CoResearch

CSIRO's staff newspaper *Jan/Mar 1980* **228**

Tea time in Beijing. Executive Members Dr Keith Boardman and Dr Greg Tegart, accompanied by Malcolm Robertson of Headquarters Secretariat, visited China last year at the request of the Academia Sinica. Here, Dr Boardman talks with the aid of interpreters to Mr Fang Yi, China's Minister for Science and Technology and head of the Academia Sinica. Malcolm Robertson's report of the trip appears on P4-5.

Strong support for trainee scheme

Their attitude, aptitude impresses Divisions

A total of 65 young, unemployed people began work in CSIRO establishments throughout Australia early this year under the Special Youth Employment Training Scheme.

There will be six intakes this year, with each trainee spending 17 weeks with CSIRO gaining experience which hopefully will fit them for permanent employment when they leave.

The scheme was introduced last year by the Federal Government for young people aged 15-24 who have been away from education for at least four months during the past 12 months, and who have been registered with the Commonwealth Employment Service for more than four months during the same period.

Its aim is to assist young people who have experienced long term difficulty in obtaining employment by providing on-the-job training in a work environment.

The scheme is not intended to provide departments or authorities with additional manpower, but comes at a time when many Divisions in CSIRO have been experiencing manpower problems, particularly in the area of unskilled or semi-skilled jobs.

This may help account for the excellent response by Divisions in all States and Territories to an invitation to participate in the scheme.

For the first intake last year, the numbers of positions offered by Divisions were as follows:

NSW	192
Victoria	162
ACT	91
Queensland	32
Western Australia	38
Northern Territory	9
Tasmania	5

The actual number of positions allocated to CSIRO by the Department of Employment and Youth Affairs, which administers the scheme, was less than 100, compared with the total of 529 positions offered.

The Government has allocated more funds this year for the scheme to be continued, and with the scheme operating smoothly several hundred trainees should gain work experience with CSIRO in the six proposed intakes.

Divisions which have already participated in the scheme have reported the attitude of the trainees to be excellent, and that they have adapted quickly to their new environment—for many, it is their first experience in the workforce.

So impressed was one Victorian Division that it kept on six of its 17 trainees for some time after the expiry of their Government-sponsored 17 weeks.

Commented one officer of the Division: "...it would be worthwhile if the public could be made aware that the young employed are not dole bludgers but responsible people who want to work.'

In the first intake this year, the State-by-State breakdown of allocations is as follows:

ACT	3
NT	1
SA	3
Tasmania	5
WA	7
NSW	29
Victoria	17

In all States except Queensland, intakes have run smoothly. Unlike the other States, the Queensland branch of the Department of Employment and Youth Affairs has delayed the allocation of positions to trainees until each participating Division provides a full report on the positions which will be offered.

In other States, trainees have simply begun work with the Divisions, on the basis that each Division would respect the aims of the scheme and provide proper trining.

Among the January-February trainees are store assistants, labourers, gardeners, workshop assistants, animal attendants, typists, clerical assistants, technical assistants, library assistants, laboratory services assistants, and data processing operators.

Rainy day funds on wane

The percentage of contributors to CSIRO's benevolent fund is disappointingly small in some States, according to figures provided in the 1979 Combined annual report of the funds.

In three States the percentage of contributors has fallen since last year.

The figures for each State, expressed as a percentage of the potential membership, are as follows (figures in parenthesis are those of 1978):

Brisbane	64	(65)
Canberra	59	(60)
NSW	85	(86)
Southern	70	(67)

The trends indicate the benevolent funds are suffering an identity problem—even those people who contribute are often only vaguely aware of what the funds do.

In brief, the role of the funds is helping CSIRO staff or their dependents who face times of great need or hardship.

Each year the funds assist a small number of people who face a financial crisis beyond their own resources, perhaps as a result of illness, accident or misfortune.

In the great majority of cases, the recipient of help is unaware even of the existence of the benevolent funds. Most cases are referred to the funds by fellow workers who know of the crisis.

Among past recipients have been people who knew of the benevolent funds, but had declined to join because they could see no point.

The cost of membership in NSW, ACT and Queensland has remained at 10c per fortnight, but Victoria recently increased its rate to 20c.

Payment is deducted by personal authority from salary every fortnight.

Each of the four benevolent funds is seeking new members—and is also constantly on the lookout for people who may be in need of their assistance.

Peck's grain mill saves a bushel

De-huller wins major award

Very few inventions can't be improved. But somebody is going to have one heck of a job improving on Norm Peck's Ripple-flo Mill.

How can one improve on a device which does a faster and more efficient job while using one-third of the energy of its more expensive predecessors, is almost wear free, is so elegantly simple that little can go wrong, and which can be adapted for tasks beyond its original purpose?

Those qualities earned the Ripple-flo Mill the 1979 Power Farming Machine of the Year award at the Australian National Field Days in November.

The Ripple-flo Mill, a device for de-hulling and milling seed and grain, was developed by the Division of Animal Production at Prospect, NSW.

Its inventor, Norm Peck, hit upon its principle while trying to adapt his home-made garden shredder to grind wet material. From its humble beginnings, the mill has been developed into a commercial unit whose potential market within Australia and overseas is enormous.

Its major market will be the livestock industries, for the preparation of feed.

Basically, the Ripple-flo Mill comprises a squirrel-cage rotor and a curved, corrugated plate. Grain or seed fed into the rotor is hurled against the corrugated plate as the rotor spins, and rebounds between plate and rotor until it cracks.

The machine dehulls mant different types of seed simply by adjusting the rotor speed to suit each one. Cottonseed and oats are best processed at high speed, while lupins and soybeans are dehulled at low speed.

So effective is the operation that difficult seeds like safflower, with its hard husk and soft, oily kernel, and rapeseed with its tiny size, are no problem.

Norm, a Technical Officer with the Division, says the biggest hurdle in the design was to provide a system which would allow seeds to go through the mill once only, instead of being recycled and pulverised.

It had been found that each seed type had a narrow speed band of about 100rpm which would remove the hulls with 80-90 per cent efficiency, without milling the kernels.

The machine could be used for milling seed and grain by using a speed above this band.

