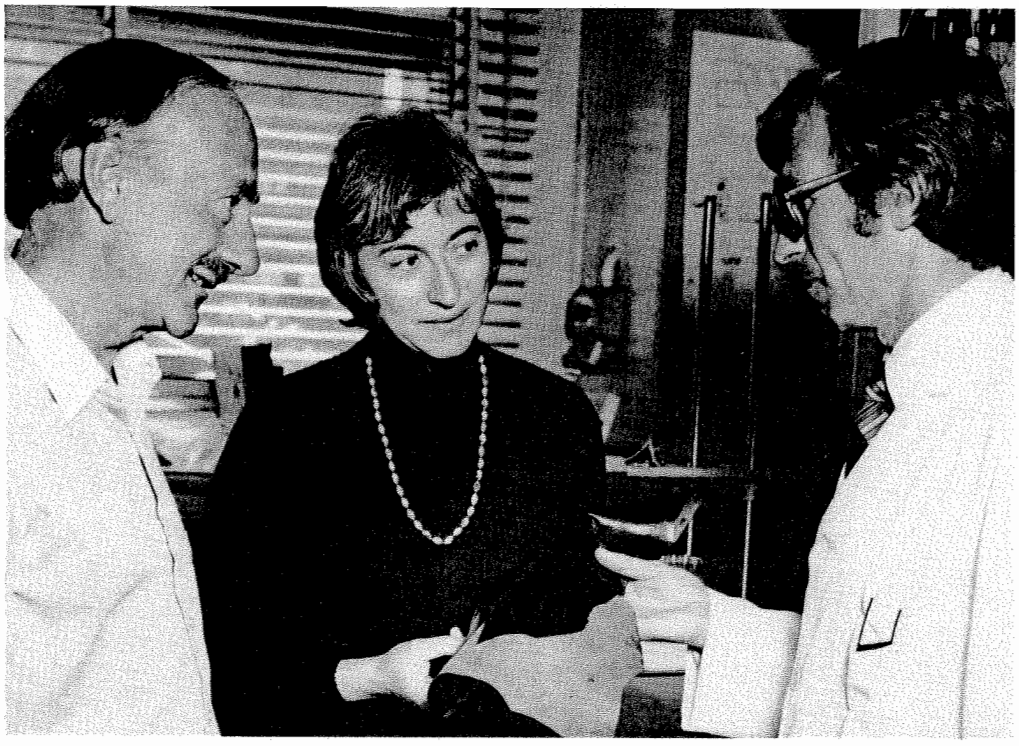
The Division of Land Resources Management in Perth has come up with a new name for staff movement—the Administrative Accommodation Shuffle.

According to the weekly newsletter, **Neil Catt** performed the retirement shuffle, **Phil Knox** welcomed partners to shuffle papers at Neil's desk, **Prue Hallett** moved into Neil's position to dance on his desk, **Sue Dawes** performed the double shuffle from the typing room to the 'bright spot', which allowed John to waltz to Prue's desk. All this has been due, according to the newsletter, to Neil's position having been surrendered, making it the tenth position to be lost in the past two years.

□ □

Philip Ciddor returns to the Division of Applied Physics at the end of the month after four weeks overseas, primarily to attend a meeting of the Consultative Committee for the Definition of the Metre. He also visited standards laboratories and research institutions concerned with stabilized lasers, non-linear optics, and length interferometry in North America, the United Kingdom and Europe, as well as the standards laboratory in Kuala Lumpur.

U.S. visitor at Protein Chemistry



Dr Barbara Brodsky, centre, recently visited the Division of Protein Chemistry for five weeks to discuss collagen research. Dr Brodsky, seen here discussing leather structure with the leader of the Leather Group, Dr Neil Evans (right), and the Assistant Chief of the Division, Dr Bruce Fraser (left), leads a group concerned with the interrelationship between structure and biochemistry of collagen at Rutgers Medical School, New Jersey. Collagen is the principal constituent of leather, and research on both basic and applied aspects of collagen structure and chemistry is carried out in the Division.

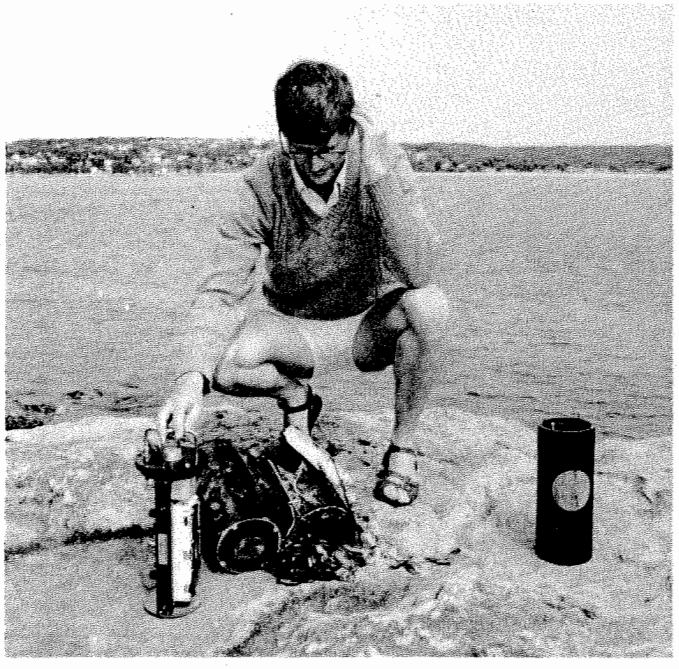
—Photograph by L. Monarch.

Old timers from the Division of Land Use Research renewed acquaintances recently with **Dr Robert van de Graaff**, who worked in the Division almost 20 years ago and has returned as a soil scientist with the Soil Conservation Authority in Victoria to work briefly in the Division's offices.

□ □

Celebrations in both the Division of Building Research and CILES, Melbourne, when two CSIRO staff members (married to each other) celebrated the arrival of their first child, a daughter to be named Clare Elizabeth. Proud parents are **Dr John Davy** of DBR, and his wife **Liz** of CILES.

Destruction on a Sydney beach



Scientific endeavour is fraught with difficulties at the best of times. Sometimes, perhaps, making scientists feel that the researcher's lot is not a happy one.

Fred Boland of the Division of Oceanography at Cronulla ponders the mentality of vandals who discovered one of the Division's $8000 recording tide gauges carefully placed in a protective casing on the sea floor off Port Hacking near Sydney. They brought the gauge ashore, opened it using suitable tools, and systematically destroyed the interior before reassembling it and abandoning it on the beach.

American research institutes studying urban housing are on the itinerary for **Dr Cecily Neil**, of the Division of Building Research who is currently on a four-week overseas visit. Cecily is also visiting Canada to attend conferences on the settlement process involved in establishing communities associated with resource development.

□ □

New elevation for **Nick Bulleid** of the Division of Fisheries in Sydney came in the form of a letter from a student in India. He wrote:

'Sir: So far I was a student. Now I am launching in research field, in which I am an infant. As I am still in reference collection, I might not have come across all the papers published by you. Hence, I humbly request you to consider me as your student and give me any kind of suggestions, guidance, advice, research procedures and any other reprints which I will consider as have come from God.'

Before Nick's head became too swollen, he remembered that he needed the odd miracle himself, or other divine intervention, to assist with his backlog of writing up.

□ □

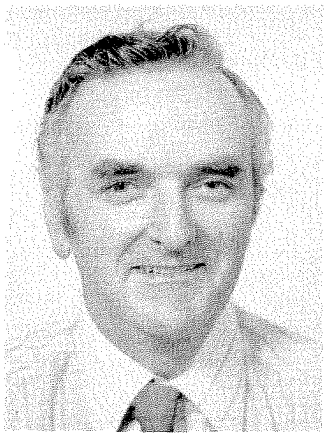
Colleagues of **Dr Walter Boas**, formerly Chief of the Division of Tribophysics in Melbourne, were saddened to hear of his death on May 12.

Dr Boas was appointed Chief of the Division in October 1949 after several years as a lecturer at the University of Melbourne. Before World War II, Dr Boas worked for a time with **Sir William Bragg** at the Davy Faraday Research Laboratory of the Royal Institution, London.

Frank Phillips, pictured above, of the Division of Chemical Technology has been elected President of Appita (The Technical Association of the Australian and New Zealand Pulp and Paper Industry) for 1982-83.

His election marks a continuation of the CSIRO involvement in Appita affairs dating from the formation of the Association in 1946. Since that time, five other officers of CSIRO have served as Appita President, including two Chiefs of Division, the late **Dr H.E. Dadswell** and **Dr H.G. Higgins**.

Frank joined CSIRO in 1956 after working for some years in the paper industry.



The untimely death on February 26 of Mr Frank Bailey, of the Division of Chemical Physics, has caused widespread regret among his many friends and colleagues in CSIRO.

Frank, pictured above, joined CSIRO at Fishermen's Bend in 1954, where he worked with Dr Lloyd Williams on the properties of ceramics.

In 1972 he left the ceramics group at Fishermen's Bend to join the Division of Chemical Physics at Clayton, where he worked on bonding metals to ceramics.

He was for many years an active member of the Australian Ceramic Society, and at the time of his death was president of the Victorian Branch; in addition, he was a member of the Ceramics Working Committee of the Committee for Technical and Further Education.

Frank worked tirelessly to bring about contact between industry and CSIRO, and played an important role in establishing the commercial manufacture of several of the Division's developments. His contributions to the field of ceramics were recognized by an invitation from the organizers to attend the Seventh International Materials Symposium at the University of California in July-August 1980.

The Australian Ceramic Society has decided that a memorial scholarship will be made available to tertiary students for the study of ceramic technology in recognition of Frank's contribution to the Australian Ceramic Society and to the field of technical ceramics.

The funeral was held on 2 March 1982. Dr Lloyd Williams gave the valedictory address.

□ □

David Griffiths, of the Division of Mathematics and Statistics is at present en route to England where he will take up a six months appointment with the Open University. During his journey to the United Kingdom he plans to visit the Institute of Statistical Mathematics in Tokyo and attend Compstat 82 and Biometrie 82 in Toulouse.

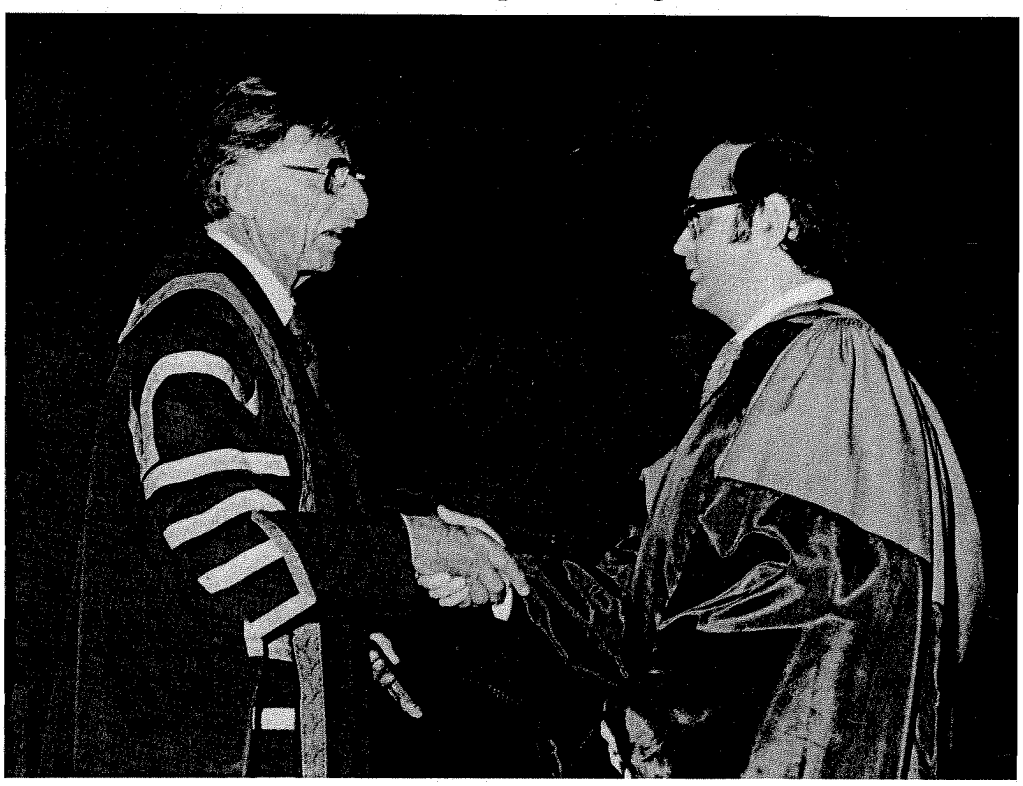
□ □

Heather Brasell of the Division of Forest Research's Tasmanian laboratory, is receiving congratulations for her third degree. Heather has been awarded her MSc from James Cook University in Northern Queensland. For her thesis Heather used litter data collected from tropical rainforests while she was working at the Atherton Regional Station. Heather now has a BA, received last year from the University of Queensland, and a BSc from Canterbury University in New Zealand.

□ □

Is there a **Mr C. Siro**? At least one Englishman thinks so. A letter recently received at the Media Office was addressed to 'The Editor in Chief, Mr C. Siro'. Although the writer got the post office box correct, he believed the suburb was named 'Dickson Act'.

Doctorate for Sydney Chief



The Chief of the Division of Radiophysics, Dr Bob Frater, right, accepts his degree of Doctor of Science in Engineering at a conferring ceremony at the University of Sydney recently.

The Deputy Chancellor, Mr Justice Selby, conferred the degree. Examiners of Dr Frater's collected papers for the degree stressed the originality of his work and the impact it had both in Australia and internationally.

Dr Frater was formerly an associate professor in the Department of Electrical Engineering at the University.

Packing suitcases is a popular pastime for **Dr Ray Jones** of the Division of Tropical Crops and Pastures in Brisbane. He only recently returned from two months holiday in Wales, and has now repacked his bags; this time he's on a four month visit to Bogor in Indonesia and Mali in Hawaii where he will be working on Leucaena and goats. During Ray's absence, **Dr Rob Bray** will be acting as officer in charge at the Davies Laboratory.

□ □

There was a double celebration recently in the Hegarty family home in Brisbane. **Dr Merv Hegarty**, recently elected as a Life Fellow of the Queensland Institute of Technology, was presented with his award at the same ceremony as his daughter Rosemary graduated as BAppSci (applied geology). Merv's award had been made only once before, and was a recognition of his contributions to the development and advancement of the QIT.

□ □

Mr Ross Cunningham, formerly with the Division of Mathematics and Statistics in Canberra, has joined the Australian National University to provide a statistical support service for academic staff and research students in the faculties.

Ross will provide a consultancy service in statistical computation and methods, and collaborate with researchers on their projects.

At the last Federal election, Ross helped provide a computer-based election forecast for Channel Ten, and plans to work with CSIRO on providing a similar service for the network in future elections.

□ □

Dr Rachel Makinson, who reired recently from the Division of Textile Physics in Sydney, has written to correct the impression given in Coresearch 250 that she had worked with the Organization for only 34 years. Rachel spent 38 years with CSIRO, joining the Division of Radiophysics in 1944, and transferring to the National Standards Laboratory in 1945.

Full time retirement was a short-lived experience for **'Smithy'—Mr A.L. Gurnett-Smith**—who retired in April from CIRC. Smithy is now back in circulation wearing a new hat—he's been appointed CSIRO Staff Mediator for 12 months from April 19. He will act as a point of contact in connection with progress in resolving grievances, but will actively investigate a grievance only when it is referred to him by the Chairman, **Dr J. Paul Wild.**

Smithy can be contacted by letter at PO Box 225, Dickson, ACT, with letters marked 'personal and confidental'.

Tony Culnane, in Canberra, can help with inquiries regarding the grievance procedures.

□ □

Mike Hutchinson of the Division of Land Use Research, has been capturing the imagination of prospective holidaymakers with his tall tales of a bicycle riding holiday in southern China. Mike cycled 500 km around the country, and colleagues have reported that his repertoire of unlikely stories appears inexhaustible.

□ □

The Central Australian Laboratory of the Division of Land Resources Management recently played host to the Chairman of the CSIRO Advisory Council, **Sr Peter Derham.** During the visit, Sir Peter visited the Landsat Sation, toured the laboratory and was briefed on research work in progress.

The laboratory was also visited during the last month by the Federal Member for the Northern Territory **Mr Grant Tambling.** Both visitors expressed interest in the rangelands research program.

Mrs Chris Joy pictured above, who retired from the Division of Fisheries Research in March after almost 20 years' service. She joined the (then) Division of Fisheries and Oceanography in March 1962 to help complete the manuscript for the 'Handbook of New Guinea Fishes'.

After some time in the Divisional typing pool and as secretary to the Acting Chief, she took over responsibility for the typing and secretarial service for the Living Resources Group. Mrs Joy will spend her retirement with her family in Cronulla.

□ □

Peter Martin, of the Division of Land Use Research, wonders whether it's only his Division that's being singled out for these wondrous name changes his Division undergoes.

Latest in the long list is 'The Division of Card Use and Resaries', CSIRO, etc.

'Towards 2000'
Making technology prime —time viewing

Jeffrey Watson, one of the three reporters on the ABC series 'Towards 2000', discusses how the program set out to convey to the average television viewer, the excitement of new technology.

This is an edited version of the paper Jeff gave to the February meeting of CSIRO's Communication Advisory Team, held in Sydney. A new, longer series of 'Towards 2000' begins on the ABC on June 30 at 7.30pm.

What we set out to do with the program was to explain developments in science and technology in relatively simple terms.

We're certainly not aimed at the scientific community; we're not making the program for scientists but for the average viewer with a passing interest in new developments. We've also tried to show how these developments will affect their lives between now and the next century. We have never tried to make value judgements about whether or not new technology is good for us. All we're trying to do is to show how things work.

RISK FACTOR

Our necks were out a long way with 'Towards 2000'. No other station in Australia has ever tried to put technology into prime time.

We make no apology for the fact that a large percentage of our first series covered some of the more glamorous technological happenings like the Space Shuttle. When we first started researching the program many people in the scientific community said, 'Oh, but there's such a lot going on here in Australia that you must look at'. Sure there is a lot going on, and some of it is terribly dull. We couldn't realistically have opened our series with a report on a coal washing process using a fluidised bed. 'A fluidised what', most viewers would say, and turn over to Bert Newton. However, those of you who watched the series regularly will have noticed that that sort of subject turned up later on in the series. Our rationale was to get the viewers interested in the glossy hi-tech material and then we could lead them by the nose to the fluidised beds.

And so we deliberately filled our earlier programs with good visual subjects .... high speed trains, spacecraft, missiles, supertankers with sails and so on.

COMMUNICATE EXCITEMENT

Above all we wanted to try and communicate something of the excitement of modern technology, and that I find is one component that's sadly lacking in most scientists .... with the exception of the Bronowskis, the Attenboroughs and the Sumner Millers of this world, most scientists are deadly dull communicators and again I must return to our basic premise .... that we are making a program not for an elitist minority but for the average red-blooded ordinary surburban viewer.

In 'Towards 2000' we have never pretended to give you the whole story. We usually have four, sometimes five, segments in that half an hour. A typical package might cover a report on battery driven buses in Germany; the introduction of video disc; a look at some of the new Videotex systems and a periscope attached to a computer which gives a view of architects' models. The premise is, if any of those subjects bore you, stick around, we'll have something different in a moment. It's not for us to give you the definitive word on lasers or chips or anything else. The ABC has its own TV Science Unit which has produced the definitive word in the form of one-hour documentaries. That is not our brief. If you like, we regard ourselves as a shop window on new technology. We'll tell you how it works; it's for our documentary makers to argue the pros and cons. In that sense I suppose we could be accused of blandly accepting every new technological break through on face value; that we are only what the Americans call a 'good news' program. I'd like to come back to that one later.

HOLDING ATTENTION

'Towards 2000' might be accused of being superficial. I'm not bothered about that sort of criticism. I am bothered if people find it dull, because in our business, that is the kiss of death.

We're now past the euphoria of the first series and asking ourselves what we'll be doing in this second, longer series.

We'll be covering the space program, satellite communications, the semiconductor industry, genetic engineering, nuclear fusion, and various solar projects and we hope to be taking a closer look at technology in Australia.

AUSTRALIAN SEGMENTS

We featured 22 segments on Australian developments in the last series, ranging from the airborne laser developed by the Weapons Research Establishment in Adelaide to CSIRO coal washing techniques. But we're certainly going to be looking for more material in our new series from Australia itself. I hope that we'll be hearing from all of you.

Now to come back to the assertion that we're a good news program; that we never question the veracity of the gases, rays, magnetic fields and silicon chips that are endlessly paraded in front of us. We're certainly aware that many of the technological breakthroughs that we've featured on the program don't work. In our last program we attempted to do a back to the drawing board segment. It's something that we're aware of, and in this next series we'll be going back and asking whatever became of some of the inventions featured last year. And if they didn't work in practice, why not?

Jeffrey Watson

Thank you for indulging me. We'll certainly be knocking on your doors again in 1982, and we're well aware that in covering science and technology so far, we haven't even scratched the surface.

Radioastronomy: Its future is threatened

Australia needed a sophisticated new telescope to ensure that its radioastronomy research did not die by the end of this decade.

The Chief of CSIRO's Division of Radiophysics, Dr Bob Frater, said the proposed new Australia Telescope would guarantee the future of one of the country's most eminent sciences.

Speaking at the National Science Forum in Canberra earlier this month, Dr Frater said the Australia Telescope, estimated to cost $25 million, could come into full operation in time for the Australian Bicentenary celebrations in 1988.

'This would be a fitting contribution to that event and a step to future eminence for Australian science', Dr Frater said.

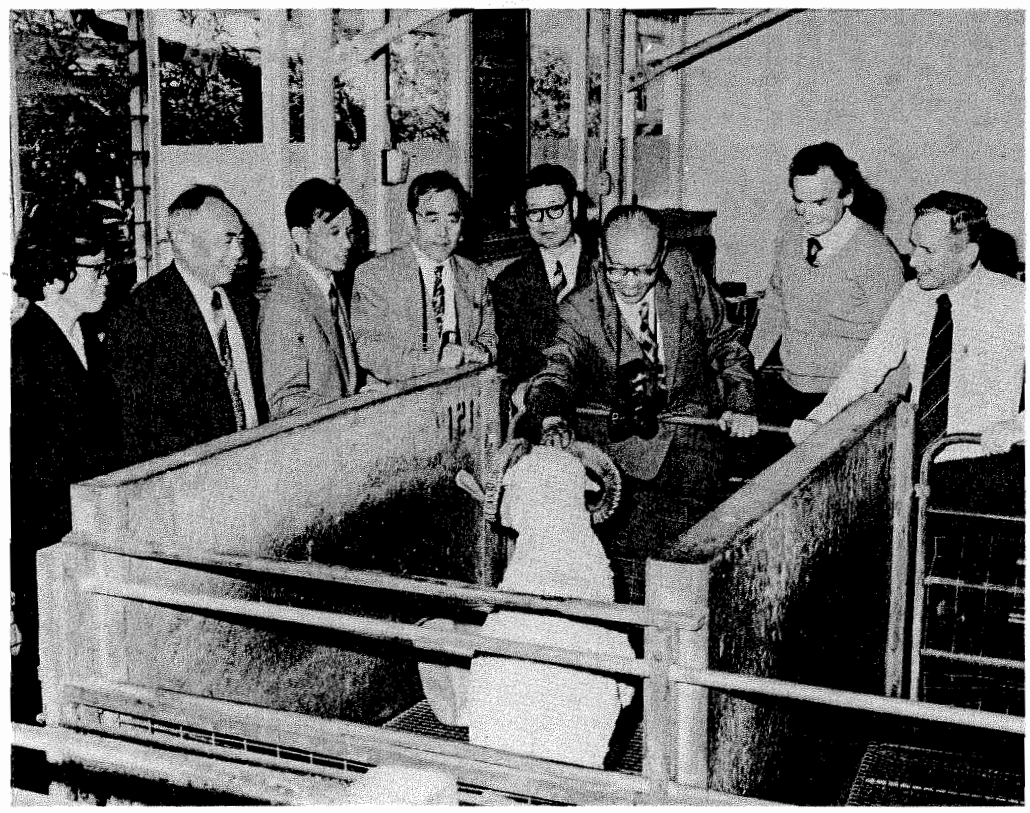
COMPLEMENTARY INSTRUMENTATION

He explained that the proposed telescope would complement the ground based optical telescopes already in the Southern Hemisphere, the space instruments of the future and the X-ray satellites which penetrated the dust of the Universe.

It would consist of three main elements. One would be a linear array of five, 22-metre dishes at Culgoora, near Narrabri in New South Wales. Another 22-metre dish would be located at Siding Spring near Coonabarabran, the site of the Australian and British optical telescopes, while the third element would be the existing 64-metre dish at Parkes.

This system would then be able to be operated in conjunction with telescopes at Tidbinbilla, Carnarvon, Alice Springs, Sydney and Hobart, possibly using satellite links.

Chinese scientists at Animal Production



The China Association of Science and Technology recently sent a delegation of six animal scientists to Australia, and during their tour they visited the Division of Animal Production at Prospect.

Their main interests were in the environmental and managerial influences on animal reproduction. Divisional scientists described work in progress in this field.

Dr Shih-Hsing Yang, head of the party, is shown here exchanging greetings with a Merino ram.

New Chief for Division of Mathematics and Statistics

The Chairman of CSIRO, Dr J. Paul Wild, this month announced the appointment of Professor Terry Speed as the new Chief of CSIRO's Division of Mathematics and Statistics.

He succeeds Dr J.M. Gani who has taken up an appointment in the US.

Professor Speed, 39, a statistician and currently Head of the Department of Mathematics in the University of Western Australia, will join CSIRO early next year.

Dr Wild said Professor Speed's appointment would strengthen the Division's efforts to involve itself in collaboration with other parts of CSIRO and with users of mathematics and statistics in the community at large.

'Much of his recent work is characterized by the effective and imaginative application of mathematics and statistics to real world problems', he said.

'As well as pursuing his own research in probability and statistics, Professor Speed has, in the past few years, established a group specializing in statistical consulting at the University of Western Australia.

'This group provides statistical and mathematical consulting to commerce and industry in Western Australia, as well as to the University.

'In CSIRO Professor Speed intends to foster more research in the general area of signal processing', Dr Wild said.

'This is an area where, with the development of recording instruments and computers, man's information-gathering capabilities have outstripped the methods for analysing data and drawing useful inferences.'

Professor Speed was born in Melbourne and educated at Melbourne and Monash Universities.

He then taught mathematics at Monash University where the principal emphasis of his work was pure mathematics.

After four years he took up a lectureship at the University of Sheffield (UK) where his work focused on probability and theoretical statistics.

In 1974 he was appointed Associate Professor at the University of Western Australia to lead the Statistics Section of the Department of Mathematics.

New edition of research directory

All CSIRO Divisions will shortly receive copies of the 1982 edition of the Directory of CSIRO Research Programs which has just been published.

One of the copies to be made available to each Division will be unbound so that, if necessary, material from the book can be readily copied. The book will also be available on microfiche.

The book is available in two editions—one, arranged under divisional headings, will be for internal distribution only, and the other, arranged under subject matter headings, will be for sale to the public for $15.00 per copy. Copies of both editions will be distributed to Divisions.

While a large number of improvements have been made to the Directory, it is planned to further upgrade the index for the 1983 edition. As a result, all Divisions will soon receive a letter asking for an update on subject material and offering the opportunity to provide a listing of key works for inclusion in the index.

Maintaining the Gallipoli link

CSIRO researcher Stefan Mucha with one of the seedlings of the Aleppo Pine at the Yarralumla nursery of the Division of Forest Research in Canberra.

A small grafted pine tree, planted at a Canberra war veterans' home last month, will ensure a link is continued between a pine tree planted in Canberra nearly 50 years ago, and the ANZAC campaign at Gallipoli.

Foresight by a CSIRO researcher made the transition across 50 years possible.

The old tree, an Aleppo Pine, was planted at the War Memorial in Canberra in 1934 by the Duke of Gloucester.

It had been raised from a seed taken from a cone at the Lone Pine Ridge by Lance Corporal Benjamin Smith, one of the Australian soliders who served at Gallipoli.

Lance Corporal Smith sent the cone to his mother, and some years later, she planted two seedlings from it and presented one of the small trees for a ceremonial planting at the War Memorial.

Researcher Stefan Mucha, of CSIRO's Division of Forest Research in Canberra, concerned at the age of the so-called 'Lone-Pine', decided to propagate some young trees from the 15-metre high tree.

Early last year he grafted buds taken from near the upper crown of the tree onto two-year-old Pinus rootstock from the NSW Forestry Commission.

Of the 20 grafts taken, 10 were successful, and the one planted by the President of the ACT Branch of the RSL, Mr A.T. Clarke, is a thriving, one-metre high tree.

Mr Mucha explained that while the tree growing near the War Memorial was now quite healthy, CSIRO would keep some specimens of the Aleppo Pine in its nursery for future plantings.

Industry aid sought on nuclear safety computer program

The CSIRO Division of Mineral Physics is seeking collaboration in industry on the NAIAD digital computer program developed at Lucas Heights Research Laboratories as part of research into nuclear reactor safety.

This work was transferred to CSIRO from the Australian Atomic Energy Commission by Federal Government decision in September last year.

The NAIAD program was written to calculate the steady state and transient behaviour of single and two-phase water in nuclear reactor cooling systems. It includes heat diffusion in the reactor fuel and a detailed surface heat transfer model with relations for all heat transfer regimes. It has been used for digital simulation of rapid depressurization of single pipes, large vessels and complex systems such as the semiscale model of a pressurized water reactor (PWR) in the USA. In one international comparison, it was a factor of ten faster than the current US reactor safety program RELAP-4. The program uses many novel numerical techniques, most of which have now been published in international journals.

The modified program has been used by The Pipeline Authority of the Australian Government to simulate its network from Moomba to Wilton. A recent comparison with actual measurement on the network showed good agreement between calculation and measurement. Advantages of NAIAD over other programs available to The Pipeline Authority are that it calculates gas temperatures as well as flows and pressures, gives greater accuracy as it includes all terms in the conservation equations, allows easy calculation of steady states, uses much less computer time, can simulate rapid changes, permits new types of pipeline components to be added, and can simulate supersonic flow. Other organizations with an interest in gas pipelines are being approached and a NERDDC grant is being sought.

Other areas of application being investigated are natural gas gathering networks (two-phase flow), steam generating boilers, and mine ventilation. A preliminary model of a Liddell boiler has been completed and will be used in the boiler control studies.

Independent inquiry on Patterson's Curse plant

An independent inquiry is to be held into the desirability or otherwise of controlling the plant Paterson's Curse, also known as Salvation Jane.

This was decided by the parties to a case before the Supreme Court of South Australia—the plaintiffs, representing beekeeper and grazier interests, and the defendants, CSIRO—early this month (June).

However, the nation-wide injunction against the release of insects by CSIRO to biologically control the plant will remain in force during the inquiry.

Once the inquiry has finished and its deliberations are made known, the necessity for the court case continuing will be reviewed.

Commenting on the move, Mr Linton Briggs, President of the Federal Council of Australian Apiarists Associations, said that an independent committee of inquiry should be an appropriate body to examine the complex scientific and economic issues involved in the Paterson's Curse/Salvation Jane question.

EVIDENCE SOUGHT

Maximum opportunity should be provided by the tribunal to receive evidence from interested people while sitting at various places throughout Australia, he said.

The committee will recommend whether the plant should be the target in a biological control program.

FAIR AND OBJECTIVE

'Importantly, the inquiry should enable evidence presented to the committee to be assessed fairly and objectively,' Mr Briggs said.

It is important to understand that at the conclusion of the inquiry the rights of both parties are preserved without qualifications to proceed to further litigation.'

Dr Max Whitten, Chief of the CSIRO Division of Entomology, also welcomed the agreement.

He said that an inquiry would help to heal some of the divisions which had arisen within the rural community over the issue.

'Paterson's Curse or Salvation Jane, regarded as a noxious weed in areas of temperate Australia, is valued by certain grazing interests and is used extensively by beekeepers to build up their hives and to obtain honey', he said.

CSIRO had identified suitable insects for the biological control of the plant, but it was expected that these would not be introduced or released if the inquiry recommended against the control program.

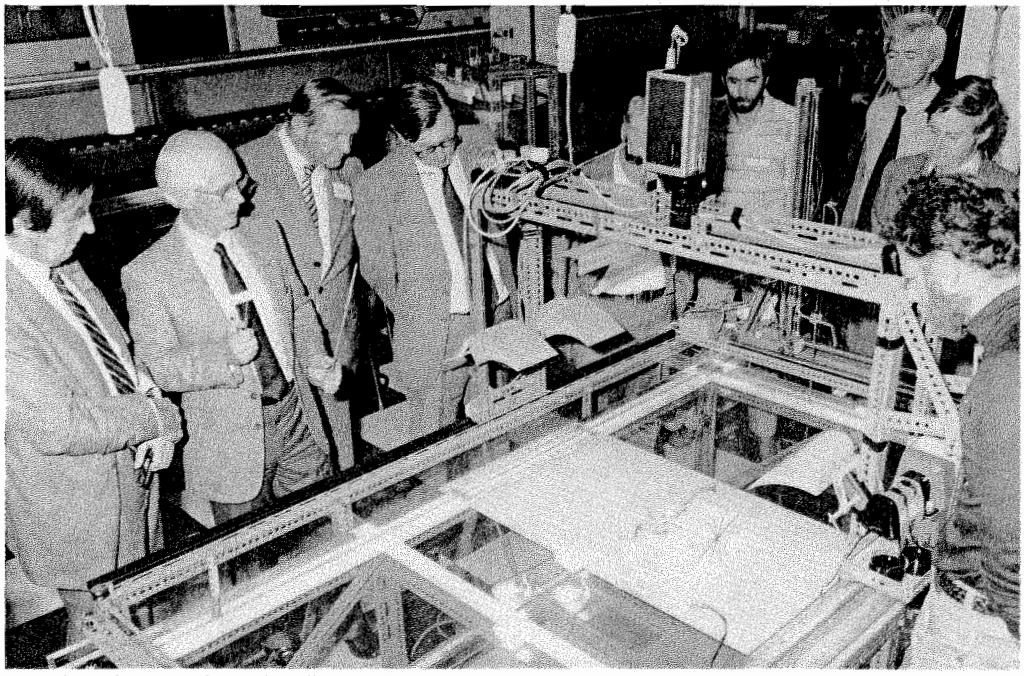
Update for Visitors Centre

From page three

A 10-inch Newtonian telescope is also being installed so David can invite local amateur astronomers to the radio telescope for night-time observing sessions. Listening posts have been set up in the Centre where visitors can find out what the telescope is doing on any given day, and the latest news on pulsars, quasars and molecules in space.

This new direction for the CSIRO Astronomy Centre, as it is now named, has resulted from close collaboration between the Science Communication Unit and the Communication Group of the Division. It comes at an opportune time: the year the radio telescope comes of age.

Executive visit to Atmospheric Physics



Dr Kevin Spillane, second from left, discusses simulated wind flow over a model of Victoria with members of the Executive when they visited the Division of Atmospheric Physics recently. The accurately scaled model of Victoria was constructed by George Scott, far right.

Members of the Executive were shown also other aspects of research into regional pollution and cold fronts. They discussed the Division's work on the carbon dioxide problem and saw the powerful lidar equipment remotely analysing the structure of cirrus cloud.

—Phote by David Whillas.

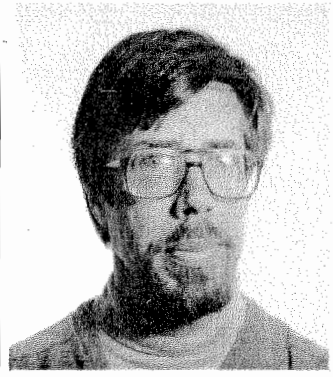
Canberra Fun Run on next month

The now internationally famous CSIRO Fun Run is on again this year on Friday, July 16, at 12.30pm.

Once again Canberra's scenic hills will be subjected to the patter of little feet, the sibilant sound of tearing ligaments, and the intoxicating aroma of B.O. and Dencorub as highly tuned athletes from Divisions all around Australia compete for the coveted 25 carat gold 'Black Mountain Cup'.

Runners, joggers, walkers and others wishing to wrench their wretched, weary white bodies over the 5.6 km course on the gentle slopes of Black Mountain should get their entries in soon to: Gregory Heath (46 5692) Colin Hazelton (46 5891), CSIRO Division of Environmental Mechanics, PO Box 821, Canberra City, 2601.

New Chief at Wildlife



One of the world's foremost animal ecologists has taken up his appointment as Chief of CSIRO's Division of Wildlife Research.

Dr Charles Krebs, pictured above, was formerly Professor of Zoology at the University of British Columbia in Vancouver, Canada.

Dr Krebs, 45, graduated BSc from the University of Minnesota in 1957, and received a PhD from the University of British Columbia in 1962.

He is the author of a textbook 'Ecology', and is writing a book on ecological methodology.

New home for the National Insect Collection

From page one

species could become extinct by accident, yet it was happening.

Australians should perhaps rethink their prejudice in conservation, which placed greater weight upon the extinction of mammals or birds.

'Some of the insects which will be held in the D.F. Waterhouse Laboratory of Insect Taxonomy are of ancient origin', Mr Thomson said. 'Their ancestry predates the appearance of even the amphibian ancestors of the dinosaurs.'

Mr Thomson said conservation of any resource began with the process of inventory, and it would be a challenge to make the national resource of the Australian National Insect Collection as complete as possible.

An insect missing from the collection meant the loss of potential information which might prove invaluable at some future date.

Mr Thomson cited the contribution of the fruit fly, Drosophila, to the revolution in genetics, as an example of the potential contribution of insect studies to human knowledge.

Increased focus on W.A. rural science

From page one

Dr Wild said the Laboratory for Rural Research would provide a focus for the scientific expertise available in all parts of CSIRO to tackle rural problems peculiar to Western Australia.

'For instance, 19 scientific and support staff are being redeployed to the Division of Animal Production, making a total of 33 staff, and will be based at the Laboratory', he said.

'They will be working particularly on pasture stability, forage quality and nutrition of livestock, trace minerals and fertilizers and reproductive efficiency.

'Other scientists will be concentrating on research affecting trees—dieback, reafforestation, nutrient recycling in forests.

DUNG BEETLE WORK GOES ON

'And other continuing work on the use of dung beetles to counter the bush fly problem will be done by Laboratory-based researchers.'

Dr Wild said the Laboratory would have an officer in charge and would provide support staff for the research scientists and for visiting scientists from overseas and from within CSIRO.

He said the arid and semi-arid zone research undertaken by the former Division of Land Resources Management at Deniliquin (NSW) and Alice Springs (NT) would continue in its present form for the time being.

New organizational arrangements for the research groups involved were still under consideration.

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris. Printed by Pirie Printers Pty Limited, Canberra, A.C.T.

CoResearch

CSIRO's staff newspaper *July 1982* 253

Students at the bench:

Peer teaching pilot scheme in Canberra

A group of senior Canberra college science students are spending eight weeks with research groups in Canberra Divisions to learn more about areas of science in which they have expressed an interest.

The scheme, which began during last month, is a pilot peer teaching program which may later extend to Divisions in other Australian cities.

It has been established by the Science Communication Unit in association with the ACT Schools Authority.

All seven Canberra colleges are taking part in the scheme which is modelled on similar schemes at the Australian Museum and the Museum of Applied Arts and Sciences in Sydney.

VARIED SUBJECTS

Each of the 20 students in the first program will spend up to 10 hours over a period of eight weeks, some more or less, depending on the availability of the group of scientists to whom the students are attached. Divisions taking part are Mathematics and Statistics, Soils, Computing Research, Plant Industry, Environmental Mechanics, Forest Research, Entomology, and Water and Land Resources.

Subjects to be studied include tissue culture techniques in plant breeding, the use of the scanning electron microscope to study insect skins, the basic nature of water erosion and the fauna survey.

OPTIMIZE EXPERTISE

The Director of the Bureau of Scientific Services, Mr Sam Lattimore, explained that the peer teaching program helped to optimize community use of CSIRO research and expertise.

'We believe that these senior science students, who have already expressed an interest in a particular discipline, can benefit from the knowledge of CSIRO scientists.

'The program will enable the student to gain a greater insight into their chosen subject, to learn how a research group operates, the reasons for its research

Continued on page four

CSIRO Chief says Landsat upgrade vital

Resources satellites such as Landsat are Australia's latest weapon against the tyranny of distance, according to Dr Ken McCracken, Chief of the CSIRO Division of Mineral Physics.

'With our small population and large land area, we Australians will benefit from this technology more than virtually any other people in the world', he said.

Addressing the National Science Forum in Canberra on 29 June, Dr McCracken said resource satellites photograph Australia every day from a height of 920 km.

FUTURE VALUE

He said that the new satellites of the 1980s will transmit ten times as much information as those of the 1970s, and that this will greatly enhance their value in the management of the resources of Australia.

'Reception of the data from the new generation of satellites will require the expenditure of $6.5 million on the existing Landsat Station', he said.

He described this as a bargain basement price, as a result of the foresight and planning of the then Australian Department of Science and the Environment in the 1970s.

Australia would easily recoup that cost, each year, through improved exploitation of floods and better scientific management of our farmlands.

WINDFALL PROFITS

He also predicted windfall profits through the possible discovery of things like new fishing grounds and new mineral deposits.

He stressed, however, the need for an immediate upgrade of the Australian Landsat Station.

'Delivery of the data to the user within three to six days is absolutely vital for any management role', he said.

On the question of whether the Government should partially, or totally, divest itself of the Landsat tracking and processing stations, he said:

Continued on page four

Honours for CSIRO researchers

Five CSIRO staff, four of them recently retired, received honours in the recent Queen's Birthday honours list.

Mr John Bolton, recently retired from the Division of Radiophysics in Sydney and now living in retirement in Queensland, was awarded the CBE for services to radioastronomy.

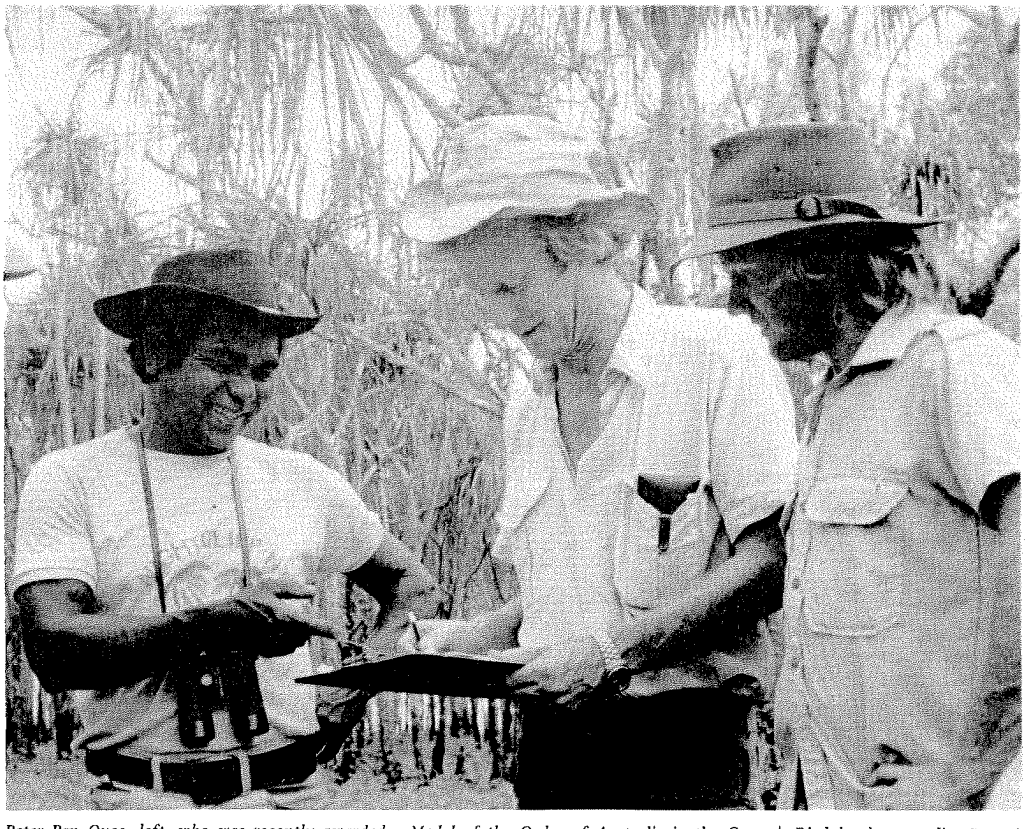
Dr Rachel Makinson, formerly with the Division of Textile Physics, and now retired in Sydney, was awarded the Australia Medal for services to the wool industry.

Mr Frank Whitty, now retired in Canberra but formerly with the headquarters staff, was awarded an MBE.

Mr Arthur Mills, formerly with the Division of Entomology in Canberra, received a BEM for his services to the Division.

The member of staff currently serving who received an award is Peter Pan Quee, a technical officer with the Division of Wildlife Research, who manages the Division's field station at Kapalga on the sub-coastal plains of the Northern Territory. Peter was awarded a Medal of the Order of Australia.

Queen's honour for Peter Pan Quee



Peter Pan Quee, left, who was recently awarded a Medal of the Order of Australia in the Queen's Birthday honours list. Peter is pictured with Dr Mike Ridpath and Peter Brady of the Division of Wildlife Research.

Travellers on the airline Air Nuigini earlier this year would have been able to read in the in-flight magazine, an interesting article on insect potters, written and illustrated by **Dr Philip Spradbery** of the Division of Entomology in Port Moresby.

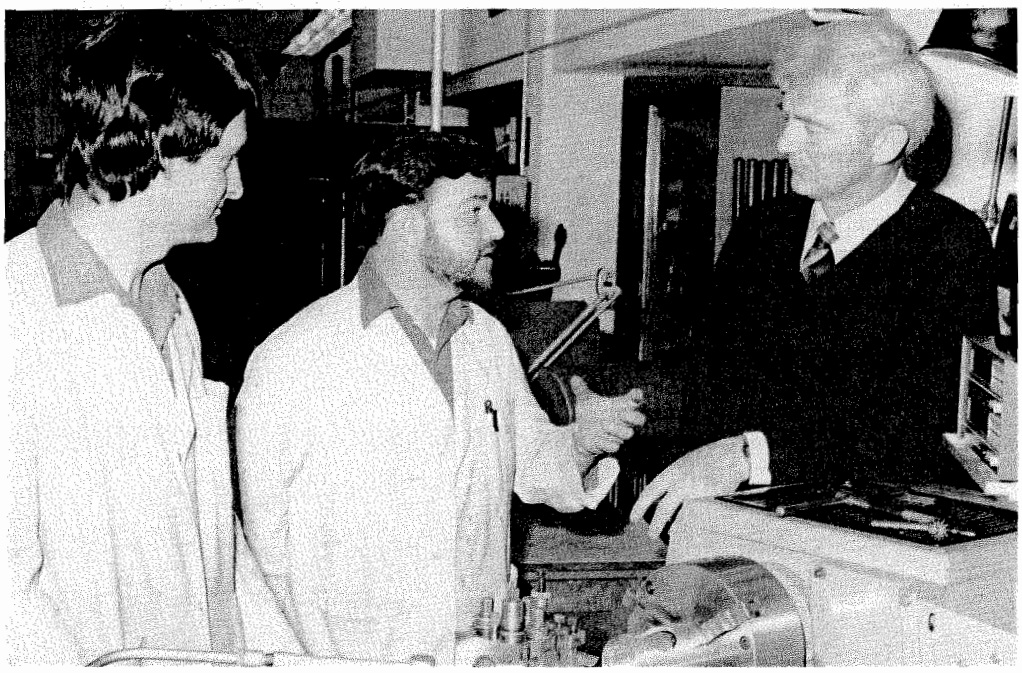
Philip's article concerned the tiny clay pots which are made by the wasp species, Eumenes, whose nests are fixed to branches of trees and shrubs, stone walls and structures such as house timbers, curtains, even books. The story is beautifully illustrated with Philip's own photographs showing the insect at work.

□ □

A new home in Toowoomba, Queensland, awaits **Dr Ian Common**, recently retired from the Division of Entomology in Canberra. Ian joined the Division in 1948, and was most recently Curator of Lepidoptera. Ian has made a significant contribution to literature on the lepidopterous and was co-author of the classic 'Butterflies of Australia'. For his work in the field, he was admitted to the degree of Doctor of Agricultural Science by the University of Queensland in 1969. Ian will continue his work with the Division as an Honorary Research Fellow.

□ □

The foundation Bancroft Mackerras Medal of the Australian Society for Parasitology has been awarded to **Dr Rob Sutherst** of the Brisbane laboratory of the Division of Entomology. Dr Sutherst's medal was awarded for research excellence.



Two Senior Laboratory Craftsmen at the Division of Atmospheric Physics recently received awards for excellent achievements in part-time study at Moorabbin and Frankston TAFE Colleges.

They are Tim Blake, left, who received the Carbi Tools Award for Toolmaking and Reg Henry, centre, who received the R.V. Dorman Award for Metal Fabrication. They are shown here with the Chief of the Division, Dr Brian Tucker.

— Photo by David Whillas.

Obituary:
Chemical Physics loses a senior scientist

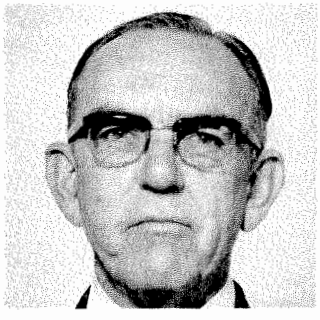
Friends and colleagues of Mr A.F. (Tony) Beecham, a member of the Division of Chemical Physics, were saddened to learn of his death, after a long illness, on May 25.

Born in England in 1920, he came with his family to Australia in 1927. He served with the AIF in the Middle East in the Second World War. In 1950 he graduated with honours in chemistry from Adelaide University and in January 1951 joined the Chemical Physics Section of the Division of Industrial Chemistry.

An organic chemist originally concerned with peptide synthesis and conformation, his interest subsequently focused on the technique of optical rotatory dispersion in relation to structure and absolute configuration, particularly of natural products. He attained a deep insight into the value of ORD and CD spectra for many aspects of chemistry, contributing significantly to the literature on that subject. His concern with the fundamental interpretation of circular dichroic (CD) spectra, particularly of steroidal compounds with an enone function led, latterly, to a fundamental reassessment of hydrogen bonding in such compounds and of the basic mechanism of hydrogen bonding in general. He had an incisive appreciation of experimental observation and would only publish when fully satisfied of all aspects of the interpretation of the facts.

At the time of his death, Tony was a Senior Principal Research Scientist with the Division. He is survived by his wife Vivienne and three sons. He was a keen golfer and a chess player of note.

Tony Beecham



Pastoral industry approaching crossroads

The future of the pastoral industry in Australia 'was rapidly approaching crossroads', Dr Dennis Minson said in his presidential address to the 14th biennial conference of the Australian Society of Animal Production.

The conference was held in Brisbane in May, and was attended by 363 delegates.

Although their major resource was land, the pastoral industries would face increasing competition from the grain industries, Dr Minson warned.

Of the 58.6 million ha of suitable land not presently used in Australia for cropping, nearly one-third was already under sown pastures.

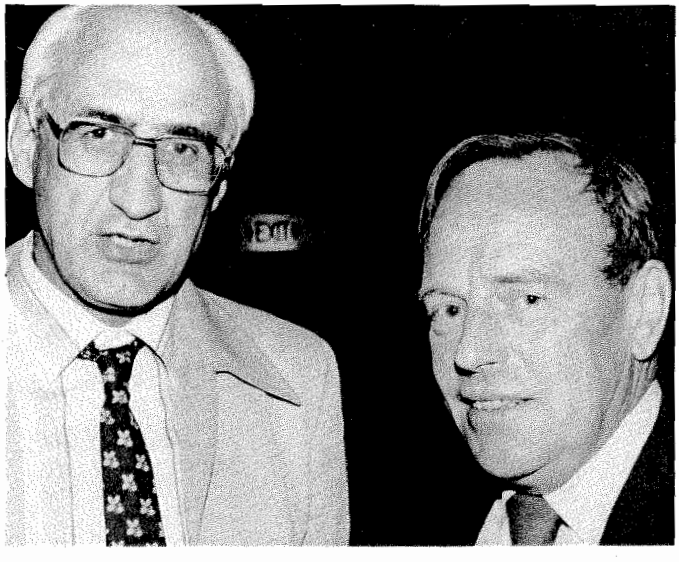
'Therefore any extension of arable farming will be at the expense of the pastoral industry which will be restricted to poorer environments', he explained.

This would also occur with the limited amount of irrigation supply—of the 1.46 million ha presently irrigated, 65 per cent was used for sown pastures.

An expansion of Australian grain production was inevitable considering the rise in world population, and Queensland alone planned to double its grain handling facilities within the next 15 years.

Dr Minson drew attention to the contribution made by pastoral industry to export income—22 per cent of the 1980 national total—higher than from either arable produce or mining.

The 1988 Bicentenary would provide an excellent time to examine Australia's land resources and decide how they could most profitably be used, he added.



At the Biennial Conference of the Australian Society of Animal Production held in Brisbane during May, Dr Dennis Minson (Division of Tropical Crops and Pastures, Brisbane) left, President for the past two years, handed over the reins of office to Dr John Corbett (Division of Animal Production, Armidale).

Conference on building efficiency

More than 200 delegates from Australia and New Zealand recently attended a two-day conference on 'Building Maintainability and Operational Efficiency' at the National Science Centre in Melbourne.

The conference was organized by staff from the CSIRO Division of Building Research and the National Committee on Rationalised Building.

Papers presented examined the complex interrelationships between the various phases of the whole building process—design, construction, use, operation, maintenance and rehabilitation.

STIR

Keeping retired scientists busy and useful too

A group of CSIRO scientists who had 'done their time' met recently at Albert Street, East Melbourne, to consider how they could be useful in retirement.

Not that they hadn't already found the answer to that question, but they wanted to combine to do the job better. So they got together and formed STIR (Scientists and Technologists in Retirement).

About 25 researchers attended the meeting and expressions of interest and apologies for absence were received from about 50 people. Although CSIRO personnel predominated, there were scientists present who had retired from other private or Government organizations. Not only retired folks were there—others who had been noting the relentless march of time towards retirement day were also interested.

RANGE OF PROJECTS

The meeting was co-convened by Clyde Garrow and Clive Coogan and got going after the usual shuffling of papers and asides of 'Shall we wait any longer?'. All those present gave their versions of what they would like STIR to be and what they were currently doing. The aspirations ranged from making scientifically designed toys to overseas government consultancy, from advancing scientific knowledge (one present was developing an entire new field in chemotaxonomy of plants) to using well-known science to aid small industry. Others were interested in developing their inventions or manufacturing scientific instruments. While it may be difficult to accomplish the entire range, the meeting saw no insuperable difficulties. But as yet all is fluid and only time will tell what form STIR will ultimately take.

Even the name, STIR, may be superseded; one person present (ex-ICI) suggested that 'STIRRERS' might be more appropriate—'Scientists and Technologists in Retirement Represent Experience Resource and Skill'.

A steering committee (or should that be a stirring committee?) was elected of half a dozen with Clyde Garrow as Chairman, and will be meeting soon to thrash out the shape of STIR.

If you are interested, put your point of view on paper and send it to Clyde Garrow, CILES, 314 Albert Street, East Melbourne, or ring him on (03) 419 1333. Or you may just be interested to register your name with STIR as one who would like to know more.

RESEARCH POSSIBILITIES

STIR is looking at a number of possibilities. We hope that STIR will receive support from CSIRO. It is hoped too that some of CSIRO's un-used facilities in equipment (probably past its prime), libraries or accommodation (staff ceilings help here!) might be made available. There are probabilities also that the State Governments might aid the establishment of STIR in their respective States, as it will be of distinct benefit to small and developing industry.

STIR is sensitive to the potential problem of its possibly competing with established consultants. While, as in love and war, all would be fair (as STIR would be composed of individuals who would have as much right on the market place as established consultants), nothing is further from the collective mind of STIR. From the showing to date STIR promises to have, Australia wide, the greatest collection in terms of diversity and expertise ever seen in any one consultant group in Australia. But mercifully that expertise does not overlap conflictingly with the established consultant areas of mainly constructional engineering, turnkey operations or architecture. In fact STIR promises to provide expertise in regions in which none was previously available.

Do you, or your friends and relatives, want to be part of it?

— Clive Coogan

From the Chairman -

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

At the last meeting of the Executive Committee (Directors and full-time Executive members) we digressed slightly from our usual business and talked about the meaning of words.

This is something which I believe is exceedingly important, because the better understanding of words the fewer of them have to be used. The fewer the words, the less the mass of paper and wastage of time. Was it Laplace or Lagrange (I always get them confused) who apologized for writing a long paper? Had he had more time he would have written a short one. And what a splendid thing it was in the heat of the battle of France in 1940 that Mr Churchill, the new Prime Minister, issued a memorandum to his Civil Service that henceforth you shall communicate by the use of plain English.

At our Executive Commmittee meeting we discussed the meaning of words like science, technology and innovation—what do they really mean? Of scientific research I suggested the following definition: research aimed at understanding nature through the generalization of knowledge obtained from observation or experiment; and the application of the same principles to human needs. Not all agreed—some, I sensed, wanted to see a more distinct separation between scientific research and technological research.

One expression which we have had to live with for several years and which has always seemed to me to be something of a mouthful is 'strategic mission-orientated research'. It was introduced for good reason by the Birch Committee of Inquiry which was anxious to choose words that had a special emphasis which distinguished CSIRO's role from the British circumstances which led to the Rothschild Report on customer-funded applied research. Even though this expression became enshrined in Government decisions, I believe it is now time for the process of language evolution to come into operation and allow the superfluous words to be dropped. My dictionary tells me that a 'mission' is a body of persons sent to foreign countries either to conduct negotiations or to convert heathens, and that orientate means to point eastwards or in some other direction. I presume the Inquiry's report used the word 'mission' in the sense that NASA has used it: a target or aim. But who has ever heard of a strategy without an aim? The point I am making is that the ungainly words 'mission-orientated' are nowadays superfluous and I commend that we abandon them to the deep. In the same way, I believe we can drop the words 'problem-orientated' when describing tactical research.

Again your dictionary will tell you the distinction between strategic and tactical. Both, of course, are words of military origin and deal with the art of disposing troops, etc. so as to win the impending battle. At the outset, it is strategy; but when your forces are in contact with the enemy it becomes tactics. This definition of 'strategy' is tempered by the cryptic qualification 'lit. & fig.'; this means that in our case we must replace 'enemy' by 'industry'—paradoxically our dearest friends. And so I suggest that we talk about the three broad parts of the spectrum of research simply as fundamental (or pure), strategic and tactical, with the understanding that strategic research has long range application in mind. I am relieved to discover, a *posteriore*, that in its report 'Basic Research and National Objectives', ASTEC had come to the same conclusion.

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When a new task of significant magnitude has to be undertaken, one needs to appoint (as in a mission) a body of persons. Nowadays, even a humble task seems to need a viable staff, like a hundred. It was not always so. I recently re-read of the case of how the railway between London and Bristol (the Great Western Railway) was designed and planned. The appointed engineer, one Isambard Kingdom Brunel (what a splendid name), employed two assistants (who apparently lacked the industry and drive of their master). Brunel, a chronic insomniac, spent his days on horseback spying out the land and negotiating contracts with landowners. He spent his nights at the drawing board and doing paper work. The whole survey, begun in March 1833, was completed in May of the same year; the final railway (still considered by many to be the best ever made) precisely followed the original survey, except that the line terminated at Paddington Green instead of Vauxhall. I believe we have a lot to learn from the nineteenth century.

Can you wonder that my number-one schoolboy hero was Brunel? He had a clear edge over my number two, Herbert Sutcliffe, who opened the batting for Yorkshire and England.

Paul Wild

Study awards announced for four CSIRO researchers

Four CSIRO researchers, three men and a woman, are the recipients of the CSIRO study awards for 1982.

The awards entitle the holders to spend some time overseas, carrying out research relevant to their particular discipline.

Mr P.F. Nelson, an experimental officer with the Division of Fossil Fuels in Sydney, plans to carry out research aimed at developing an understanding of photochemical pollution and the effects of continued release of halocarbons on the stratospheric ozone balance.

Mr C. Andrikidis, a senior technical officer at the Division of Applied Physics in Sydney, will examine overseas developments and techniques in the design, construction and application of cryogenic apparatus.

Mr C. Sona, a supervising draftsman, also in the Division of Applied Physics, will study the current level of technical achievement and practical utilization of current computer aided design and manufacturing techniques in the area of computer aided engineering.

Miss S.M. Collins, a librarian at the Division of Food Research's Dairy Research Laboratory in Melbourne, will study research methods in librarianship and the interpretation of statistics and their application in setting standards for scientific libraries.

The Committee which examined the proposals from staff was headed by the Director of the Institute of Biological Resources, Mr Michael Tracey, and the former Chief of the Division of Applied Physics, Mr Fred Lehaney. The Committee was joined by John Brooks from the Division of Radiophysics for the experimental officer applications, Kay Johnson from the Division of Land Use Research for the technical applications, Peter Hume of the Division of Building Research for the trades applicants and Noel Sullivan from the Office of the Executive for the administrative applicants.

Guidelines for DNA researchers

Procedures designed to eliminate or minimize the risk of physical escape of organisms used in genetic engineering work involving recombinant DNA are detailed in a new publication, 'Guidelines for Small Scale Work with Recombinant DNA'.

The document specifies three levels of laboratory containment, the most stringent calling for airlocks, biological precautions and filtering of exhaust air from laboratories.

Biological procedures specified include the use of specially bred organisms which cannot survive outside the laboratory.

The guidelines are similar to those used in other countries and take into account revised assessments of possible hazards arising from R-DNA work. They are based on previous guidelines issued by the Academy of Science.

Copies of the book are available free from The Director of Public Relations, Department of Science and Technology, P.O. Box 65, Belconnen, A.C.T.

Landsat upgrade vital

From page one

'I believe that the benefits of the nation are so broad, as well as being both politically and economically sensitive, that the operation should remain firmly in the hands of those who are responsible to the people of Australia through the ballot box.'

FUTURE SCENARIOS

Dr McCracken put forward a few scenarios that illustrated just what the new generation of satellites could do for us, both in managing our country, and in learning more about it.

'Imagine that the Darling River is in flood and that Bourke is surrounded by water', he said.

'Two months later a fraction of that water will reach the Menindee Lakes near Broken Hill. These lakes, together with the Hume, Burrinjuck, Dartmouth and other dams, are the storage tanks for the use of water throughout the Murray-Darling River system.

'The Darling is like a very leaky pipe. Only about half of the water passing Bourke reaches the Menindee Lakes.

'Resources satellites will help us know how much will come out of the end of that leaky pipe, and enable us to juggle our use of water throughout New South Wales, Victoria and South Australia.'

This would result in the capture of sufficient additional water to increase the sales of primary produce by at least $10 million.

'Agriculture near Albury, rice growers near Deniliquin, vineyards near Mildura and citrus orchards in South Australia would all benefit. The prices of produce in the shops would be more stable', he said.

IMPROVED PRODUCTIVITY

He described other cases where the satellites will improve Australian productivity. Farmers will be able to manage their land more effectively: storage and transportation of crops will be streamlined.

Dr McCracken also spoke of their value in mineral exploration. 'Satellite photographs played some part in the discovery of the Argyle Diamond Mine and the Roxby Downs Copper-Uranium deposit. Space age imagery is now as indispensable to the explorer as his geological hammer', he said.

'Science and technology have played a major role in coming to terms with our large fragile continent.'

He predicted that resources satellites would build on the tradition established by, for example, refrigeration, radio, aircraft and control of the rabbit.

Peer teaching pilot scheme

From page one

programs, and how professional scientists approach problem-solving tasks', Mr Lattimore said.

CLASS PRESENTATION

At the end of the term, the students will give a presentation to the college class based on their experiences. They will also receive a certificate detailing their time spent. Mr Lattimore said the program would be closely monitored during the term.

He said the Science Communication Unit was studying the possibility of introducing the scheme on a national basis during the first and second terms of next year.

CSIRO helps to solve an industry problem

The Division of Textile Physics in Sydney has a program aimed at improving the use of textiles in industry and an active subprogram concerned with the use of fabrics as filters for flue gases to prevent particulate matter escaping to the atmosphere.

Many industries employ these filters known by the term 'baghouses' sometimes alone, sometimes in conjunction with electrostatic precipitators.

One user, Mt Isa Metals Ltd, maintains a large multiple baghouse installation to filter the hot gases from the sinter plant and blast furnace of its lead smelter at Mt Isa. The Company is facing two problems, inability to increase smelting throughput because of filtration limitations, and failure of filter bag fabric due to fatigue. Fatigue occurs because the filter bags are severely flexed during the mechanical shaking sequences required to free the fabric periodically of caked dust.

An experimental rig employing small sized filter bags about one metre in length and 12 cm in diameter has been developed at the Division. The rig incorporates mechanical shaking arrangements, control and monitoring of heat input and gas flow, together with provision for electrostatic charging of the dust particles in the incident gas flow.

The rig is intended for installation at Mt Isa in the flue gas stream and the main purpose of the experiment is to find out whether electrostatic charging will improve the filtering capacity of the baghouse. Bench scale laboratory experiments have shown that charged particles build up a dust cake with a more porous structure than uncharged particles and hence extend the period between cleaning.

A secondary purpose is to determine optimum conditions of filter bag shaking to remove the accumulated dust cake. It is hoped that this may be accomplished with less rigorous shaking than is practised at present and hence reduce premature filter fabric failure.

The rig is being manned at Mt Isa by Dr William Humphries, the group leader, and a Senior Technical Officer, Mr Jack Madden, who has been responsible for detailed mechanical design and construction. Mr Mick Miceli has designed and built the electronic control and monitoring systems and Mr Jack Ikin has supervised the electrical installations.

Staff from the Division of Textile Physics in Sydney load an experimental rig to try to solve a problem at Mount Isa mines. The rig will be installed in a flue gas stream to see whether it can help reduce wear and tear on filter bags, and increase smelting throughput. The rig is now in operation at the mines.

Looking at how Canada handles its technology transfer

A one-day seminar on technology transfer in Canada has been organized for July 22 at the Division of Applied Physics in Sydney.

The principal speaker will be Mr David King, head of the business assistance group of British Columbia Research, based in Vancouver.

Researchers interested in the subject of CSIRO's involvement with secondary industry are welcome to attend and should contact Ms Yvonne Esplin or Dr Graeme Sloggett by telephoning Sydney 4676211.

An information note on the proposed seminar points to the parallels between Australia and Canada, and outlines Canada's mechanism to facilitate the transfer of technology from publicly funded scientific institutions to industry.

The province of British Columbia has an active program of technology transfer, implementing such ideas as science parks, giving active assistance to industry through contract research and trouble-shooting, and conducting seminars and workshops in such areas as robotics and production engineering.

The July 22 seminar will commence at 2.00 p.m. in the NKL theatre, Bradfield Road, Lindfield.

New challenge awaits Irrigation Research Chief

With the recent change in status of CSIRO's Division of Irrigation Research, to become its national Centre for Irrigation Research, the former Chief of the Division, Dr P.E. Kriedemann, has returned to a full-time research program.

Before his term as Chief, Dr Kriedemann was involved in research on environmental and biological regulation of photosynthesis, the primary energy harvesting system in higher plants.

He is at present undertaking three months' work at the Research School of Biological Sciences of the Australian National University, Canberra. His work is on the adaptation of photosynthesis to differing levels of atmospheric carbon dioxide, which is of significance in greenhouse cropping, and on differences in the physiology of salt tolerance in commercial sunflower and a wild species related to it.

Dr Kriedemann will subsequently be working for several years as a Research Associate in the Plant Physiology Department of the Waite Agricultural Research Institute. Following from his present studies, he will identify which attributes amenable to genetic manipulation contribute towards salt tolerance in plants. The research approach will be based on short-term measurement of photosynthetic response to solutes in the root zone.

Looking at Australia from a satellite

A book recently published in Sydney gives all Australians the chance to have an astronaut's view of the resources and environment of Australia.

The book, Satellite Images of Australia, outlines the way satellite pictures are used in agriculture, environmental studies, mapping, minerals exploration and in other resources management activities.

The book presents to all Australians, the colourful and often dramatic 'space art' produced by the effects of time, wind and water.

Areas as diverse as the deep blue waters around the Barrier Reef, the arid stretches of sand dunes in the Simpson Desert and the urban sprawl of the capital cities are captured in the book's spectacular satellite pictures.

Satellite Images of Australia, edited by the Chief of the Division of Mineral Physics, Dr Ken McCracken, and Ms C. Astley Boden, is of 72 pages and costs $14.95 paperback, $25 cloth bound, from CSIRO's Editorial and Publications Service, PO Box 89, East Melbourne.

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris. Printed by Pirie Printers Pty Limited, Canberra, A.C.T.

CoResearch

CSIRO's staff newspaper *August 1982* **254**

Budget funding

Australia Telescope gets Govt. approval

Work on the construction of the $25 million Australia Telescope would begin before the end of the year, according to the Minister for Science and Technology, Mr David Thomson.

The project received an initial grant of $820 000 in CSIRO's allocation of the 1982/83 Federal Budget—and a commitment for funding over the next six years.

'The approval of the project is a shot in the arm for Australia's radioastronomers who faced the prospect of rapidly falling behind the rest of the world as their equipment became outdated', Mr Thomson said.

'But just as importantly, the telescope will mean a similar shot in the arm for Australian technology because the project is an all-Australian undertaking which will inject $20 million into the technology sector.'

Mr Thomson said antenna design studies and costing for the project had been undertaken as part of the CSIRO proposals for funding. 'This means that detailed tender documents can now be prepared with a minimum of delay', he said.

He explained that the Australian Telescope was made of three elements—and made use of existing facilities.

'The telescope consists of new antennas at Culgoora near Narrabri in New South Wales, and at Siding Spring, near Coonabarabran, also in New South Wales. These antennas will be linked by microwaves to the existing 64-metre CSIRO radio telescope at Parkes, 350 kilometres away.

'The combination of the antennas creates, in effect, one huge, powerful radio telescope about 300 kilometres across.

'The telescope will provide high resolution radio images of the southern sky and ensure that Australia remains among the world leaders in radioastronomy', he said.

Mr Thomson said without the instrument, Australian astronomers faced the bleak prospect of not being able to keep up with

Continued on page 8

12.9% increase

Budget details

An Appropriation of $256.391M is being sought for CSIRO in 1982/83, comprising $249.406M for salaries, operational and research activities, and $6.985M for large equipment items and minor building works.

The amount sought represents an increase of $29.366M, or 12.9%, over CSIRO's expenditure of $277.025M from Appropriation in 1981/82.

The main components of this increase are: salaries ($11.7M); cost increases ($4M); Australian National Animal Health Laboratory ($3M); and transfer of part of the Australian Atomic Energy Commission to CSIRO ($6.5M). The remainder of the increase is for the transfer of the Division of Chemical Technology to Clayton, Victoria, and the initial transfer of the Division of Oceanography at Cronulla, NSW, to Hobart, Tasmania; part cost of the oceanographic research vessel; and part cost of the new radio telescope.

The Government has also approved the letting of a contract during 1982/83 for the construction of new laboratory facilities at Clayton, Victoria, for the Division of Materials Science. The cost of the facility is estimated to be $10.1M (at February 1982 prices), with construction planned to commence early in 1983/84.

It is hoped to let a contract soon for the oceanographic research vessel.

In addition to the direct appropriation to CSIRO, $56.27M has been appropriated to the Department of Transport and Construction for expenditure on the Organization's behalf on works and buildings and the maintenance of existing facilities. Of this amount, $35M will be spent on the construction of the Australian National Animal Health Laboratory (ANAHL) at Geelong, Victoria.

A further $0.066M has been appropriated to the Department of Administrative Services to enable items for acquisition commenced on behalf of CSIRO in 1981/82 to be completed in 1982/83.

Chairman's comment

Commenting on the Budget as it affects CSIRO, the Chairman, Dr J. Paul Wild, said:

'The Government's decision, announced in the Budget, to support the Australian Telescope is wonderful news and will mean that the field of scientific endeavour for which Australia is most famous—radio astronomy—will continue to thrive in the future.

'I believe scientists throughout Australia, whether they are astronomers or biologists will rejoice.

'And so will the astronomical community throughout the world.

BICENTENARY PROJECT

'It would be difficult to imagine a more appropriate project for Australia's Bicentenary in 1988.'

Dr Wild continued:

'Considering the financial stringencies of the time the funds provide a reasonable level to permit us to undertake important research for Australia.

'The overall increase of 12.9 per cent includes allowances for several specific items.

'When these items are set apart, our operating funds received a level of indexation of about half the actual inflation rate.

'We need to keep a careful watch to ensure that programs have adequate operating funds.

'I believe it is absolutely vital that today, more than ever before, we continue to be able to demonstrate that the kind of work we are doing represents good value to the nation.'

Hobart laboratories under way

Marine science was of increasing importance to Australia, the Chairman of CSIRO, Dr J. Paul Wild, told an audience in Hobart last month at the official ceremony to mark the start of the Marine Laboratories.

Dr Wild said marine science, and in particular oceanography, was one of CSIRO's priority areas and the Organization planned to establish a centre of world excellence in Hobart.

Dr Wild said the laboratories would provide accommodation for more than 200 scientific and support staff. 'The adjacent wharf will be the home berth for a new oceanographic vessel', he added.

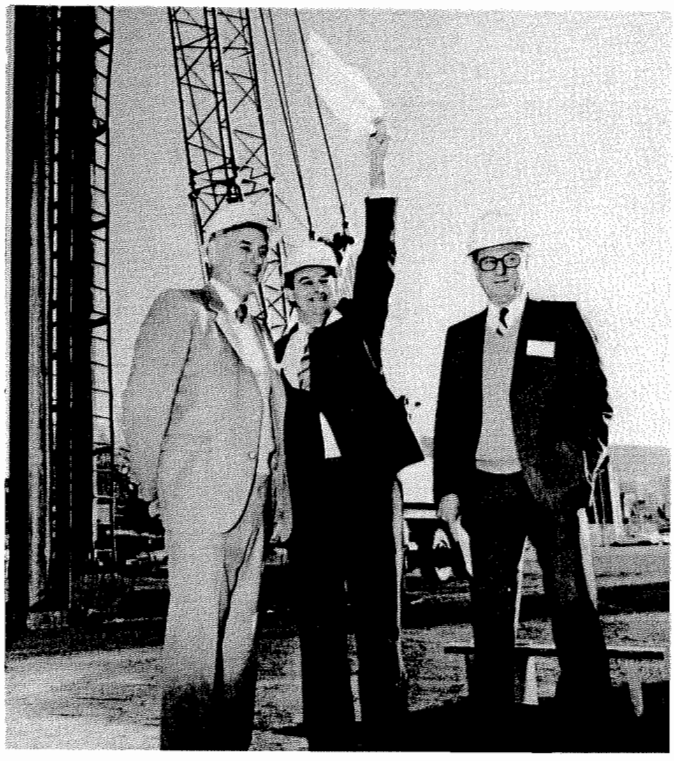
'Currently, tenders for the vessel are being assessed with a view to letting a contract for construction later this year', Dr Wild said.

He said the move of CSIRO staff to Hobart would be phased, commencing early next year in order to minimise the disruption of the research programs.

'We hope to take up temporary premises in central Hobart to serve as headquarters of the Division of Oceanography while the new laboratory is under construction.

'The facilities building, shed three, will be completed well before the remainder of the laboratory, and we expect to be able to transfer our marine operations and workshops into that building by the end of 1983', Dr Wild added.

The Minister for the ACT, Mr Michael Hodgman, who is Federal Member for the electorate of Denison, officially unveiled a plaque which will be fixed to the completed building. Mr Hodgman said the laboratories were the biggest Federal Government construction project ever undertaken in Hobart, and would ultimately inject millions of dollars into the Tasmanian economy.



The Federal Minister for the Capital Territory, Mr Michael Hodgman, gives the all-clear to a crane driver who will sink the first pile, marking the beginning of construction on CSIRO's new marine science laboratories in Hobart, Tasmania. The laboratories are being built at a cost of $11.8 million. Watching the ceremony is the Chairman of CSIRO, Dr J. Paul Wild and Mr Ron Thomas of the Commonwealth Department of Transport and Construction.

Letters to the Editor

Dear Editor, When the Chairman gave his definition of 'scientific research' in CoResearch some weeks ago* I tore it out to ponder at leisure.

It surfaced again today and after reflecting that the Executive should have settled these basics years ago (leaving more time for running the Organization, you know) I found it to be an amusing example of how ideology pervades all our thinking, an ideological definition being one which legitimizes our own interests.

Thus, J.P.W.'s definition allows scientific knowledge to be acquired by observation as well as experiment and this, you will admit, is a very good thing for astronomers who want to be called scientists.

To balance this generosity though, he restricts science to understanding nature (which is what pure and natural scientists do) and, as an afterthought, applying this understanding to the meeting of human needs (which is what applied and unnatural scientists do). One conjectures that it would never cross his mind to see scientific research as including the effort to understand causally that portion of the world containing people (adios, social science).

As for the effort to understand causally the effectiveness of decision-making procedures (and so design better ones) that involves both people and values, and surely must be art—farewell management science.

Scientism is the myth that science is neutral and objective (now there's a definition said the Queen). It's alive and well in Limestone Avenue and I believe it is blinding our leaders, with their rather old-fashioned ideas about science, to the possibilities for using scientific research to produce innovative ideas for tackling that whole range of important questions (conflict resolution, national survival, research management etc. etc.) which are currently seen as 'falling outside our charter'.

I can understand the temptation to simplify decision-making by using a narrow interpretation of our terms of reference but please be careful gentlemen not to condemn us to searching for the right answers to the wrong questions.

—Douglas Cocks
Water and Land Resources

P.S. I wonder what his definition of 'non-scientific research' is?

*Research aimed at understanding nature through the generalization of knowledge obtained from observation of experiment; and the application of the same principles to human needs.

☆

Dear Editor, So merit promotion is alive and well (Chairman's column, *Coresearch*, June). A jealously preserved cornerstone, no less.

What great news for scientific progress, cash management trusts, and the beach-house market. But spare a thought for the SSOs. Heady stuff, this talk of promotion, and on merit, too! Gosh, what would it be like?

Emboldened by inflation and a sense of injustice, I've been trying to find out. I have asked insistently to be assessed and paid on merit. Possibly I've been too docile, but we SSOs are a gentle herd. More inclined to ruminate than fulminate. At least they haven't *de*moted me.

Instead, they've sentenced me to life on level four in a jerrybuilt, medium-rise, five-storey pyramid, lovingly maintained by Personnel Branch. Now, I'm sure they're a nice, honest bunch in Personnel, but they've made a terrible mess of level four. Strewth—talk about gross disparities in skills, responsibilities, and work value. The fifth's not much better.

Anyhow, I should't complain. There must be more to life than scientific progress, cash management trusts, etc.

But it would be nice to read a special cheerio for SSOs from Dr Wild. He might even explain why we can't move back into a high rise tower, like the one they evicted us from 20 years ago. Or is perpetuation of a slave class a budgetary imperative?

—D.W. Horwood, Managing Editor,
Australian Journal of Experimental
Agriculture and Animal Husbandry,
CILES, Melbourne

☆

Dear Editor, I can assure Peter Martin (*CoResearch* 252) that his Division does not receive the individual attention of those who scramble or otherwise foul up Divisional titles.

Our name has covered the spectrum from 'Good Research' to 'Fool Research', but my favourite is a recent one—'Rood Research', and this on a Vice-regal envelope.

—J.H.B. Christian
Chief, Division of Food Research

☆

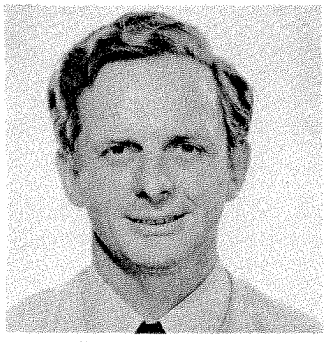
Dear Editor, As one who shares our Chairman's dislike of ungainly words (*CoResearch* 253), here is one that is frequently used, both in and outside CSIRO: 'forward planning'.