With conventional dehulling machines, which tend to be large and expensive, seed must be cleaned and graded for size before being fed into a fixed gap between rollers. Husks and kernels often break into similarly-sized pieces which can be difficult to separate, and oilseeds may have oil squeezed out, causing them to clog up the rollers.

In the Ripple-flo Mill, the large clearance between the rotor and the corrugated plate eliminates clogging, and does not require adjustment for seed size.

Because the husks are so efficiently removed by the mill, they can be sucked away by a vacuum device.

A Sydney firm, California Pellet Mill (Australia) is producing the mill commercially, and is marketing a larger model capable of processing 3-5 tonnes per hour.

Further milling applications are possible, including the separation of milled material into different fractions. Dry lucerne hay containing 16.8 per cent crude protein has been successfully milled and separated by shaker screens into stem and leaf fractions containing 20.5 per cent and 11.8 per cent protein respectively.

The leaf fraction could be used as a protein concentrate, and the stem fraction as a useful feed for sheep and cattle.

The absence of a screen to block materials coming through also enables the Ripple-flo Mill to be adapted for the shredding of materials of high moisture content.

This involves the replacement of the rotor with a swing-hammer arrangement which produces a unique shredding action that can be used on such materials as green corn and sugar cane, producing a fibrous material suitable for animal fodder, silage making, or further processing.

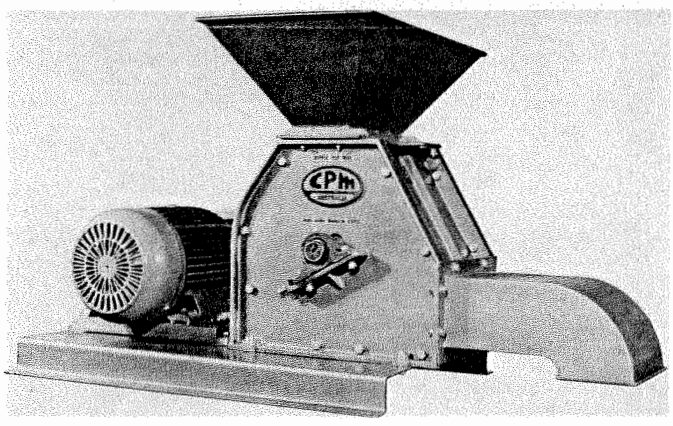
The Division is also examining the possibility of adding a liquid feed system so that liquid containing perhaps molasses or minerals can be added during shredding or milling.

Ripple-flo's inventor, Norm Peck, joined the Division as a fitter and turner in 1962, and became a Technical Officer in 1976.

Apart from his skills as a handyman and inventor, he enjoys fishing, keeps his own bees, bakes his own bread, and has gained a reputation as a first-class barbecue chef.

Norm is married and has two sons.

ABOVE: Norm Peck displays the Power Farming Award he received for his Ripple-flo mill. Great interest was shown in the machine at the National Field Days at Orange, Australia's largest exposition of its type.



LEFT: The California Pellet Mills commercial version of the Ripple-flo mill. A larger industrial version is also being manufactured.

Death of Dr Colin Andrew

The death occurred in Brisbane on Christmas Eve of one of Queensland's best known agricultural scientists, Dr Colin Andrew, Assistant Chief of the Division of Tropical Crops and Pastures. Born at Crows Nest on March 25, 1920, he was educated at Queensland Agricultural College, Lawes.

The Second World War saw him in the Infantry for six years with campaigns in the Middle East, New Guinea and Borneo. He joined the 2/25th Battalion on its formation, became the Battalion's youngest officer and rose to the rank of Major.

After the war he studied agriculture at the University of Queensland and joined CSIRO in 1950.

During his research career he became known as one of the world's leading scientists on the mineral nutrition of tropical legumes. One of his early achievements, in collaboration with the late Dr Wilf. Bryan, was to overcome the problems of growing good pastures on the very infertile Wallum soils at Beerwah.

He went on to specialize in the use of visible symptoms and chemical analyses for determining the fertilizer needs of the new tropical legumes that were developed in Queensland during the 1960s and 1970s. His methods have been used widely in practice both in Australia and overseas.

Dr Andrew became interested in the problems of the acid soils that occur commonly in Northern Australia and many other tropical countries.

He showed that some of the tropical pasture legumes are remarkably tolerant of the low levels of minerals and high concentrations of aluminium found in these acid soils. Consequently they do not need much lime. This discovery has had a profound effect on tropical pasture research, particularly in South America.

The high reputation of Colin Andrew's achievements is demonstrated by the following tribute from a leading US scientist: "Most of the people who do research in plant nutrition look upon his work as a model of how a major long term program in mineral nutrition of any group of plants should be designed and conducted."

He was a member of the Governing Council of the Queensland Agricultural College, advisor to the Fijian Government on pasture improvement and made two visits to Brazil during which he gave advice and established collaborative projects.

Dr Andrew is survived by his widow, Hazel, and four children.

Conference on noise

A conference on Noise in the Textile Industry will be held at the CSIRO Division of Textile Industry, Geelong, Victoria on April 18.

The conference is being organised by CSIRO to help textile management in its efforts to meet new legislation controlling the amount of noise to which textile workers may be exposed.

Subjects will include noise and its measurement, engineering noise control, compliance with industrial noise legislation, and management responsibility in protecting employees' hearing.

Manufacturers of noise-measuring equipment and hearing protectors have been invited to display their products.

The conference fee of $15 per person covers lunch and refreshments, and all delegates will receive a copy of the conference proceedings.

Further information and registration forms are available from the Chief, CSIRO Division of Textile Industry, P.O. Box 21, Belmont, Victoria 3216. Phone enquiries to the Liaison Assistant, Mrs R. Dowling—052 434377.

Fun run's fame spreads

Gee-along from Geelong

Never one to shrink from a challenge, and powered by the most moral of fibres, the Division of Textile Industry in Geelong will send a four-man team to the Black Mountain Fun Run in Canberra in July.

By the time the race comes around, the 'Hot to Trot' team from Geelong will have spent nearly 18 months in training, and will certainly be worth watching.

Its members are Gerry O'Kane, John Warner, John Baker and Ken Lewins. They have even gone to the trouble of having T-shirts printed with their own symbol, including the 'Hot to Trot' legend.