Is there any other kind?

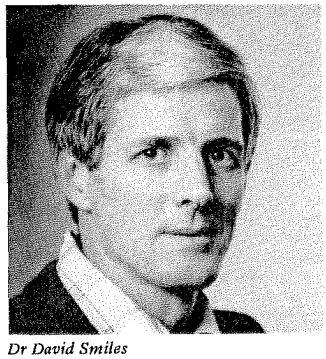
—George Fisher
Division of Food Research
Sydney

Senior staff appointments

Dr David Mitchell



Dr Don Gibson



Dr David Smiles

Three important positions within the Organization have been announced by the Chairman, Dr J. Paul Wild.

Dr Wild said Dr David Smiles would become Chief of the Division of Soils, based in Canberra, Dr Don Gibson would be Chief of the Division of Energy Technology in Melbourne, and Dr David Mitchell would be Officer-in-Charge of the Centre for Irrigation Research at Griffith in New South Wales.

SOILS

Dr David Smiles will succeed Dr A.E. Martin who completes his term as Chief of the Division of Soils at the end of this year.

Dr Smiles, an agricultural science graduate from the University of Sydney, has been Chief of the Division of Environmental Mechanics since 1980. He was awarded a Doctor of Science in Agriculture in 1979, and joined CSIRO in 1972, after a period as a senior lecturer at the University of Sydney.

'Dr Smiles, a soil physicist, has made a significant contribution to an understanding of water flow in swelling clays and other industrially important particulate slurries', Dr Wild said.

He will head a Division which conducts research into the physics, chemistry and biology of soils, and the movements of water and dissolved substances within them. The Division also has a responsibility for characterization of Australian soils.

ENERGY TECHNOLOGY

Dr Don Gibson, who becomes Chief of the Division of Energy Technology, has been acting Chief of the Division since it was formed in September 1981.

Dr Gibson graduated in science and engineering from the University of Sydney in 1963. He joined CSIRO in 1967 after a period at Cambridge University where he obtained a PhD with partial support from the Division of Mechanical Engineering.

'Dr Gibson has established an international reputation in fluid dynamics and noise control engineering', Dr Wild said.

The Division of Energy Technology has, as its long-term goal, the investigation and development of the techniques necessary to ensure a balanced utilization of Australia's energy resources.

IRRIGATION RESEARCH

Dr David Mitchell, who becomes Officer-in-Charge of the Centre for Irrigation Research at Griffith, is an honours graduate in science from the University of Capetown in 1957, and has a PhD from the University of London in 1970.

He joined CSIRO as a principal research scientist in 1977, working to develop management strategies for aquatic vegetation in irrigation systems.

'Dr Mitchell has been recognized internationally as a freshwater biologist', Dr Wild said.

The Centre for Irrigation Research is concerned with improving the efficiency of management of irrigation waters and with improving productivity of irrigated crops through a better understanding of the soil/water/root zone system.

Deaths of two retired CSIRO Chiefs

The deaths of two former Chiefs of CSIRO occurred during the past weeks.

Dr Bertie Dickson who was the oldest surviving CSIRO Chief died in Sydney at the age of 96, and Dr Harry Frith, who retired last year as Chief of the Division of Wildlife Research, died suddenly at the age of 61.

Dr Bertram Thomas Dickson was Chief of the Division of Plant Industry until his retirement in 1951. He was honoured with a CMG in 1960. Dr Dickson was born in England and was educated in Canada. He came to Canberra in 1927, where he lived until 1966. He was appointed to the Council of the Canberra University College in 1937, becoming its Chairman in 1953. In later years, he lived in Sydney. Dr Dickson is survived by his son Frank and a daughter, Marjorie, who lives in Canada.

Dr Harold James (Harry) Frith joined CSIRO in 1946 to work on a program of research on citrus fruit at Griffith in New South Wales. He transferred to the wildlife-survey section in 1951, and was appointed Chief when the Division was created in 1962. Dr Frith was made Officer of the Order of Australia in 1980, in recognition of his work in Australia for wild life conservation.

Dr Frith retired from CSIRO after a heart attack, and left Canberra last January to live on a small rural holding in the Lismore area where he had intended to continue his research on birds.

He is survived by his wife, a son and two married daughters.

Solomon explains polymer science to students

The Chief of the Division of Applied Organic Chemistry, Dr David Solomon, recently delivered the 1982 Hartung Youth Lecture to groups of students in Melbourne, Geelong, Ballarat and Warrnambool.

The lecture series is sponsored by the Australian Chemical Institute for the benefit of senior secondary science students. This year's series was a major event of National Chemistry Week in Victoria.

The Hartung Youth Lecture was established in 1958 to honour Professor E.J. Hartung who was Professor of Chemistry at the University of Melbourne from 1928 to 1954. Professor Hartung was renowned for his simple but very striking lecture demonstrations.

Dr Solomon's lecture was entitled 'Synthetic Macromolecules'.

Highlighting the fact that 60 to 80% of chemistry graduates will have direct or indirect involvement with some aspect of polymer science in their careers, Dr Solomon explained the chemistry of the formation of synthetic polymers with the aid of cleverly constructed models. Several striking display boards depicted the enormous range of polymer products in commercial, industrial, medical and domestic use.

New research grants

$100,000 for nine ANU-CSIRO programs

A total of nine projects involving researchers from CSIRO and the Australian National University will share in $100 000 in research grants jointly provided by the two organizations.

The grants are the first to be made under a joint fund established to support collaborative projects between the two groups. The aim is to strengthen research by encouraging more interaction between relevant groups, particularly where there are complementary strengths in the two institutions.

A joint CSIRO/ANU committee assessed the 52 applications for grants. Institute Directors Mr Michael Tracey and Dr John Philip were CSIRO's representatives on the committee.

GRANTS

Grants have been made to the following projects (the leaders of the research groups are shown in brackets): electron transport and attachment in gases, $12 500 (Dr G.N. Haddad, Division of Applied Physics/Dr R.W. Crompton, ANU); photochemical studies of metal ions encapsulated in an organic cage, $1200 (Dr W.H.F. Sasse, Division of Applied Organic Chemistry/ Professor A.M. Sargeson, ANU); an electron microscopy/diffraction investigation of the transformation olivine-spinel, $8000 (Dr A.W.S. Johnson, Division of Chemical Physics/Dr L.G. Liu and Professor B.G. Hyde, ANU); structure and exchange properties of vesicles in photochemical solar conversion systems, $13 000 (Dr W.H.F. Sasse, Division of Applied Organic Chemistry/Dr J. Israelachvili, ANU); study of the nature of teratogenicity of viruses for the ovine foetus and the nature of the immune response of the foetus to virus infection, $7000 (Dr A.J. Della-Porta, Division of Animal Health/ Dr P.J. McCullagh, ANU); characteristics of carbon fixation and water loss in eucalypt foliage, $23 000 (Dr A. Wheeler, Division of Forest Research/Dr I.R. Cowan, ANU); trans-membrane organization of the protein sub-units of photosystem I complex from chloroplasts, $7400 (Dr J.M. Anderson, Division of Plant Industry/Dr I.J. Ryrie, ANU); gradient index schematic eyes for exploration of the developing and mature ocular design strategies of vertebrates, $3000 (Dr P.J. Sands, Division of Computing Research/Dr A. Hughes, ANU); molecular cloning and analysis of the DNA of genes involved in eye pigment biosynthesis in the sheep blowfly, $24 900 (Dr M.J. Whitten, Division of Entomology/Dr A.J. Howells ANU).

Judging gets underway for the BHP Science Prize

Australia's national science competition for students, the BHP Science Prize, has produced almost 400 entries for this year's awards.

CSIRO jointly organizes the competition with Broken Hill Proprietary Limited and the Australian Science Teachers' Association. By making this input, CSIRO's Science Communication Unit hopes to improve its links with science teachers at State and national levels.

Entries received to date include: sulphide minerals in Lake Macquarie, genetic manipulation of the fowl, power from running water, the acidity of Perth's rain, and 'a series of harmless experiments on my three-year-old Anglo Arabian horse'.

Judging of the projects will take place at State level towards the end of this year, followed by national judging in January 1983.

As an extra incentive to the students, the top two winners of the BHP Science Prize will be flown to the United States to take part in the 34th International Science and Engineering Fair in May 1983. Westinghouse Electric will pay the cost of travel and sponsor a visit by them to the Westinghouse Research and Development Centre in Pittsburgh, Pennsylvania.

From the Chairman-

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

CSIRO aims at excellence in all that it does: research, of course, but more than that, in administration too.

Now that the administration (which covers Divisions, Institutes, Regional Offices and Head Office) has had time to settle down after the new structuring that followed the 1978 Government decision and the 1979 Scott Report, the Executive has decided to take a thorough look at the way to do things in the future. Not only have the delegations of authority altered in recent times, but there has been a revolution in available technology for administration and information handling.

The Executive has set up a committee to carry out this task under the chairmanship of our new Executive Member, Geoff Taylor. The committee also includes: a part-time Member of the Executive, Bails Myer; two Chiefs, Bob Frater and Don Taylor; Howard Crozier; and an external representative, Russell Boardman, Bursar of the A.N.U. I invite all staff members to make submissions (in confidence, if desired) to the Chairman of the committee if they have relevant matters to raise.

● ●

The science of spectroscopy was born in 1802 when the English scientist William Hyde Wollaston (chemist, physicist, physician, metallurgist, mineralogist . . . .) discovered seven dark lines in the spectrum of sunlight. In time, spectroscopy became not only a major industrial technique for chemical analysis, but a cornerstone of physics responsible for the development of atomic structure and quantum mechanics. CSIRO has had its share of glory from spectroscopy. Greatest of all was the success of Sir Alan Walsh's atomic absorption and spectrophotometer; others of us have made humbler contributions; and a large proportion of Divisions now use spectroscopy of some form as a routine technique. Yet the month that has just passed might qualify as our 'month of the spectral line'; for two splendid pieces of work have surfaced.

The first to emerge concerned the 2.6 mm wavelength spectral line of carbon monoxide. Using the small (4 m) precision radio telescope at Radiophysics (Epping) a team consisting of Drs Brian Robinson, Jim Casewell, Raymond Haynes, Dick Manchester and John Whiteoak have for some months been observing the detailed Doppler-shifted profile of this line from our galaxy, the Milky Way. With the aid of galactic dynamics, frequencies can be converted into distances and so the distribution of the gas can be traced. Through this technique it has been possible to show that our galaxy is a perfect specimen of a symmetrical four-arm spiral. We are located near the edge some 30 000 light years from the centre. Twenty-five years ago, Dutch and CSIRO radio astronomers had obtained the first evidence of spiral arms using hydrogen. It needed a gas-like carbon monoxide, confined to the main star lanes, to reveal the four-arm spiral structure.

The second concerned the 10 m wavelength band of silicon dioxide. Led by Dr Frank Honey (Division of Ground Water Research, Perth) and Dr Bob Carrol (W.A. Institute of Technology) a small team, who had put together their own satellite monitoring station, were trying to locate the clouds of ash from volcanoes in Indonesia which have recently endangered two jumbo jets. The clouds are initially visible on meteorological satellite pictures but become completely invisible when they rise to greater heights where jet aircraft fly. Honey argued that silicon dioxide must be present in the ash and might have a different emissivity from the other substances like water. Now the U.S. NOAA7 satellite, which is in polar orbit and monitors each point on the Earth at twelve-hourly intervals, observes in a number of wavelength bands including the infra-red bands 10-11.5 μm (channel 4, which contains the SiO_2 line) and 11.5-12.5 μm (channel 5 outside the line). By differencing and ratioing the two channels, and using all the tricks of the data-processing trade, Honey was able to obtain pictures that strikingly reveal the clouds. I am told the differential emissivity was only 1^0C between ash cloud and background.

This piece of work, undertaken in response to an S.O.S. from the Department of Aviation, was achieved in only 48 hours. Could Honey have been egged on by my last month's story of quick work by Brunel? Certainly the initials of his newly named Division of Ground Water Research have a Brunellian flavour.

● ●

Speaking of rapid achievement, may I add one more historical feat. On 22 August 1741, George Frederick Handel began composing his *Messiah*, the immortal Oratorio of gigantic proportions with 51 recitatives, arias and choruses. By 28 August, he had completed Part I with a chorus whose words understated Handel's task: *His yoke is easy and his burden is light*. By 6 September he had completed Part II: *Hallelujah!* By 12 September he had finished the lot: *Amen*

Paul Wild

Chairman urges wage restraint

The following statement by the Chairman of CSIRO, Dr J. Paul Wild, was telexed to all CSIRO Divisions:

'It is clear that Australia is experiencing most difficult economic conditions. The Organization, which in accordance with its responsibilities, maintains close advisory links with industry and the community is well informed of the true position and cannot disregard the extraordinarily difficult economic conditions applying in Australia and observable overseas. Inevitably these circumstances will adversely affect all Australians.

EXECUTIVE REVIEW

The Executive at its meeting on 12 August reviewed these circumstances. It resolved as a matter of urgency that it should support the Prime Minister's call for restraint and join with other organizations in the interests of itself and by way of example to participate in efforts to stop the wage price spiral.

Executive defers latest wage rise

It resolved to defer acceptance for a period of twelve months of the pay rise recently determined by the Remuneration Tribunal and applicable within the Organization to Members of the Executive.

STAFF TALKS

The Executive further determined to explore with staff, staff associations and the Public Service Board a recommendation to apply a similar wage restraint throughout the Organization. The recommendation would if applied be reviewed in June 1983.

Paul Wild, Chairman, Brisbane 13.8.82.'

BACKGROUND

The Executive comprises three full-time and five part-time members.

Salaries and allowances of office set as at July 1 1981 for the full-time members were: Chairman, Dr J. Paul Wild, $61 500 (plus $3075 allowance); Dr Keith Boardman, $56 500 (plus $3075); Dr Geoff Taylor, $56 500 (plus $3075).

The new rates established by the remuneration tribunal and effective from July 1 1982 are: Dr Wild. $65 250 (plus $3500 allowance); Dr Boardman, $61 500 (plus $3500 allowance); Dr Taylor, $61 500 (plus $3500 allowance).

The five part-time members of the Executive's July 1 1981 honorarium was $6 800 per annum. The new honorarium set as from July 1 1982 is $7275 per annum.

Mr Doug Boland, of the Division of Forest Research in Canberra, who has been awarded a Churchill Fellowship to study developments in seed handling and nursery establishment techniques in the cultivation of Australian trees. Des will carry out his studies in South Africa, Spain and Brazil. —*Photo by Peter Hay.*

Doug Bradhurst returned to the Division of Energy Chemistry recently, after a five-week overseas visit to acquaint himself with the latest international developments in research on the production of hydrogen using solar energy and its safe and compact storage in metal hydribes.

Doug visited a number of universities in Japan, and presented a paper at the International Symposium on Metal Hydribes at Toba. He then visited the United States, presenting two papers at the Fourth World Hydrogen Energy Conference in California, and calling at various government laboratories. On the return leg, Doug held discussions at Daimler Benz R and D Laboratories at Stuttgart, and with staff of the Ecole Polytechnique Federale at Laussanne in Switzerland.

□ □

Jan Shawyer, the friendly voice on the switchboard at the Division of Forest Research, has left for warmer climates after nine years with the Organization. Jan made news in Coresearch several times—once when she was a medals winner at the paraplegic games, and later during rehabilitation which enabled her to walk with the aid of a walking stick. Jan has moved north to Yamba on the New South Wales coast to help her family run a mixed business which includes fishing boat hire. Before she left, Jan was farewelled by about 60 friends at a special luncheon where she was presented with a gold ingot and chain.

□ □

Mr Chen Chuan-Le, an astronomer from Peking Astronomical Observatory, has joined the Division of Applied Physics for 12 months under the auspices of the Australia-China Council. He has been at the Culgoora observatory to participate in the solar physics group's observing program. Mr Chen previously spent a year at the Division in 1977.

□ □

It helps to have a sense of humour during Divisional reorganizations, and someone at Alcoa seemed to have the tongue in cheek when communicating with the Floreat Park laboratories in Perth. A letter was addressed to the Division of Hydro/Land/Sheep/Ology.

Dr Bruce Fraser, Assistant Chief of the Division of Protein Chemistry, has been awarded a Fellowship under the Anglo-Australian Visiting Fellowship Scheme of the Royal Society. The Fellowship covers the expenses involved in spending a month in the Laboratory of Molecular Biophysics at Oxford University, working with **Dr Andrew Miller** on a joint project concerned with the molecular structure of collagen, the principal protein of leather.

A special high-speed X-ray diffraction camera has been installed at the SRC Synchrotron Facility at Daresbury and part of the time will be spent exploring the use of this camera in problems of relevance to the Division's program on basic studies of leather.

Paul Davis (Protein Chemistry), **Ray Carter** (Chemical Physics) and **Graeme Plant** (Varian Techtron, but located at the Division of Chemical Physics) recently became Australia's first diplomates in vacuum technology after concluding studies at the Footscray Institute of Technology.

During the course, Ray produced a survey entitled 'A Survey of Suppliers of Vacuum Equipment in Australia'. It details in tabular form the Australian suppliers of a wide range of vacuum apparatus, materials and services. Accuracy has been assured because, in every case, the individual supplier has scanned the survey form and made changes where necessary.

There are 21 tables incorporating 74 manufacturers and 30 Australian suppliers.

Copies of the survey are available from the Applied Physics Department, Footscray Institute of Technology, PO Box 64, Footscray, Victoria 3011, at a cost of $5 per copy, post paid.

□ □

George Price recently retired from the Division of Energy Chemistry, after 23 years at the Lucas Heights Research Laboratories. Most of George's time was spent with the AAEC, before transfer to CSIRO in October 1981. George was a competent and widely experienced experimental officer who made valuable contributions to a number of important projects including the thermochemistry and toxicology of uranium compounds and, more recently, the development of technetium generators, the product of which is used in radio-diagnostic techniques in hospitals.

□ □

Dr Peter Newton of the Division of Building Research has been awarded a National Science Foundation grant under the U.S.-Australia Co-operative Science Program to undertake a comparative study of the changing residential and industrial structure of major Australian and American cities. His collaborators in this project are **Dr Jack Goodman** of the Urban Institute, Washington, DC, and **Dr Maryann Wulff** of Swinburne Institute of Technology.

There was champagne all round for **Nick Bulleid**, a scientist at the Division of Fisheries Research in Cronulla, when he was named joint winner of the ninth annual champagne award. Nick is a partner in a Hunter Valley vineyard, Brokenwood. He and his partner, ABC television journalist, **Martin Gillam**, were selected at the final judging from nine State finalists. The two men will leave later this year on their prizewinning three week study tour of the Champagne district in France.

□ □

What's in a name? According to **Dr Bob Clements**, of the Division of Tropical Crops and Pastures, there is great excitement when it comes to naming a new plant variety. A competition held to name a new lucerne variety, turned up a wide range of names, some unprintable.

The winner, submitted by **Cliff Thomson**, was Trifecta. It capitalizes on the number three which was so pervasive in the breeding program: three organizations (CSIRO and two branches of the Department of Primary Industry), three qualities sought (disease resistance, aphid resistance, Hunter River phenology), three aphids, three parent lines and the code name APC cycle three. Runner up, offered by **Helen Stace**, was Sequel, derived from S.E. QUEensland lucerne. This name has been selected for a second breeding line. Other suggestions included tricycle, bonza, sunstate and falklander (a prize lucerne worth fighting for).

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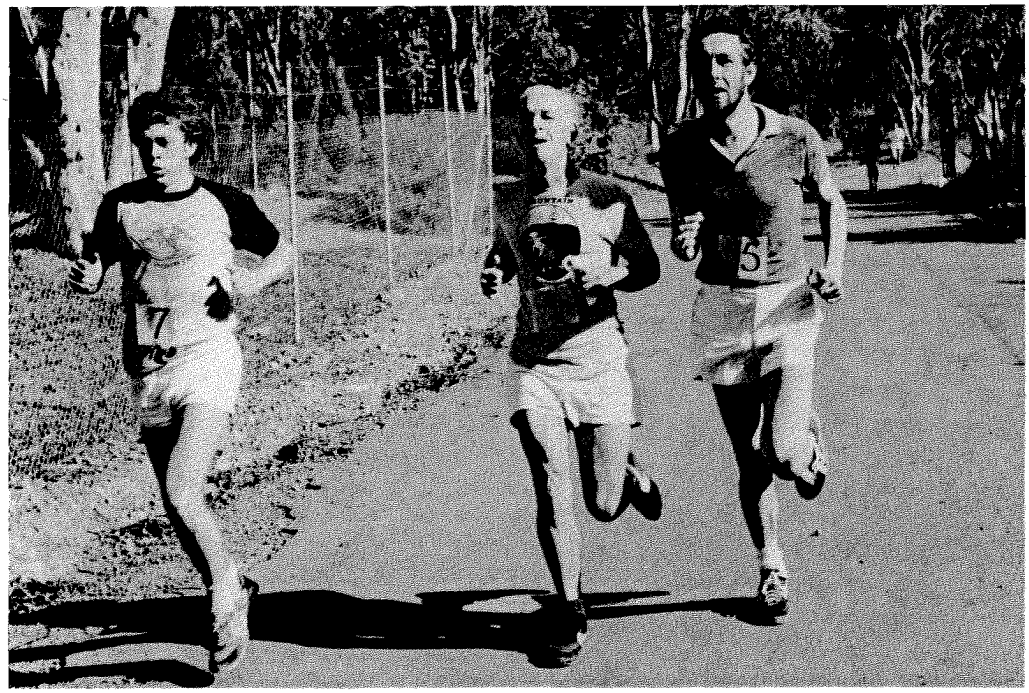
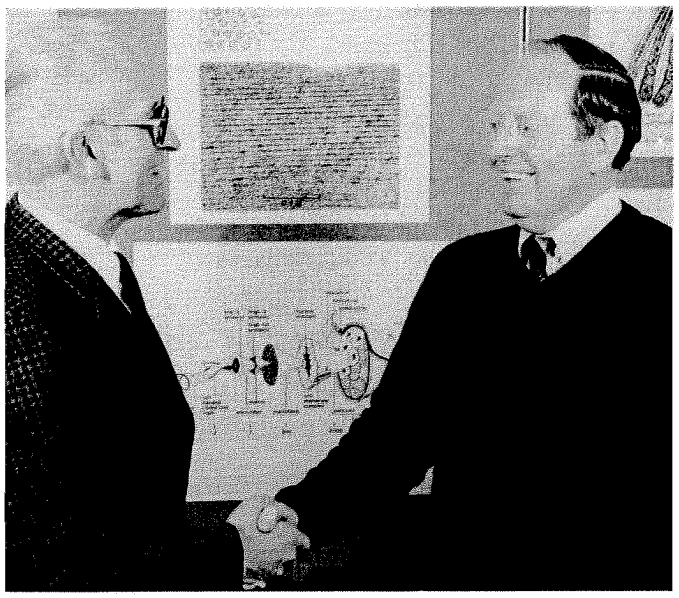
The death occurred recently in Adelaide of **Dr A.T. Dick**, who was for 11 years, Chief of the Division of Nutritional Biochemistry. Dr Dick retired from CSIRO in 1976.

□ □

The ABC has found that the recent television program featuring bulldog ants and various staff members of the Division of Entomology was the top scoring program among ABC and commercial productions for the week of its screening. The viewing audience was 12 per cent in Melbourne and 10 per cent in Sydney, which is considered a high rating for an ABC natural history program.



A team of fun-runners from the Division of Water and Land Resources won the recent Black Mountain fun run. More than 100 runners took part in the course for the Black Mountain Cup. Striding it out here is, from left, Ian Ross, from the Canberra RAO, Ross Gilby from the Division of Entomology and Michael Raupach also from Entomology.



The Chief of the Division of Protein Chemistry, Dr Gordon Crewther, left, congratulates Mr David Graham, who recently received the British Empire Medal in the Queen's Birthday Honours. David retires from CSIRO next month after 13 years as the purchasing officer with the Division. David is no relation to the professional golfer of the same name, but is a keen golfer himself and has for many years been one of the main organizers of the Division's golfing day. David's wife, Sybil, has also worked at the Division for the past four years. —*Photo by Bruce Weir.*

Malcolm Robertson, who recently completed a 12-month secondment to the ASTEC Secretariat, has taken up a temporary assignment as technical secretary to the Chief of the Division of Mineral Physics, **Dr Ken McCracken**.

Malcolm takes up the position at the North Ryde offices from the middle of September. He expects to spend 12 months in the job.

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A cigarette lighter played a large part in saving the lives of two CSIRO officers who were lost in thick bush in the Picton Valley area of Tasmania. **Trevor Bird** and **Jiri Dolezal** spent the night huddled under a log when they became lost while examining a stand of Huon Pine. They used Jiri's cigarette lighter to start a fire while sheltering under a tree from the heavy rain.

□ □

The retirement this month of **Greig Turner** from the Tropical Cattle Research Centre at Rockhampton, brings to an end 40 years' service to CSIRO. Greig, a senior principal research scientist, graduated from Melbourne University and initially worked on problems in the sheep industry. His interest in cattle production developed during studies he undertook in the United States from 1947-50. Grieg will become an honorary research fellow, attached to the Division.

□ □

The E.W. Hicks Memorial Prize for 1981, has been awarded jointly to two members of the staff of the Division of Food Research. **Mr Paul Walton**, a technical officer, and **Mr Brian le Breton**, an apprentice carpenter, were given the award for 'the most meritorious academic record leading to the award of a first post-secondary qualification by part-time study while on the staff of the food research laboratory'. Brian consistently gained top marks in his apprenticeship courses and Paul received the Leonard J. Lawler prize for 1981 for best aggregate mark in clinical biochemistry at the New South Wales Institute of Technology. Paul now intends to pursue a PhD course at the State University of Pennsylvania, USA.

A new ornothological work, 'The Fairy Wrens' is authored by CSIRO scientist **Dr Richard Schodde**, of the Division of Wildlife Research in Canberra. The book has been released in both limited and general editions by Lansdowne, and is brilliantly illustrated by **Richard Weatherly**.

Dr J.G. (Greig) Zadow, Dairy Research Laboratory, recently returned from a two-month visit to Europe and the USA where he studied the latest developments in the fields of whey processing and whey protein functionality. Dr Zadow attended a meeting in USA of personnel from research groups collaborating in studies on whey protein functionality.

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Spending a year at the Division of Building Research is **Sam Akrofi**, who is from the Building Research and Road Institute in Ghana.

□ □

Visitors to the science centre at Parkes in New South Wales can now post mail which is franked with a stamp of the giant dish. **David Krumlauf** at the Centre reports a steady sale of ready stamped postcards.

□ □

Farewells to retiring scientists are becoming popular at the Division of Food Research. This time, retirement functions were held for **Dr Joan Bain** and **Dr Keith Murray**. Both were guests of honour at a function held at Macquarie University. Dr Bain specialized in electron microscopy and collaborated in a wide range of research projects at the Food Research Laboratory for 30 years. Dr Murray established the Division's international reputation in flavour chemistry, developing the technique of analysing food volatiles by gas chromatography and mass spectrometry in combination. He had been with the Division since 1960, but his service dates back to 1939, when he joined the Division of Plant Industry.

Meritorious service to the Australian dairy industry over a ten year period is the criterion for the Australian Society of Dairy Technology's John Bryant Gold Medal Award. This honour was conferred on **Mr L.L. (Lawrie) Muller**, Officer-in-Charge, Dairy Research Laboratory, at the Society's 1982 Federal Council Meeting.

□ □

The Prescott Medal for 1982 has been awarded to **Dr Colin Williams**, formerly of the Division of Plant Industry, and now living in Queensland.

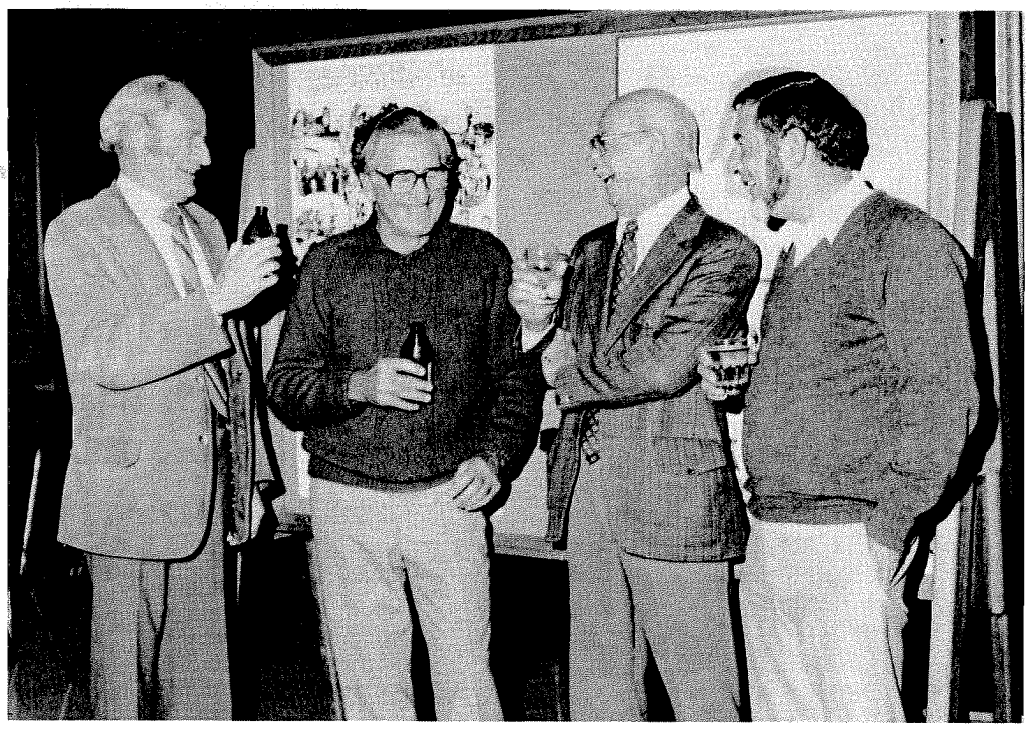
□ □

Colin White, based at the Floreat Park laboratories in Perth, has been awarded an Alexander van Humboldt scholarship to study in Germany for one year. Colin plans to spend the first two months of his stay in Germany studying the language at one of the Goethe Institutes.

□ □

At the Australian Society of Dairy Technology's 1982 Federal Council meeting, the Australian Journal of Dairy Technology Award was awarded to **Dr R.J. (John) Pearce** and **Mr R.M. (Ray) Shanley** of the Dairy Research Laboratory (DRL) for their paper 'Analytical and preparative separation of whey proteins by chromatofocusing'. This award is presented annually to the authors of the best paper published in the Journal during a 12-month period.

Last year, DRL also collected the prize which was awarded to **Dr G.W. (Graeme) Jameson**, **Mr B.J. (Brian) Sutherland** and **Professor C.A. (Tony) Ernstrom** for their paper 'Cheesebase for processing. A high yield product from whole milk by ultrafiltration'.



Three Chiefs drink to their No. 1 Draftsman, Reg Munyard, second from left, at his retirement function at the Division of Water and Land Resources, Canberra.

Although Reg's continuous service with the Division began in October 1952, Reg had first joined up in 1946 as a camp assistant with the first regional survey the Division undertook—the Katherine-Darwin survey.

From his appointment to the Division's drafting office, Reg gradually built it into a highly valued group of professional cartographers and illustrators. Reg is also noted for his contribution to the Laboratories Co-operative, including five years as a Director. As member No. 7 he was one of the first to join, and, he insists, one of the first to borrow!

From left are Alan Stewart, Reg Munyard, Chris Christian and current Chief, Dick Millington, Behind Reg is a record of antics and other general misbehaviour on the early surveys, while behind Dr Millington is not his shadow but a computer ink-jet plotter reproduction of a part of Reg's unique olfactory apparatus in glorious technicolour. Reg is still very much attached to his nose, and was most appreciative of its immortalizing on magnetic tape from which it can be reproduced on demand for and by future generations of Australians. —*Photo by Jack Cavanagh.*

Tracking the volcanic ash cloud by computer

Australian scientists have developed a method to track the clouds of volcanic ash which have threatened passenger aircraft.

The clouds, from volcanic eruptions, have fouled aircraft engines twice this month and flights have been diverted around them.

A team from CSIRO and the Western Australian Institute of Technology in Perth developed the method which means the clouds can be tracked when they disperse and rise into the altitudes used by large passenger jets.

According to the Minister for Science and Technology, Mr David Thomson, the CSIRO/WAIT team had devised a method which could be of world aviation importance.

'It is certainly a brilliant piece of science —and a credit to the ingenuity of Australian science and technology', he said.

'What the team did was to devise a way of extracting a very weak signal from a very large amount of irrelevant noise by mathematically subtracting two infra-red images and using special signal processing techniques.'

The scientists used their own tracking station to receive data from the US NOAA7 Satellite and then, through a painstaking process of computer programming, were able to 'see' the clouds of ash at high altitudes where they were invisible to conventional weather satellites.

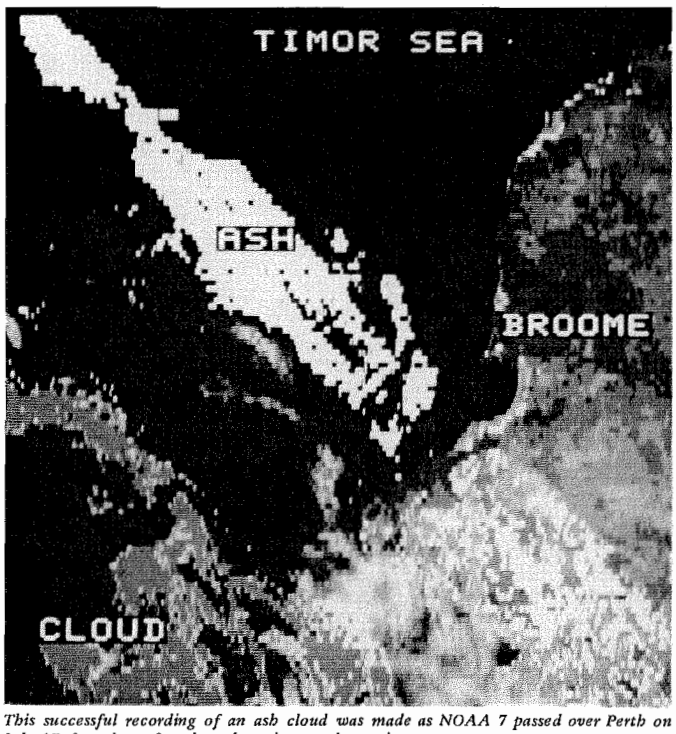
They recognized that the ash would contain a large amount of silica that would absorb a characteristic infra-red radiation band that the satellite would detect.

The team which tracked the clouds was led by Dr Frank Honey, of CSIRO's Division of Groundwater Research in Perth and Dr Bill Carroll of WAIT's School of Electrical and Electronic Engineering.

Dr Honey explained that the clouds—which originally contain particles of up to 2 mm across—were clearly visible soon after an eruption to the geostationary satellites which provide routine weather information.

'However, when the clouds begin to disperse they contain particles only a few microns across and they ascend to much higher altitudes.

'At these altitudes they pose a threat to high flying passenger aircraft, but more significantly they become almost invisible to weather satellites as they merge with other clouds.'



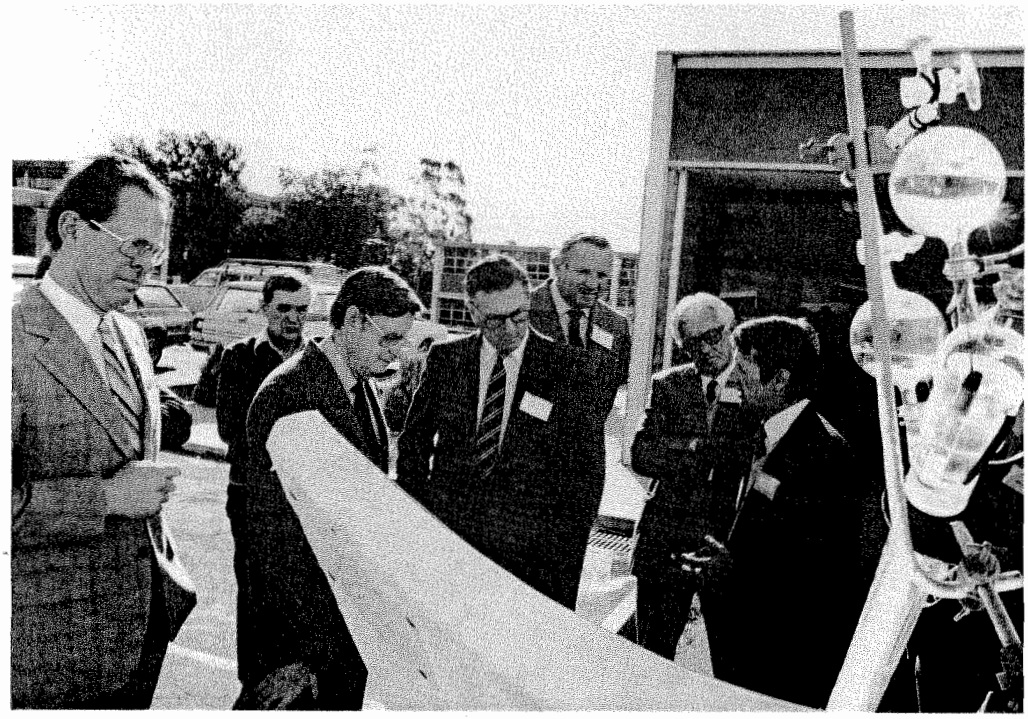
This successful recording of an ash cloud was made as NOAA 7 passed over Perth on July 17, four days after the volcano's second eruption.

Executive visit to Lucas Heights Research Laboratories

CSIRO's Executive visited the Lucas Heights Research Laboratories for the first time on July 7 to see, at first hand, research being undertaken by staff who are now part of CSIRO, following their transfer from the Australian Atomic Energy Commission.

The transfer will ultimately involve 143 professional and technical staff (or positions) plus arrangements to allocate of the order of 190 support staff either by transfer to or support for CSIRO at Lucas Heights.

In April, 1982, 119 staff transferred to CSIRO from the AAEC. The staff were divided between the new Division of Energy Chemistry and the Divisions of Mineral Physics, Energy Technology and Chemical Physics. The resources transferred to CSIRO will enable expansion of research in such areas as fossil fuels, mining of energy resources, alternative fuels, renewable energy and energy conservation.



Dr Don Bradhurst explains the operation of his solar hydrogen generator to Members of the Executive during a visit to the Lucas Heights laboratories last month. From left is the Chief of the Division of Energy Chemistry, Dr P.G. Alfredson, Dr N.K. Boardman, Dr J.P. Wild, Mr P.D.A. Wright, Dr W.L. Hughes and Dr Bradhurst.

STAFF DISCUSSIONS

The Executive heard presentations and visited laboratories in connection with projects selected to indicate the scope of the work in progress. These included presentations on the chemical uses of radiation and collaboration with the Australian Institute of Nuclear Science and Engineering, ion implantation research on solar photovoltaic cells and on metal hardening, nuclear techniques of analysis and their application to the mineral and coal industries, analysis of pipeline networks, the MARKAL computer model for analysis of energy systems, production of hydrogen from water using solar energy and work on the chemistry of oil shales.

The Chairman, Dr J. Paul Wild, addressed the staff at the end of the day-long visit, welcomed them into the CSIRO and introduced the other members of the Executive. He spoke of the favourable impression that he and other members of the Executive had gained of the research being undertaken. Earlier, the Executive was told that many of the ongoing projects had commenced some time ago within the AAEC and hence for some, the transfer to CSIRO had been relatively easy. However, in other cases, notably oil shale research, the researchers had had to make substantial changes in their field of work.

After his address the Chairman and members of the Executive met with staff at an after work social function.

Buzzwords

For those who require that snap word, this Buzzword section may be utilized. Merely select a digit from each of the three columns and combine the words opposite each number into your own technical jargon. For example, select '4', '0' and '1' and you generate 'parallel policy options', an expression bound to command instant respect—and confusion!

Column 1	Column 2	Column 3
1. integrated	1. management	1. options
2. total	2. organizational	2. flexibility
3. systematized	3. monitored	3. capability
4. parallel	4. reciprocal	4. mobility
5. functional	5. digital	5. programming
6. responsive	6. logic	6. concept
7. optical	7. transitional	7. time-phase
8. synchronized	8. incremental	8. projection
9. compatible	9. third-generation	9. hardware
0. balanced	0. policy	0. contingency

Huntly decides to call it a day

Dr Huntly Higgins retired from the position of Chief of the Division of Chemical Technology on July 2.

Two functions were held to mark the occasion. The first, held in the Division's canteen in South Melbourne, was attended by current members of the Division, together with people from the former Division of Forest Products now working in the Division of Building Research. The second, at the Dorchester, Alexandra Gardens, Melbourne, saw a gathering which included the Chairman and members of the CSIRO Executive, together with past and present colleagues both from within CSIRO and from industry and government organizations.

Dr Higgins was born in Perth, WA, and was educated at Perth Modern School and the University of Western Australia, graduating BSc in physics and geology in 1938. After a brief period as a junior geologist in New Guinea, he returned to the University of Western Australia as an honours student, completing his BSc(Hons) in 1940. He then joined Great Boulder Mine in Kalgoorlie as a geologist. He was also, for a short time, Lecturer in charge of geological subjects at the Western Australian School of Mines. He then joined the RAAF as a Meteorological Officer, rising to the rank of Flight Lieutenant and at the end of the Second World War was acting as Assistant Divisional Meteorologist for New South Wales.

PROTEINS STUDY

On joining the then Division of Forest Products CSIR in 1945, Dr Higgins was initially engaged in studies on proteins, especially casein, then the most commonly used plywood adhesive. At the same time, his pioneering work on the physical properties of wood veneers led to an early recognition of the nature of the plastic deformation of wood at high temperatures.

In 1953, he was made responsible for the paper physics work within the Division and subsequently became Officer-in-Charge of the Section of Wood Chemistry, Pulp and Paper (later known as the Section of Paper Science). With the formation of the Division of Chemical Technology in 1972, he was initially Co-ordinator of the Renewable Resources Program, was appointed Assistant Chief of the Division in 1974 and Chief of the Division in 1979. During his career, Dr Higgins has published about 140 research papers, mainly in the wood, cellulose, pulp and paper field.

MAJOR CONTRIBUTIONS

Major contributions to the assessment of forest resources, both in Australia and elsewhere, to an appreciation of the various wood pulping processes, especially as applied to the unique and changing Australian forest resource, to an understanding of the relationships between paper, fibre and wood properties and to the recognition of the hydrogen bond as a factor of major importance in the forest products industry have been acknowledged in many ways.

Dr Higgins has been elected a Fellow of the Institute of Physics, the Australian Institute of Physics, the Royal Australian Chemical Institute, the Institute of Wood Science, the Australian Academy of Technological Sciences and the International Academy of Wood Science.

INTERNATIONAL RECOGNITION

He has been either Chairman or a member of a wide range of specialist committees in the pulp and paper field. He was President of Appita (The Technical Association of the Australian and New Zealand Pulp and Paper Industry) for 1967-68 and of the International Association of Scientific Papermakers in 1970-72. He was awarded the Appita–L.R. Benjamin Medal in 1977.

In addition to his research activities, Dr Higgins has always shown an abiding concern for people. He has been involved in aid programs to a number of developing countries, including Papua New Guinea, Malaysia, India and Guyana and was Chairman of the First S.E. Asian Regional Pugwash Conference in 1967. He has also been an unfailing source of support to his colleagues, who have greatly benefited from his personal integrity and consideration for others.

Dr Higgins will retain his contact with CSIRO as a Senior Honorary Research Fellow, while pursuing his interest in bridge, chess and golf, and at the same time resisting any inducements to take up fishing.

—Alex Mckenzie.

Old friends call to say goodbye

Dr Huntly Higgins (left) with Dr Kevin Harrington, CSIRO Division of Forest Products, later Chemical Technology, Mr Lindsay Bryant, former Chief, Division of Wood Technology and Forest Products Research, Forestry Commission of NSW; Mr Bill Algar, formerly Research Manager, APM Research and Professor Alan Wardrop, Latrobe University and formerly CSIRO Division of Forest Products.

—Photo by Neville Prosser.

CSIRO Chief leads team to China

The Chief of the Division of Water and Land Resources, Dr Dick Millington, led a 4-man team investigating remote sensing in China between 15 May and 4 June this year.

Organized under the auspices of the Australian Academy of Technological Sciences, the team included the Chief of the Division of Mineral Physics, Dr Ken McCracken, Mr K. McLoy (NSW Department of Agriculture) and Mr G. Whitehouse (NSW Water Resources Commission).

Topics examined with their Chinese counterparts from the State Science and Technology Commission (SSTC) included the application of remote sensing to mineral exploration, water resources, agriculture, forestry, urban and coastal land uses, as well as the hardware and software of image interpretation. Dr Millington told their hosts that Australia could gain significantly from Chinese developments in sensors and hardware for airborne remote sensing, particularly in the infra-red and microwave wavelengths. In return Australia could offer the benefits of its experience in the development of software and methods for analysing digital data from satellites or airborne systems.

The large land areas covered by both countries, it was agreed, meant that both stood to gain much from the application of satellite surveillance on a continental scale.

TRAINING COURSES

The attention of the hosts was drawn to the existence of courses in remote sensing at various tertiary institutions in Australia, and the suggestion made that attendance of Chinese students at such courses might be combined with work experience at CSIRO.

Dr Millington made the following extra observations on his hosts and their country:

'Both rail and air travel were of high standard, comfortable and with courteous service. On all occasions when we were to be met at a specific place and time, it was so. Punctuality in all appointments was expected and adhered to.

The Chinese people have a sense of humour more akin to an Australian sense of humour, which itself shows marked differences from that of other English speaking countries, and from that of many European peoples too.

Our hosts went to considerable trouble to show us the sights. Visits to the Great Wall, Summer Palace, Forbidden City, Ming Tombs, Temple of Heaven, the lake in Hangzhou, Historical and Cultural Museum and Mao's Tomb, a trip by ferry down the Yangtse and the softness and serenity of the countryside during daylight train journeys were all most memorable.'

Northern Territory Committee members named

The appointment of nine members to the CSIRO Northern Territory Committee has been announced.

The Committee will act as a link between CSIRO and individuals and associations in the Northern Territory and provide an input to the national advisory body, the CSIRO Advisory Council.

VIEWS WELCOMED

The Committee would welcome the views of organizations and individual members of the public regarding the work of CSIRO.

The Committee will also be involved in making the work of CSIRO more widely known in the Northern Territory.

Its membership is representative of a wide range of interests, the North being different from the rest of temperate Australia in agriculture and biological sciences. Northern Australia has much in common with the tropical world, where far less work in tropical science has been done.

MEMBERSHIP

Chairman of the Committee is Dr G.A. Letts, CBE, Director, Conservation Commission of the Northern Territory. His appointment was announced last year.

The members of the Committee are: Mr B.J. Cameron, Chairman, Agricultural Development and Marketing Authority; Mr W.J. Fisher, Senior Partner, W.J. & E.E. Fisher, Mining Consultants; Mr G.J. Hunt, Principal of Gary Hunt and Associates, Architects and Environmental Consultants; Ms W.M. Kirke, Research Writer; Mr R.M. Morrison, Architect; Dr J.V. Quinn, Assistant Secretary, Environmental Health Division, Northern Territory Department of Health; Mr C. Rioli, Member of Executive, Tiwi Land Council; and Mr W.J. Waudby, a Pastoralist.

Contact with the Committee should be made through Dr M.G. Ridpath, the Secretary of the Committee, at the CSIRO Darwin Laboratories, McMillan Road, Berrimah.

CAT

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

The eighth meeting of the Communication Advisory Team (CAT) took place at the Division of Forest Research, Canberra, in July.

Items on the agenda included: activities of the CSIRO Advisory Council; communication-related reviews; a report from the Melbourne regional group of communicators; the joint CSIRO/Department of Science and Technology committee on publicity; and CSIRO's communication objectives.

Mr Sam Lattimore, Director of the Bureau of Scientific Services, joined the meeting for a discussion of the last item. He made the following points in response to questions from CAT representatives:

- CSIRO's Act is an *enabling* Act, listing functions the Organization is *allowed* to perform but not necessarily having to. The Executive has adopted the view that *research* is the prime function of CSIRO; everything else is subordinate.
- CSIRO's research results must be used. This involves technology transfer, but also doing work that people want done. There must be cooperation with potential customers at the planning stages.
- The Executive endorsed a recommendation in 'Communication: CSIRO's Other Role' urging CSIRO scientists to prepare state-of-the-art documents based on their *total* experience, not just on CSIRO work. Sadly, scientists have shown a reluctance to do this, probably because they believe activities of this sort will act against their promotion chances.
- CSIRO must identify reasons *why* it wants to communicate with various audiences. These reasons include: adoption of research results; attraction of funding; credibility in the community; internal morale; employment of high-calibre staff.
- Chiefs should have broad communication objectives for the Organization, not methods for achieving it. Any communication policy should allow Chiefs to modify their actions to particular environments.

Because some statement on communication appeared necessary, Mr Lattimore offered to prepare a short account for the Executive to endorse. A draft would be available for the next CAT meeting in October.

To assist Mr Lattimore in this task, CAT representatives agreed to invite contributions from their Divisional contacts on areas for which they needed most guidance.

The eight-member Communication Advisory Team spent a morning visiting the Regatta Point exhibition in Canberra, and discussing communication problems of mutual concern with staff of the Information Service of the Australian National University.

Figures on P.S. early retirement

The following article is reprinted from the June issue of the ACOA bulletin, and was supplied for the interest of readers in view of the recent discussion on early retirement.

It is now over one year since the Commonwealth Employees' (Redeployment and Retirement) Act took effect. The Act included an option for public servants to elect to retire at fifty-five years of age.

A preliminary study has reported that there were 719 voluntary early retirements in the age range 55-59 years in the twelve months from February 1981. This represented 8.1% of permanent staff in the 55-59 years age group in the Service in December 1980. The departments/organizations with the highest number of early retirement were:

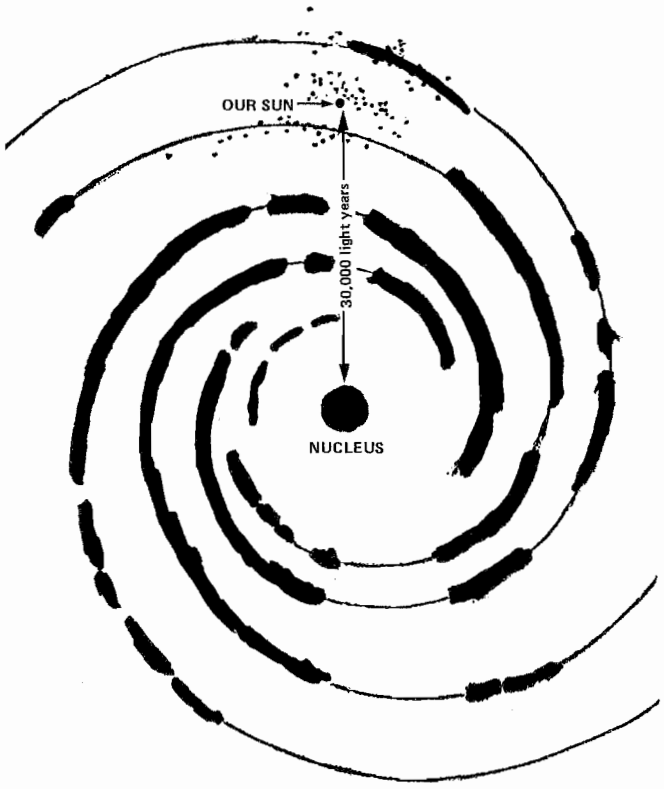
	No.	% of total retirements
Defence	136	19%
Taxation	114	16%
Veterans Affairs	54	8%
Social Security	48	7%
Business and Consumer Affairs	44	6%

NSW with 256 (10.9% of staff aged 55-59) and ACT with 175 (9.7% of staff aged 55-59) experienced the greatest losses. Victoria, with 92 (4.3% of staff aged 55-59) experienced the lowest rate.

Males represented 80% of early retirements. However, early retirements of women represented 9.4% for female officers aged 55-59, compared to 7.8% for men.

Further information is set out in a paper titled *Voluntary Early Retirements under the CE(RR) Act.* The paper was circulated to departments on 18 March 1982. Copies can be obtained from Michael Turner (062) 717 125.

New view of the Milky Way



The photograph shows the Milky Way as it would appear from outside, a view we can never have from earth The sun, 30 000 light years away from the nucleus, is embedded far out in the disc of the galaxy.

The broad bands show spiral arms delineat d by radio astronomers. The dots near the sun show the extent of the results from optical astronomy.

The arms are spiral in shape, like the shell of the nautilus, or the web of many spiders.

CSIRO radioastronomers discover the Milky Way's 'grand design'

CSIRO radio astronomers in Sydney have used a new technique to discover more about the Milky Way.

Astronomers have found that the Milky Way is part of a grand spiral galaxy with four catherine wheel arms trailing over a distance of more than 100 000 light years. The Milky Way, as normally seen, is an edge-on view of our galaxy.

FACTS UNCOVERED

The research, carried out using the four-metre radio telescope at Epping, has uncovered previously unknown facts about the galaxy in which we live.

The new technique has allowed astronomers to observe the massive clouds of molecules between the stars from which new stars are born.

Using the four-metre radio telescope, researchers have penetrated the interstellar dust which normally obscures the light from distant stars.

Radio waves, penetrating the dust, can probe every part of our galaxy and have enabled radio astronomers to 'piece together' the grand design of the Milky Way.

Since the 1950s, radio astronomers at CSIRO's Division of Radiophysics have played a leading role in this quest.

The team of CSIRO scientists comprise Dr Brian Robinson, Dr Jim Caswell, Dr Raymond Haynes, Dr Dick Manchester and Dr John Whiteoak. Collaborating in the project have been Professor Bill McCutheon from Vancouver and Chris Rennie from the ANU's Mount Stromlo Observatory.

The researchers have taken radio measurments of the molecular clouds in our galaxy which delineate the spiral arms. These are normally highlighted optically by hot, young stars and surrounding ionized gas.

These measurements have been convincingly made since 1980, with supporting observations made at Columbia University in the United States.

Complementary radio observations of ionized gas, made over the past 10 years at Parkes in New South Wales, have been vital in understanding these observations.

The scientists will present their research to international conferences in Holland and Greece this month.

Budget funds for the Australia Telescope

Continued from page 1

advances made overseas using superior instruments.

'As well, as the existing instruments aged, Australia would lose some of its most talented young radioastronomers to overseas research groups', he said.

TECHNOLOGY EXPERTISE

'But with the Australia Telescope, Australian radioastronomy has an instrument which will carry it into the 21st century.'

Mr Thomson said Australia was well placed to build the telescope because of local high technology expertise.

'The construction of the telescope will provide a stimulus to a range of technological areas. These include antenna design and construction, low noise amplifiers, optical fibres and a range of electronics including very large scale integrated circuits.'

NATIONAL FACILITY

The Australian Telescope would be operated as a National Facility by the CSIRO Division of Radiophysics from its headquarters in Sydney.

'Astronomers from the universities and observatories throughout Australia will be invited to contribute during the construction and later operation of the telescope through Advisory Technical and Time Assignment Committees which will be set up to ensure a fully cooperative effort by Australia's astronomical community', Mr Thomson 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 8th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris. Printed by Pirie Printers Pty Limited, Canberra, A.C.T.

CoResearch

CSIRO's staff newspaper *September 1982* **255**

Revolutionary tool

Minister challenges industry on CSIRO's new silicon chip

The Minister for Science and Technology, Mr David Thomson, has challenged Australian industry to enter the silicon age by adopting what he described as 'an extraordinary new tool for innovation'—a custom designed silicon chip.

Mr Thomson said Australian industries and research institutions could in future design their own special-purpose silicon chips and have them made at a fraction of current cost, using technology developed in the Division of Computing Research.

'We are the first country outside the United States to develop this capability and make it widely available to industry and research institutions, and the opportunity to exploit it must not be squandered,' Mr Thomson said.

OVERSEAS MARKETS

'We have acquired a tool which could revolutionize manufacturing industry.

'We are now in a position to penetrate overseas markets with a whole new range of high technology devices based on special computer chips designed by the very industries which made the devices.

Mr Thomson said the potential of silicon chips designed by their end users had already been demonstrated with the success of a research program by the Division of Computing Research's VLSI (Very Large Scale Integration) Laboratory in Adelaide to produce Australia's first multi-project wafer.

Mr Thomson paid tribute to the achievement of the VLSI Laboratory in Adelaide, headed by Dr Craig Mudge, for developing the technology for end user designer custom chips, and transferring it to industry in such a short time.

He said that in recent weeks there had been another important development—AWA Microelectronics in Sydney had successfully fabricated some of the Australian-designed chips, showing that an important step in the manufacture of multi-project chips could be done locally, in addition to local design.

Chiefs new Committee formed

A Committee of four CSIRO Chiefs has been formed to act as a point of contact between the collective Chiefs and Members of the Executive.

The Committee was formed as a result of discussions at a meeting of all chiefs held earlier this year in Melbourne.

The Chief of the Division of Plant Industry, Dr Jim Peacock is its Chairman. Other members are the Chief of the Division of Radiophysics, Dr Bob Frater, the Chief of the Division of Chemical Physics, Dr Lew Chadderton and the Chief of the Division of Human Nutrition, Dr Basil Hetzel. Drs Peacock and Chadderton will serve until September next year while Drs Hetzel and Frater will serve until September 1984.

'Its formation should increase information flow from the Chiefs to the Executive,' he said.

'It will also provide the Chairman and members of the Executive with a ready means of contact with the collegiate body of Chiefs on matters that are most directly pertinent to the Research Institute structure,' Dr Peacock added.

Although formalized arrangements have yet to be finalized, Dr Peacock said he anticipated the Committee would develop a number of sub-committees which could prepare information for the Executive on a variety of topics.

'Subjects being considered at present include early retirement, overseas travel and senior promotions,' he said.

The suggestion that the Committee be formed was contained in a report which came from the Melbourne meeting which was taken up by the Executive.

The Chairman, Dr J. Paul Wild, told the Chiefs at their September meeting he believed the formation of the Committee was a positive move, and something which had been needed in CSIRO.

● ENGINEER

S.A. man joins CSIRO Executive

Mr Graham Spurling has been appointed as a part-time member of the Executive of CSIRO for a three-year term from September 9.

Mr Spurling, 45, is Managing Director of Mitsubishi Motors Australia Limited in South Australia.

Mr Thomson said Mr Spurling would replace Dr W.L. Hughes, who has retired as a part-time Member of the Executive.

Mr Spurling is currently a member of CSIRO's South Australian State Committee.

He is a graduate of the University of Adelaide in Mechanical Engineering, and has served in key positions in industry over a number of years, before taking up his present position last year.

Mr Spurling is a Master of Automotive Engineering from the Chrysler Institute of Engineering, and is a Member of the Society of Automotive Engineers. He has served as a Member of Council of the Adelaide College of Advanced Education, and the Menzies Scholarship Foundation.

Mr Spurling is married, with five children.

He becomes one of five part-time Members of the Executive of CSIRO, who meet formally with the three full-time Members 11 times each year.

CSIRO apprentice wins top Victorian craftsman's award with a miniature engine

A fourth-year apprentice at the CSIRO's Division of Textile Industry, Belmont, Victoria, Mr Ron Jorgensen, has been awarded a top Victorian apprentice craftsmanship award, the Sir Fred Thorpe Award.

Ron, who completes his fitter-and-turner apprenticeship with CSIRO in April next year, entered a working-model miniature 24 cc horizontally opposed 4-cylinder engine in the 1982 Exhibition of Apprentice Craftsmanship Awards.

The model was engineered by Ron to fine precision, including manufacture of miniature spark plugs.

In the Exhibition, he was awarded a bronze medal, making him eligible for the Sir Fred Thorpe Award, which he took out in competition with the other bronze-medal winners.

The Award—a cash prize of $250—is given by the Council of the Science Museum to commemorate the life and work of Sir Fred Thorpe, a former apprentice who became a leading industrialist and a chairman of the museum council.

Ron Jorgensen, right, pictured with his model engine which won the top Victorian apprentice craftsmanship award, the Sir Fred Thorpe Award. Ron is showing his model to the Hon. Jim Simmonds, MP, Minister for Employment and Training, left, and Mr C.V. Finlay, Deputy Director of the Science Museum.

—Photo by Peter Lee.

Letters to the Editor

Dear Editor, Let no one be disturbed by D.W. Horwood's sarcasm (*CoResearch* 254).

Being probably the only person in CSIRO to have twice trudged the whole way from Dan to Beersheba, under the lash, I feel I ought to speak my opinion.

Had D.W. Horwood been given a really sound thrashing suitably early in his career, he would have acquired respect for his seniors and betters and come to appreciate that life is merely a sexually transmitted disease which afflicts some less severely than others.

Let him go and rage at his mother—oops! his father too, of course, and for as far back as he can trace his ancestry, which should surprise no one if that is not very far—while those of us who were properly chastened continue to work steadfastly, unquestioningly and joyfully (yes, joyfully) for what is indubitably the best and fairest scientific and industrial research organization in the southern hemisphere.

Grant me, dear Editor, a few more picas (I'm not now referring to Horwood who deserves to be swiftly forgotten as he surely shall) to add that, as a result of my own personal experiences both in the Organization and in my own home, I am convinced that only those who have passed through a long travail can appreciate Elysium and strive unflinchingly, toiling on regardless for the betterment of our country with all its suffering science and dodging of income tax.

Thus I am right behind our Chairman's call for wage restraint. Indeed, I have been applying his principle for decades in the disbursement of my wife's allowance and the childrens' pocket money (I eat out myself, naturally) and they are all darlings—grateful, respectful, hard-working, devoted and even warmly loving.

I fear, however, that Dr Wild's prescription is not nearly sufficiently savage to evoke this response. Truly harsh penance must be exacted. Stern chastisement is what is needed now. Personnel Branch holds the whip hand. May it not be deterred by the snivellers, but strike fiercely and frequently, riving the meat from the bone, searing and tearing till not a smidgen of rotten or recalcitrant flesh remains.

I stand ready to accept the call and offer the Branch and Management my intimate knowledge of how to wield the cat most bitingly and touch the sorest spots. Perhaps the Chairman could consider taking me on as a personal adviser, in the role of a Job's comforter maybe, with an appropriate reclassification.

—J.J. Lenaghan
Bureau of Scientific Services

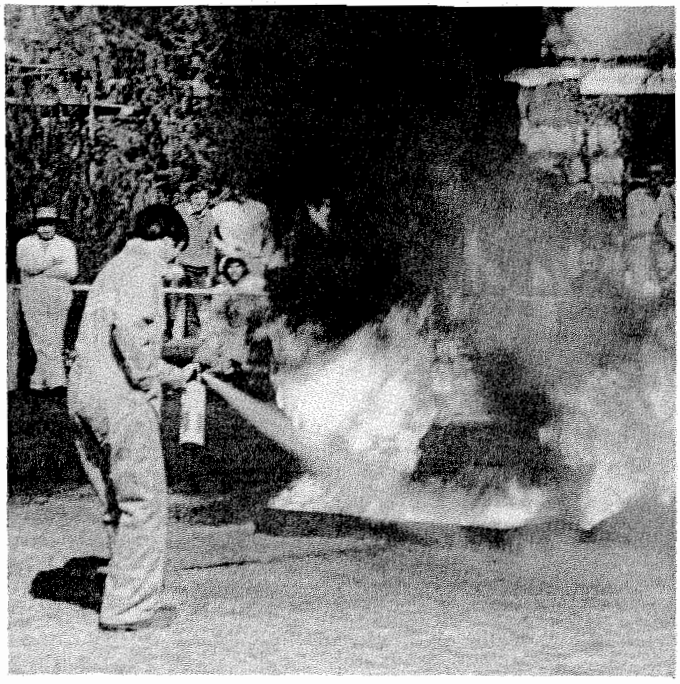
P.S. Sorry! Horwood completely slipped my mind. Drag him to the pillory. Demote him. Pursue this initiative with daily bulletins each announcing a score or so of further demotions, randomly selected, but widely scattered. Evil will soon be extirpated.

Dear Editor, I am thrilled to learn that the Chairman has resolved to defer acceptance of a wage increase for a period of twelve months.

However, I am concerned that the hardship incurred surviving on $61,500 is rather extreme; I hope that all staff will note this generous sacrifice and reconsider any spurious wage increases with the same patriotic fervour as our Chairman.

—Robert McCulloch
Foreman Printing Craftsman, $16,546 p.a.
Printing Unit, Collingwood, Victoria

Fire-fighting techniques on show



A representative of Wormald International's portable fire division, Mr Tony Viscogliosi, demonstrates fire fighting techniques to members of the staff of the Armidale laboratory of the Division of Animal Production. The demonstration included a lecture as well as practical demonstrations of various fire fighting techniques and the use of different extinguishers. Demonstration fires were contained in water-filled trays, topped with petrol and ignited with cloth tapers. —*Photograph by G.R. Nicol.*

First 'Chief's Review' at a Melbourne laboratory

The Organization's first 'Chief's Review' was held at the Division of Applied Organic Chemistry, Melbourne on August 2 and 3.

The panel consisted of the Chief, Dr David Solomon (Chairman), Sir Geoffrey Allen (Research Director, Unilever, U.K.), Dr Brian Booth (Scientific Manager & Director, Wellcome Australia Ltd.), Professor Don Cameron (Professor of Organic Chemistry, University of Melbourne), Dr Bob Durie (Chief Scientist, R.W. Miller & Co Pty Ltd.), and Dr Peter Muecke (Head Office, Secretary).

All members of the Review panel together with the Director of the Institute of Industrial Technology, Dr W.I. Whitton, were given the Review Document, which included relevant papers and reports of each of the Division's programs. In addition each member of the Review panel was allocated one of the Division's programs for detailed review—a complete collection of papers and reports on this program was included.

On the first day of the Review the panel as a whole discussed all of the Division's work. On the second day, each panel member discussed one of the programs with all of the scientists working in that program.

The novel feature of this Review was that each panel member individually discussed a program with all of the scientists involved in it. This turned out to be beneficial both to the panel in their assessment of the Division and to the scientists working on the program.

The report which will be completed by the end of this month, will be given to the Director of the Institute of Industrial Technology, Dr W.I. Whitton.

Dear Editor, The following is an open letter to the Chairman, Dr J.P. Wild.

In *CoResearch* (254 25 August 1982), you expressed your admiration of 'rapid achievement' in research. J. Hadamard, the French mathematician, said that:

'Scientific discoveries come in a flash to those, who deserve them, but only after years of hard work.'

This is very true in Dr Frank Honey's case (*CoResearch* 254). The remarkable achievement of his group was made possible because the Chief of his Division regarded diversity in scientific research as a strength rather than a weakness. He assisted this group to continue its research over many years despite other opinions. He was not always successful in sustaining other projects.

Dr Frank Honey's success proves that when a Chief is in close working contact with the research scientists in his Division he is in an excellent position to judge the importance of a particular project.

—Henry Allison
Principal Research Scientist,
Division of Groundwater Research
Perth

Delay on handbook

Some two years ago, scientists and research groups around the Organization contributed 100 experiments for a CSIRO Science Handbook for school teachers, in a project set up by the Science Communication Unit.

The Australian Science Teachers Association (ASTA) volunteered to trial the experiments, and to rewrite them in a form better suited to school use. Unfortunately, this process has considerably delayed the production of the Handbook.

A commercial publisher has now taken up the project. ASTA has agreed with this publisher to complete the education component of production by May 1983. Publication should follow soon after.

New ceramic has wide industrial application

The Minister for Science and Technology, Mr David Thomson, said that a remarkable ceramic developed by CSIRO, could lead to a new age of high-efficiency diesel engines.

Mr Thomson said the ceramic, called partially stabilized zirconia (PSZ), combined exceptional toughness with a high degree of resistance to rapid temperature change, and was likely to find use in a wide range of industrial applications.

It was the first ceramic of its type to be developed in the world.

HIGH-TECHNOLOGY INDUSTRY

Mr Thomson said the development meant the creation of a new technology industry for Australia, with exciting prospects for rapid growth.

'Apart from its potential use in diesel engines, PSZ also promises to be the best material developed for extrusion dies in the metal-forming industry, and CSIRO believes it may become the preferred material for medical prostheses such as artificial hip joints,' Mr Thomson said.

PSZ was developed by the Advanced Materials Laboratory of CSIRO's Division of Materials Science in Melbourne. The wholly Australia-owned company, Nilsen Sintered Products (Australia) Pty Ltd of Victoria, had already begun developing international markets for PSZ products.

Recently Nilsens had supplied piston caps and cylinder liners to Japanese and United States diesel engine manufacturers for testing in experimental ceramic-based engines.

Early results indicated the Australian ceramic was superior to any yet tested.

INCREASED POTENTIAL

Mr Thomson said that both CSIRO and Nilsens had pointed out the PSZ was not in itself a new ceramic but before CSIRO had discovered a way of greatly enhancing its properties in a controlled manner it had been regarded as a low-grade ceramic with little industrial potential.

'Most ceramics are very brittle materials and also tend to shatter if subjected to rapid temperature change, especially at very high temperatures,' Mr Thomson said.

In 1975, during fundamental research into the properties of PSZ, CSIRO made the important discovery that under certain conditions of stress the ceramic actually gets stronger.

They recognized the importance of this discovery, patented it, published it internationally, and then began to look at commercial applications.

COMMERCIAL COLLABORATION

Nilsens' scientists were invited to work in CSIRO's laboratories almost from the outset and the company is now poised to develop international markets which could eventually be worth many millions of dollars.

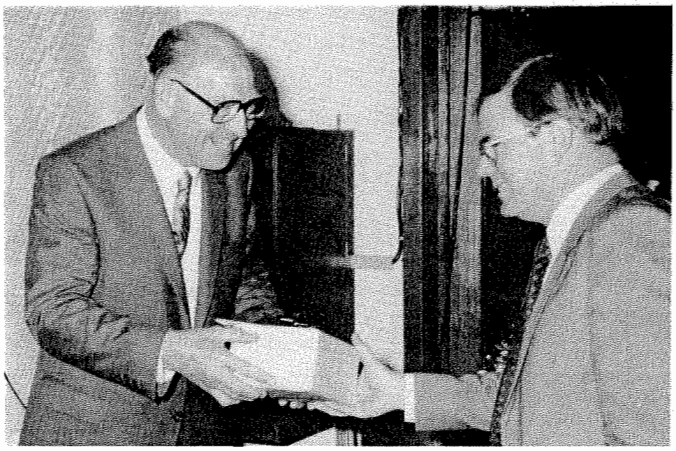
Mr Thomson said artificial bones made from PSZ had entered clinical trials. PSZ was inert in the body, and its exceptional strength and low friction properties indicated it would be more durable than the polymer materials presently used.

A further spin off was the prospect that a zirconia-processing industry could be established in Australia, which currently supplied three-quarters of the world's requirements.

An independent study commissioned by CSIRO was examining the economics of zirconia powder production in Australia. At the moment, the raw material is mined in Australia, processed overseas, and then re-imported at considerable cost.

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

Retirement for Denver



Mr Den Banyard, left, the longest serving member of CSIRO's present staff, pictured at his retirement dinner with the Chief of Division of Plant Industry, Dr Jim Peacock. Den, a senior administrator in the Division, completed 48 years' continuous service. He began work in the Division of Entomology in Canberra in 1934, later transferring to administration. He joined the Division of Plant Industry in the early 1950s. He was honoured by the Queen in June 1981, for public service in CSIRO.

Alan Pearce, from the Division of Fisheries Research at Marmion in Western Australia is researching, in his own time, the history of oceanography in Australia. He appeals for any information from colleagues which might be helpful. Alan would appreciate old journals and reports.

□□

Two members of staff at the Division of Water and Land Resources, **Bob Galloway** and **Jean Sheaffe**, are collecting the discs which fasten sliced bread in bags. They say the collection will help a crippled child to be supplied with a wheelchair. All contributions to them will be gratefully received.

□□

Dr Peter Kennedy who has recently begun six months' research at the Cunningham Laboratory in Brisbane, is no stranger to CSIRO. He has previously worked with the Division of Animal Physiology and the Division of Animal Production prior to his recent study at the University of Alberta in Canada. He is presently working with Mac McLeod on the breakdown of protein and fibre in the rumen, particularly in tropical forages.

□□

Dr Len 't Mannetje has resigned from the Division of Tropical Crops and Pastures, in Brisbane, to take up a professorship at the University of Wageningen in Holland. Among the several farewells given for Len and his wife Corrie was one attended by more than 80 colleagues where he was presented with a variety of reminders of his work including an ashtray with an inlaid stylo, buffel grass and SIRATRO.

□□

The Officer in Charge of the Cunningham Laboratory, **Dr Merv Hegarty**, leaves Brisbane this month for a six months study tour overseas. He will spend the first three months at the Royal Botanic Gardens, Kew, working with **Professor Arthur Bell**. He will spend the second three months at the Technische Universitat at Munich, working in the Department of Feed Chemistry with **Dr Jergen Weder**. During Merv's absence, Dennis Minson will be acting as Officer in Charge.

□□

After 9½ years with the Central Information Service, CILES, **Ian Crump** has left to join industry.

Ian has moved to a new company, Infoquest, being established by the Myer Emporium as a section of Myer Communications Ltd. Infoquest is a new venture in Australia in the field of commercial information services.

□□

Dr A.J. (Alan) Hillier spent five months in Europe, US and New Zealand visiting laboratories and studying plasmid technology and starter organisms used for manufacturing European-type cheeses.

□□

Dr Jean Apgar of the U.S. Plant, Soil and Nutrition Laboratory, Ithaca, N.Y. and **Dr Hank Mayland**, of Snake River Conservation Research Center, Kimberley, Idaho, visited the Divisions of Soils and Human Nutrition, Adelaide in August.

This visit was under the USDA-CSIRO Science and Technology Exchange program. They are interested in the uptake of zinc by plants and its role in animal and human nutrition.

□□

Chris Stevens, a former apprentice printer at CSIRO's Melbourne printery, has been named winner of the Arthur Frost Memorial Award for 1982. The award is made annually to a CSIRO apprentice for outstanding achievement and consists of a commemorative plaque and a cheque for $350, provided jointly by the Executive and the Laboratory Craftsmens Association.

From the Chairman-

A regular column by the Chairman of CSIRO

Dr. J. Paul Wild

The eight-man Executive of CSIRO is not alone in its belief that unless Australians exercise restraint in their demands for increased wages over the next year or two the country could be headed for economic difficulties more serious than any of us have known in our adult lifetime.

Unfortunately, when the chips are down, the first things to suffer are activities whose yields are strategic rather than immediate—that includes us. The Executive therefore has resolved to do what little it can to urge general wage restraint—in particular to ensure that the voluntary restraints now beginning to appear in the private sector are echoed in the public sector. To be effective such restraint should be across the board.

The Executive believed sufficiently strongly about the matter that it decided to make a start by deferring for 12 months the wage increase to Executive salaries recently determined by the Remuneration Tribunal. (If others in the Organization cared to follow suit the example would be strengthened, but nobody would, or could, be compelled to defer an increase.) In the event, the decision could not be implemented because we found, on legal advice, that the Executive had no powers to determine, even to reduce, its own salary. The Executive will, nevertheless, take what measures it can to support wage restraint not selectively on the staff of the Organization, but across the whole work force.

I am experienced enough to know that some will see the Executive's recent action as some kind of scurrilous two-card trick. I can only give you my word that the attempted move was completely sincere.

● ●

A job in CSIRO means different things to different people To some it means just a job requiring attendance for 36¾ or 40 hours a week. To others the job is a matter of dedication and personal commitment. I believe CSIRO is fortunate in having an unusually large proportion of staff in the latter category and this applies to many who perform tasks out of the glamorous limelight of research but essential for the support of the researchers. Perhaps the easiest way of distinguishing between the two categories of people is how an individual interprets flextime.

Of course research scientists are in a specially privileged category. In most Divisions, they have in effect always enjoyed a degree of freedom akin to flextime. Many will be found to work 50 or even 60 hours a week; the research scientist should be dedicated and committed or not at all.

These sentiments were discussed by the Chiefs at their recent meeting with the Executive. Yet some Chiefs believed that the introduction of flextime had had an adverse effect on some research staff who actually believed they could accomplish their weekly task in 36¾ hours! Some were highly critical of the notion of research staff working a regular 9-day fortnight. My only comment is that I hope the vast majority of research scientists still share the attitude I used to hold when I was in the privileged position of doing research:- not only am I allowed to get involved with all these wonderful things, but they actually pay me for it! In those days one wasn't conscious of the clock. I hope the same attitude prevails today.

● ●

A few weeks ago I found myself in Kansas City talking to a group of purposeful young men (including a CSIRO man seconded from Radiophysics) mostly with Australian accents. They were busy putting together the latest version of the Interscan aircraft landing system.

Our system was adopted by the US at the end of 1974 and by the world in 1978. Nevertheless, the rules of the game are that any country or firm can fabricate it. The first big contract, for 100 installations, will be let by the US Federal Aviation Administration at the end of 1983. Competition will be fierce to win this contract, especially with US companies like Bendix (once our close ally during the international fight) and Hazeltine in the line-up. We are competing through a 50/50 joint venture comprising Interscan (Australia) Pty Ltd, a Government-owned company, and Wilcox Electric, the US Company that currently supplies most of the world's present Instrument Landing Systems. Beginning last January, our people set up shop in Wilcox's Kansas City building determined to win the contract or bust. They are doing a truly excellent job; their motivation is simple and sure; and their morale is sky-high. I am sure you will join with me in wishing them a victorious conclusion.

Paul Wild

QE11 students visit CSIRO in Canberra

One hundred year 12 secondary students from all over Australia visited the Division of Forest Research in Canberra last month to learn a little about CSIRO.

The students were taking part in the Queen Elizabeth 11 Silver Jubilee Trust's National Capital Forum which brings top senior secondary students to Canberra for a week to study the Westminster system of government.

The students spent two days at the Division, listening to researchers explain aspects of CSIRO's work. Dr Don Colless of the Division of Entomology discussed the National Insect Collection and showed some choice specimens while Mr Stephen Midgley and Mr Jerry Cole of the Division of Forest Research explained the collection and distribution of seed from Australia's versatile native trees, particularly eucalypts. A short film explaining CSIRO was also shown to the party.

The visit was organized jointly by the Science Communication Unit and the Division of Forest Research.

CAT

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

Wendy Parsons, Information Officer at the Division of Forest Research in Canberra, has contributed this month's CAT column.

When a new Chief came to our Division last year, one of his requirements was that internal communication should be good. Rather than issue a stream of memoranda to the staff (with no guarantee that everyone would read them), he proposed that we upgrade our newsletter, using the front page to talk about current issues and matters of interest.

The aim was to keep people up-to-date and to help them feel part of the team. Anyone who wanted to guest spot for the Chief would be welcome.

It was intended to be a frank and open publication, offering every opportunity for comment on what the Chief said, or on any other issue in the Division or in CSIRO.

Out of that came BARK, an eight-page (2 folded foolscap sheets backed) mini-paper, which has now been coming out fortnightly for more than 12 months. Each issue is on different coloured paper.

Because the Chief does not mince words, his 'Chief Spots' have drawn comments from hitherto uncommunicative people and more than comments from some of the more garrulous members of the Division.

REGULAR FEATURES

BARK has regular features—Chief Spot, Opinion, Regionals (news from our stations in other states), Words of Wisdom, Sports Briefs and Absent Friends, together with cartoons and press clippings. Contributions for all of these either arrive by mail or are dropped into a 'BARK box' in my office. There's never a shortage of material.

BARK takes very little time (approx. 1 hr) to prepare and is printed on site. It is widely read in other parts of CSIRO at various levels. This can be useful as we discovered recently when the Chief implied he had some doubts about the arithmetic being perpetrated by the 'finance people'. This drew a rapid response and explanations of exactly how the 'arithmetic' is done.