Early acceptors for the Fun Run this year include Entomology's Mountain Masochists, thrice winners of the Black Mountain Cup, Environmental Mechanics (which organises the run), Land Use Research, Plant Industry and Canberra RAO.

Sydney's two teams of last year have indicated they will compete again—Applied Physics and Food Research. Food Research may well provide the strongest challenge to Entomology, along with last year's runner-up, Environmental Mechanics.

This year's Fun Run will again be held on Friday, to enable any visiting team members to continue on to the snow for the rest of the weekend.

Organisers are still seeking to expand the representation of non-Canberra teams, and would welcome any inquiries from laboratories in Melbourne.

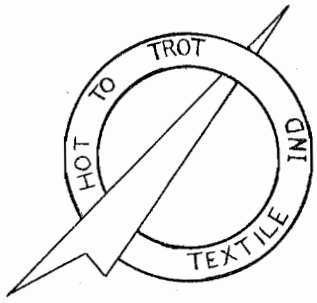
Transport costs from Melbourne (or perhaps Adelaide or Brisbane) can be low if shared by a four-man team, and in the case of a large centre like Melbourne, a cheap group booking could even be made for 10 or more competitors through an airline.

Any inquiries can be directed to either Greg Heath or Colin Hazelton at Environmental Mechanics (062-464911), who can also arrange billets for anybody seeking accommodation on the cheap.

While the term 'Fun Run' is loosely applied to the event, the attitude of most competitors is less than light-hearted, and in the case of the defending team and its nearest challengers, verges on fanaticism (Entomology's runners are reputed to run every lunch hour, and weep with frustration on weekends).

The distance is 5.6 km, a large part of it uphill, and in the past two years the winning time was under 22 minutes. That's a shade over 15 kmh for the journey.

The run will begin at lunch time on July 18.



CSIRO staff at South Melbourne recently underwent training in the use of fire extinguishers for a variety of fire types likely to be encountered in chemical laboratories. Instructors from the South Melbourne and Port Melbourne stations of the Metropolitan Fire Brigade were impressed by the style and effectiveness of some of their students . . . .

State committees named

The Minister for Science and the Environment, Mr David Thomson, recently announced the composition of the six CSIRO State Committees.

The State Committees act as a link between CSIRO and individuals and associations, and provide an input to the national advisory body, the CSIRO Advisory Council.

Each committee is chosen to represent a wide range of interests capable of considering agricultural, industrial and economic matters bearing on CSIRO's work, and community interests which might be furthered by CSIRO.

The composition of the State Committees is as follows:

NEW SOUTH WALES

CHAIRMAN

Mr A. Boden, the Chairman of Hardman Chemical Industries Pty Ltd.

MEMBERS

Dr D.G. Badger—Senior Manager, Reserve Bank of Australia.

Dr C.S. Barnes—Manager Research, CSR Ltd.

Mr W.J. Hucker—Chairman, Air Programs International Pty Ltd.

Mr D.J. McGarry—Managing Director, Australian Oil & Gas Corp.

Dr D.G. MacLennan—Chairman, Biotechnology Aust Pty Ltd.

Mr H.E. Mitchell—Assistant General Secretary, Miscellaneous Workers Union.

Mr C.H. Monk—Chairman, NSW Board of Education.

Mr G.R. Peart—Agricultural Consultant

Dr D.A.J. Swinkels—Minerals Process Research Manager, BHP Ltd.

Mr N.R. Tieck—Company Director and Consultant.

Mr N.A. Whiffen—Managing Director, Nethel Pty Ltd.

SECRETARY

Mr T.C. Clark, CSIRO Regional Office, Remington Centre, 183 Liverpool Street, Sydney—telephone 211 3400.

VICTORIA

CHAIRMAN

Mr J. E. Kolm, Executive Director, ICI Australia Ltd.

MEMBERS

Mr J. D. Brookes—Director of Conservation, Ministry for Conservation.

Dr A. J. Farnworth—Chief General Manager, Australian Wool Corporation.

Mr A. G. Gibbs—Chairman, Victorian Railways Board.

Mr R. Gottliebsen—Assistant Editor, Australian Financial Review.

Professor K. H. Hunt—Professor of Mechanism, Monash University.

Mr F. C. James—Dean, Faculty of Applied Science, RMIT.

Sir Oscar Meyer—Chairman, West Gate Bridge Authority.

Mr L. M. Muir—Senior Partner, Potter Partners.

Mr E. F. Sandbach—Director Research, Telecom Australia.

Mr S. D. M. Wallis—Managing Director, Australian Paper Manufacturers.

SECRETARY

Mr J. A. Pattison, CSIRO Division of Building Research, PO Box 56, Highett, 3190—telephone (03) 95 0333.

QUEENSLAND

CHAIRMAN

Mr K. E. Gibson, former Managing Director of ACF and Shirleys Fertilizers Ltd.

MEMBERS

Dr G. I. Alexander—Deputy Director-General, Department of Primary Industries.

Dr J. A. Allen—Chairman, Board of Advanced Education.

Mr A. J. Allingham—Grazier.

Mr G. L. Baker—Deputy Director (Technical), Department of Commercial and Industrial Development.

Mr W. G. Hamilton—Personnel Manager, Consolidated Fertilizers.

Mr J. C. Rivett—Chairman, Gutteridge Haskins & Davey.

Mr E. P. S. Roberts—Grazier.

Mr D. M. Traves—Director, Target Petroleum.

Professor D. H. Trollope—Deputy Vice-Chancellor, James Cook University of North Queensland.

Mr H. N. Walker—Chief Engineer, Queensland Railway Department.

Mr C. D. Williams—Research Manager, MIM Holdings Limited.

SECRETARY

Mr D. B. Thomas, CSIRO Regional istrative Office, 166 Wickham Terrace, Brisbane—telephone (07) 221 2170.

TASMANIA

CHAIRMAN

Professor Peter Scott, Pro-Vice-Chancellor and Professor of Geography, University of Tasmania.

MEMBERS

Mr J. R. Ashton—Chief Commissioner, Hydro-Electric Commission.

Professor D. E. Caro—Vice-Chancellor, University of Tasmania.

Mr M. C. P. Courtney—Editor, Launceston "Examiner".

Mr R. J. Downie—Grazier.

Mr P. J. Fountain—Director, Tasmanian Department of Agriculture.

Mr A. G. Kemp—Company Director, Kemp & Denning Limited.

Mr J. B. Piggott—Chairman of Law Reform Commission, Tasmania.

Mr J. G. Symons—Director of Mines, Tasmania.

Mr P. T. Unwin—Chief Commissioner for Forests.

Captain D. M. Waters—Principal, Australian Maritime College.

Mr B. Wilson—Research Manager, Goliath Portland Cement Company.

SECRETARY

Mr G. B. Stirk, CSIRO Tasmanian Regional Laboratory, Stowell Avenue, Hobart—telephone (002) 23 7371.

SOUTH AUSTRALIA

CHAIRMAN

Mr J. E. Harris, Managing Director of Adelaide and Wallaroo Fertilizers.

MEMBERS

Mr D. Andary—Berri Co-operative Packing Union Ltd.

Mr R. D. Bakewell—Permanent Head, Department of Economic Development.

Mr S. B. Dickinson—Company Director and Mining and Energy Consultant.

Mr J. M. Kerin—President, United Farmers and Stockowners Association.

Mr M. Knapman—Simpson Pope Ltd.

Mr J. C. McColl—Director, Department of Agriculture and Fisheries.

Professor James P. Quirk—Director, Waite Institute.

Mr K. J. Shepherd—Engineering and Water Supply Department.

Mr P.M. South—Director, Department of Woods and Forests.

Mr I. E. Webber—Chrysler Australia Ltd.

SECRETARY

Mr B. W. Bartlett, CSIRO Division of Human Nutrition, Kintore Avenue, Adelaide—telephone (08) 223 5511.

WESTERN AUSTRALIA

CHAIRMAN

Mr L. C. Brodie-Hall, retired mining company executive, West Perth.

MEMBERS

Mr E. N. Fitzpatrick—Director of Agriculture, W.A. Department of Agriculture.

Mr E. R. Gorham—Co-ordinator, Department of Industrial Development.

Mr R. M. Hillman—Director of Engineering, Public Works Department.

Mr R. D. Ireland—Chairman and Managing Director, Millars Timber (W.A.)

Mr J. B. Kirkwood—Commissioner, State Energy Commission, W.A.

Dr J. R. De Laeter—Dean of Applied Science, W.A. Institute of Technology.

Dr M. J. Mulcahy—Head, Special Services Branch, Department of Conservation and Environment.

Mr J. B. Oliver—General Manager (Projects) Western Mining Corp.

Mr W. T. Peart—Managing Director, Vickers Hoskins Pty. Ltd.

Mr J. Shepherd—Farmer, Agricultural scientist.

Professor R. Street—Vice-Chancellor, University of Western Australia.

SECRETARY

Mr J. P. Brophy, CSIRO Regional Administration Office, PO Box 374, West Perth. Telephone (09) 2212170.

Red carpet , duck and rice wine

On 3 April 1979 several members of CSIRO's senior management were visited at CSIRO Headquarters by a delegation from the Chinese Academy of Sciences, Academia Sinica. The delegation, led by Professor Qian Sanqiang, was in Australia as guests of the Australian Academy of Science which was celebrating its jubilee. During the discussions at CSIRO Professor Qian had pointed out that, while Academia Sinica was very pleased with the scientific exchanges that were taking place under an agreement between Academia Sinica and the Academy of Science, he and his colleagues felt that the similarity in organisation and activity between CSIRO and Academia Sinica provided the opportunity for a closer relationship between these two bodies. Academia Sinica was a government-funded research organisation made up of over one hundred research institutes each devoted to a specialised area. They wished for a mutually beneficial program to be developed and accordingly he had extended an invitation for a CSIRO delegation to visit China, as the guests of Academia Sinica, to hold discussions and to visit several institutes.

The CSIRO Executive accepted this invitation and it was arranged that Dr Keith Boardman and Dr Greg Tegart from the CSIRO Executive should visit China in November and December 1979. Malcolm Robertson from the science secretariat at Headquarters would accompany them.

On Saturday November 24 the Australian party arrived in Beijing (Peking) to begin a full, interesting and sometimes exhausting series of visits, inspections and discussions with the members of many institutes of Academia Sinica and several other research academies. The visits took the delegation from Beijing to Shenyang, in the heart of China's industrial northeast, to Shanghai at the mouth of Chang Jiang He (the Yangtze River) on the east coast. The visit concluded in Shanghai on 7 December 1979, although both the arrival and the departure of the delegation was arranged through Guangzhou (Canton). This article by Malcolm Robertson has been written to describe some of the more "cultural" aspects of the visit, although for serious minded readers a copy of the official report of the visit can be acquired from him in Headquarters (phone (062) 484518).

For some time before we left we had been warned of the delays and difficulties likely to be encountered with Chinese officialdom at airports and railway stations when entering or leaving China. Consequently when our train pulled in to the station at Guangzhou, after a brief trip from Hong Kong we had diligently completed various forms to describe to the last detail our belongings and money and were expecting the worst.

However, to our surprise, and thanks to a certain Mr Yeng from Academia Sinica who met us at the station, we were led aside and out another exit with a minimum of fuss.

Although we had seen some brief glimpses of China out of the train windows, peasants in the fields, workers in some small villages and on the railway stations, our first real taste of the People's Republic came as we walked out of the Guangzhou railway station and down the long sloping pathway that led to the square in front.

Here we were confronted with a sea of humanity such as we had never before encountered. Presumably the sea had rolled up to witness the exit from the station of groups such as ourselves from different parts of the world, and no doubt it was a popular pastime, for a great deal of interest was shown in ourselves, our baggage and our dress as we walked single file through the parting crowd to the cars reserved for our use.

To the western eye, however, it was all a little overpowering because of the uniformity in dress of the poeple and because of the hush that fell on those immediately nearby as we walked through.

However, we departed, unscathed, and amid much tooting of car horns our Shanghai sedans weaved through the throng out on to the main road for a short drive to the airport.

By this time it was almost dark and while we were waiting for our plane to Beijing the good Mr Yeng plied us with many dishes of fine Guangzhou food and several bottles of piju (beer).

In true Australian fashion we each ordered one bowl of soup. In true Chinese fashion we each received a bowl of soup large enough to feed the entire table.