We've had a number of guest writers for the Chief spot, and opinions, articles and cartoons from a range of people outside the Division.

A couple of other CSIRO Divisions have adopted the idea of a Chief spot. BARK is fun to edit and as far as I can tell, has raised the standard of our internal communication as well as contributing towards the establishment of the Division's image within the Organization.

Sydney seminar

How Canadian Industry gets its technology

CSIRO and the National Research Council (NRC) have had a somewhat similar history, as indeed have the two erstwhile dominions, Australia and Canada, particularly in regard to the story of manufacturing industry in both countries.

It was therefore of considerable interest to have a visit from Mr David King, Head of the Business Assistance Unit, BC Research, Vancouver, who, whilst on a trip to Australia, was able to come to the Division of Applied Physics to conduct a seminar entitled Technology Transfer to Secondary Industry in Canada.

Apart from the CSIRO staff, there were representatives from the Department of Science and Technology, the Department of Defence, the New South Wales Science and Technology Council, the Small Business Agency, various university departments and consultants—in other words, all who had some interest in the transfer of technology from government research laboratories to industry.

THE TECHNICAL INFORMATION SERVICE

Mr King explained that the NRC has had a Technical Information Service (TIS) to industry since 1945, employing at the present time, approximately 100 'field engineers'. These men are engineers, who have had experience in industry and are able to handle trouble shooting problems, as well as help in the introduction of new technology, particularly to the large number of small businesses, which are below the threshold size for the employment of professional staff.

Since all the NRC laboratories are based in Ottawa, the field engineers and their staff are located in 16 provincial offices, situated mainly in the provincial research councils or other foundations, most of which are not-for-profit institutions.

BG Research has the equivalent of 7-man-years of TIS manpower based at its laboratories in Vancouver, arranged by contract with NRC.

NRC DIVISION OF INDUSTRY

The TIS is directly accountable to the Division of Industry which is just one of the 15 Divisions of NRC, just like the Division of Chemistry, Division of Physics and so on. (For those of you who have an opportunity to visit Ottawa, Dr K. Glegg is the Director of the Division of Industry.)

In addition to the TIS, the Division of Industry is responsible for the Manufacturing Sciences and Technology Service and the Technical Awareness Service, by which current information is individually précised for manufacturers into a two-page monthly format.

INVENTIONS

The Division of Industry works closely with Canadian Patents and Development Limited (CPDL), which is a subsidiary crown company of the NRC. CPDL is a clearing house for inventions arising from publicly-funded research and development. It publishes a catalogue of inventions available for licensing, which is produced twice a year.

ASSISTANCE PROGRAMS

The Division of Industry is responsible for the administration of considerable funds, mostly in the form of Industrial Research Assistance Programs known as IRAP. The IRAP schemes may be suggested where appropriate, to small- and medium-sized businesses, by the field engineers, who are able to advise local manufacturers on their applications. IRAP programs are not available to large companies, i.e. businesses with more than 200 employees. The programs operate on three levels (IRAP, MINI IRAP, and LITTLE IRAP) and these are aimed at increasing the level of research and scientific expertise in individual Canadian industries.

THE BACK DOOR APPROACH

Another program administered by the NRC's Division of Industry, is the Science and Engineering Student Program (SESP), which offers technical aid to industries in project work. This is a useful and practical way of gradually introducing technical expertise into small businesses almost by the back door.

If a small firm should need some fairly basic technical help for a certain project, it may employ a science or engineering student for the job for a period of 6-12 months and have 75 per cent of the expense refunded by NRC. At the end of this SESP period, or at the end of the student's studies, it often happens that the former student is employed on a permanent basis by the firm and thus moves naturally across to the industrial situation with accompanying benefits to both sides.

MOBILITY OF PERSONNEL

The mobility of personnel is an important part of NRC's policy. Not only is this the case with the field engineers and the student programs, but also with the NRC scientists and engineers, who may spend a year or so working in an industry, with salaries paid by NRC. Likewise, industrial scientists may move across and work for a time in the NRC laboratories, where this is the most convenient way to get a job done.

NRC has found that the best way to achieve efficient technology transfer is to have the giver and the receiver working side by side at the laboratory bench or on the factory floor for at least 12 months, so that this is arranged wherever practical.

Although Canadians, like Australians, are grimly fighting the creeping de-industrialization of their nation and don't claim to have all the answers to technology transfer, it does seem that they have found some practical mechanisms for bridging the gap between research and industrial technology.

THE HUMAN BRIDGE

Notable amongst these I think, is the concept of the 'field engineer', who can operate on the shop floor level and is often quite a colourful and individualistic character. He can build up credibility by small time trouble shooting and then move on to introduce new technology by using a selection of NRC assistance programs, by using the full resources of the NRC laboratories and expertise or by using the resources of the Canadian Institute for Scientific and Technical Information (CISTI).

He is the 'human bridge' by which technology may be channelled, linking the harrassed manufacturer, often battling for survival, to technical help and assistance. NRC allow two man-days of free time to any one business, after which time, consultancy cooperation and technical services are paid for on a normal commercial basis or through one of the IRAP or SESP programs. About 80 per cent of all potential users of TIS are within 70 kilometres radius of a field office, and it is this accessibility which NRC considers vital. Another vital factor is the speed of turnaround of requests for IRAP assistance, which, because of NRC's direct lines of communication to the Treasury and the Prime Minister, is said to be extra fast.

NRC says that, like CSIRO, it is many things to many people, but to Canadian industry NRC advertises that it is 'on call' to help industry solve its problems.

Mr King's talk was taped, together with the following discussion, so that anyone wishing to borrow this cassette may feel free to do so. Please contact me at PO Box 218, Lindfield, 2070 (Tel. 467 1441).

—Yvonne Esplin

CSIRO assistance with special libraries book

Librarians and documentation staff in two CSIRO Divisions recently assisted with the publication of the fifth edition of the Directory of Special Libraries in Australia.

This was the first computerized edition of the book and was edited by Gabrielle Watt, the Librarian at the Division of Computing Research and Heather Howard, Librarian at the Division of Forest Research, who co-edited with Jean Geue, Librarian at the Patents Office.

CSIRO staffers Rob Hurle and Socrates Paschilides from DCR, Jim Gilmore from CILES, and Anne Robinson, a casual librarian with DCR, provided assistance, while Jill Adamski, Librarian with the Tasmanian Regional Laboratory, coordinated the information supplied, aided by Roneko Chantharasy, a library assistant with DCR.

The Directory was produced using an inhouse software program made available by CILES, and the DCR computerized typesetting program COMTEXT. There were 881 entries received, containing not only interlibrary lending information, but also information on networks to which libraries were connected.

The present format was produced in a three-ringed binder which could be used for replacement editions. Copies are available from the Library Association of Australia, Sydney, at a cost of $35 for members and $45 for non-members.

Japanese Govt. research awards

Applications are invited from researchers in the fields of natural and applied science and technology for research awards from the Japanese Government.

The Government offers the research awards through the Science and Technology Agency of Japan for the promotion of international scientific co-operation. The grants would enable researchers to spend up to seven months in government laboratories in Japan.

The award consists of an accommodation allowance and a return economy class air fare. The awards are for an appropriate Japanese Government research institute and are not renewable.

Applications are invited from government employees or persons of similar status who have been engaged in scientific and technological research for more than three years since graduation.

Interested researchers should contact the Program Manager, Bilateral Science and Technology Agreements, the Department of Science and Technology, PO Box 65, Belconnen, ACT, 2616.

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris. Printed by Pirie Printers Pty Limited, Canberra, A.C.T.

CoResearch

CSIRO's staff newspaper *October 1982* 256

Historic Executive meeting in the Northern Territory

CSIRO's Executive met in Alice Springs this month — the first time the Organization's governing body had met in the Northern Territory.

The Chairman of CSIRO, Dr J. Paul Wild, headed a party of senior CSIRO officers including the full-time Executive members — Dr Keith Boardman and Dr Geoff Taylor, and two part-time members — Professor David Craig and Mr David Wright.

The Alice Springs meeting reflected the Executive's policy of holding some of its meetings away from CSIRO's headquarters in Canberra, during a three-year program which will see the Executive visit every CSIRO laboratory in Australia.

The party inspected research projects at CSIRO's Rangelands Laboratory in Alice Springs, which conducts research into agriculture and the ecosystems of the arid zone.

Members attended a social function during the visit to meet members of CSIRO's Northern Territory State Committee.

LANDSAT INSPECTION

The Executive visited the Department of Science and Technology's Alice Springs Landsat Station and observed the transmission of data from a satellite passing overhead — data which would later be converted into Landsat images for mineral exploration, agricultural research and monitoring of environmental change.

The Executive met formally at the Rangelands Laboratory before flying on to Katherine, where the party saw a major experiment in tropical agricultural systems being conducted by CSIRO at Manbulloo, outside Katherine.

The Executive also saw current research at CSIRO's Katherine Research Station before leaving for Darwin, and to CSIRO's Narramoor Base Camp at Kapalga where they looked at research being conducted into the ecosystems of the area.

The Executive also inspected research projects being conducted by various CSIRO Divisions in Darwin — the Divisions of Wildlife Research, Horticultural Research, and Tropical Crops and Pastures.

LARGE EXPENDITURE

CSIRO has a staff of 70 in the Northern Territory, and will spend more than $2m in the Territory this year.

Dr Wild stressed that this figure represents only the amount spent directly within the Territory. Many other research programs being conducted at other centres around Australia were also highly relevant to the Territory — for example, research at the recently-created Division of Tropical Animal Science in Brisbane.

Dr Wild said that where possible, CSIRO encouraged a reasonable regional balance in the location of its research, particularly agricultural research, and attempted to locate laboratories where some strategic and tactical research could be directed to the problems of the surrounding environmental region.

Lucerne launched

Trifecta - a three-way winner against disease

The new lucerne variety called Trifecta will help Australian lucerne growers win their race against pests and diseases, according to the Minister for Science and Technology, Mr David Thomson.

The variety was bred in a co-operative program involving the CSIRO Division of Tropical Crops and Pastures and the Queensland Department of Primary Industries.

"The name Trifecta aptly sums up the unique combination of qualities of this new lucerne — aphid resistance, disease resistance and the good production characteristics of the most widely grown lucerne variety in Australia — Hunter River," Mr Thomson said.

DISEASE RESISTANCE

It has resistance to the major diseases of lucerne — Phytopthora root rot and anthracnose crown rot and three major pests — the spotted lucerne aphid, pea aphid and the blue-green aphid.

"Disease resistance alone should result in at least a 20 per cent increase in yield of Queensland lucerne crops," he said.

Seed from the new variety was being produced by the South Australian Department of Agriculture and should be commercially available within 18 months.

Mr Thomson added that the development of Trifecta underlined the importance of plant breeding to the $70 million Australian lucerne industry.

Another medal for the Interscan team

Members of CSIRO's Interscan team with the bronze medal they recently received for their research. From left is the Chairman of the Guild of Air Pilots and Air Navigators, Mr Trevor Jensen; the Master of the Guild, Mr Norman Royce; Dr Dennis Cooper; the Chairman, Dr J. Paul Wild; and the former Chief of the Division of Radiophysics, Mr Harry Minnett. The medal will be placed in the foyer of the Division's laboratory at Epping.

Air pilots award to Interscan researchers

The Chairman of CSIRO, Dr J. Paul Wild, a former Chief of the Division of Radiophysics, Mr Harry Minnett and Dr Dennis Cooper, of the Division, have been awarded a medal for their participation in the development of the Interscan landing system.

The three men have received the inaugural Grand Master's Australian Medal of the Guild of Air Pilots and Air Navigators.

The Master of the Guild, Mr Norman Royce, made the presentation of the medals and accompanying citations, at a cocktail party held in Sydney last month.

Plant pathology research committee established

The CSIRO Executive has set up a committee to review the Organization's plant pathology research.

Chairman of the Committee is Professor B.J. Deverall, head of the Plant Pathology Department, Sydney University. The Committee members are from CSIRO, the Queensland Department of Primary Industries and the Department of Scientific and Industrial Research (DSIR), New Zealand.

The Chairman of CSIRO, Dr J. Paul Wild said that Australia's agricultural and forest crops suffered significant losses from plant disease.

'The review is being carried out to define major gaps in Australian plant disease research', he said.

'Based on this assessment, the most useful future role for CSIRO in plant disease research will be selected.

REVIEW RESEARCH

'The Committee will review CSIRO's research activity in plant pathology and relate this to research in State organizations, the universities and commercial companies.

'It will assess the degree of liaison and communication between these various research groups and explore the possibilities for improvement', Dr Wild said.

The Committee has invited submissions from interested groups and issued press advertisements on its needs for information.

It will report to the CSIRO Executive in about nine months on research needs and priorities and make recommendations on how the Organization can best respond to these needs.

The membership of the Committee is: Dr Albert D. Rovira, CSIRO Division of Soils, Adelaide; Dr Geoffrey Behncken, Queensland Department of Primary Industries (Plant Pathology); Dr P.J. Brook, Plant Diseases Division, DSIR, New Zealand; Professor Brian J. Deverall (Chairman), Department of Plant Pathology, University of Sydney; Mr Michael V. Tracey, Director, CSIRO Institute of Biological Resources, Canberra.

The Secretary is Dr Ken Old, CSIRO Division of Forest Research, Canberra.

Letters to the Editor

Dear Editor,

May I add to the Chairman's comments on the Messiah, published in the August edition of Coresearch?

Handel did indeed write the Messiah in only a few weeks. However, in the preceding year or so, he composed nothing at all, being in a state of dejection.

If Handel had been subject to the kind of accountability which some expect now of research scientists, his patron may have withdrawn all support well before Messiah was composed!

Incidentally, those Canberra-based employees of CSIRO may like to take the opportunity of experiencing a performance of Messiah by the Canberra Choral Society with the Canberra Youth Orchestra on December 11.

SHIRLEY PIPITONE
Personnel Branch, Canberra

Units in a garden setting

Units at Sirovilla, the elderly peoples' home at Belmont, near Geelong in Victoria. The Division of Textile Industry is supporting the Society which plans to more than double the number of units at the centre.

Sirovilla centre plans to double its size later this year

Extensions are planned at Sirovilla, the elderly peoples' home in Geelong which is supported by the social club of CSIRO's Division of Textile Industry.

Plans have been drawn up to add 15 new units to the centre in a project which has been estimated to cost $400,000. The addition will more than double the size of the centre which now comprises 14 units.

It's expected work will begin early in the new year, with the units occupied towards the end of 1983. The project will attract a Federal Government subsidy of two dollars for each one dollar, contributed.

COMMUNITY FUNDING

Sirovilla is situated on the Colac Road at Belmont, a suburb of Geelong. It originally began as an idea from the social club of the Division of Textile Industry and a Society was formed in February 1972 to develop the project. Funding for the centre came from donations from a variety of community groups and charitable organizations as well as the Federal Government. The first eight units were opened in November 1975, and an additional six units were occupied in early 1978.

Each of the units have a living area/kitchen, bathroom and one bedroom which is large enough to provide either single or double accommodation. Basic furnishings – an electric range, refrigerator, washing machine, clothes dryer, curtains and carpets, are included, and residents provide their own furniture.

The units are positioned to offer residents privacy, although a strong community atmosphere exists and most residents have developed attractive gardens.

ELEGIBILITY

To be elegible, women must be aged 60, and men 65, and be 'active elderly'. At least half the units are required by the Hospital and Charities Commission of Victoria, to be occupied by tenants who could not be expected to contribute towards the cost. The remainder are occupied by 'self sponsers' who contribute about one third of the building cost. On their death, these units revert to the Society and can be used for non-contributers.

The centre is managed by the Sirovilla Elderly Peoples' Homes Society, which is registered with the Hospital and Charities Commission of Victoria. The Society is a public organization with representatives from CSIRO and the local community. The current president is the Chief of the Division of Textile Industry, Dr Don Taylor, while the Divisional Secretary, Geoff Watson is its secretary and Hayden Smith is presently treasurer.

LONG-TERM PLAN

Dr Taylor explained that the extensions to the centre would absorb some of the 50 people who were currently waiting to move into Sirovilla. "However, in order to plan for the future, the Society is investigating the possibility of purchasing more land to extend the site and enable more units to be built in the longer term," he said.

Dr Taylor explained that the Society would be delighted to receive financial support from other CSIRO divisions. Donations should be sent to the Secretary, Sirovilla Elderly Peoples' Homes Society, P.O. Box 21, Belmont, Victoria, 3216.

ACT students complete their scientific encounter

A group of A.C.T. secondary college senior science students gathered at the Questacon Science Centre in Canberra recently to mark the successful conclusion of an unusual science education experiment.

For the previous eight weeks, the 20 students had spent up to 10 hours working with researchers in CSIRO's Canberra laboratories, learning more about specific areas of science which interest them.

Subjects covered included plant breeding, water erosion, tissue culture techniques and the use of the scanning electron microscope to study insect skins. The students returned to their colleges to lead a class discussion on the subject covered by the research program.

All seven A.C.T. colleges took part in the scheme which was jointly organised by CSIRO and the A.C.T. Schools Authority with the co-operation of the A.C.T. branch of the Australian Science Teachers' Association.

The Chairman of CSIRO, Dr J. Paul Wild, said the teaching program had helped to optimize community use of the Organization's research work and scientific expertise.

"It also enabled the students to gain a greater insight into their chosen subjects, to learn how a research group works, the reasons for its research programs, and how professional scientists approach problem-solving research." he said.

At the ceremony, each student was presented with a certificate. The students' work was also on display.

From the Chairman–

A regular column by the Chairman of CSIRO

Dr. J. Paul Wild

As I have already remarked, it is one of the pleasures and privileges of my job to have described to me the work being done by individuals engaged in the research of the Organization.

During the happy hour, after one long and pleasant day of listening – it was at Cronulla I think – a small group of young research staff said it was about time *I* told *them* about *my* work – that is if I do any work outside the duties of Chairman and Chief Executive as prescribed by the Science and Industry Act. They had heard about radio astronomy and Interscan, but what now? The rumours had been puzzling. So what I write today (the fifth floor is practically empty – the cats are all away, so the mice can play) is an attempt to respond to that request – as part of the process of accountability, if you like. But my diversion is largely a spare-time occupation, unless you wish to hold me to the rigours of a fourteen-day fortnight.

I shall use mathematical symbols, but make no demands on your possibily rusty mathematics except to revive nostalgic memories of sunny days in the third form. So please, Doris, try to stay with me to the very end. What I am really going to try to do is to hint at the meaning of Einstein's general theory of relativity with the minimum of tears. My own thing occupies only the last two or three sentences.

●●

I wonder how many of you ever contemplate the question: what is the greatest scientific discovery of all time? A futile question to some; but to others it provides a challenge: the answer must reflect some majestic simplicity, like the *Ode to Joy* melody of the Ninth Symphony. I personally have no doubt about the answer: it is the incredible result that if, on a plane surface, you mark out a right-angled triangle then the length, s, of the longest side is related to the lengths, x and y, of the other two sides by the equation

$$s^2 = x^2 + y^2. \qquad (1)$$

This result has been known for four thousand years, long before the time of Pythagoras, yet it was not until long after Pythagoras that a convincing proof was found. You may hazily recall the almost magical proof you learnt in the third form, appreciating, perhaps for the first time, an intellectual masterpiece. I understand that modern education deprives the young people of today from exposure to such decadent Euclidean delights.

Valuable though this theorem is to the surveyor, architect and engineer, it has been the mathematical generalization of the theorem that has had the greatest impact on the world. This generalization takes several forms.

Firstly equation (1) only applies on a plane surface; it doesn't work on the surface of a sphere, for example. But it does if you replace s, x *and* y by infinitely small distances ds, dx *and* dy. Thus

$$ds^2 = dx^2 + dy^2 \qquad (2)$$

is true on any surface. (You may not know it Doris, but you are now doing Calculus). Secondly, you can generalize equation (2) to three dimensions, thus

$$ds^2 = dx^2 + dy^2 + dz^2. \qquad (3)$$

Personally I do not regard geometry as a branch of mathematics: it is really a branch of science. It started and must remain in the real world. And the real world, as we now know, is a four-dimensional affair, in which time, t, is inextricably mixed up with space. In the real, four dimensional, world equation (3) generalizes to

$$ds^2 = c^2 dt^2 - (dx^2 + dy^2 + dz^2). \qquad (4)$$

where c is a constant, the velocity of light. Equation (4) is the cornerstone of the restricted or 'special' theory of relativity and fixes up the otherwise spooky fact that the light reaching you from a light source hits you at a constant speed however fast you are travelling towards or away from the source.

Equation (4) describes the interval, in a four-dimensional world, ds, for any system of coordinates whether regarded as 'stationary' or moving at uniform velocity. It does not apply to coordinates on an accelerating platform or in a gravitational field. To cope with these conditions, further generalization is necessary. This is done first by re-writing equation (4) using a change of notation:

$x^0 = ct$, $x^1 = x$, $x^2 = y$, $x^3 = z$, so

$$ds^2 = (dx^0)^2 - (dx^1)^2 - (dx^2)^2 - (dx^3)^2. \qquad (5)$$

Mathematicians have another way of writing this equation, as follows:

$$ds^2 = g_{jk}\, dx^j\, dx^k, \qquad (6)$$

where the indices j and k can each assume the 4 values *0, 1, 2* and *3*, and where it is understood that the right-hand side is summed over all possible (sixteen) combinations of j and k. Evidently to make (5) and (6) the same the components of g_{jk} have the set of values

$$g_{jk} = \begin{matrix} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{matrix}$$

The thing, g_{jk}, is called a tensor.

How now do we treat the problem when the observer is on an accelerating platform? (Fasten your seat belt, Doris and hold tight). Well, you simply make a transformation of coordinates, for instance by making x^1 depend on the time x^0; you then finish up with a different set of values of g_{jk} – these are no longer constant but depend on the coordinates.

We have already introduced a fact of experience – the constancy of the velocity of light. Now we need another – that all objects falling freely in a gravitational field do so at the same rate (à la Galileo and the Leaning Tower): thus one cannot distinguish between being in an accelerating rocket, or a stationary one in a gravitational field. It is but a small step from that argument to reach the conclusion that it is the 16 g_{jk} components that specify the potentials of the gravitational field. It is a rather larger step, involving a knowledge of non-Euclidean geometry, to realize that from purely geometrical reasoning you can write down equations that determine the g_{jk}. These are called the Einstein equations; they define the law of gravitation.

According to the theory space is 'curved' and a particle travels along the 'straightest' possible line or *geodesic*. This is impossible to imagine in 4 dimensions; but you can do so in 2 dimensions – for instance, the geodesic line drawn on a sphere is a great circle. In 4 dimensions the Earth's orbit round the Sun is a geodesic line.

The theory is called general relativity, the most beautiful of all physical theories. Thus, with a touch of license, you can say that the theory of gravitation is a generalization of Pythagoras's theorem.

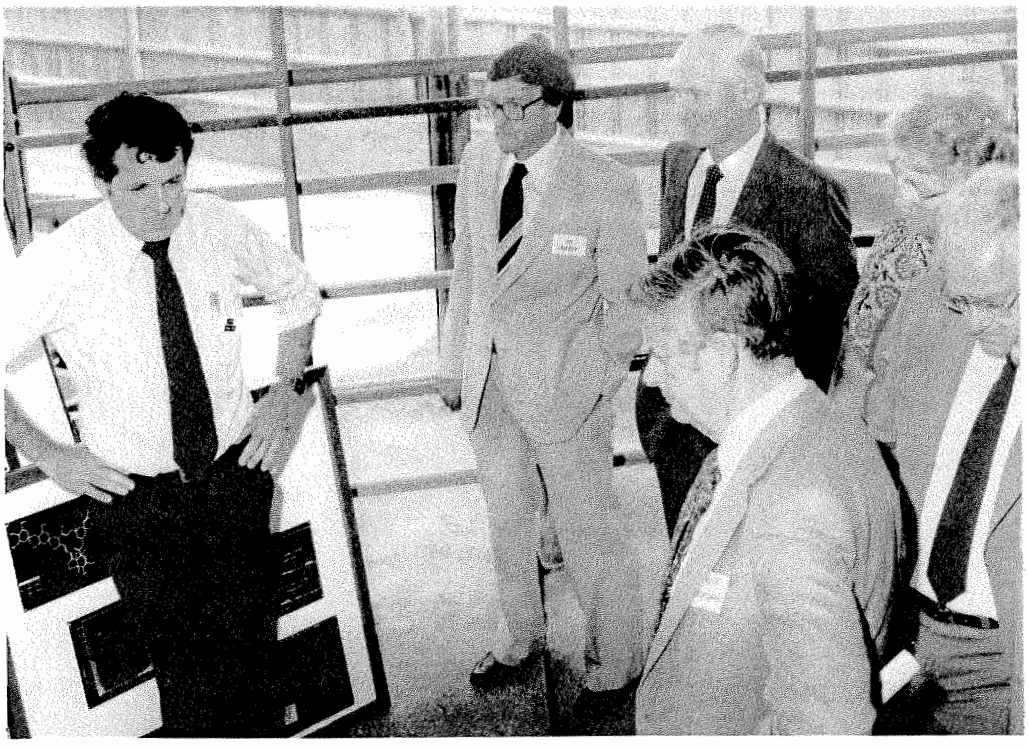
●●

My own personal interest is in generalizing the theorem one step further to account for the phenomena of electromagnetism. How? By making the g_{jk} complex, rather than real, functions of the coordinates. As Tom Lehrer once noted; if you ask a silly question, you get a silly answer. But I believe I can show how the fundamental equations of electromagnetism all emerge from the geometry when generalized in this way. I will send any interested person a copy of the paper when it is finished, which I hope will be soon.

It will not go unnoticed that I am here luxuriating at the fundamental end of the research spectrum. I hasten to remind my many friends in the Institute of Industrial Technology that my last attempt to contribute to research was at the technology end of the spectrum. I believe a little bit of each is as good for the soul as it is for the national interest.

Paul Wild

Visit to Long Pocket Laboratories



Dr Jim Nolan from the CSIRO Division of Tropical Animal Science, left, discusses research on the control of cattle ticks with members of CSIRO's Advisory Council and the Queensland State Committee.
Twenty-five members of these two advisory bodies visited the Long Pocket Laboratories in Brisbane in September. After a barbecue lunch with staff, the members toured the site and heard presentations which highlighted some of the major areas of research being undertaken at the laboratories.
The Long Pocket Laboratories are the headquarters of the Division of Tropical Animal Science. Major research programs are aimed at controlling economically important diseases of cattle in the tropics. Groups from the Division of Entomology and Mathematics and Statistics are also located at the laboratories.
From left are Dr J. Nolan, Mr I.D. Gordon (Secretariat). Sir Peter Derham (Chairman, Advisory Council), Dr N.K. Boardman (CSIRO Executive), Mrs B. Meynink (Queensland State Committee) and Mr L.G. Wilson (Executive Secretary). – *Photo by Stan Fiske.*

Retirement for senior CSIRO staff

Dr Alan Moore of CSIRO's Division of Materials Science retired in September after more than 40 years service with CSIR/CSIRO.

Several days after his retirement, a number of his past and present colleagues and their wives attended a dinner in honour of Alan and his wife, Judy. Alan was presented with a Kenneth Jack collotype of the Cloisters at Melbourne University. Addresses at the farewell occasion were given by Dr John Anderson, the Chief of Materials Science, as well as by former colleagues, Dr Hill Worner and Mr John Nicholas. Because of the number of earlier co-workers in attendance, the dinner was very much like a grand reunion.

WAR-TIME RESEARCH

Alan Moore joined the Lubricants and Bearings Section of CSIR on 8 December, 1941, just two days prior to his 21st birthday and, as he recalls, two days prior to the sinking of HMS *Repulse* and HMS *Renown* off the coast of Malaya. This was the second year of World War II and the CSIR Section that Alan joined was a wartime venture brought about through the appointment of Dr Philip Bowden in November, 1939, to establish a CSIR Laboratory to carry out reserach into and development of bearings for aircraft engines, and lubricants in general. Alan's appointment following his completion of a BSc at Melbourne University met Dr Bowden's immediate need for a Metallurgist/Chemist.

Towards the end of the war Philip Bowden returned to his teaching post in Cambridge where he set about establishing, within the Physical Chemistry Department, a laboratory called initially the Physics and Chemistry of Rubbing Solids (PCRS) and later the Physics and Chemistry of Solids (PCS). In 1945, Alan was invited together with several of his colleagues at Lubricants and Bearings to assist in this task. After several years with Bowden he was awarded a Cambridge PhD with a thesis on the deformation of rubbing solids.

WIDE-RANGING RESEARCH

Back in Melbourne, Lubricants and Bearings had by this time gained a new leader, Dr Stewart Bastow (later to become a member of the CSIRO Executive), and had been renamed Tribophysics. The section, soon to be granted Divisional status, was to have its own laboratory built on the campus at Melbourne University and opened in the early 1950's. The Division of Tribophysics became in the late 1970's the present Division of Materials Science.

Following his return to Melbourne at the end of 1947, Alan Moore worked successively on the recrystallization of zinc (with Geoff Brinson), the influence of hardness on friction (with Greg Tegart), and the thermal etching of silver (with Ernie Hondros). Alan worked in many areas concerned with surface problems but what became a prolonged interest with a most successful and satisfying outcome was his modelling of crystal surfaces – work carried out in conjunction with John Nicholas and Jock MacKenzie. The precise characterization of crystal surfaces in terms of either 'broken bonds' or residual nearest neighbours was an important aspect of the physics and chemistry of solid surfaces. This related to the growing interest in surfaces within Tribophysics with subsequent emphasis on studies of expitaxy, adsorption, desorption and catalysis. This work led Alan to consider the nature of this microscopic hemispherical needle tips that could be 'imaged' (with atomic resolution) by the technique of field ion microscopy that was burgeoning at the start of the 1960's.

His computer simulation of the field-ion atomic patterns obtained experimentally were painstakingly carried out on the CSIRAC computer with its 1K memory! Alan's interest in this field was maintained up to the time of his retirement in September of this year so that the award of a Royal Society grant to spend 1982/83 at the Metallurgy and Science of Materials Department at Oxford University to work with Dr George Smith on computer programming for a field ion atom probe should give him continuing satisfaction in his favourite field of studies.

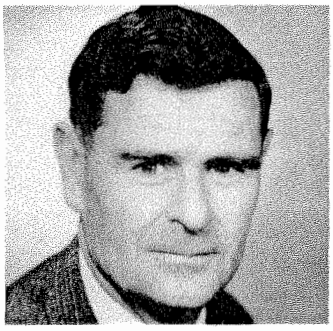
ENTHUSIASTIC RESEARCHER

Alan Moore's life in CSIR/CSIRO has involved him in many areas of research and other activities. He has shown great enthusiasm in all of these ventures – an enthusiasm which was not dampened even when faced with the daunting task of acting over a number of years as the Divisional representative or contact person for the planning and construction of the proposed Material Science Laboratory complex at Clayton. His valuable work on the Engineering Group and Welding Research Committees should be mentioned as well as his four years as Chairman of the Solid State Division of the Royal Australian Chemical Institute. Finally, his overwhelming interest in the wide application of computers drew him into the area of computer assistance to disabled persons and into the development of programs that might be useful for those handicapped people whose communication is limited to the manipulation of several keys or levers.

Alan Moore's retirement does mark the end of an era, and we wish him well firstly for his stay at Oxford and then for a prolonged and satisfying period in retirement. With his multiplicity of interests, however, Alan is most unlikely ever to suffer from boredom.

JOHN SPINK

Dr. Colin Williams



A Chief Research Scientist at the Division of Plant Industry, Dr Colin Williams, and wife Marjory, have retired to Bribie Island just north of Brisbane.

Dr Williams joined Plant Industry in 1949 to lead a group of scientists interested in the chemical composition of Australian pasture plants with particular reference to the nutritive value and the inter-relationship of mineral nutrients in plant nutrition.

He soon earned for himself a wide reputation in his field and came to be accepted as one of the most distinguished soil scientists in Australia.

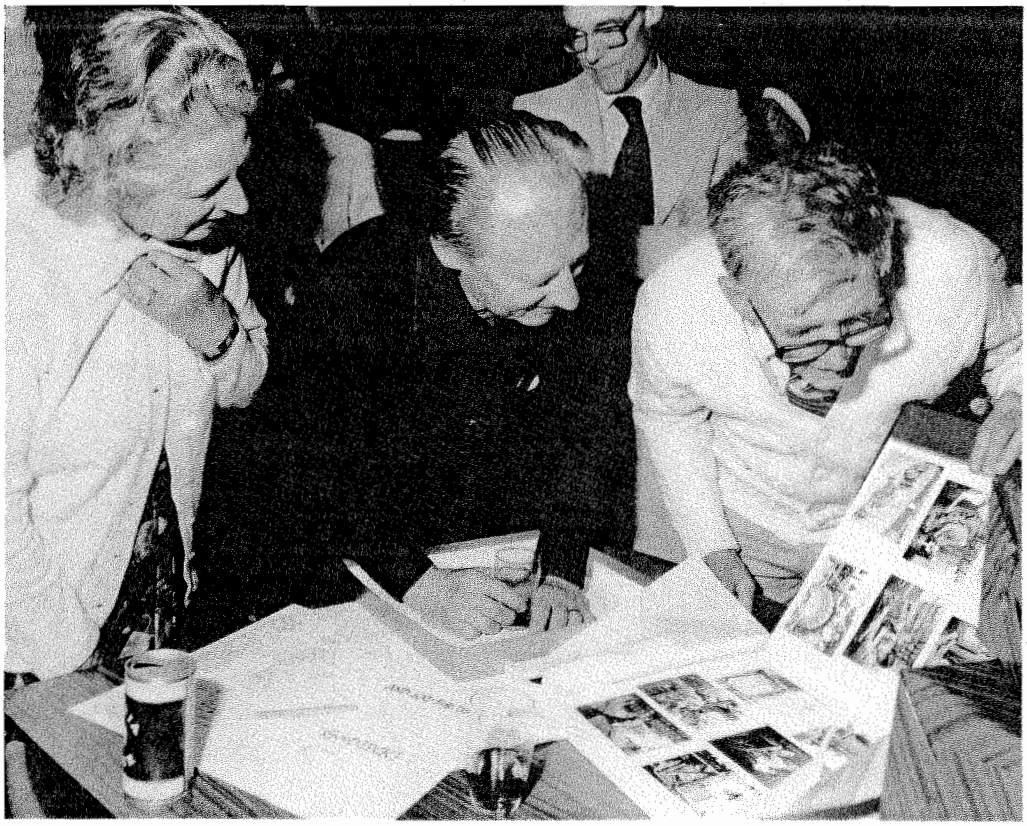
Initially his work in Plant Industry was concerned with the fertility of soils, and from the outset the excellence of his research became widely known, and apart from enhancing his personal reputation, it brought the Division and CSIRO to the forefront of scientific achievement in this field.

Among many of the investigations undertaken by Colin Williams was his work on determining the relevance to human health of trace impurities such as Cadmium in fertilizers The work attracted wide public and scientific interest.

In more recent times, Colin Williams initiated Plant Industry's research program examining the problem of fertility of crops and pastures in acid soils. This is a problem of national importance, involving more than 10 million ha of agricultural land.

Just prior to his retirement, Dr Williams was awarded the prestigious J.A. Prescott Medal for 1982 in recognition of his outstanding contributions to soil science, in particular for his research on soil fertility and the consequences of superphosphate application to Australian soils.

Arthur plans an Australian tour



One of the gifts Arthur Thompson received on his recent retirement from the Division of Energy Technology was an album of photographic memorabilia. Many of the people and projects with which Arthur had been associated with during his 30 years with CSIRO were recorded. Both present and past members of the Division, who gathered at the two separate functions held to farewell Arthur, reminisced with him over past events. However Arthur, who was a senior technical officer at the Division, is not dwelling in the past and has many exciting plans for his retirement. The first of these is to drive his new, fully equipped campervan across the Nullabor to Perth where he will participate in the Australian Model Yacht Championships in January 1983. After that it's the Grande Tour of Western Australia.

Arthur Thompson is pictured above right with his wife Mrs Myrtle Thompson and Dr John Kowalczewski looking at the album.

– Photo by Neil Hamilton

ple... People... People... People... People... People ... People ... People ... People ...

Dr Chris Heyde, of the Division of Mathematics and Statistics, is this month attending the Fourth South East Asian Statistics Seminar in Singapore. The conference is also the second meeting of the East Asia and Pacific Region of the Bernoulli Society.

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The Assistant Chief of the Division of Applied Physics, **Dr Bill Blevin**, is currently attending several overseas conferences. In West Berlin, he is discussing light and radiation measurement, in Paris he is Chairman of the 10th session of the Consultative Committee for Photometry and radiometry of the International Committee for Weights and Measures, and in Italy and the United Kingdom, he's talking about research policies and priorities in the standards field at national, standards laboratories.

□□

A wayward envelope which had originally contained a copy of Ecos magazine, found its way back to the Science Communication Unit recently containing a copy of a New Zealand Feminist magazine. It seems the Ecos had been sent to a New Zealand address from which the received had extracted the magazine, inserted another, and redirected it to the Sydney office of Womens Liberation. They had refused to pay the postal charges now imposed, and the envelope was then 'returned to sender' at CSIRO's Dickson, ACT, address.

□□

Stephen Thrower of the Division of Feed Research's Tasmanian laboratory, has recently accepted two years secondment to the Tasmanian Fish Development Authority to assist with the Establishment of an advisory service for the processing industry, and to give advice on the design and layout of fishing vessels. During his 11 years with CSIRO, Stephen has worked on a variety of industrial problems related to the fishing industry, and has undertaken research work for FAO in Malaysia and Sri Lanka, and ADAB visits to Tuvalu, formerly the Ellis Islands.

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The Division of Building Research has begun a building and construction news service to give up to date information on the Division's research to trade and technical journals. Industry Communications Officer **David Zerman** said the news service is part of the Industry Liaison Service established last year to provide an easy point of contact for all professional, technical and trade staff in Australia's building and construction industries.

□□

Dr Ebbe Nielsen, currently of the Department of Entomology in the Zoological Museum at the University of Copenhagen, will soon join the Division of Entomology in Canberra.

Dr Nielsen will first work in the Division on studies of the Australian incurvarioid fauna.

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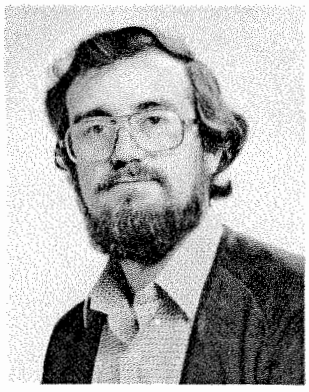
Dr A.J. (Alan) Hillier spent five months in Europe, US and New Zealand visiting laboratories and studying plasmid technology and starter organisms used for manufacturing European-type cheeses.

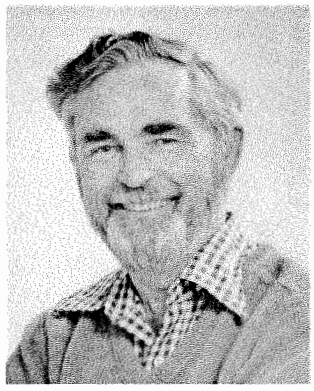
□□

Four CSIRO apprentices were among prizewinners in the Victorian apprentice craftsmanship awards.

As well as **Ron Jorgenson**, of the Division of Textile Industry, whose photograph and story appeared in the last issue of Coresearch, two boys and a girl won awards in the State-wide competition, **Mark Lucas**, of the Division of Chemical Technology at South Melbourne, won the Master Builders' Award and a Certificate of Technology, **George Spiteri**, also of the Division of Chemical Technology won the Beazley Award for the best RMIT student in his section, and **Kim Scott** won a bronze medallion and the L.H. White award for her entry of a beam balance.



Dr Peter Napier



Professor Ron Bracewell

The Division of Radiophysics is currently hosting two distinguished visitors from America. **Dr Peter Napier**, Deputy Director and Head of the Electronics Group at the Very Large Array (VLA) in Socorro New Mexico, will be at the Division until December. Peter's experience with the construction of the VLA radio telescope is being put to excellent use in the setting-up stages for the Australia Telescope.