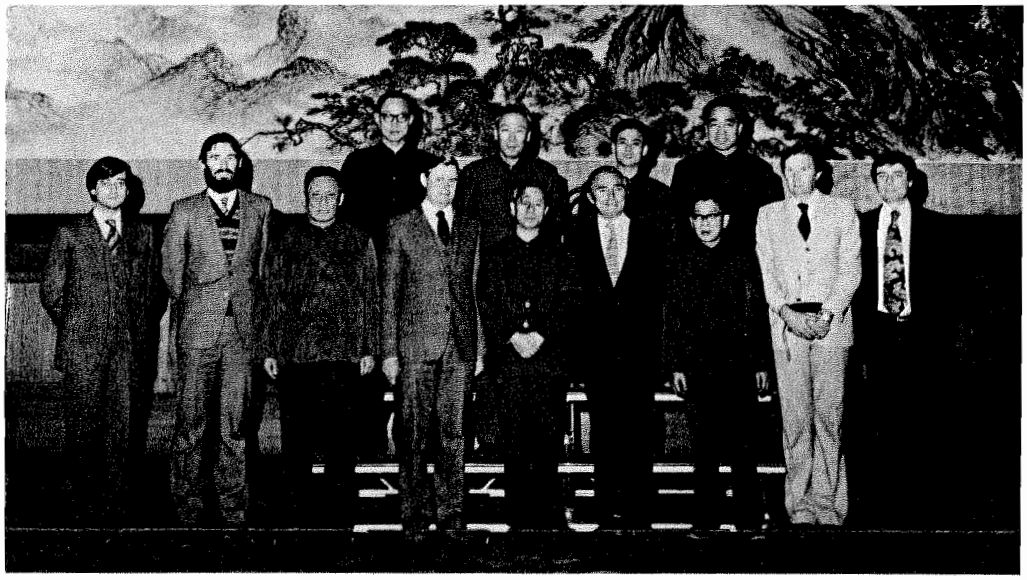
Some of the dishes were equally large! Mr Yeng was unperturbed by this apparent gluttony and politely continued to answer our questions. However, this was to be the only time we were required to order from the menu, and although our future meals were usually more than we could eat, perhaps our hosts had decided to save us from ourselves.

The flight to Beijing in a 707 was uneventful, if a little cramped, and set the trend for all other internal flights. These were typically at night, the planes were always full and cramped (particularly on the British Tridents used for shorter hauls) and we were invariably served tea, a selection of cold eats and a souvenir such as a notebook, keyring or packet of sweets.

In Beijing we stayed in the Beijing Hotel in the centre of the city in Changan Avenue adjacent to the Tien An Men Square.

The Square is surrounded by such world famous buildings as the Great Hall of the People, the Workers Cultural Palace, and the Palace Museum, while in the centre is Mao Zedong's (Mao Tsetung) mausoleum.

Our wing of the hotel was built in the early fifties and boasted red carpet, ensuite bathrooms, ceilings of a fantastic height in the foyer, and lashings of ornate gilt trimmings. It was also too hot for comfort, especially when the outside temperature was barely above zero.



CSIRO's visitors, Australian Embassy Staff and members of the Academia Sinica pose formally beneath a huge mural which, apart from its subject matter, bears the calligraphy of Chairman Mao Tse-tung.

Our first day in Beijing was a Sunday and a day of rest for the scientific community we were expecting to visit, so our hosts had arranged for a days outing to the Great Wall and the Ming Tombs. We breakfasted early and, dressed to the ears in warm clothing and hats, we received our initiation to Beijing traffic as we were driven from the hotel out into the barren hills that surround Beijing and through which part of the Great Wall winds.

Apart from the foot, which possibly leads the field as China's greatest transport mode, the bicycle must be the most popular means of moving around the cities and towns of China.

There are literally millions of them and annual production runs to about 9 million. On the move they clog the roads and highways, stationary they clutter the footpaths and foyers, but despite these disadvantages we conceded that they must be better than an equal number of cars.

Their biggest drawback, as with cars, is the person in charge. The average Chinese cyclist appears to have no sight or hearing since they dart out from behind large objects, swerve without warning and ignore traffic lights.

However, after a while you realise that they have plenty of sense because without this outward show of nonsense, they would soon be the underdog on the roads in favour of large buses and trucks, the other main road users.

It was through this mass of pedalling commuters that we slowly drove out to the Great Wall, some forty kilometres from the hotel, our only mishap being to knock one poor cyclist from his machine after he had taken a sudden right angle turn in front of the car. The victim seemed unhurt, if somewhat dazed, as he was lifted into a passing bus and sent on his way.

We walked along the Wall, were impressed by its antiquity, its construction and its size, enjoyed the icy blast from inner Mongolia that froze exposed flesh in minutes, and bought souvenir postcards.

Keith Boardman chanced to meet an old friend (what a place to meet and what a conversation opener!) but the rest of us were definitely strangers to the place.

We were accompanied on this outing, and indeed throughout the visit, by two friends from Academia Sinica—Feng Yinfu from the foreign affairs section who accompanied Professor Qian on his visit to Australia, and Shao Minxing our interpreter who had also been to Australia on five previous exchange visits and who was the Australian expert at Academia Sinica.

We drove back towards Beijing but detoured somewhat to visit the Ming Tombs.

Here one huge underground tomb, out of a collection of a half a dozen scattered over several kilometres of countryside built to entomb various Ming emperors and their families, had been opened in 1956 and displayed for the people of China. The Ming dynasty ruled China from 1368 to 1644.

The opened site is known as Dingling and was built over six years beginning in 1584. It contained Emperor Shenzong and his two wives and is a magnificent example of traditional Chinese architecture.

The site comprises many temples and buildings, spread over several hectares, culminating in the vast monument that houses the headstone for the Tomb. We spent several fascinating hours looking at the buildings and the exhibits, the latter mostly having come from within the Tomb, before returning to the hotel.

Our next "cultural" event was the Welcome Banquet, hosted at lunchtime by Professor Qian and several of his colleagues from Academia Sinica. From the Australian side were ourselves and Ambassador Woodard and one of his staff, Ross Maddock, from the Australian Embassy.

Among the many dishes served we enjoyed Peking Duck, for which the particular restaurant we were attending was famous, and toffee apple.

Many toasts to the friendship and co-operation between CSIRO and Academia Sinica and Australia and China were drunk to the obvious pleasure of the Chinese who delighted, at this and at the other banquets we attended in Shanghai and Shenyang, in encouraging us to drain our glasses of Mautai (the Chinese neat liquor).

A steely gaze over the top of his glass from Mr Feng and a hoarsely whispered "gambe" (skoll or bottoms up) would be all the incentive Greg Tegart needed to throw his head back and feel the fiery fluid burn down his throat! And he could still take notes during the afternoon—that's the stuff from which Executive members are made.

We had six days in Beijing, mostly spent in discussions and visits with Chinese scientists in their laboratories, but during all the driving to and fro from one side of the city to another we caught glimpses of much of the day-to-day activity of the Chinese.

We passed many magnificent buildings and palaces in addition to the rows and rows of apartment blocks and low shabby houses.

We saw the shops and the huge piles of cabbages on the footpaths outside.

We passed the democracy wall many times and never saw any trouble there.

We met Vice-Premier Fang Yi, in charge of science and technology, in the Great Hall of the People one evening, and we spent several hours walking through the shopping area near the hotel, to the endless interest of the Chinese passers-by.

We walked through the Palace Museum and marvelled at its splendour, and we spent one foggy lunch-time in the Tien An Men Square watching the passing crowd.

And we enjoyed every minute.

(continued opposite)

People

One of CSIRO's most respected science administrators, Mr Peter Butler, has retired after nearly 30 years with the Organization.

Mr Butler, who was First Assistant Secretary (Science Liaison) has held senior positions on CSIRO's secretariat since joining the Organization in 1951.

He gained the degree of Bachelor of Agricultural Science from the University of Adelaide in 1946, then interrupted his studies to serve with the AIF during the war. He returned to the University of Adelaide to gein the degree of Master of Agricultural Science in 1951 after three years as a Research Fellow with the Waite Institute.

He joined CSIRO in 1951 and became Assistant Secretary (Agricultural and Biological Sciences).

In 1961 he was appointed Chief Scientific Liaison Officer, London. Soon after his return he was appointed Scientific Assistant to Member of the Executive.

In 1973 he became Senior Assistant Secretary (Agricultural and Biological Sciences), and then First Assistant Secretary (Science Liaison) in 1978.

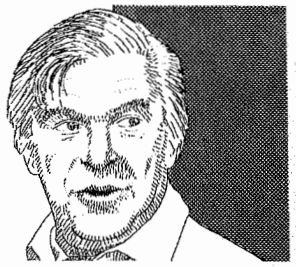
During his career Mr Butler represented CSIRO on a number of committees, including the Australian Meat Research Committee, Australian Pig Industry Research Committee, Australian Chicken Meat Committee and the Poultry Research Committee.

He was secretary of the Standing Committee on Agriculture from 1964 to 1973, and when CSIRO accepted responsibility for organising conferences under the aegis of this committee, took on this task himself.

He organised a number of highly successful conferences and established a pattern and an approach that is largely followed today.

He displayed a detailed knowledge of the agricultural and livestock industries and the research being undertaken to assist them both within CSIRO and in State departments, universities and industry.

He gained a reputation for a keen awareness of the special needs and problems of research workers, an awareness which was balanced by an equal understanding of the needs and problems of the industries using the results of that research.



Peter Butler

Honours

Nine members or former members of CSIRO staff have received awards in the New Year and Australia Day honours this year.

The awards were as follows:

NEW YEAR HONOURS

Knight Bachelor—Mr D. Zeidler, Chairman and Managing Director of ICI and former CSIRO staff member between 1942-52.

Companion of the Order of St Michael and St George—Mr C. R. Kelly, former Member of the CSIRO Advisory Council.

Commander of the British Empire—Dr A. E. Pierce, former Member of the Executive and now Minister (Scientific) in London.

British Empire Medal—Miss P. Glancy, a member of staff of the Division of Mechanical Engineering.

AUSTRALIA DAY HONOURS

Companion of the Order of Australia—Sir Rutherford Robinson, former Member of the Executive.

Officer of the Order of Australia—Dr H. J. Frith, Chief of the Division of Wildlife Research.

Member of the Order of Australia—Dr A. J. Millington, Acting Director, Institute of Earth Sciences; Commander K. M. Adams, RANR, member of staff of the Division of Animal Production.

Three Australian scientists who have been awarded Queen Elizabeth Fellowships for research in the physical and biological sciences will work with the Division of Plant Industry in Canberra.

The fellowships are for two years and are tenable at Australian universities or approved research institutions.

The scientists are:

Dr Anthony Ashton, a research associate at the University of Chicago, United States, who will do research into plant enzymes.

Dr Pamela Dunsmuir, a research associate at the Sidney Farber Cancer Institute, Boston, US who will investigate DNA sequencing.

Dr Gerard Zurawski, a post-doctoral fellow already working with the Division, who will continue his research there in the field of molecular biology of plants.

Software directory

By James P. Higgins
Division of Entomology

No doubt when most people think of computers, and those that minister to these sods, they imagine a very ordered world in which all decisions are rational, procedures are carefully developed, and mistakes (excluding whoppers in accounts) never occur.

Alas—as any honest minion will tell, things are seldom like this.

Indeed to illustrate just how subjective and haphazard is the computer world one only has to look at the procedures for writing programs.

I am not referring to the technical decisions such as: what language to write in, should the decision be top-down, modularity, etc.

Rather I refer to the initial decision of whether or not the program, or routine, etc. needs to be written!

I will assume that it has been ascertained that a need exists and that a solution by computer is appropriate. Given all this the next question is "Will we be reinventing the wheel?". Or, "is there already a program written which will satisfy our needs?".

Now if the search for such a program is more of an effort than writing it then obviously it is better to go ahead and forget about looking.

But given the close cooperation between Divisions of CSIRO, the common computing facilities, and the similar types of requirements that workers may have, it *should* be relatively easy to find out if the required program is available within the Organization.

We in the Division of Entomology have attempted to make a start in this direction by producing a directory of our Division's software.

Within a few weeks of its release we already have received many requests for various software and now have a mailing list of about 40, not including our own people.

A useful side-effect of our directory is that programmers tend to produce better quality work when it is to be offered for public consumption.

Perhaps other Divisions, especially those with large programming efforts, will likewise see the advantages of sharing their work—or are we doomed to keep reinventing the wheel?