Professor Ron Bracewell, Department of Electrical Engineering at Stanford University, arrived at the Division in September for a three month stay. His in-house lecture course (including take-home assignments!) on Transform Theory and Other Mathematical Techniques for Two-Dimensional Data Handling is being attended by some 40 staff of the Division.

Dr John Skilling, of the Department of Applied Mathematics and Theoretical Physics, University of Cambridge, and an expert on image and date processing by maximum entropy is due to take up a two month guest appointment in mid January 1983.

The Chief of the Division of Applied Physics, **Dr John Lowke**, recently returned from an overseas visit where he represented Australia on the organizing committee of the Gas Discharge Conference which was held in London. Dr Lowke also attended the Annual Assembly of the International Institute of Welding, held in Yugoslavia.

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The Assistant Chief of the Division of Water and Land Resources, **Neil Body**, has been in Berne, Switzelrand, participating in a symposium on the subject of research basins. Neil delivered a keynote address on the use of the results from research basins in water resources planning and management. He was also Chairman of a round table discussion on the appropriate future actions on this topic within the programs of UNESCO.

Tour of Division for Entomology technicians

The Division of Entomology has arranged a series of familiarization excursions to give its technical staff a broader understanding of aspects of divisional research.

The first excursion took 20 staff on a tour of the national insect collection, and included men and women who had spent less than two years with the Division.

The program aims to allow for better utilization of technicians on an informal basis and to enable smooth redeployment of technicians if necessary.

Arrangements for the excursions were carried out by the recently formed Technical Representative Group within the Division. The group comprises representatives from each research section, and has the support of the Chief of the Division, Dr Max Whitten.

Organizers are now planning other excursions both within the Division, to other related Divisions, the RAO, the Library and Headquarters.

Award - winning apprentice

CSIRO's apprentice of the year, Mr Chris Stevens, right, holds the Arthur Frost Memorial Award, presented to him recently by the Director of the Bureau of Scientific Services, Mr Sam Lattimore, left. The acting manager of the CSIRO's printing unit, Mr Len Chard, is in the centre. Chris assisted with the printing of many previous issues of Coresearch when it was printed at the Melbourne printing unit.

Historic setting for international solar conference in Italy

Thoughts of staying for one week in a castle overlooking the Adriatic Sea as a guest of a Prince were not in the mind of Kevin Sheridan, Solar Group Leader of the Division of Radiophysics, when he accepted an invitation from the Trieste Astronomical Observatory to act on the Scientific Organizing Committee for a Solar Meeting in Trieste, Italy.

However, this actually happened to Kevin and his wife, Elizabeth, and five other members of the Committee. The castle was the Castle Duino (Duino is a small town some 25km from Trieste). After passing through the impressive entrance gate we were welcomed by our host Prince della Torre e Tasso, the Duke of Duino, and later shown to our accommodation. After gazing with admiration at the treasures we passed during our introduction to the Castle, we found our own suite to be similarly furnished, including paintings by various masters adorning the walls. The spectacular views from our windows were of the coastline along the Adriatic Sea and the magnificent gardens of the Castle grounds. We had the freedom of the Castle and its surroundings for one unforgettable week during which, of course, our scientific meeting received its rightful share of our time (reluctantly!).

ART MASTERPIECES

The meeting itself "The Fourth CESRA (Committee of European Solar Radio Astronomers) Workshop on Solar Noise Storms, Trieste, August 9-13, 1982" was also hosted free of charge by the Prince who made available several rooms in his castle for this purpose; the main meeting room was called the "Sala dei Cavalieri" and appropriately displayed large paintings of some of his illustrious ancestral knights in suits of armour astride their similarly protected steeds; in another meeting room a portrait by Titian was one of several masterpieces displayed.

The remaining 30 delegates were housed in a nearby motel within walking distance of the Castle. Australia was well represented with three participants including Ron Stewart from Radiophysics and Professor Don Melrose from the University of Sydney.

FAVOURABLE COMMENT

Australian work, particularly that of the Culgoora Solar Observatory, received favourable comment in the press and also on television. Translated from the Italian press some selected extracts referring to our work are the following:

"In the appropriate cornice of the Castle of Duino, under the auspices of the Prince Torre e Tasso will begin the previously announced workshop on radio-astronomy on storms of solar noise."

"There will be at Duino the Australian astronomers who work continuously with the biggest solar radio telescope in the world at Culgoora."

"Today is the opening day and this morning after the welcoming address, talks will be given by the Norwegian Elgaroy and the Australian Sheridan on the results of their latest observations. There will also be talks by Wenzel (USA), Melrose (Australia) and Benz (Switzerland) who are the most quoted scientists, on a world level, on the theory of solar noise storms. A talk on the role of magnetic fields in the solar corona will be given on Thursday by Stewart (Australia)."

REMARKABLE PRINCE

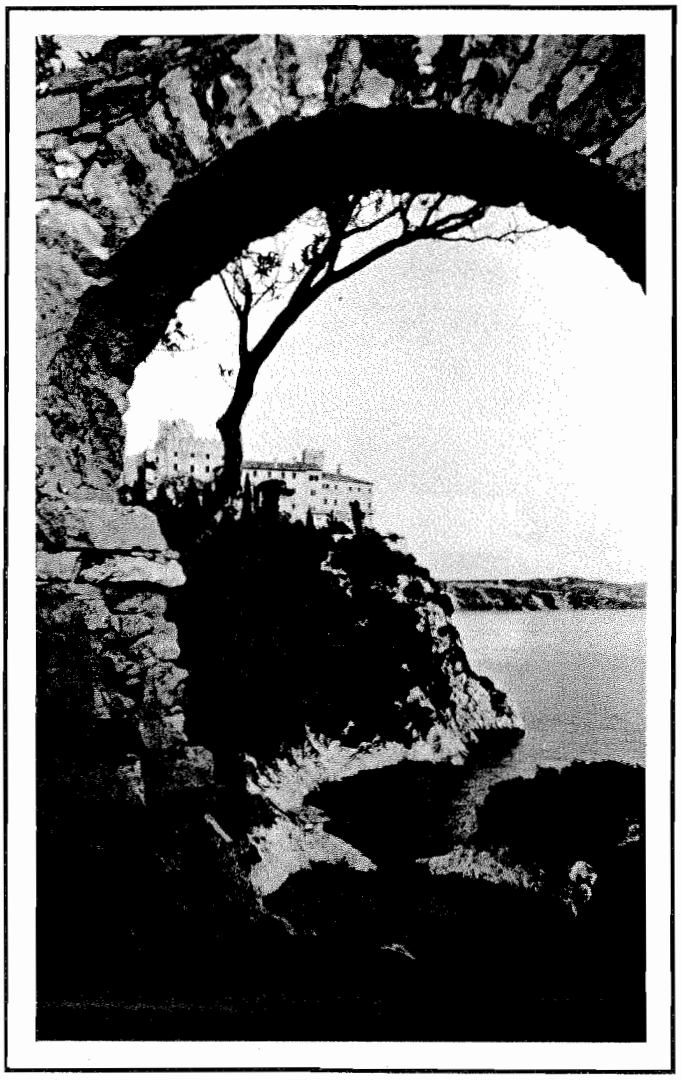
His Highness the Prince is a remarkable man who, as he phrases it "likes to build bridges between science and the arts, between peoples of different philosophies" and he is certainly helping to achieve this by such gestures as the above. He speaks many languages and is familiar with the work of many noted scientists and artists (many of whom have been his guests). During one of our dinners at the Castle the only topic of conversation which foundered somewhat was when Kevin Sheridan introduced Cricket!

The Castle of Duino traces its origins back to around the 6th century B.C. Some of the remains of these early days are still standing on the 'Rock of Duino' in the grounds of the present structure which was started in the 3rd century A.D. and added to in the thirteenth and seventeenth centuries.

MULTICOLOURED MICROCOSMOS

One Italian reporter summed up the meeting as "A multicoloured microcosmos of scientists are rubbing shoulders for five days filled with readings and discussions, interrupted by short coffee-breaks on the terrace of the Castle in front of the breath-taking panorama of Duino and Sistiana with the remains of the Celtic fortress emerging between the sea and the woods. A fascinating view that will be a lingering memory to all when they return to their respective countries".

Kevin Sheridan says the experience was a memorable one in his 'Sun-studded career' and his advice to the research staff is to welcome with open arms any invitation to act on Scientific Committees as the rewards may occasionally outweigh the effort involved.



The Italian castle visited by Kevin Sheridan seen through an arch of the ruins of the old sixth century BC structure on the Rock of Duino.

New Chief for Mineral Engineering

An internationally recognised scientist who has made important contributions to fundamental solid-state science and its applications to assist the mining industry, has been appointed Chief of CSIRO's Division of Mineral Engineering.

The Chairman of CSIRO, Dr J. Paul Wild, said Dr Alan Reid, 51, would succeed the late Dr D.F. Kelsall as Chief of the Melbourne-based Division.

Dr Reid, a Fellow of the Australian Academy of Science, is presently Assistant Chief of the Division of Mineral Chemistry.

Dr Wild said Dr Reid was an exceptionally productive and versatile scientist whose work had consistently been of the highest quality.

WIDE-RANGING RESEARCH

"His research has covered a broad area of science and presently includes chemical reaction processing, mineral structures and image analysis as applied to mineral processing. He is the author of several patents and numerous papers," he said.

Dr Reid graduated as an M.Sc with first class honours in chemistry from Canterbury University in 1954, and as a Ph.D in 1959 from the Australian National University. In 1970, the ANU awarded him a D.Sc for his contributions to solid state chemistry.

RIVETT MEDAL

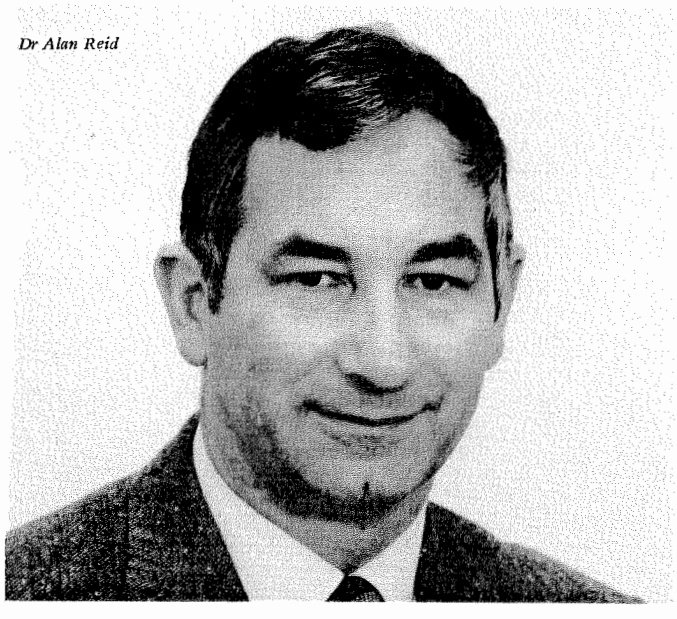
In 1970, he was awarded the CSIRO Rivett Medal for "a decade of outstanding contributions to physical science."

Dr Wild said Dr Reid had made major contributions in the mining and mineral processing industry which had been recognised by the Australian Mineral Industries Research Association.

"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," he said.

The Division of Mineral Engineering is within CSIRO's Institute of Energy and Earth Resources. It conducts theoretical and practical studies aimed at developing methods for improving and controlling industrial processes. Particular emphasis is placed on processes used for the treatment and handling of ores and mineral products.

Dr Alan Reid



CSIRO librarians gather in Melbourne for a conference

CSIRO librarians who recently attended the East Melbourne conference. Peter Dawe, the Chief Librarian, is in the front row, second from left. To his left is Eve Abearn, librarian at the Molecular and Cellular Biology Unit at West Ryde. Eve, who retires soon, had often said she wanted a gold watch on retirement, and her colleagues clubbed together to present her with a 'mickey mouse' model. Marjorie Thompson, on Peter's right, is holding a special lightweight 'suitcase' as a retirement present in line with her expressed desire for travel.

Have the freemasons opened their ranks at last to the saner sex? Or is the flower of Australian librarianship picketing their building, with a view to taking it over in place of Central Library's Collingwood Store? No: these may be the trends of the future, but picketers don't smile like that.

The photo at right shows the librarians of CSIRO, gathered together at the end of the recent CSIRO Librarians' Conference, held in East Melbourne in August.

A total of 89 CSIRO staff attended the conference including all but one of the librarians-in-charge of CSIRO's 43 libraries (one was prevented by illness).

The conference provided an opportunity to introduce new libraries to the network. Dr Geoff Taylor, who opened the Conference on behalf of the Executive, welcomed in particular the laboratory at Rockhampton, the Australian National Animal Health Laboratory at Geelong, the Lucas Heights Research Laboratories in Sydney, and the Melbourne and Adelaide laboratories of the Division of Manufacturing Technology.

The key issues addressed by the conference were the current economic climate – how to continue providing services which cost more, on funds which grow smaller – and (less disheartening) the developments constantly occurring in information technology. A number of librarians spoke about local computing systems they were developing within their Divisions; guest speakers from the information services at CILES and from the Division of Computing Research described data-bases and services currently available, and possible new developments, and representatives from Telecom and from commercial bodies spoke on automated library systems now in use, and future developments in telecommunications and the information industry.

LIBRARY REVIEW

Most important of all, however, were the discussions of the recent report of the Review of Information and Library Services in CSIRO. These discussions covered such questions as what CSIRO's national role should be, in relation to Australian libraries in general, and the National Library in particular; whether technologies such as microfilm and facsimile transmission offer practical answers to problems of storage, duplication and availability of materials; whether fees should be charged for library services (such as interlibrary loans and locations) to non-CSIRO users; and a host of similar questions. The 28 recommendations of the Review Committee's report were considered in turn, and the collective opinion of the meeting was ascertained, and comments formulated on each.

This was the fourth CSIRO Librarians' Conference to be held in the last 10 years, and the most important in terms of the issues addressed. Many participants said that it was the best conference so far: the most productive, as well as the most enjoyable.

Marjorie Thompson, soon to retire as a CSIRO librarian, identified part of the feeling of the conference, when she described in her farewell speech what it is to be a Divisional librarian. She said that the two things she would miss most, when she retired, would be the flavour of research – "you are right there where it is all happening" – and "the very special relationship, growing over the years, between libraries in the network–you know you belong".

ANNE SEDGLEY

Retired scientist

Sudden death of Tom Pressley

It was with great sadness that former colleagues of Dr Tom Pressley at the Division of Protein Chemistry learned of his sudden death on August 27.

Although Tom retired from the Division in 1979, he was still a familiar figure calling to visit old friends and it is fitting to record his long association firstly with CSIR and later CSIRO.

Tom was born on 20/2/14 in Onehunga, New Zealand, graduating B.Sc. from Auckland College, University of New Zealand.

Dr Tom Pressley

Photo by Leona Monarch.

Tom and his wife moved to Australia and in 1948 he spent one year with the Australian Leather Research Association in Sydney. In 1949 he was seconded to the Ministry of Post War Reconstruction, Division of Industrial Development as a Research Officer, and in August of that year he was appointed as a Research Officer III at the Division of Industrial Chemistry on twelve months' probation. This was to begin his long association with CSIRO. In 1950 he became a permanent officer and in 1959 undertook his Ph.D. cojointly with CSIRO and the Bacteriology Department at the University of Melbourne on 'The role of textiles and hospital dust in cross-infection'.

International recognition

Tom was the author of over 75 papers and articles and he participated in many radio interviews for CSIRO. He was a Fellow of the Royal Institute of Chemistry and the Royal Australian Institute of Chemistry. In 1977 he was made an Officer of the Order of Australia and in 1979 was awarded the Institute Medal of the Textile Institute (U.K.), in recognition of distinguished services to the textile industry in general, and the Institute in particular. On his retirement a film was made of his career by the Film and Video Unit CSIRO.

His papers covered a wide spectrum of interests ranging from the dry chlorination of wool blankets, the fire hazard of textiles to the indelible marking of medical sheepskins to prevent theft from hospitals. However, Tom will be best known for his invention of a neutral detergent for the washing of wool garments. This was marketed by Lever & Kitchen under the well known name of Softly . These widespread interests were a reflection of Tom's ability and interests. He was able to perceive solutions to many important problems around him and bring the scientific method to bear on their solution. He liked very much to see practical results flow from his work.

Tom will not only be missed by colleagues in CSIRO but by many people in the Textile Industry, the dry cleaning and laundry industry and in numerous organizations in which he was involved It is a tribute to his knowledge and standing that after retirement he was widely sought after as a consultant to a variety of industries.

He was working up to the time of his death in the things that he liked most– solving practical problems. He was always prepared to help anyone who needed his advice or assistance no matter what their standing in the Organization and he had special sympathy and consideration for young people.

Tom is survived by his wife Marjorie, and his son and daughter.

P.G. Gordon

CAT

An extremely practical approach to the business of CSIRO science communication was taken at the inaugural meeting of Sydney's communicators, held on September 29 at the Division of Applied Physics in Sydney.

Nineteen people, from as far afield as Lucas Heights and Cronulla, gathered at the impressive labyrinth in which the Division is housed.

After due acknowledgement to CAT as being responsible for this regional get-together (via CAT members Paul Hewitt and Christine Astley-Boden), the meeting got down to its "nuts-and-bolts" agenda

First up was a proposal for a regional communication facilities register. There was an enthusiastic response to this idea, and a questionnaire was distributed. This document sought details on the equipment and staff dedicated to communication in each Sydney division.

When complete, the register will allow communicators to locate elsewhere in Sydney's CSIRO sites, any specialised facilities that are not available within their own division. More effective utilisation of Sydney's communication resources should result, with very little lying idle. Equipment not available for loan will still be listed, so that communicators can locate sources of "user" advice on particular types of equipment.

The meeting's principal organiser and host, Paul Hewitt, then led the meeting through a complex maze of corridors to a practical demonstration of computer-aided design equipment. This was followed by a description of the novel light pen developed in the Division of Applied Physics. Of course, the main interest shown was in the application of such technology to the preparation of artwork for publication.

On safe return to the meeting room, the possibility of organising workshops on various techniques of value to communicators was discussed. Again, the practical side of Sydney's communicators emerged, and all agreed that these could be useful, as long as they were "hands on" exercises rather than talk sessions. It was felt that such workshops could be run in conjunction with the regional meetings.

One particular point had the meeting unanimous in their protests. This was the recent scrapping of hard copies of the CSIRO staff lists, while the microfiche version was continued.

Communicators, it was felt, suffered most from such Headquarters cutbacks, as they need convenient access to Organization information – often, queries crop up in the middle of a telephone conversation. Hands up all those who have a personal microfiche reader at their desk!

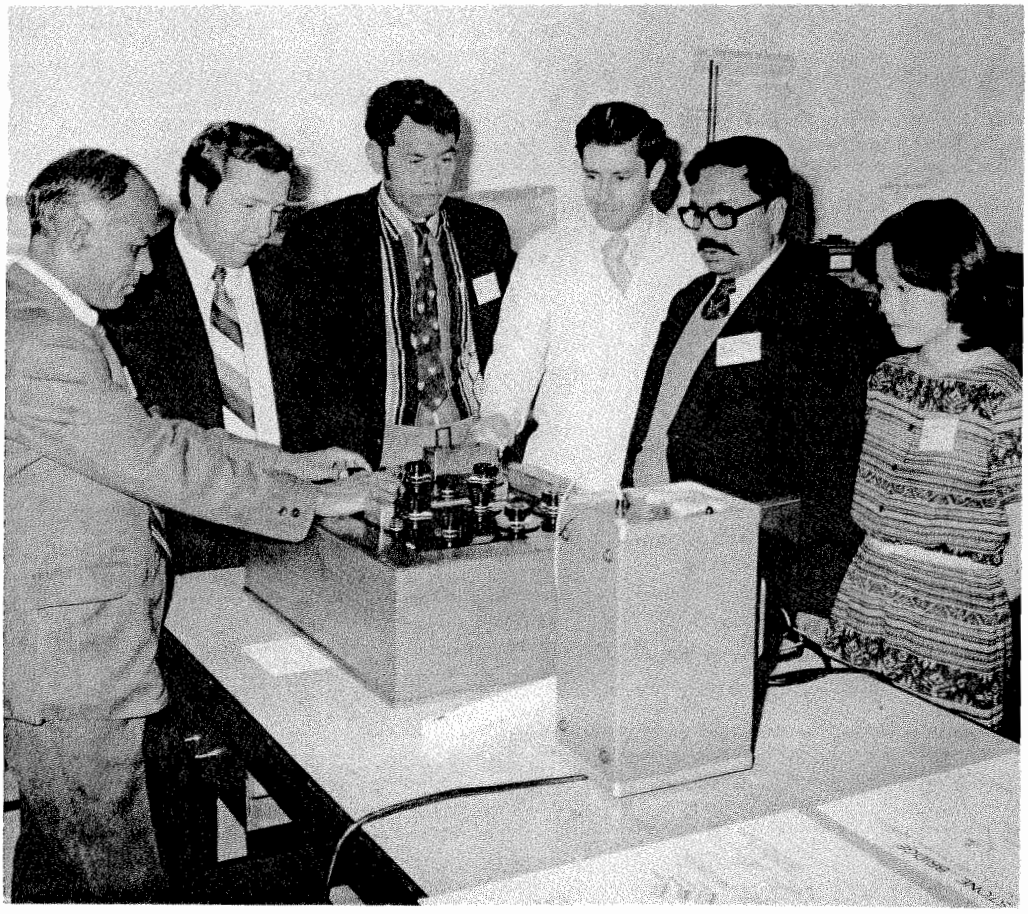
The CAT representatives at the meeting were asked to convey to the next CAT meeting the concern of Sydney communicators about the lack of hard copy where microfiche was a poor alternative.

At last the meeting got to the last item on the agenda, refreshments, and many useful wineside chats followed. Often this informal part of a meeting is the most productive – and the Sydney Regional Communicators Meeting was no exception. Sufficient enthusiasm was metered for a second meeting to be suggested . . . in March 1983 at the Division of Radiophysics.

If you're a Sydney communicator, and for some reason missed out on an invite to the meeting, contact Paul Hewitt or Christine Astley Boden for further details.

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

Asia/Pacific visitors at Applied Physics



Receiving instruction in electrical measurement are, left to right, Mr Md T. Sarkar (Bangladesh), Dr D.R.R. Gowdie (Papua New Guinea), Mr N.B. Tabuyaqona (Fiji), Mr Peter Dencher (CSIRO), Mr T.V.P. Upadhyaya (Nepal), and Mrs Tay-Sum Kit Mun (Singapore).

Warning on a taxation shortfall

The Regional Administrative Officer in Canberra, Mr Geoff Cave, has drawn the attention of all staff to a possible shortfall in their taxation deductions for this financial year.

Mr Cave said that, for salary purposes, there were 27 pays to be recorded for the financial year although current taxation scales were based on 26 pays.

"We have been advised by the Australian Taxation Office that no special formula exists to cater for taxation instalment deductions for employees who receive an extra pay during the financial year," Mr Cave said.

"As a consequence some employees could have insufficient taxation instalments deducted to cover taxation on assessment."

Mr Cave recommended that each employee examine their own circumstances and decide whether to make provision for the taxation shortfall by:

- saving the amount with one of the approved credit societies for the required term.
- arranging to have extra taxation instalments deducted on a fortnightly basis.
- accepting the shortfall in taxation as an interest-free loan to be judged on assessment.

Mr Cave said it was not possible for his office to calculate each employees' potential shortfall, but as a general guide, indicated that with a salary of between $8,700 and $16,500, the shortfall would be around $49, between $16,500 and $35,000, the shortfall would be between $125 and $140, while for a salary of between $35,000 and $54,000, the shortfall would be between $300 and $350.

Training workshop on metrology for Asia/Pacific researchers

As part of CSIRO's contribution to the Asia/Pacific Metrology Programme (APMP), the Regional Workshop on Metrology for Developing Countries was staged at the Division of Applied Physics.

The Workshop also involved intensive training, intended to provide metrologists actively involved in the establishment of physical standards in the Asia/Pacific region with access to personnel and instruments in the Division. The training was given in the fields of mass, length, temperature, and dc and ac electrical measurements. The format of the training sessions was kept loose to allow delegates to participate at the level they wished and to spend more time in selected fields if they wished.

METROLOGY TRAINING

Seven days were devoted to training in metrology and three to regional collaborative projects. Over 30 participants from Australia, Bangladesh, China, Fiji, Hong Kong, India, Indonesia, Korea, Malaysia, Nepal, New Zealand, Papua New Guinea, Philippines, Singapore, Sri Lanka and Thailand took part. They were joined by 10 participants from international aid agencies, BIPM and NPL (United Kingdom), and 20 members of the Division in training and discussions.

The flags have been removed, the participants have returned home, and there has been time to assess the effectiveness of the workshop. The general consensus is that it was completely successful. All participants from developed and developing nations, international aid agencies, and CSIRO agree that it was a significant meeting. In particular the participants from Asia/Pacific countries were impressed by the advice and hospitality they received and they asked me to express their gratitude to all involved.

REGIONAL REPUTATION

I am pleased that initial contacts have been established between members of the Division and scientists from national standardizing laboratories in the Asia/Pacific region. I hope these contacts are strengthened and effective interchanges of information result.

T.P. JONES

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris. Printed by Pirie Printers Pty Limited, Canberra, A.C.T.

CoResearch

CSIRO's staff newspaper November 1982 257

Coming of age for the Parkes radiotelescope

The 'grand old lady' of radio-astronomy in Australia, the Parkes 64-metre telescope operated by CSIRO, came of age on October 31.

The gigantic steel and concrete structure, standing amid ripening wheatfields in rural western New South Wales, was considered an amazing feat of engineering ingenuity when it was formally commissioned by the then Governor-General, Lord De L'Isle, on October 31, 1961.

The Parkes radio telescope is used to study radio emissions from objects ranging from the Moon—so close that astronauts have been there—to galaxies and quasars so distant that the radio waves have taken 10 000 million years to reach the earth.

Over the years, scientists have used the telescope to make exciting discoveries about the Universe, bringing international recognition to Australia.

The telescope has been responsible for several major discoveries; it played a major part in detecting the first quasar and was used by NASA for the Apollo missions to the moon.

Recently the Parkes telescope was used by a team of Australian and British astronomers who discovered a quasar at the edge of the Universe.

A group of these scientists, together with some of the key personnel involved in the telescope's construction, held a reunion at the radio telescope on the day.

People calling at the telescope during the day were offered tours of the facility arranged by CSIRO's Visitors' Centre at the telescope.

They were also able to see the results of extensive modifications which have been made to the telescope over the past few months.

These include the fitting of two new rings of perforated aluminium panels to the dish surface to enable the telescope to observe at higher radio frequencies.

The improved surface was made possible after a survey of the dish showed that its structure far exceeded the original design specifications.

Another major improvement has been the complete remodelling and re-equipping of the control room to allow for the installation of new computing facilities, control desk and work stations.

A less visible but important modification has also taken place in the aerial cabin situated at the focus of the paraboloid dish. The cabin houses the sensitive receivers which are cooled to around -260° centigrade.

FTS for CSIRO senior scientists

Four CSIRO scientists have been elected Fellows of the Australian Academy of Technological Sciences for their achievements in technological sciences.

The scientists were among 15 Fellows who were elected at the recent annual general meeting.

The new Fellows and a summary of their citations are:

The Chief of the Division of Building Research, Dr F.A. Blakey, whose election recognized his research contributions in the field of concrete and structures. His distinguished career in research related to the building industry has contributed to practical applications for new methods for faster construction.

The Chief of the Division of Radiophysics, Dr R.H. Frater, who was described as a distinguished contributor to the design and development of major Australian astronomical facilities, especially in the techniques of radio astronomy, where innovations have influenced astronomical instrument developments overseas.

The Chief of the Division of Animal Physiology and Animal Production, Dr T.W. Scott, who has guided the transfer of technology to industry of a number of developments that have arisen from research at his Division. Dr Scott is a world leader in lipid biochemistry of ruminants.

A senior scientist at the Division of Entomology, Brisbane, Dr R.H. Wharton, who has made important contributions to the control of cattle ticks in northern Australia. Dr Wharton was awarded the Chalmers Medal in 1967 for his research in Malaysia into the transmission of malaria and parasites of man, monkeys and domestic animals.

Earlier in the year, the former senior scientist in the Division of Chemical Physics, Sir Alan Walsh, was elected a Fellow of the Academy. Sir Alan was present at the annual meeting to receive the K.L. Sutherland Memorial Medal which was presented by the President of the Australian Academy of Technological Sciences, Sir Ian McLennan.

New Chief for Applied Geomechanics

A scientist with an international reputation in the development of underground mining techniques has been appointed Chief of CSIRO's Division of Applied Geomechanics.

The Chairman of CSIRO, Dr J.P. Wild, said that Dr Barry Brady, 40, would succeed the late Dr D.F. Kelsall as Chief of the Melbourne-based Division.

Dr Brady is currently Associate Professor of Mining Engineering in the Department of Civil and Mining Engineering at the University of Minnesota, U.S.A.

'Dr Brady has strong links with the Australian mining industry, and spent six years as a rock mechanics engineer with Mount Isa Mines Limited.

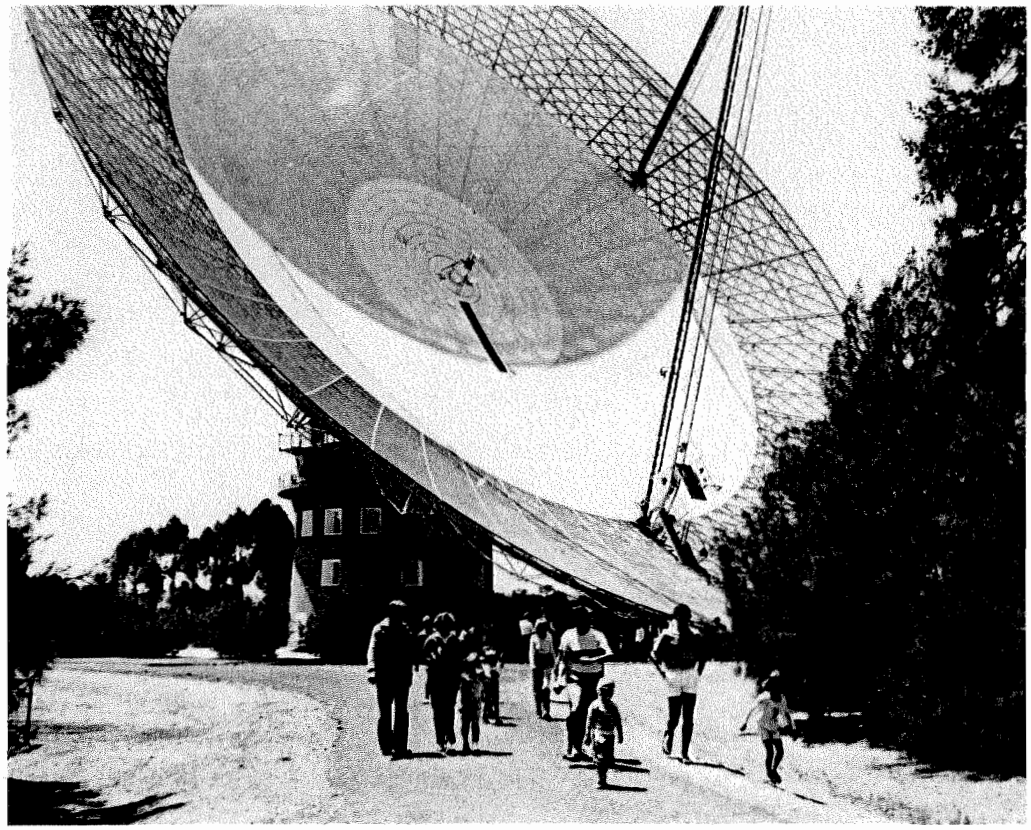
'During this time, he was responsible for ensuring the overall stability of the mine area', Dr Wild said.

A Bachelor of Science and Master of Science graduate of the University of Queensland, Dr Brady spent a total of eight years with Mount Isa Mines, spending his first nine months as a miner.

In 1975, he joined the Royal School of Mines at the Imperial College, London, lecturing in engineering rock mechanics. He subsequently graduated MSc and PhD from the Imperial College.

In 1979, Dr Brady took up his present position at the University of Minnesota, where he has been lecturing in applied rock mechanics and carrying out research into numerical methods of stress analysis.

He is expected to take up his new position in the new year.



Some of the 1000 visitors who called at the Parkes radio telescope on October 31, during the telescope's 21st birthday celebrations. The visitors' centre mounted a special display of the construction and media coverage of the telescope, including photographs and newspaper clippings with amusing explanations of the scientific expectations of the telescope. A silent film showing construction stages was also shown. During the day, many of the visitors heard staff of the Division of Radiophysics explain the basic functions of the telescope. More celebrations are planned in March next year, when the Parkes district celebrates its centenary.

Letters to the Editor

Dear Editor,

I refer to the column 'From the Chairman' in the September issue of *CoResearch*.

Perhaps few will doubt the sincerity of the CSIRO Executive in its attempt to defer its recent salary increase, but many may doubt its determination to achieve the result sought. That result is presumably, in essence, the transferring of the increase to the more needy or deserving, of which the former, if not the latter, are at present abundant in this country. But there are many ways of achieving such a result other than by deferring a salary increase.

For instance, the Executive could, as private citizens, establish a trust for funding (either partially or fully) research experience for promising young scientists (or whatever else they see as appropriate), and transfer the after-tax-component of their salary increase to the trust. Such an example, from so influential a body as the Executive, would no doubt inspire other CSIRO personnel to similar self denial, and would also, in the form of the trust, provide a ready mechanism for achieving it.

An initiative such as this would be a sure indication of the Executive's determination to achieve the result they have sought.

— Dr D. Culpin
Division of Mathematics
and Statistics,
Sydney

Dear Editor,

Dr Wild has assured us that the Executive's decision to defer its salary increase was not a 'scurrilous two card trick' (Chairman's column, *CoResearch*, September 1982).

I assume now that this public-spirited gesture has been declared *ultra vires* that the Executive will be exploring other means of helping to overcome Australia's economic difficulties.

May I suggest that it address itself to alleviation of the increasingly serious unemployment problem, and in particular, the extent to which adoption of a CSIRO policy providing the possibility of retirement at age 55 might contribute?

The internal CSIRO debate about the CE(RR) Act has been dominated by the views of the Officers' Association and the ACOA, which, despite differing philosophies, have exerted their combined influence to discourage its adoption. The voices of those ground between these two institutional millstones should perhaps now be heard, given recent disastrous employment figures and forecasts.

I concede that the opportunity for staff to retire or be retired at age 55 would not necessarily lead to the creation of an equivalent number of job opportunities in CSIRO. On the balance of probabilities, however, this would be a more likely outcome than the pollution of the research stream, and indiscriminate 'head-lopping', feared by opponents of adoption of the CE(RR) Act.

I know that alternatives to the adoption of the CE(RR) Act are being examined, but development of proposals of this kind is a slow process, and, in my view, unlikely to lead to the successful negotiation of a special deal for CSIRO. One is tempted, to quote an eminent scientist/administrator (recently retired), to regard this as another 'typical CSIRO smother'. Meanwhile, the dole queue gets longer.

— Gordon McLennan,
CSIRO Advisory Council,
Canberra

Dear Editor,

One was not a little touched by the Chairman's kindly asides in the latest issue of *CoResearch*.

He was, of course, quite right to assume a certain oxidation in my numeracy, although I did detect his tendency to underrate the Maxwell equations of electromagnetism which, as we all know, when expressed in covariant form are completely—but completely—consistent with the ideas and equations of general relativity, thus making a geometric interpretation of the electromagnetic field logically unnecessary. Of course, logic isn't everything, is it? As it happens, I have myself done a little work on the elucidation of the properties of the coupled Einstein-Maxwell equations in vacuum, with some quite amusing speculations as a result.

As for the old g_{jk} chestnut: well, as Ludovici Carroll said:

'Hic autem quam celerrime possis currendum est modo ut in eodem loco maneas. Si aliquo alio ire velis, multo celerius currere oportet!'

No, sadly, there is no analogue of the principle of equivalence in electromagnetism; the lack of such a principle has prevented the development of a true geometric theory of electromagnetism, despite the efforts of the likes of Einstein, H. Weyl and the rest of us. Of course, it's good to have a hobby: I myself recombine DNA into the most charming wall hangings. As Einstein himself said in *On Science*, 'Imagination is more important than knowledge.'

And it's good to know that Our Beloved Leader sees the need for a little mind-exercising to keep him a whole and happy social animal. We must all be delighted to know we have a closet social scientist up there!

— Doris,
Australia

CSIRO technology on show...

The Division of Textile Physics Jet Printer aroused considerable interest both from the commercially concerned and the scientifically curious at the recent TOC 82 convention in Melbourne. Several enquiries were made about the possibility of adapting the technology developed by the Division for other applications. Elucidating a point, above, is Les Wills, while Miranda Devine operates the printer from 'mission control'.
— Photograph by Neville Prosser, Division of Chemical Technology

...at TOC '82, held in Melbourne

Four CSIRO Divisions combined to exhibit CSIRO-developed processes and technologies at the Third Technology Exhibition held in Melbourne recently.

The Exhibition, opened by the shadow Minister for Science and Technology, Mr Barry Jones, MP, was held in conjunction with TOC 82, the Technology Opportunities Convention, comprising four days of seminars and panel discussion on factors affecting modern manufacturing and innovation.

Transfer of Technology, The Importance of Offsets to Australia, and Opportunities Through Robotics, were major themes in the seminar program which featured speakers from some of the largest US Corporations already involved in the Transfer/Offset program.

Co-ordinated by Mr Gus Perger of the Division of Manufacturing Technology, exhibits were on display from the Divisions of Applied Physics, Textile Physics, Applied Organic Chemistry, and Manufacturing Technology.

Photographic displays, videofilm, chemical structure models and working exhibits demonstrated the commitment of CSIRO to the manufacturing sector.

Instruments available from the Division of Applied Physics, including an optical non-contact displacement transducer and an R.F. Machine Safety Tester were illustrated by a photographic display and information leaflets.

On exhibition from the Division of Manufacturing Technology were 'SIROCHEK', an instrument for measuring the radial relief of taps, techniques for polishing hard materials, and video films displaying integrated engineering manufacture and robotics.

The Division of Applied Organic Chemistry used a chemical structure model to demonstrate 'SIRORES', selective metal absorbing resins for recovering copper, mercury and iron from dilute solutions.

FABRIC PRINTING TECHNOLOGY

A jet printer for the printing of wool fabrics was demonstrated by the Division of Textile Physics.

An alternative to traditional screen printing methods, jet printing is aimed at reducing the high set-up cost of textile printing by using electronic storage of patterns and electrostatic control of dye droplets in the printing process. The Division has developed an electrostatic printer and a scanning system for acquiring pattern data from original artwork. Whilst the experimental model is rigged only for single colour work, multiplication to permit four-colour printing requires very little development, and could readily be done by the manufacturer when the project is taken up in industry.

The CSIRO exhibits caused a great deal of interest and there were many enquiries both from technical and lay visitors. Division representatives were satisfied that the considerable effort involved in mounting and manning the exhibits was well worthwhile.

From the Chairman -

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

In these days of high inflation rates it becomes very difficult to keep track of how our salaries have fared in real terms over the years, and so I thought it would be useful to ask the Personnel Branch to prepare some material showing the salary trends of representative levels of research, experimental, technical, laboratory and administration grades. (I wish to thank Mr David Rofe for assembling this material.)

The graph has two vertical scales; one is calibrated in 1967 dollars, the other in 1982 dollars. The vertical scale is maintained constant in real terms assuming inflation at a rate of the Consumer Price Index.

The Table shows, in real terms, the percentage increases in total pay (first column) between 1967 and 1982. Each category is seen to have received a real-term increase varying from 14.4 per cent to 61.2 per cent. Of course these increases do not take account of the fact that inflation causes real incomes to be pushed up into a higher taxation bracket. In an ideal world the taxation structure would be modified to allow for inflation, but I have the impression that governments and their treasuries throughout the world are unable to resist the temptation of not making this adjustment in full.