Flextime by computer

Anybody who has ever filled in a flextime form will welcome the trend in CSIRO to computerise flextime records.

A number of Divisions have already moved to computers to eliminate the time-consuming process of checking and updating individual flextime records, among them the Division of Entomology in Canberra.

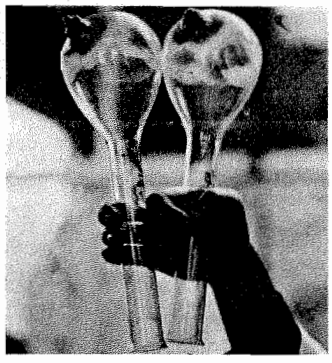
Entomology's system is fairly typical of those already in use or being considered by other Divisions, and comprises four sections:

- The attendance records, filled in by each employee each pay period,
- A computer-stored employee particulars file (EPF) which holds each person's current flextime balance,
- A computer program called ATTEND which processes data from the flextime forms,
- A computer program called FILER which allows the staff clerk to make alterations to the employee particulars file.

Each day the employee enters his start and finish times in 24-hour notation on his attendance form, so that at the end of the pay period all periods of duty and authorised absence are shown.

The form is then signed by the employee and his supervisor and submitted to the staff clerk, who punches it onto cards. The cards are then fed into the ATTEND program which checks the data for errors, and if it is error-free, updates the flextime balance on the employee particulars file.

Employees have a choice as to how they receive their current flextime balance, by indicating on their flextime forms.



Somebody boobed!

Academia Sinica fetes Executive visitors *(from page 4)*

In Shenyang and Shanghai the story is very much the same, except that we were accompanied on these legs of the visit by Peter Rowe, one of the attaches from the Australian Embassy.

Peter's realistic view of life in China, based on two years of experience, provided a useful balance to the no-expenses spared treatment we had been receiving. Not that there was any attempt on the part of our hosts to give us a rosy image of China.

Far from it, in fact, as we were not shielded from any aspects of their way of life and were often told about the disruptions caused by the political upheavals of the Cultural Revolution.

Many scientists we spoke with gave us sorrowful accounts of colleagues banished to the countryside and whole institutes closed down in the name of equality and purging society of elitist groups.

We saw what effect this policy had had, on many of the Institutes we visited, in the form of poorly equipped laboratories and walls papered with political slogans and outpourings.

More importantly, however, we could see the effects of ten years of isolation in the level of the research being carried out.

While it would be arrogant to be derogatory about the quality of the research, there is no doubt that much of what is now being done in China has been done already elsewhere in the scientific world.

This, of course, is the crux of the problem in negotiating for scientific exchanges. While China has an enormous amount to gain from exchanges, for other advanced countries the gain is not so obvious.

But I digress from the "cultural"aspects of our visit, and already this article is longer than anticipated.

In Shenyang where we enjoyed four days of relatively warm weather, just above zero ^{o}C, in contrast to the predictions of ten to twenty below, we visited a people's commune, a foundry, a feather handicraft factory, a palace museum, a tomb and the opera. The last of these deserves a short description.

Picture a shabby downtown cinema surrounded by a horde of humanity stretching a block in either direction and completely filling the roadway outside the cinema and you have a fair description of the Shenyang Opera House on opera night.

Through this throng our cars nudged a path and deposited us at the front entrance where we were guided to a special VIP lounge.

Here we were served tea until the lights dimmed at which time we were whisked down the centre aisle to the only row in the house with padded seats.

Despite all these precautions we were still clearly as much objects of interest as the forthcoming performance.

The theatre was two tiers and patrons hung over the balcony or stood around the edges in a manner positively Dickensian.

The raising of the curtain brought forth a great surge of excitement which continued at intervals throughout the performance complemented by bursts of handclapping.

The show was a traditional opera and the story was about a wrongly disgraced general, banished from the Emperor's court, coming with his eight sons, to the Emperor's aid in a time of crisis during a war with a neighbouring state.

The Emperor was saved, the general's honour reinstated, but with the loss of five of his sons during the final battle scene, and the villain, who originally orchestrated the general's disgrace as part of his plot to have his own kingdom, vanquished.

The colours, sounds and costumes were magnificent but nearly four hours of the performance were certainly sufficient!

The popularity of the opera rivalled a football grand final day in Australia and is probably because traditional opera performances have only recently been allowed after being totally banned for many years.

Contemporary operas, with definite political bias, have been all that has been available previously.

In Shanghai, where we spent three full days, we were treated to the acrobatics, an equally enjoyable performance including some remarkable feats, but without the excited crowd of patrons that we experienced in Shenyang.

However, we found Shanghai a more lively city overall, probably a legacy of the past when it was a thriving international seaport with all the associated iniquities.

The warmer climate would help also as the dress of its citizens reflected.

The goods on display in the shop windows indicated that perhaps the Shanghai people enjoyed a higher living standard than their colleagues further north. We saw radios, cameras and tape decks for sale, encouraged by huge advertisements for these and other consumer goods, erected in the manner of any Western nation.