To take account of this effect, the Table has a second column showing the real-term salary increases between 1967 and 1982 after taxation has been deducted. For taxation purposes, I have assumed that the person is married with two children and that the family has no other source of income or deductible items. The figures indicate quite clearly that there has been a general compression in salary scales with lower income earners having benefited in real terms while the upper income earners have benefited less.

There are doubtless various factors which make a precise quantitative comparison between 1967 and 1982 rates of pay debatable. Among these are basic changes in the taxation structure and the degree to which the C.P.I. takes account of steeply inflating commodities such as petrol, power and housing. Nevertheless, I reckon we haven't done too badly! I am especially pleased to see the recent long overdue progress made in the salaries of the laboratory craftsmen and technical grades.

● ●

With my Executive colleagues, I recently spent a most enlightening week in the Northern Territory. For the first time in the history of the Organization, we held an Executive meeting in Alice Springs where we also saw the work of the Rangelands Research Unit. Then on to Katherine and particularly the Manbulloo Field Station where we were shown the work being done by the Division of Tropical Crops and Pastures towards making the vast areas of semi-arid land in the north more manageable for supporting cattle. And finally to Darwin and particularly the Kapalga Field Station of the Division of Wildlife Research in the buffalo country of the far north, where heavy rains fall in summer followed by a long dry, hot winter. We spent a day in the 'wetland' system seeing how the Wildlife Research group there were gaining a detailed understanding of how each species of flora and fauna in the area interacted with one another. This study leads to insights on how to manage the system as a whole so as to make the best possible use of the land.

While at Darwin, we also saw the work of groups from Horticultural Research and Tropical Crops and Pastures (including those from Kununurra); I had a very useful discussion with the Hon. Marshall Perron (the Deputy Chief Minister in Mr Everingham's absence interstate); and finally Mike Ridpath organized a lunch-time forum on 'Research in Northern Australia—the Issues and the Means'. I believe this forum resulted in better understanding of problems all round and it led to some positive results.

Throughout the Territory it was wonderful to see how generally high the morale was in spite of the privations associated with isolation and a trying climate. It was also good to sense the rapid development of the Territory following self-government introduced several years ago. There was generally a get-up-and-go attitude and an intense regional loyalty that tends to be lacking in long established communities.

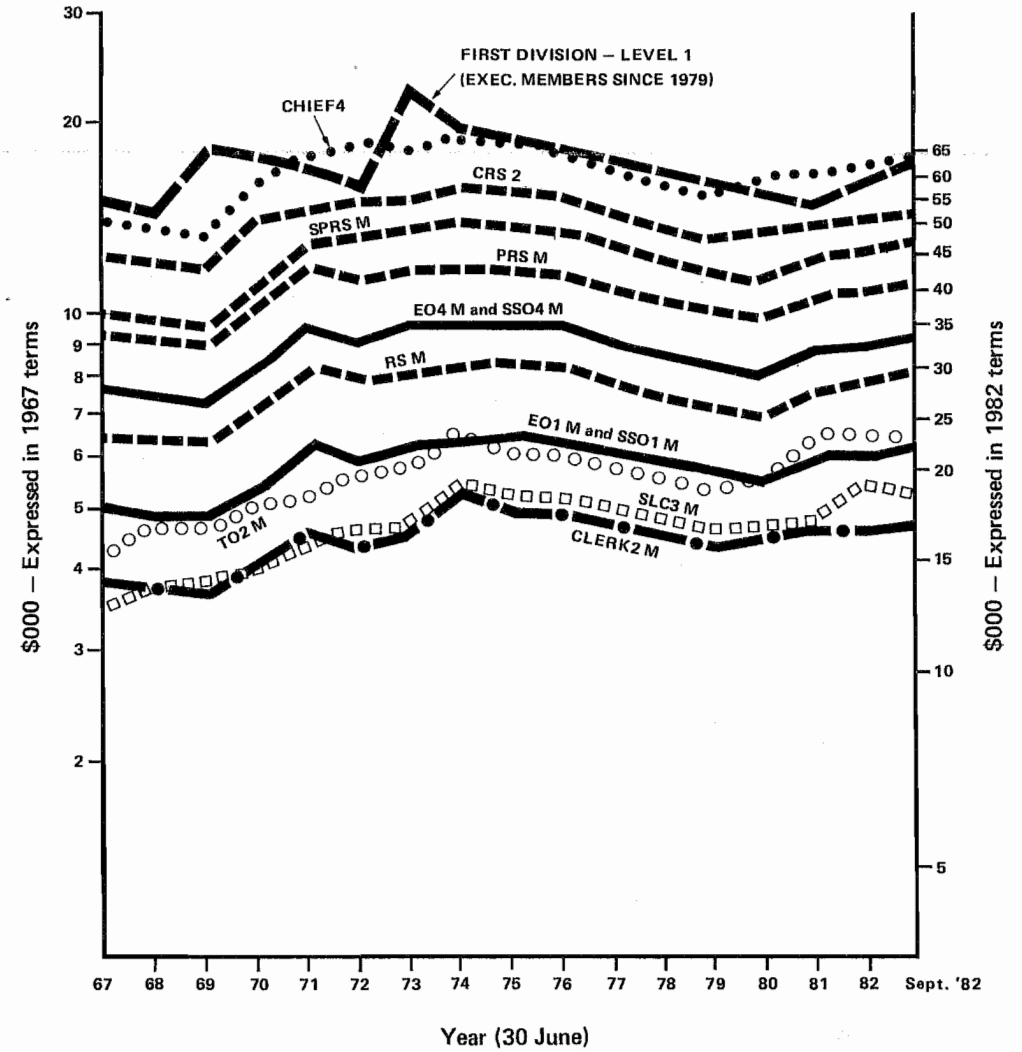
● ●

The Executive does not often indulge in the luxury of sightseeing. I must admit, however, that we did enjoy two unforgettable experiences: an after-work cruise-and-walk through the majestic Katherine Gorge; and a flight in a small plane (on our way to Kapalga) across the wastelands of the north coast, through (looking up at!) the escarpment near the E. Alligator River on the western border of Arnhem Land; over and around the Ranger uranium mine at Jabiru, then on to the bush airstrip at Kapalga.

Percentage increase in incomes (adjusted by CPI) between 1967 and 1982

Designation	Before tax increase %	After tax increase %
First Division – Level 1 (F/T Exec. Member since 1979)	14.4	7.7
Chief4	24.4	13.8
CRS2	17.7	9.3
SPRS (max.)	28.4	14.7
PRS (max.)	20.3	10.3
RS (max.)	24.3	13.8
EO4/SSO4 (max.)	21.3	12.4
EO1 (max.)	25.3	20.6
STO2 (max.)	38.2	28.6
TO2 (max.)	46.3	36.2
SLC3 (max.)	51.2	42.8
LC2 (max.)	61.2	50.6
Clerk2/3 (max.)	24.5	21.4

Paul Wild



CAT

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

As mentioned in the previous CAT column, a meeting of Sydney-based communicators decided to establish a register of communication facilities available in Sydney.

The register will list the equipment, etc., in Divisions, and while there is no implication that the facilities are available for use by other Divisions (although in many cases they are), such a register could be of assistance if, e.g., similar equipment is being considered for purchase by another Division.

At the CAT meeting held at Highett on October 25/26, it was decided to extend the project to cover all Divisions in capital cities. If all goes well it could eventually cover all of CSIRO. With this in mind, six co-ordinators have been approached to provide the necessary regional administrative liaison. They are: Bill Silvey, Brisbane; Paul Hewitt, Sydney; Wendy Parsons, Canberra; Helen Dornom, Melbourne; Anne Frodsham, Adelaide; and Bob Rummery, Perth.

When the data has been collected, it will be produced and distributed in hard-copy form to be used as a CILES data-base. Annual up-dates are envisaged. Experts in various technical fields will also be identified. CAT hopes that this will become the basis of a CSIRO User Group. User groups are very useful sources of information, without the pressure of a company representative. The following groups may be able to help you solve a problem in communication.

International Information/Word Processing Association. Sydney Chapter, PO Box R298, Royal Exchange, Sydney, NSW 2000. Information, Barry O'Donnell on Sydney 2 0243. Users' body, 120+ members and closely tied to US IWP, Melbourne Chapter, PO Box 161, Prahran, Vic. 3181.

Library Automated Systems Information Exchange (LASIE). PO Box 602, Lane Cove, NSW 2066. Secretary: Arnel Pedersen on Sydney 427 2181. Users' body, about 250 members, including many overseas.

Micrographics Association Australia. GPO Box 1447, Adelaide, SA 5001. Federal President: Duncan MacKenzie, on Adelaide 262 2311. Users' body, 500 members. NSW: James Everard, 516 4099.

Australian Computer Society. PO Box N26, Grosvenor Street, Sydney, NSW 2000. Executive Secretary: R.W. Rutledge, on Sydney 267 5725. Users' body, about 8000 members.

Association of Field Service Managers (AFSM). User service group, 3 States, 160+ members, PO Box 1619, North Sydney, NSW 2060, or ring Len Jacob on Sydney 887 1000.

Australian Computing Services Association (ACSA). Representing the bureaux, software consulting and recruitment companies. Membership currently includes over 50 companies, throughout Australia. For information contact President, Len Rust, on Sydney 922 5300, or Secretary, Carl Paul, on Sydney 264 2000.

Records Management Association of Australia (RMAA). PO Box R53, Royal Exchange, Sydney, NSW 2000. Federal President: Cec Partington. Users' body, 770 members.

National Association for Training the Disabled in Office Work (NADOW). 504 Pacific Highway, St Leonards, NSW 2065. Phone Sydney 43 3588.

This list is by no means comprehensive, and CAT would appreciate being advised of other user groups. —Paul Hewitt

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

Andrew Mitchell, information officer at the Division of Fisheries Research at Cronulla, has come up with the startling information that each day, 6 816 000 metal, 426 000 glass and 639 000 plastic containers are disposed of (overboard) from the world's merchant fleet. How does he know? The information was published in a recent copy of 'Pollution Bulletin'.

□ □

Dr R.N. Caffin of the Division of Textile Physics has recently been elected to the eight-member Board of DECUS for the Australia/New Zealand/South-East Pacific region for a two-year term.

His responsibilities within the Board will include editing the Symposium proceedings and the membership journal. DECUS, or DEC Users Society, is an international computer society with over 40 000 members world-wide and over 3 000 in the local region.

Membership is open to those with an involvement with DEC computers, and encompasses programmers, research workers, DP staff, academics, commercial users and software houses. He is also the current Chairman of the RT-11 Operating System Special Interest Group, a member of the Symposium Planning Committee, and founded the Sydney North User Group with DECUS.

□ □

Dr Bernard Stone of the Division of Tropical Animal Science, has been awarded the degree of Doctor of Science by the University of Queensland.

His thesis entitled 'Resistance to Chemicals and Inheritance in Ticks' was based mainly on his published work on the resistance of cattle ticks to acaricides and the genetics of this resistance. Also included were results from his studies on other aspects of tick toxicology and physiology.

Dr Stone was previously with the Division of Entomology and joined the Division of Tropical Animal Science in its formation in March this year. He is based at the Long Pocket Laboratories in Brisbane and is currently studying the toxin of the Australian paralysis tick, with a view to developing a vaccine to protect livestock and domestic pets against tick paralysis.

□ □

Three senior journalists in CSIRO's Science Communication Unit have left the Organization during the past few weeks.

The Senior Media Liaison Officer, Mr Bill Kelly, resigned to become Director of Public Relations at the Department of Employment and Industrial Relations, Mr Tom Parkes has been appointed Director of Public Relations at the Department of Industry and Commerce, and Mrs Dorothy Braxton has retired on the grounds of ill health.

Bill Kelly joined CSIRO in 1974 and established the Media Liaison Group.

Tom Parkes joined CSIRO in 1975, and was Production Editor of the Media Group, responsible for the production of many of the group's publicity releases and regular features.

Mrs Dorothy Braxton joined the Central Communication Unit, the forerunner of the Science Communication Unit, in 1973. Dorothy was Editor of *CoResearch* for six years, and says she greatly enjoyed the opportunity to meet and make friends among Divisional and RAO staff across the country.

More recently, she was responsible for day-to-day management of the CSIRO Visitors' Centre at Parkes, and took on many special projects for Headquarters, Divisions and RAOs.

Dorothy plans to remain in Canberra, where her association with science communication will be retained through voluntary work at the Questacon, the national science centre being developed in the national capital.

A workshop to familiarize scientists with the media will be held early next month in Melbourne.

The course has been organized by CSIRO's Communication Advisory Team (CAT) and is being co-ordinated by Mr David Zerman of the Division of Building Research.

Up to 25 scientists will participate in the workshop which will suggest methods by which CSIRO scientists can make the most effective use of the media to promote their work and expertise.

It will attempt to help participants to become more aware of the roles, influences and powers of the print media in Australia and more familiar with the problems associated with accurate and informed reporting of scientific and technical matters. It will discuss CSIRO's present involvement with the media and the services offered by CSIRO's Media Liaison Group. There will be information on the various types and styles of radio and television interview.

Session leaders at the workshop will include journalists from the print and electronic media, CSIRO information officers and members of the CSIRO Science Communication Unit.

Melbourne-based scientists who are interested in attending the course should contact the Co-ordinator, Mr David Zerman, at the Division of Building Research, Highett, Victoria, by November 26. The course will cost $25 per person, to cover the cost of hospitality and printed material, and will be run over two days, December 7 and 8.

□ □

Dr C.H.B. Priestly, formerly Chairman of the Environmental Physics Research Laboratories, has been made an honorary fellow of the Australian Institute of Physics.

Fisheries research on display

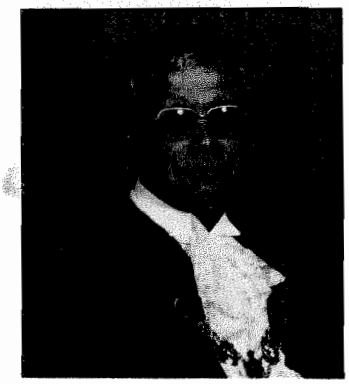
The Division of Fisheries Research was among 65 exhibitors at the Australian Fisheries Exposition, held recently in Sydney.

The Expo attracted exhibitors and visitors from interstate and overseas and was a major event in the Fishing Industry's calendar.

Fish Expo is only held every three years—the first was in Melbourne in 1976, Perth in 1979, and Sydney this year.

The Division's striking blue and silver aluminium display stand (designed by Mr Ian Henderson of the Science Communication Unit) attracted considerable comment. Mr Henderson also designed the display panels which depicted various aspects of the Division's research supporting the development of Australian Fisheries. These were zooplankton and phytoplankton studies; the northern prawn fishery; southern bluefin tuna; barramundi; sex change in fishes; northern shark; North-west Shelf fishery; and eddies.

A video cassette of bottom topography of the North-west Shelf fishing grounds was also shown. The Division of Food Research and Oceanography also had research projects displayed on the stand.



Explosion pulping might be Heikki Mamers' specialty during business hours, but in his 'spare' time he is His Worship the Mayor of Frankston.

Heikki, pictured above, who has represented the North Ward of the City of Frankston for some years, certainly creates an elegant impression in his robes of office in contrast to his more usual CSIRO sports jacket and slacks image.

Heikki's explosion pulping technique has gone international following the shipping of a small demonstration plant to Italy to test its ability to treat grape residues. The plant was constructed in the workshops at the Division of Chemical Technology.

□ □

Dr Colin Williams whose retirement from the Division of Plant Industry was reported in the October issue of *CoResearch*, has been awarded the Prescott Medal for his outstanding contribution to Australian agriculture. The medal is awarded annually by the Australian Soil Science Society. Colin received the medal in a ceremony at the Brisbane laboratories from the Society's President, Dr J.S. Russell.

□ □

Clyde Garrow at CILES beleives that on the subject of wage restraint, the Chairman and others may be heartened to learn that a 13-year-old Melbourne boy recently wrote to CILES offering to 'meet the cost' of employing juniors to work in CSIRO, including himself. Clyde wrote thanking him for his gesture and included the pamphlet 'Careers in CSIRO'.

□ □

Colin Smith, CSIRO's archivist, has drawn *CoResearch* readers' attention to a review which is currently being carried out of the Archives. He writes:

'Readers of that entertaining series, the *CSIRO Information Circulars*, may have noticed as they skimmed over 82/47 that there is a review on, of the CSIRO Archives.

'Some people think the CSIRO Archives are a major national scientific and cultural resource—even though the archiving is left to one person.

'Some will think that this represents an excessive diversion of resources from research. Others will think otherwise. Others will not think about it at all.'

The Review Committee would like to know what you think. Write to: The Secretary, Committee of Review: CSIRO Archives, PO Box 225, Dickson, ACT 2602. (For terms of reference and other details, see 82/47 and/or ring Colin Smith on (062) 48 4677. Please ignore the deadline on the circular.)

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris.

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CoResearch

CSIRO's staff newspaper *Dec./Jan. 1982/83* **258**

Annual Report tabled: *Scientific research needs a 'special environment'*

In his introduction to CSIRO's Annual Report, the Chairman, Dr J. Paul Wild, said scientific research 'must be excellent to be worthwhile and needs a very special environment'.

Dr Wild said the CSIRO looked to Parliament to 'maintain the same degree of independence and accountable freedom that we have thrived on since the days of Sir David Rivett, who passionately fought for these conditions'.

Dr Wild said that at June 1982 CSIRO had been operating for three-and-a-half years under the amended Science and Industry Research Act which followed the Independent Inquiry into the Organization chaired by Professor Arthur Birch.

'Considerable changes were prescribed by the Government', he said.

They included:

- extended and more independent advisory and planning machinery;
- a greater sense of accountability;
- increased delegation down the line; and
- a new form of Executive and management structure.

'I believe all these changes have been shown by experience to have been wisely conceived and we are grateful to those responsible', he said.

A 'special thread' ran through the Birch Inquiry report.

'That is the principle that the CSIRO Executive should be allocated annually an agreed amount of directly appropriated funds, and then be left to get on with the business of managing those funds to yield the maximum national benefits with the minimum of external interference.'

Continued on page 8

Institute fellowship for Dr Ray Jones

Dr Raymond Jones, a senior scientist with the Division of Tropical Crops and Pastures at Townsville, Queensland, is one of five new Fellows named by the Australian Institute of Agricultural Science.

Dr Jones, who is Officer-in-Charge of the Davies Laboratory at Townsville, was awarded the Fellowship for his leading role in the sub-tropical and tropical pasture research in Northern Australia, especially in his contribution to the development of principles for managing pastures and to grazing theory.

During his 22 years in Queensland, Dr Jones has been in the forefront of sub-tropical and tropical pasture development which has led to the development of highly productive, stable pasture systems.

Other Fellows named by the Institute are: Dr William T. Parsons, Member of the Vermin and Noxious Weeds Destruction Board, Melbourne; Dr Clifford D. Blake, Principal, Riverina College of Advanced Education; Dr Owen Carter, Assistant Principal, Hawkesbury Agricultural College and Mr Richard Condon, Western Lands Commissioner for the Western Division of New South Wales.

Map of Research Activities

CSIRO's Annual Report, tabled in Federal Parliament in the first week of December, features a colourful map of the Organization's research activities. Unfolded copies, suitable for display, are available from Headquarters Library, P.O. Box 225, Dickson, ACT 2602.

Oil shale research expanded

The Minister for Science and Technology, Mr David Thomson, has announced an expansion of collaborative research between the Rundle Joint Venturers and CSIRO on the Rundle oil shale deposit.

The Joint Venturers are Esso Exploration and Production Australia Inc. and Southern Pacific Petroleum NL/Central Pacific Minerals NL.

CSIRO began its studies of oil shales in Queensland and Tasmania in the mid-1970s when the possibility of their exploitation as sources of liquid fuels was raised.

'Collaboration with Esso and SPP/CPM is an important aspect of CSIRO's research program', Mr Thomson said.

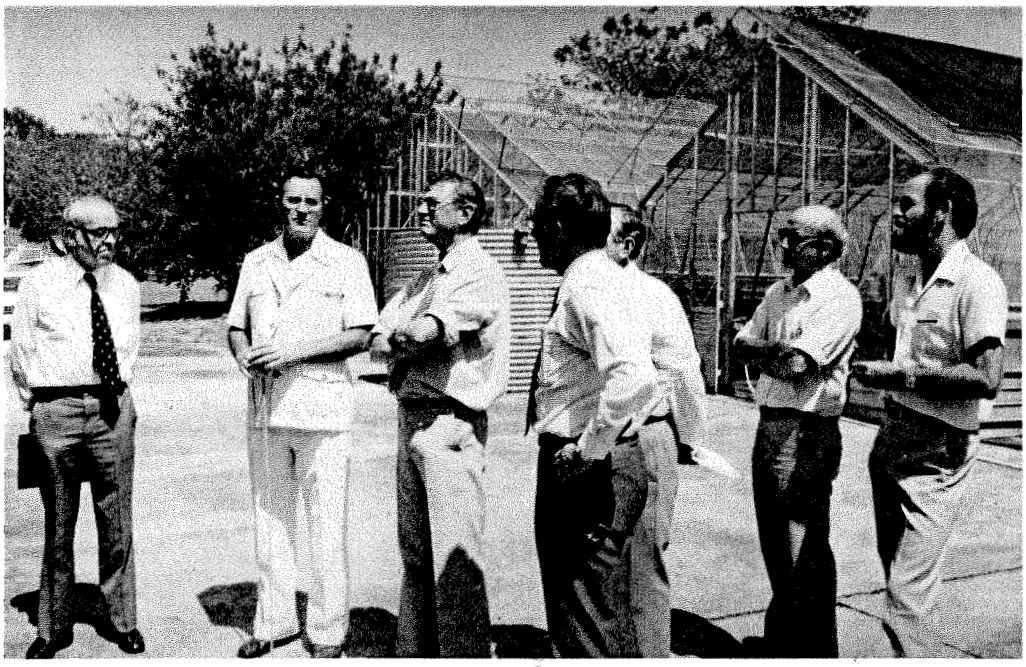
'The new projects are aimed at improving knowledge of how the Rundle shale will react during processing.

'Fundamental data such as thermal properties and chemical changes during treatment are to be measured in experiments with various shale samples.

'As part of the program, the Joint Venture is providing $360 000 which will enable the purchase of several items of equipment needed for making the detailed measurements of shale properties', he added.

The research will be carried out by the Division of Fossil Fuels and the Physical Technology Unit in Sydney, and by the Division of Mineral Chemistry in Melbourne.

Samford laboratory opened



The Chairman of CSIRO, Dr J. Paul Wild, inspects the Controlled Pollination Unit at the Samford laboratories after he officially opened the complex in November. The Unit, to be administered by the Division of Tropical Crops and Pastures, is unique in the sub-tropics and tropics. Pictured at the opening are, from left, the Director of the Institute of Biological Resources, Mr Michael Tracey, Mr Ray Strickland of the Division of Tropical Crops and Pastures, Dr Wild, the Chief of the Division of Tropical Crops and Pastures, Dr Ted Henzell, Mr Ron Williams and Dr Bryan Hacker, both from the Division. *See story page six.*

Letters to the Editor

Dear Editor,

Mr McLennan's letter to the November 1982 issue of *CoResearch* contains an inaccurate account of the CSIRO Officers Association policy on early retirement in CSIRO.

The CERR Act in the Australian Public Service and in various statutory authorities has indeed set new standards in the federal public sector, with respect to voluntary age retirement. It has however maintained and even strengthened the standard of age 65, for mandatory age retirement. Under CERR, the old Public Service Act power of management to summarily retire officers on the grounds of their age alone, from age 60-65, was removed. Under CERR, mandatory age retirement is only possible from age 65.

However CERR did introduce voluntary age retirement from age 55, where this had previously only been possible from age 60 under the old Public Service Act in the Australian Public Service. It is important that people be aware of the distinction between mandatory age retirement and voluntary age retirement.

In CSIRO we are still mirroring the old pre-CERR days in the Australian Public Service, when voluntary age retirement was only possible from age 60, and when mandatory age retirement by management was possible from age 60.

The Officers Association is now seeking the same age retirement standards for CSIRO as now operate in the Australian Public Service under the CERR Act, namely, voluntary age retirement from 55, and the strengthening of age 65 as the community standard for mandatory age retirement, by removing mandatory retirement on the grounds of age alone, from age 60.

There are many other issues which the CERR Act raises, including redeployment into and out of CSIRO, and redeployment and retirement of excess (redundant), invalid, or involuntarily inefficient officers. Extra benefits in these areas, as well as appeal tribunals, are also issues. The whole issue is complex, and has enormous ramifications for the future. Negotiations are currently going on between CSIRO and its staff associations.

In conclusion, the Officers Association is actively seeking age 55 voluntary retirement in CSIRO. We are also seeking the other provisions of the CERR Act which are beneficial for both staff and management. It is not a necessity that CSIRO go under the CERR Act to get similar provisions to CERR in CSIRO. Other large statutory authorities such as the Commonwealth Banking Corporation and the Australian Broadcasting Corporation have obtained, or are obtaining, CERR type provisions in their terms of employment, without going under the CERR Act itself.

—Jim Pletch
Research-Industrial Officer
CSIRO Officers Association
Melbourne

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Dear Editor,

A recent editorial in *New Scientist* (Vol. 96, No. 1327, p. 75) refers to a suggestion by an Italian researcher that there should be a Nobel prize for administrators of R & D.

The editorial, whilst endorsing the proposal, goes on to suggest that often administrators are promoted researchers who have done well in research but they fall flat on their faces because administration requires different skills.

This suggestion challenges the fundamental philosophy in CSIRO that good researchers go on to become better administrators and yet in these days of musings over pay freezes, the productivity of Mozart and the space available for rock-chopping, it really warrants serious examination.

The point is, can scientists who were brought up with the attitudes described by Sir Peter Medawar (and others both before and since) in his book 'Advice to a Young Scientist', 1979, p.11, '... of delighted wonderment ... that they should be paid ... for work that is so absorbing and deeply pleasurable ...' *reasonably* be expected to administer the tough new world of sponsored research with the associated demand for results (favourable, of course), quarterly reports (naturally on time) and so on, in the absence of appropriate retraining schemes?

The *New Scientist* further suggests that 'we should begin by awarding a Wooden Spoon for administration of research'. *CoResearch* would do well to take up this suggestion and start a competition for a design of this Wooden Spoon, if only to act as a diversion for those correspondents who imagine a new logo will be the panacea for CSIRO's problems.

—Michael H. Jones
Division of Mineral Chemistry
Melbourne

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Dear Editor,

As our Chairman says (*CoResearch*, November 1982), high inflation does indeed make it hard to keep track of how our salaries have moved over the years.

This is why, like Dr Wild, I decided some three years ago that expressing salaries in real terms was the only way to present a true picture of salary trends. I was then involved in preparing some widely publicized material which showed how disastrously CSIRO professional staff had fared over any chosen long period since 1964. Why does the Chairman, claiming 'we haven't done too badly', now reach such a different conclusion?

Well, it is not because we use different data. I am reasonably happy with the statistics given to the Chairman by Personnel Branch, although the 1967 base date chosen for the comparisons is not quite fair—a glance at the Chairman's graphs will show that nearly all of the real increases for professional staff occurred up to 1971 and the picture has been very dismal since then. And the logarithmic form of graphical presentation tends to obscure the detailed trends and any differences between the curves.

But these are quibbles in the face of the Chairman's interpretation of his own statistics to show that 'we haven't done too badly'. Inexplicably, he has neglected to consider average weekly earnings, the most useful yardstick for measuring the general living standard of the salary earner, which increased by 52.5% in real terms between June 1967 and September 1982. Anyone who managed less than that is doing badly, in my view, and that goes for everyone in the Chairman's Table, excepting LC2. According to my calculations, the Chairman himself has done worst of all, with an 11% increase over the past 15 years. Most classifications would need rises of the order of 25% to bring them to the national average real increase.

I have been arguing for three years that the professional staff, as well as the Executive, of CSIRO should be sharing equitably in the increased national wealth which they have helped to generate. With his unfortunate conclusion, the Chairman seems to be taking a contrary view. I hope he changes his mind.

—Tom Biegler
Division of Mineral Chemistry
Port Melbourne

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Dear Editor,

Are we really doing so well in CSIRO?

In the November issue, the Chairman cited statistics for real increases in our salaries between 1967 and 1982. These (before tax) increases ranged from 61.2% for laboratory craftsmen to a mere 14.4% for Executive Members, with most of us in the 20-30% range.

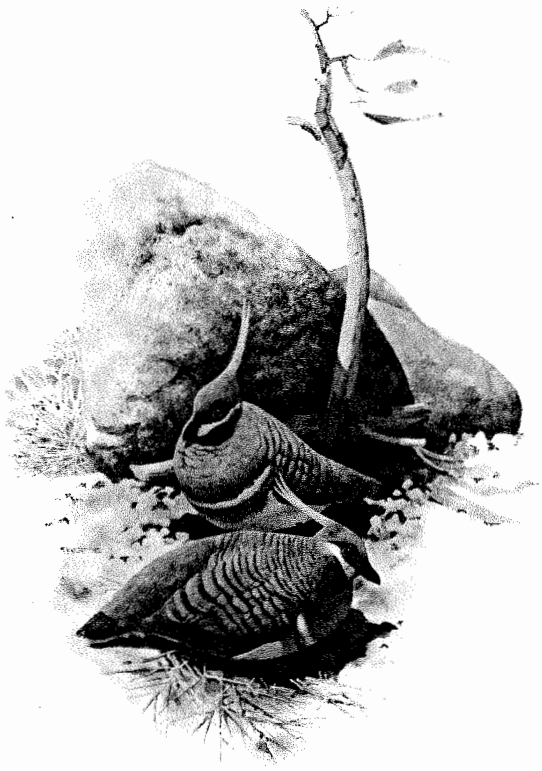
I wondered how these increases compared with national economic growth. Official statistics show that national income at current prices grew from $20.5 billion to $135 billion between 1966-67 and 1981-82. Adjusting for inflation, by the CPI index, and for population growth, the increase in national income per capita at constant prices was from $1778 to $2635, or 48%.

So most of us haven't kept up with the Jones—or the grocers, dentists, car salesmen ... Further, as PAYE taxpayers we are paying more than our share to keep the ship of state above the bottom of the harbour.

On top of the Government's forecast of 10¾% inflation in 1982-83 it now proposes to freeze our salaries for a year! Already that inflation statistic—like the Budget deficit—is looking rubbery. So our incomes skid to a halt ... while the prices we pay to the Joneses, and their incomes, bounce further ahead.

Lies, damned lies ... !

Bill Curnow
Headquarters



This year's CSIRO Christmas card, painted by CSIRO wildlife artist, Mr Frank Knight, is an illustration from the recently published book, 'Australian Pigeons and Doves' which was written by the former Chief of the Division of Wildlife Research, Dr Harry Frith.

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Dear Editor,

In dealing with salaries in the November issue, the CSIRO Chairman presented a Table and a graph and the finding that over the years 'we haven't done too badly'.

Percentage increases from 1967 to 1982 in incomes adjusted for cost of living, vary from 8 to 51 after tax increase.

I think Dr Wild should have explained why he chose to compare salaries of September 1982—presumably at the new rates—with those of 1967. Without that explanation, many of us will be encouraged to think that some special pleading is involved. The period around 1967 was one when CSIRO salaries were badly depressed in relation to those of other highly competent people in government service and in universities. That period continued until increases were gained—rather unevenly as the graph shows—during 1970 and 1971.

Another period of disadvantage for CSIRO staff is indicated in Dr Wild's graph around 1980, since when there have been gradual increases. Understandably then, the comparison of 1982 with 1967 should indicate an increase in real income.

But if we want 'to keep track of how our salaries have fared in real terms over the years', it would be better to compare current rates with those around 1971, or 1964, or 1954. To take a point from one of my books on statistics (Reichmann 1964), we should not make too much of an increase in ice-cream sales from winter to summer. We really want to know how sales compare for the same season of different years, either winter or summer.

—G. Blackburn
Division of Soils, Adelaide

Ten graduates given Postdoctoral awards

Ten young Australian graduates have been granted Postdoctoral Awards by CSIRO. The graduates, all men, and their host Divisions are:

Walker, G.R. (Manufacturing Technology). Investigations into the effects of heat treatment and surface hardening on plastic strains.

Colditz, I.G. (Animal Health). Studies on the mechanism of leucocyte traffic into mammary gland epithelia and secretions.

Elliman, R.G. (Chemical Physics). Investigate the production and tribological properties of non-equilibrium metallic alloys with the aim of fabricating wear and corrosion resistant surface coatings.

Krieg, P.A. (Molecular and Cellular Biology Unit). To determine how and where in the cell a messenger RNA precursor is processed into a mature cytoplasmic message.

Raven, R.J. (Entomology). Cladistics and biogeography of dipluroid myglomorph spiders with a taxonomic review of included genera.

Haseloff, J.P. (Plant Industry). Mechanisms of RNA transcription, by normal plant cellular enzymes of viroids and a novel class of viruses.

Simpson, R.J. (Plant Industry). Investigate whether the genetic yield potential of European ryegrass and Australian wheats might be improved by selection against certain elements of 'wastefulness' in plant respiration.

McCallum, H.I. (Fisheries Research). Investigations into the management of multispecies fisheries.

Furbank, R.I. (Plant Industry). Study the regulation of starch and sucrose synthesis in C_4 plants.

Mackay, D.A. (Entomology). Research the role of pre- and post-alighting discrimination in host selection by ovipositing butterflies.

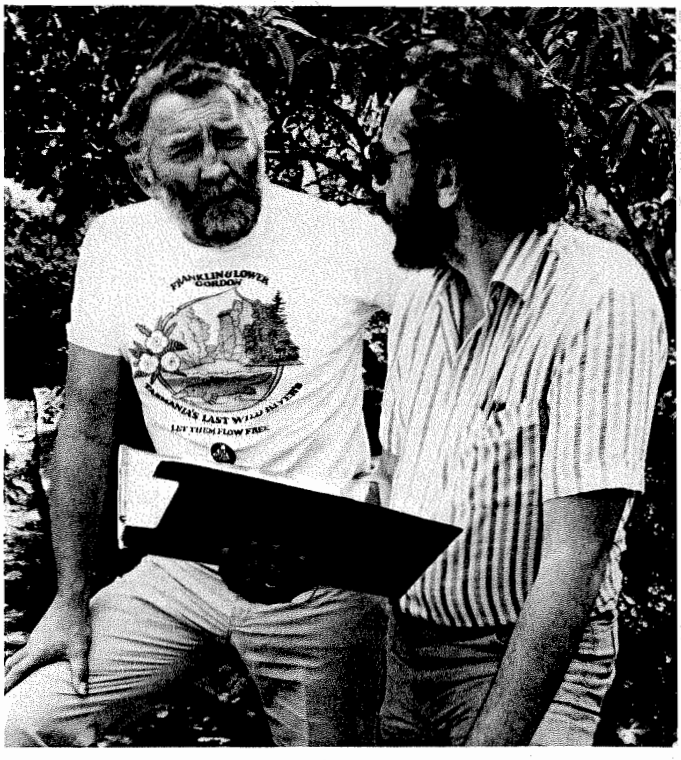
Australian Science in 'The Peoples' Daily'

An article on CSIRO entitled 'Flower of Science in Australia' was recently published in 'The Peoples Daily' in Peking.

The article gives a brief history of scientific research in Australia, and outlines areas of research covered by the Organization during its existence.

'The Australian scientists have done a lot of good deeds for the country. They are respected in the Australian society. The flower of science in Australia spreads its fragrance everywhere', the article concludes.

Botanic Man in CSIRO film



The BBC's 'Botanic Man', Professor David Bellamy (left) discusses the script with the Film and Video Centre's scriptwriter Russell Porter. Professor Bellamy was in Melbourne recently for the Tasmanian Wilderness Society, and the film crew took advantage of the visit to record his views on the buildup of atmospheric carbon dioxide. The Film and Video Centre is producing a major film on the subject, and Professor Bellamy's voluble and enthusiastic contribution guarantees it won't be dull.

From the Chairman-

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

It is quite clear from letters I have received from inside and outside CSIRO, as well as correspondence published in this journal, that the recent attempt by the Executive to demonstrate its belief for the need for wage restraint was widely misunderstood.

By its action the Executive was not attempting to do any of the following things:

- upset established relativities in the salary structure
- establish scholarships or research or industry endowments
- adjust the ratio of operating to salary funds within the Organization
- indulge in charitable activities.

On the contrary, the Executive took the action it did, by way of example, because it believed the nation is living beyond its means and that the first requirement to set its house in order is to reduce the standard of living across the board to help control inflation, increase employment and increase the viability of industry. In the event, the attempted action did not go unnoticed and may well have made a contribution towards achieving its original objective.

• •

Co-operation with Government, industry, the community and, above all, other research institutions, is a matter of fundamental concern to CSIRO. Quite apart from the fact that common sense dictates that we should co-operate in all ways possible, the law insists that we should. Since 1949 the Science and Industry Research Act instructs us as follows:

'The Organization shall, as far as possible, co-operate with other organizations and authorities in the co-ordination of scientific research, with a view to—

(a) the prevention of unnecessary overlapping; and

(b) the most effective use of available facilities and staffs.'

Our co-operation takes many forms. Our longest established links have been in the rural sector, notably through committees of Ministerial Councils for Agriculture, Fisheries, Forestry and so on and, much more recently, with industry itself through the National Farmers' Federation. We have similarly numerous links with the mineral and manufacturing industries.

In the last few years the Government has set up machinery to ensure co-ordination at Ministerial and working levels between the Department of National Development and Energy (DNDE) and CSIRO on both energy and water resources research. Recently we have reached agreements with the Bureau of Mineral Resources on co-ordination of minerals research and with the Bureau of Meteorology on atmospheric research. In the long run, such agreements lead to better understanding and definition of one another's roles and the Executive wholeheartedly welcomes them.

In spite of these developments of greater co-operation there are still occasions when affected staff voice concerns that we are somehow being taken over or unreasonably restrained. Much of this kind of concern goes back to the time of Rex Connor, as instanced by several motions passed at the 1981 AGM of the Officers Association expressing concern (over the Energy agreement) that 'CSIRO was once again faced with the prospect of a part of CSIRO becoming responsible to two Ministers'. In recent weeks some scientists, especially in the Division of Mineralogy, have expressed other worries over the agreement with BMR—fearing that the Bureau was going to decide what kind of research they were going to do. Of course there is a need to define the roles of different organizations working in the same general field. But I can assure the staff of CSIRO that the Executive holds sacred its responsibility to determine the research priorities and programs of the Organization and has no intention of relinquishing it.

As a post-script to this subject, I am very pleased to say that as a result of meetings between the Australian Vice-Chancellors' Committee and CSIRO our relationships with Australian universities have never been closer. We are now entering research agreements with six universities to undertake extensive co-operative research programs on a 50:50 basis. These are, of course, additional to many less formal arrangements entered into by particular Divisions and individual scientists.

• •

As a result of this column, I receive a steady trickle of correspondence, so that I can judge what interests people more or less. It was a surprise to me that the item that caused most response was not salaries or retirement policy or budgetary matters or even the importation of the virus of foot and mouth disease. It was, in fact, a discussion of the theorem of Pythagoras. The response was consistently positive except, alas, from one quarter. It seemed that every female member of staff with the name of Doris thought I was having a go at them, individually or collectively. In fact, I now admit, I had only one Doris in mind—and she responded in her inimitable style in the last issue. I hereby bestow upon her the Order of the Christoffel symbol, which (as Doris would know like the back of her hand) bears the classical insignia

$$\Gamma^{i}_{kl} = \frac{1}{2} g^{ij} \left(\frac{\partial g_{ik}}{\partial x^{l}} + \frac{\partial g_{il}}{\partial x^{k}} - \frac{\partial g_{kl}}{\partial x^{i}} \right)$$

• •

May I wish you all the season's greetings.

Paul Wild

Corrosion Medal to Dr Ed Potter

Dr Ed Potter, of the Division of Fossil Fuels, was awarded the Corrosion Medal of the Australasian Corrosion Association at the conference dinner in Hobart, last month.

Although Dr Potter has many other interests—electrostatic precipitation and the OA Presidency, to name but two—corrosion has been with him for many years (and has left hardly a trace!).

Dr Potter said 'When I came to add it up, my second day of employment was on a piece of corrosion research, and I'm still at it 42 years later!'

MAJOR CONTRIBUTION

His major contribution to this field was in the electric power industry in England. The method of corrosion mitigation that he devised for steam boilers is still successfully in use today.

On a lighter note, he has developed a corrosion 'stage show', in which he delights students—and serious scientific adults—with demonstrations of the art of corrosion. For instance, he runs a full-size wall clock on nothing else but small pieces of scrap metal moistened with seawater. And, with his 'instant' corrosion package, he can ruin a brass spring in just ten minutes.

Such corrosive magic is not only an educational experience for students and adults alike, but also serves to pinpoint Dr Potter's ability to communicate his research results in such a way as to infect others with his enthusiasm, so perhaps prompting a future generation of scientific 'artists'.

□ □

Mr Peter Murphy has been appointed to head the newly re-established Technical Information and Liaison Office in Perth, Western Australia. Mr Murphy, who holds degrees in science, economics and a Masters in Business Administration from the University of Western Australia, is well known in Western Australian industrial and commercial circles.

A telephone inquiry service will operate from the office which will exploit the latest information technology to obtain specific technical information from the CSIRO data bases and from overseas centres. His appointment forms part of the CSIRO information network which has centres in Melbourne and Sydney.

Mr Murphy's office is at 28 Kings Park Road, West Perth, telephone 32222111.

Mr Martin Combe retired from CSIRO on December 7 after almost 45 years of service. There was a farewell to Martin, his wife, son and daughter-in-law attended by more than 100 people on Thursday, December 2, 1982, at Headquarters.

Martin recalled CSIRO's early years in Melbourne when David Rivett would sometimes help Martin, in his role as a junior messenger, to carry heavy parcels. Tribute was paid to Martin for his ability, helpfulness and hard work. Best wishes were extended to Martin and his wife for a happy retirement.

□ □

John Sheedy, who has probably worked in more CSIRO units than any other officer, retired on November 30.

Fittingly known to all who came into contact with him as 'Gentleman John', he joined the Organization in July 1952 as a clerk at McMaster Laboratory, Glebe. He later worked in the RAO Canberra, HQ (when it was in Melbourne), Forest Products, RAO Sydney, Coal Research and Physics until in 1966 he was appointed relieving administrative officer attached to Headquarters. In this capacity he served from Katherine to Cronulla, Perth to Prospect and many points in-between.

After a period back at Physics, he later travelled extensively again as one of the team introducing the Knuckey registry system to divisions and units. In 1975 he returned to the RAO Sydney as Registrar and when he retired was acting as Overseas Travel Officer.

A quiet farewell was given to John by his colleagues. His retirement plans include some more travel and then the quiet life beside Sydney Harbour.

Death of Bill Bailey

It was with great sadness that colleagues of Bill Bailey in the Division of Entomology learned of his death on September 25 after a short illness.

Although Bill retired from the Division in August 1978, he maintained close contact with his friends and colleagues in CSIRO.

Bill was regarded as one of the world's foremost storage researchers during a long and distinguished career in the Division. As research leader of the Stored Grain Research Laboratory, he made many contributions to scientific methods of grain storage over the three decades of his service with CSIRO.

Since his appointment as a research officer in 1950, he surveyed the problems associated with wheat and flour storage and pursued many fruitful lines of stored product pest research.

Born in England, he receive a B.Sc (Honors) from the Imperial College of Science and Technology, University of London. In 1941, he joined the Ministry of Food as an entomologist and two years later he was placed in charge of the Inspecton Division's work in Bristol. He then joined the CSIRO and began to focus his attention on hermetic storage of grain and its effect on insect pests. Much of his research set a foundation for later studies on airtight storage and use of controlled atmospheres.

INTERNATIONAL LINKS

Many organizations drew on his expertise in the field of stored product entomology. In 1962, he visited Ceylon to advise on grain storage, pest control and bulk handling of cereals and two years later, he acted as a consultant in South Vietnam. He was then assigned to the Pest Infestation Laboratory in England where he studied the effects of physical disturbance on stored product insects. Mr Bailey represented Australia at the Codex Alimentarius Committee on Pesticide Residues at the Hague.

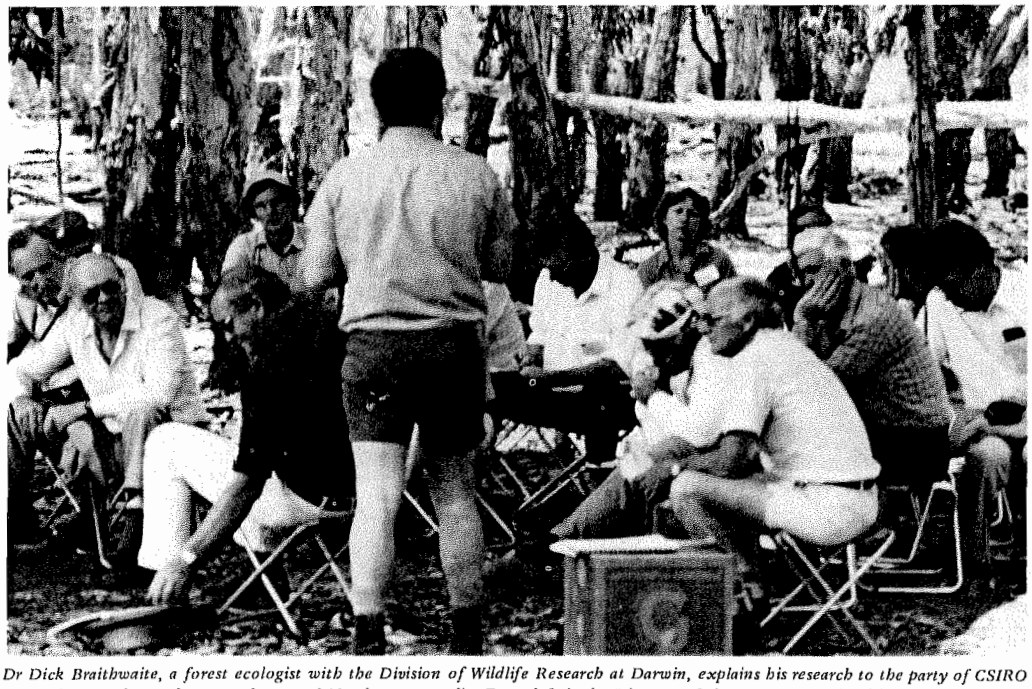
In 1970, following an agreement between the Australian Wheat Board and CSIRO to promote research on grain storage problems, he was appointed leader of a stored grain investigations team. The following year, he presented papers to the International Congress on the Storage of Grain and its Products in Winnipeg, Canada. With several other entomologists, he negotiated details of an exchange program under the Australian-U.S.S.R. Science Agreement and participated on the first joint Symposium on Grain Storage held in Moscow in 1978.

From 1974 until his retirement, he acted as a consultant to the Grains Working Group of the ASEAN Sub-committee on Food Handling. In 1973, he visited Burma on behalf of the Australian Development Assistance Bureau to advise on development of the Country's export trade in pulses. Two years later, he visited Bangladesh on a similar mission concerning storage and handling of food grains. In 1979, he again visited Burma on behalf of FAO to participate in a Prevention of Food Loss Mission.

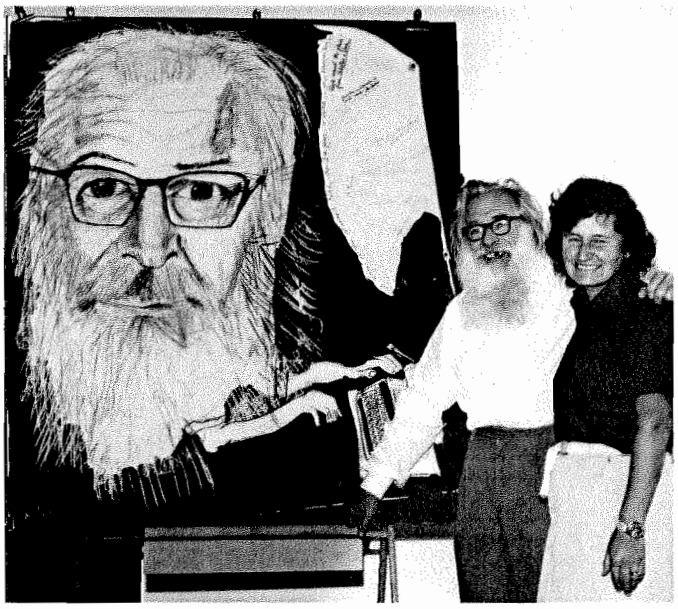
Bill is survived by his wife Robin, son Ian, and daughter Ann.

—Bruce Champ

CSIRO's Executive goes bush



Dr Dick Braithwaite, a forest ecologist with the Division of Wildlife Research at Darwin, explains his research to the party of CSIRO Executive Members who recently toured Northern Australia. From left is the Director of the Bureau of Scientific Services, Mr Sam Lattimore, Dr Geoff Taylor of the Executive, Mr David Wright, a part-time Member of the the Executive, Dr Mike Ridpath of the Division of Wildlife Research, Darwin, the Chairman, Dr Paul Wild, Professor Pat Werner, Dr Don Weiss of the Planning and Evaluation Advisory Unit, the Executive Secretary, Mr Gratton Wilson, Mr George Dudzinski of the Division of Mathematics and Statistics Darwin laboratory and the Chief of the Division of Wildlife, Dr Charles Krebbs. The photograph was taken at Apple Tree Point in the Northern Territory.



Teddy Trickett, with Dr Kathleen Skinner, and the farewell charcoal sketch she presented him on his retirement.

Our Teddy, alias 'Einstein, the Bower Bird' Trickett, retired on November 3 from the Centre for Irrigation Research at Griffith.

In compliance with Teddy's wish, the staff contributed towards a donation for C.A.A. Additionally, a pen to keep in contact with his colleagues, a local polished 'Pet Rock' suitably inscribed, and a brass plate 'donating' his Sun Follower, known affectionately as *Eucalyptus trickitti*, were presented.

Teddy's contributions were dedicated towards precise data capture, and sooner or later most of his colleagues benefitted from his help. He had no enemies and his farewell message was 'to study the particular matter rather than the general, and for God's sake, be honest'.

In his retirement, Teddy and Theodora will adopt a nomadic life, commuting between their home near Bright, Victoria, and Griffith, avoiding extremes in temperature and continuing to be a sun follower.

—Alistair Low

Successful cyclethon

A recent cyclethon held by the ACT Division of the National Heart Foundation enabled a group of Headquarters staff to test their fitness and raise funds for heart research at the same time.

Organizer of the team effort was **John Mitchell** of the Industrial Relations and Employment Conditions group within Personnel Branch. John reports that the cyclists completed 65 circuits of Lake Ginninderra, a total of 325 kilometres, and raised a total of $528.90 for the Heart Foundation.

Other team members taking part were **Bill Dominguez, Linda Meech, Lindy Dunstone, Gil Barnes, Tim Healy**, his two sons **Ben** and **Luke** and daughter **Natasha**, **Dennis Daly**, and John's daughter **Gillian**.

An unexpected bonus was a prize of a portable barbeque given to the team as the group which contributed the most in sponsorship The barbeque was presented to the Headquarters Social Club

Dr George Bornemissza of the Division of Entomology has gone on sick leave pending retirement next year. George joined the Division in 1954 and was the initiator of what came to be known as the Dung Beetle Program In 1970 he moved to South Africa where he built up and supervised the Dung Beetle Research Unit at Pretoria until his return to Australia in 1979 Since then he has been based in Hobart His scientific contributions have been recognized by two unusual distinctions: the Encyclopedia Britannica Australia Award in 1973, and a Rolex Award for Enterprize in 1981.

□ □

Mr Tony Woods has been appointed as Scientific Assistant to the Chief of the Division of Oceanography, **Dr Angus McEwan**. Tony has a B.Sc and an M.Sc from the University of Natal, and was formerly laboratory manager in the Physics Department at the University of Tasmania. Tony has been spending some time at Cronulla prior to moving back to Hobart when Dr McEwan relocates there early next year.

□ □

Dr Allan Clarke from the Department of Oceanography at Florida State University, Tallahassee, is visiting the Division of Oceanography in Hobart and Cronulla until August 1983. Dr Clarke is a graduate of Adelaide Univesity and while he is in Australia, will work on his theory on wind driven shelf water movements and carry out analyses of tidal currents and sea levels on the Australian shelf to research his theory on the effect of continental shelves on tides.

□ □

Vince Taylor recently retired on grounds of ill health, after 36 years with CSIRO.

Vince joined the Organization in 1946 and for the past 11 years, has been a member of Headquarters staff of Management Services Section, working in both the accounting and contracts areas.

Mr Andrew Forbes, an experimental officer with the Division of Oceanography at Cronulla (NSW), is one of eight people taking part in a re-enactment of Captain William Bligh's remarkable sea voyage following the mutiny on the *Bounty*.

On April 28 1789, Captain Bligh and 17 others were set adrift in a 21' (16.3 m) open boat with eight pairs of oars and several sails. They sailed from near Tofoa Island in the Tongan Group to Restoration Island in Torres Strait and then on to Timor—a distance of 3700 nautical miles (6000 km), which took 41 days.

Master Mariner, Captain Ron Ware, a direct descendant of Bligh, is in charge of the re-enactment. He hopes to launch the replica of the *Bounty*'s longboat from the P & O ship *Oriana* on April 28, 1983. Captain Ware will be navigating with instruments and charts of the time—no modern navigational equipment will be used, nor will there be a support vessel. Extensive filming of the voyage will be undertaken by one of the crew, an ABC staffer, as well as from the air, for a documentary series.

Mr Forbes will also be undertaking a number of scientific observations suring the re-enactment voyage.

Tragic death at BMR in Canberra

Michael Reed died tragically on Monday, November 15, 1982.

Michael was a Technical Officer at the Baas Becking Geobiological Laboratory and had worked there since 1973. He was a most conscientious and diligent person and his contributions to the Laboratory will always be appreciated. Recognition of his excellent technical assistance is recorded in the acknowledgements of nine scientific publications from the Laboratory.

Michael was a very knowledgeable man and he enjoyed the respect and admiration of his colleagues. His presence in the Laboratory will be sadly missed.

Michael was buried at Delegate, surrounded by the hills and valleys he visited often and loved so much.

Michael is survived by his wife Raylee, and his son Ian and daughter Donna.

—Graham Skyring

Goodbye and Good Luck

The Assistant Chief at the Division of Water and Land Resources, Mr Neil Body, presents Mrs Toni Komarowski with one way of illuminating her retirement at a farewell function at the Division's Canberra headquarters. Toni joined CSIRO in 1955 as a laboratory assistant and transferred to the Division in 1957.

—Photo by Jack Cavanagh

Chinese delegation in Australia to develop remote sensing skills and techniques

The People's Republic of China is no longer the remote, unknown country behind the Great Wall, and by now many CSIRO Divisions will have been host to a party of Chinese visitors.

These visits are part of China's intensive scientific development since the end of the Cultural Revolution.

One field in which the Chinese are rapidly developing skills is that of remote sensing. Signals from any part of the electromagnetic spectrum are reflected from the earth's surface and detected by various instruments carried in aircraft or spacecraft. The particular wavelengths reflected, and their relative strengths, can be interpreted to reveal a great deal about the environment below the instruments.

China, like Australia, is a vast country with a large range of landscapes, poor transport in many areas, and sparsely populated regions. It can therefore also benefit greatly from remote sensing, in the mapping, monitoring and management of its resources.

A Remote Sensing Delegation from China recently visited the Divisions of Mineral Physics, Oceanography, Computing Research, and Water and Land Resources. Dotted between the 'Sirovisits' were such bodies as the Australian Landsat Station, the University of New South Wales, the New South Wales Water Resources Commission, the New South Wales, South Australian and Victorian Department of Agriculture, the Bureau of Mineral Resources, the Australian National University and the Division of National Mapping.

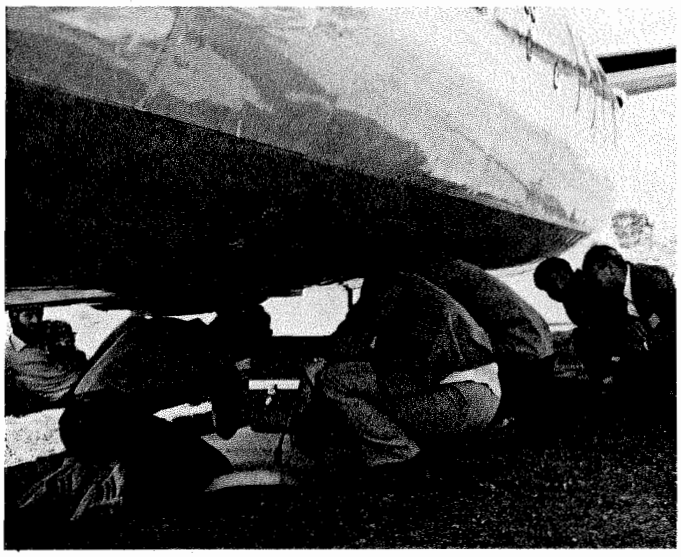
It all started way back, really, with an exchange agreement between the Australian Academy of Technological Sciences and the State Scientific and Technological Commission of China.

DELEGATION

The Academy sent a Remote Sensing Delegation, led by Dr Dick Millington, Chief of Water and Land Resources, to China in May 1982 to visit various remote sensing laboratories and to explore the possibility of future collaboration in this area. The members of the Delegation were Dr Ken McCracken, Chief of Mineral Physics, George Whitehouse of the New South Wales Water Resources Commission and Keith McCloy of the New South Wales Department of Agriculture.

One immediate outcome of this fruitful two and a half week tour was the return visit by the Chinese Remote Sensing Delegation, which was particularly interested in the various applications of remote sensing data in Australia, and wanted to discuss the possibilities of collaboration.

Two of the members of the Chinese Delegation were from the State Scientific and Technological Commission: Chen Weijiang (leader) from the National Remote Sensing Centre and Fu Lixun from the Department of Basic Research and High Technologies. The other members were Li Liu-yu from the Ministry of Forestry, Chu Liangcai from the Research Institute of Surveying and Mapping, and Yang Ting-huai from the Chinese Academy of Geological Sciences.



Crawling underneath Cyrano . . . Malcolm Robertson of the Division of Mineral Physics, is poised—camera in hand—for a snapshot of Mike O'Brien of the Division (left). Mike is showing Li Liu-Yu and Chu Liangai of the Chinese Remote Sensing Delegation the infra red scanner built into the bomb bay of the CSIRO Fokker Friendship, called Cyrano. Looking on with interest are Yang Ting-huai and Fu Lixun.

The interpreter, Chu Liangcai, was extremely efficient, managing to recognize this to a no doubt similar Chinese remote sensing patois, with impressive ease.

'Ozzie' remote sensing jargon and convert

However, the Division of Mineral Physics had its own on-site interpreter, Chris Yuan. Chris was an invaluable link with the Delegation, being not only a native Chinese speaker but also well versed in remote sensing, having worked for five years in the early '70s with Mike Duggin, former leader of the Division's remote sensing group. All in all, language was not a problem, and the visit to the Division of Mineral Physics proved to be a great success.

One of the highlights of the visit to Mineral Physics facilities was a crawl around Cyrano. This, in case you didn't know, is the CSIRO Fokker Friendship. What an amazing collection of instruments it contains! The visitors, however, were most enthralled by Mineral Physics scanning equipment.

Their lengthy discussion/question session was fielded ably by Mike O'Brien, a member of the Mineral Physics remote sensing team, who spends most of his time tending the scanner and flying around seeing Australia through the scanner. Here and there Chris Yuan and Ken McCracken chipped in a point or two.

SEMINAR

Chen Weijiang also gave a Seminar at Mineral Physics North Ryde Laboratory. His talk outlined China's comparatively recent start in the field of remote sensing, in the mid to late '70s. However, China has certainly taken a great leap forward since then and plans to commission its very own Landsat receiving station in 1984, in Beijing.

This raises an interesting point: This station will be classier than our current Australian counterpart and will be able to receive data from the satellite's thermatic mapper. This new instrument aboard the brand-new Landsat 4, launched in July '82, provides excellent detail that can greatly assist those interested in land and water management.

Unfortunately the Australian station, commissioned in 1980, only has the ability to digest data from the multi-spectral scanner—we need an upgrade of our equipment to keep up with the new technology now up in space.

Chen Weijiang discussed the tremendous significance of remote sensing to the further development of the Chinese national economy. He said that China was eager to collaborate with other nations in order to improve remote sensing technology in the Asian region and elsewhere.

The visit by the Chinese Remote Sensing Delegation and the initial trip to China led by Dick Millington are already two significant steps towards such a collaborative arrangement.

—Christine Astley Boden

Controlled pollination unit is opened

The introduction of improved plants from overseas was vital for Australian agriculture, the Chairman of CSIRO, Dr J. Paul Wild, said when he opened the $500 000 Controlled Pollination Unit at the CSIRO Samford Research Station, near Brisbane.

The Unit, to be run by the Division of Tropical Crops and Pastures, is unique in the subtropics and tropics.

Dr Wild said the Unit would be used to maintain and regenerate an essential national resource—the seed from these valuable introduced plants.

IMPORTANT ROLE

'The Controlled Pollination Unit is essential for maintaining the quality and quantity of this seed', he said.

'It will be used to grow cross-pollinating plants in isolation to ensure they produce pure seed uncontaminated by unwanted pollen.'

'When only small numbers of seeds of particular plants are introduced into Australia it will be used to multiply this seed for testing in the field.'

'As the quality of seed held in storage begins to decline with age, the Unit will be used to regenerate this seed by growing plants and collecting new seed for subsequent storage.'

CSIRO DESIGN

Dr Wild said the Unit, comprising two glasshouses with 36 individual rooms, had been built by the Department of Transport and Construction to a design specified by CSIRO officers.

Important design features incorporated in its construction to exclude pollen and to allow the year-round production of plants included:

- Special sealed joints to prevent any movement of pollen either into the buildings or between individual rooms.
- A filtration system for incoming air that removes any particles greater than five microns in diameter.
- A special purification plant with reverse osmosis membranes to provide water of high quality so salts do not accumulate in the pot-grown plants.
- As well, internal air is maintained at a higher pressure than external air, also helping to prevent pollen entry.

Continued on page 8

Better communication cassettes available

The Science Communication Unit has recently purchased a series of five audio-cassettes entitled 'Better Communication'.

Prepared by Hugh Mackay and Caroline Jones from the Centre for Communication Studies at Bathurst, N.S.W., these cassettes aim to improve personal relationships through better communication.

Topics covered in this series are:
The secret of successful communication, How to be a better listener, Communication is good for you, How to say what you mean, The message and the medium, Manipulation and how to resist it, Changing people's minds, How to handle conflicts, Am I getting through?, Communication with yourself.

CSIRO staff may borrow the cassettes for up to ten days by contacting Mrs Dorothy Crisp, CSIRO Science Communication Unit, P.O. Box 225, Dickson, A.C.T. 2602, Phone: (062) 48 4585.

258-1982/63

Filming science:

A powerful tool in conveying a message

Russell Porter, of CSIRO's Film and Video Centre, writes on 'The Screening of Science'.

Film,[1] more than any other means of communication, has the power to convey the way things are'.

The tools of images and sounds used in film create an illusion so effective that even the most dispassionate audience can 'suspend disbelief' and become 'really there'.

Moreover, in watching a film we can be 'really there' in ways we never can in our personal experience. Scales of space and time can be distorted to make them accessible to human scrutiny.

In a parallel sense, science is fundamentally concerned with 'the way things are', often in frames of reference not accessible to direct observation. From this point of view alone, film is clearly a very appropriate device for science communication.

But film is more than just an expansive analogue of our everyday experience. To view a program, whether projected or televised, is to have things done to our consciousness that cannot be done by any other means.

Film has been defined as the art of anticipation—an effective film holds its audience by creating the need to know 'what happens next'.

For most purposes, a film is neither designed nor available for re-scrutiny[2]—it is seen once or perhaps twice, and leaves us with a series of concepts and feelings, rather than with a series of specific bits of information.

Despite this, over the past few decades film and television have transformed the way people expect to be informed. The flickering screen has progressively usurped the printed page as the community's primary source of information and diversion. The new 'visual literacy' has created critical expectations of film, changing the criteria by which information is appraised.

Millions of people watched 'Life on Earth', most of whom would have been unmotivated to explore its subject through other means. It's irrelevant whether the 'quality' of information transferred through film is comparable with that of the written word—the two media do not (or should not) attempt to do the same thing.

DOCUMENTARY FILM

The value of the documentary films (including films about science) is their unparallelled capacity to create awareness, influence attitudes, expand knowledge and emotionally dispose an audience.

Most people who saw 'Life on Earth' will remember certain images from the series, something of its emotional impact, and perhaps its central rationale. For specific information about a stage of biological evolution (for example), the seeker of detailed knowledge will turn to the literature (perhaps even the 'book of the series'). But even the best literature cannot match the 'realness' and absorbing immediacy of film.

To make a film, then, is to do something to people—perhaps millions of people—that cannot be done in any other way. And of course it is this power that has transformed communications into a global galaxy of flickering screens.

The motives for wanting access to this powerful network range from the most banal and exploitative, to the most benign and enlightened. We would argue that the use of film for the communication of science is among the most productive uses of the medium.

SCEPTICAL ATTITUDES

Even here, though, there are sceptics: one Professor of Pathology, whose contentious work was the subject of a BBC program, complained that:

'The public has more to fear from the ability of mass communications media to distort, misrepresent and terrify, than from any of the biological experiments shown in the programme'.[3]

It is unlikely that any CSIRO film would ever deliberately set out to terrify its viewers. Distortion and misrepresentation, however, are charges that can be laid against any documentary film, simply because of the selective and interpretive functions of film makers.

In almost any film, it is the image that endures, rather than the words and other sounds. The soundtrack acts as a prompt, a device for influencing our responses to what we see on the screen. The soundtrack should complement and elucidate the image rather than compete with it.

PRECONCEIVED IDEAS

Yet scientsts (and others) often seem to expect a scientific film to be a kind of monograph with pictures, with aims, methods and results clearly enunciated, while on the screen someone in a lab coat points at graphs.

And indeed many films have been made more or less to this formula, but it is a use which undervalues the potential of the medium.

How then can films about science be used to best advantage, and for whom should they be made? In part, the second question implies the first. Scientific films have a range of possible styles and applications.

At one end of the spectrum, film can be an essential component of research itself: time lapse, high speed, micro and macro cinematrography have all been used by scientists (including many within CSIRO) to study the behaviour of phenomena beyond the range of human perception. This is a special case however.

In most cases, scientific films are used to extend awareness of scientific activity beyond the laboratory. Occasionally their audience is extremely limited, and it is a valid (if costly) use of the medium for one scientist to demonstrate his work to another, on film.

More likely, films on science will be aimed at specialized groups (such as students) or to the general public. In each case, the target audience determines the style and level of detail of the film. A film which tries to reach more than one kind of audience usually ends up reaching no-one very effectively.

There is a good case for arguing that the most effective use of the film medium is that which reaches the broadest possible audience.

One screening of a CSIRO film on the ABC's 'Weekend Magazine' reaches an estimated two million viewers, and from the response to such screenings, it's clear that a good general film can be interesting and useful to many, including the most specialized of viewers.

A specialized film, however, can reach only the specialists, and there will continue to be a need for such films. But for an organization like CSIRO to make known its existence and activities, there can be no more effective means than through a film aimed at the world at large.

GENERAL APPEAL

This, of course, begs the question as to whether the world at large needs or deserves to be so informed. In a recent article entitled 'Informing the Public: Why Bother?',[4] scientist and writer Isaac Asimov argues persuasively that public understanding and awareness of science and technology are an essential component of society.

In support of this proposition, he discusses and convincingly defends six assumptions:

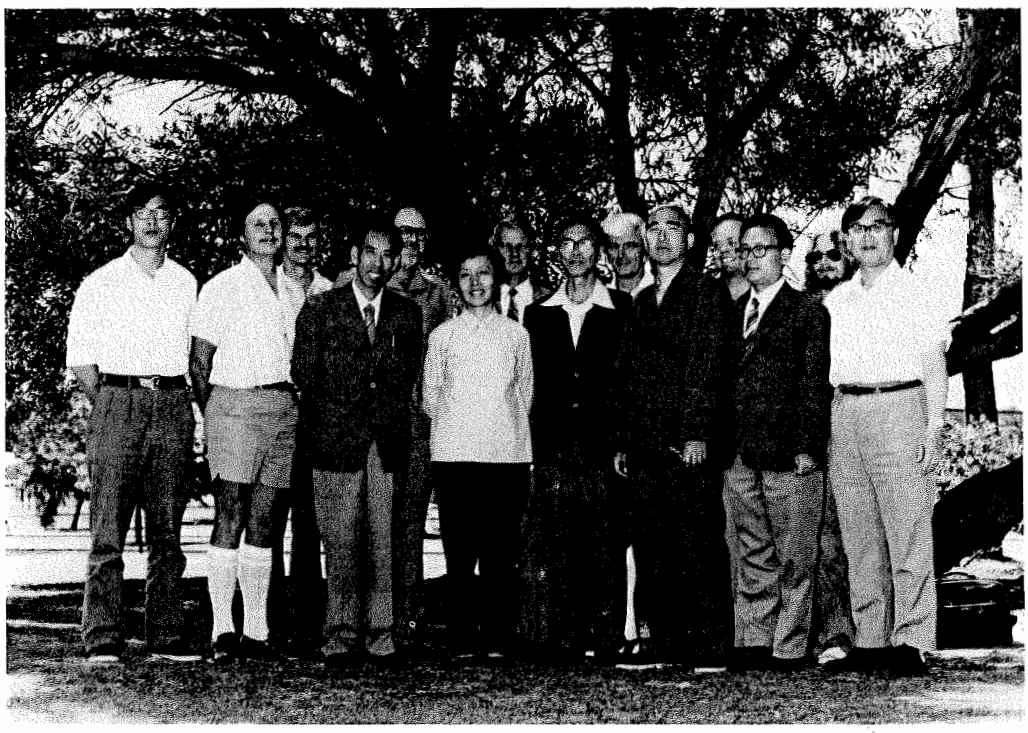
. Knowledge is simply a good thing in itself;
. People will be able to make more intelligent personal decisions if they have more knowledge of science and technology;
. The very structure of democratic society depends upon the existence of an enlightened citizenry;
. Science and scientists need the sympathy of the public;
. Science and scientists need the financial support of the public and;
. Scientists do not reproduce by binary fission.

These and related assumptions come close to providing a rationale for the activities of the Science Communication Unit. As science and technology increasingly impinge on our daily lives, the need for effective communication between 'producers' and 'consumers' will increase correspondingly.

We would argue it is a need which good film can fulfil more effectively than any other means. The video revolution will ensure an ever-increasing public demand for such films.

1 For most purposes here, 'film' is used to cover 'moving images' (plus sounds) whether created optically or electronically.
2 The imminent expansion of domestic video recorders, video libraries and information retrieval aystems will change this, and eventually will change the function of the screen image itself, extending it ever more into the domain of print. There will always be the need, however, for the 'classic' documentary.
3 From: *Reflections on Science and the Media*, June Goodfield, AAS, 1981.
4 SIPISCOPE, published by Scientists' Institute for Public Information, Vol. 10, No. 1, Jan.-Feb. 1982.

Chinese visitors at Floreat Park



A group of Chinese scientists visited the Floreat Park laboratories on November 9, to discuss trace element research in Western Australia with staff of CSIRO's Laboratory for Rural Research in Perth. In particular they were keen to discuss research on selenium, zinc, molybdenum and copper deficiencies. The visit was organized by the Australian Academy of Science and the Academia Sinica. Pictured are, (from left) Yu Shun Xiang, Dr Duncan Peter, Mr John Hill, Tan Jian An, Dr Barrie Purser, Li Jiyun, Dr Frank Hingston, Cheng Bo-Rong, Dr Jim Barrow, Guo Fang, Dr Bruce Chandler, Cheng Hong-De, Mr Paul Young and Hu Rongmei.

CAT

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

Many issues arose from the October meeting of CAT—one of which was mentioned in the last CAT column, namely a register of communication facilities available within CSIRO.

Perhaps the two most important issues were:

. the draft Communication Statement, prepared by Mr Sam Lattimore, Director of the Bureau of Scientific Services
. the organization and role of CAT.

Communication Statement. Since its inception, CAT has been hammering away, trying to get some sort of statement on communications from CSIRO's Executive. Well, at long last, several chinks have occurred and Sam Lattimore agreed to provide CAT with a draft Communication Statement. This draft was discussed at the October CAT meeting and an amended form has been circulated with the CAT minutes. This second draft is open for comments. In fact, each CAT member will be approaching the communicators in his/her Institute for their comments prior to the next CAT meeting, March 1-2, 1983. So, speak now or suffer the consequences!

Seriously, this draft Statement is a most welcome move in the direction of having the Executive state clearly their views on CSIRO's communications strategies. CAT would like to thank Sam Lattimore for his efforts.

After discussion of the draft Statement in March, it will be circulated to Chiefs and then to the Executive.

Organization and role of CAT. Due to the rotating membership of CAT, the functions and aims of CAT sometimes become obscured. With this in mind, the October meeting of CAT undertook a 'mini mini internal review' (to keep in fashion) and decided that if CAT is to remain a viable group making a worthwhile contribution to CSIRO, then members must be prepared to put in some ground work between meetings. This means that everyone connected with communications should feel part of CAT—you can only do this if you get involved. You can always contact your Institute's CAT member with news or comments on what you consider are CAT related items—do not always wait to be contacted first. Also, with the CAT membership rotating every two years, it is hoped that in time every communicator will get the opportunity to be a member of CAT.

CAT is asking for ideas on the issues it should be addressing. If you have any suggestions about the long-term plan for CAT, I would welcome your contribution.

MEDIA AWARENESS WORKSHOP FOR SCIENTISTS

The Media Awareness Workshop CAT planned for December7-8, 1982 had to be postponed due to clashes with other CSIRO activities. However—do not despair—the Workshop has only been postponed. David Zerman, Chief Co-ordinator, will try to organize another Workshop late March, 1983. The keynote speaker for the Media Awareness Workshop was to have been Nobel Laureate Sir Macfarlane Burnet—David hopes that Sir Macfarlane Burnet will be able to participate in the proposed March Workshop. More details, dates etc. will be available later.

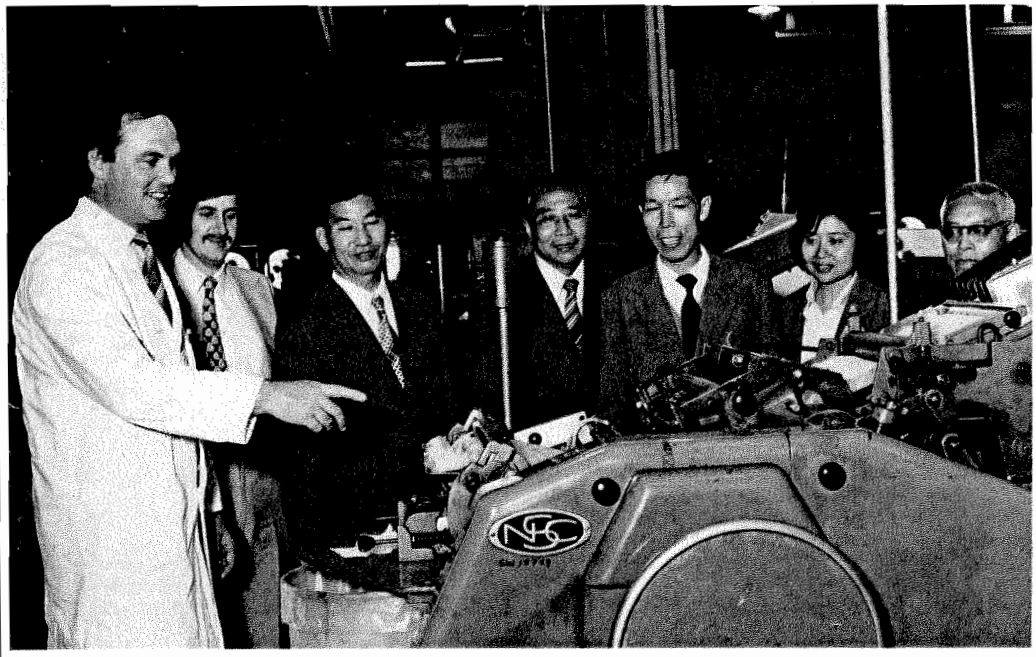
MELBOURNE REGIONAL COMMUNICATORS GROUP

The Melbourne Regional Communicators Group held a meeting at Highett in October to coincide with the CAT meeting. This gave Melbourne people a chance to meet interstate communicators.

Mr Graham Wallis, the science teacher associated with the CSIRO Science Centre at Highett, gave people attending the meeting a good insight into the Centre's function and operation: Building Research also opened the doors of its new radio/television studio and showed people around.

The next meeting of the Melbourne group will be on Tuesday, February 15, when the group will be given a tour of ANAHL at Geelong. Further details will be sent to people early 1983. If anyone from interstate will be in Melbourne around that date and would like to join the tour of ANAHL, please contact me. However, numbers will be restricted.

—Helen Dornom,
Dairy Research, Melbourne



A study group from the People's Republic of China visited the Division of Textile Industry in November for discussions and demonstrations on equipment and technology for the early-stage processing of wool and the treatment of wool-scouring effluents.

The visit was part of a tour of the woolprocessing industry in Australia organized by the Australian Wool Corporation.

Three days were spent at the Division, and the delegation was given an overview of current research, and had detailed discussions with research staff on scouring and topmaking research and recent developments in this area.

The photograph shows the Division's technical secretary, Mr Stan Boston, left, pointing out features of one of the Division's combing machines to, from left, Mr Tom Kerr, Australian Wool Corporation, Mr Jian Yongli, Vice-director and Engineer Shaanxi Wool topmaking mill and leader of the delegation, Dr Wei Juming, Associate Professor of North-West Textile Engineering Institute, Mr Jia Yar, Interpreter, Ministry of Textile Industry, ROC, Miss Bao Guoping, Engineer, Minister of Textile Industry, ROC, and Mr Ling Xi Chi, Engineer, Minister of Textile Industry, ROC.

—Photo by John Card

Controlled pollination unit is opened

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SEED RESOURCE

Dr Wild said the Division of Tropical Crops and Pastures now held 20 000 varieties of pasture grasses, legumes and crops, mostly at the Samford Station.

'This resource represents the achievements of many overseas plant collecting missions undertaken by CSIRO scientists since the second World War.

'This large collection must be maintained to ensure that new varieties can be produced as new problems arise.'

'Scientific work on this collection has already resulted in the release of more than 30 commercial varieties and I am sure this effort will be continued.'

Annual Report tabled:

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CSIRO strongly supported this concept 'subject to the need for the Government to make additional allocations for major new initiatives which it wishes to support'.

GLOBAL BUDGET

The Government had made 'considerable progress along the recommended path' by introducing a 'global' budget for CSIRO.

Dr Wild said that in spite of progress towards a global budget 'unnecessary constraints remain'.

'The application of external controls over matters like staff ceilings and overseas visits is now totally unnecessary', he said.

'I also believe that we should have greater flexibility to introduce early retirement suited to our own requirements.

'Any population of research scientists should preferably include a strong component of youth.'

He said the 'outstanding success' of CSIRO compared wih other countries' government research institutions 'stems from the wisdom of successive Commonwealth Governments in ensuring that two basic requirements were satisfied'.

These were:

. CSIRO's governing body should consist of full-time members who are scientists and part-time members who are industrialists and community representatives; and
. the Executive, today aided by an Advisory Council on which Government departments, industry and community interests are represented, should be fully responsible and accountable to Parliament.

'From this basis we co-operate widely, harmoniously and in our own right with all relevant Government departments', Dr Wild said.

CONSULTATIVE MACHINERY

'We have also established consultative machinery to ensure that we take account of Government policies and that our activities are well co-ordinated with those of other agencies.'

Other major issues dealt with in the Annual Report include research policies for biotechnology and the Australian National Animal Health Laboratory.

'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 Editor, Box 225, Dickson, ACT 2602. Tel. 48 4640. Editor: Jeannie Ferris.