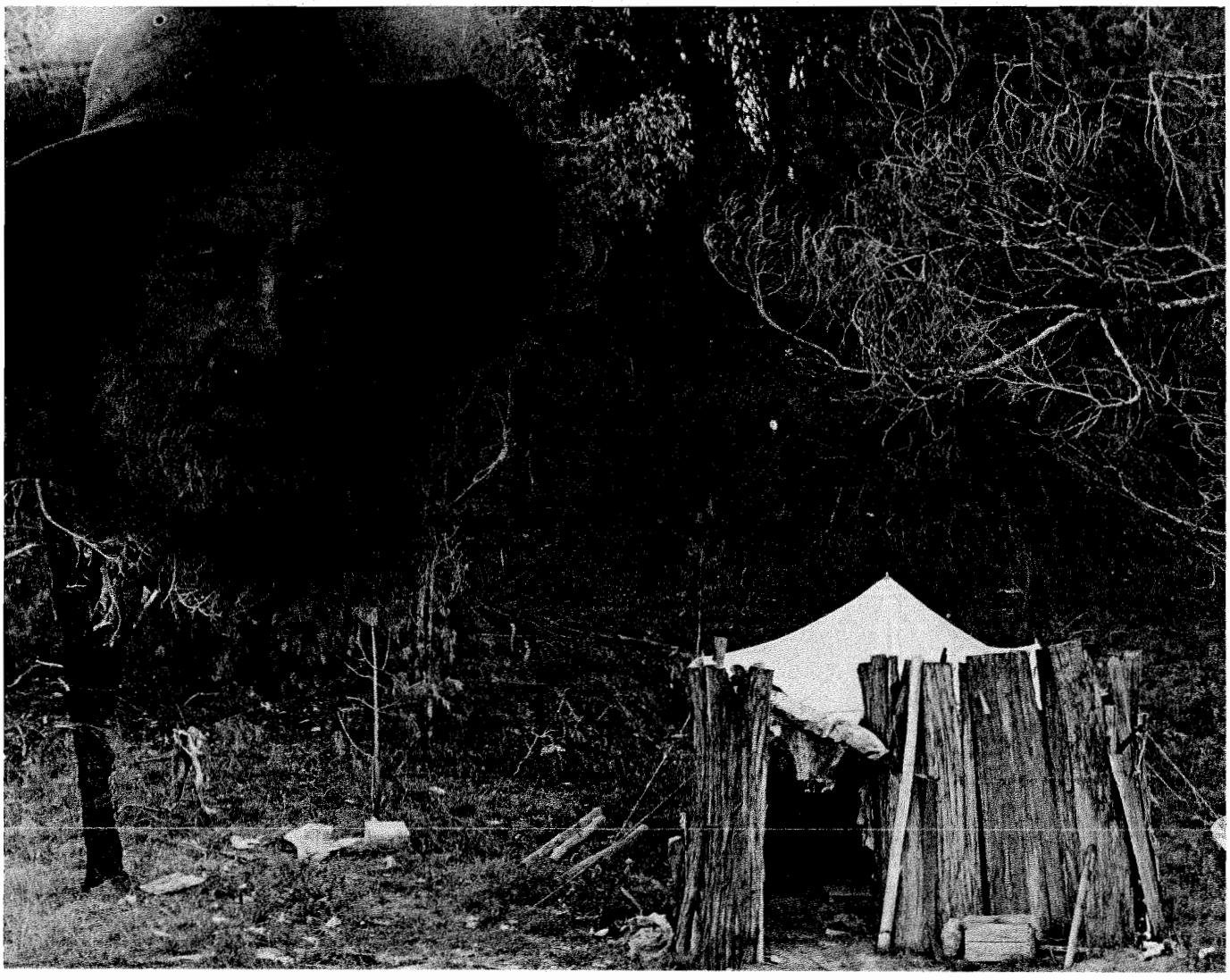
All too soon we realised that our visit to China was coming to a close. We had visited three major cities, and within them some twenty scientific institutes or offices in fields ranging from agriculture and forestry to metallurgy and ceramics.

We had held numerous discussions with the research leaders of these institutes over equally numerous mugs of Chinese tea.

We had visited tourist sites and cultural activities and become well acquainted with our Chinese guides and hosts.

We were laden with Chinese scientific journals, meeting notes and general souvenirs and to tell the truth we were slowing down.

So it was with some relief but with infinitely more regret that we flew back to Guangzhou and into the care of the ubiquitous Mr Yeng who saw we were smoothly, and without undue official intervention, spirited through customs and emigration to our plane to Hong Kong.



Backwoodsman joins foresters

By WENDY PARSONS

Down in the gum tree gully sits a fading tent, pitched against leaning timber slabs that form a backing for a galvanized iron fire place.

This gully is on 'Pinebank', a property near Canberra. It's the home of Len, known to the locals as Saltbush, a craggy weather-beaten man, rangy, bohemian-haired, bearded.

There's some CSIRO research going on round this property too—vast trials testing how well trees and livestock can live together. It's known as agroforestry.

Len's interest in the strange doings of agroforestry researchers is growing. He first came here a drifting worker about four years ago, travelling with his mate Cec and picking up work "cuttin' props".

He was in and out of the place then, but about 10 months ago Cec, who'd gone off in the car, didn't come back, and Len was left with no tucker or money, living in the slab-tent humpy and scratching out sustenance by catching rabbits.

After three weeks Francis Clarke, owner of Pinebank, became concerned and asked Len what was up.

The outcome was that Francis—Fra to all friends—gave Len work to keep him alive. (He does admit though that the property had its best rabbit control ever when Len was out of tucker).

Fra wasn't sure of Len's capabilities—he was rather fond of the demon drink, and didn't look too robust—but he thought he'd give him a go on concreting for a start.

Seventeen yards of concrete later, Fra and his neighbour, who was also helping, were out of puff and Len was still going. So Len stayed on.

Chris Borough, CSIRO Forest Research, has Len as a sort of caretaker to his vast agroforestry trials on Fra Clark's property. The bushman from the gully has helped plant out eucalypt trials ("We got some dole bludgers in to help but they only lasted two days")—and guards Chris' pine trees from kangaroos and goats ("I chase 'em with a tractor and my dog Blue.")

"I check on the strangers around the research area too—I pull 'em up and ask what they want.

"Once some shooters come in shooting too close to the tent so I took the rifle out and put one over the bonnet of the car.

'They've got me growing me own pines now . . . got about 17. Put a whisky bottle at the base of 'em to keep the water up to the roots. I wouldn't put one of those apple gums in the ground—they won't burn, they're no good for timber."

Len came from Botany. After nine years in the navy, with the end of the second war, he went bush, did some pea growing around the Oberon area for about 10 years and went broke with too much rain and the black spot hitting a 70-acre crop.

In the green eucalypt gully near the slab-side tent, there's now a dusty orange caravan.

"Fra said I would have died in the tent, so he persuaded me to get the caravan I used when I was a powder monkey for the Yarrowlumla Shire. I used to keep 2 ton of nitrate in the back of it, a dozen cases of gelly under the bed, and the detonators under the pillow."

On the window of the caravan is proof that Len, the caravan, and the gully have joined the prestigious ranks of other CSIRO research establishments round the country.

There glows an oval blue-and-white sticker that reads: "CSIRO—Science for Australia".

Top soils scientist retires

Dr Roy Brewer, a Chief Research Scientist with the Division of Soils, Canberra, has retired after 38 years of service as pedologist and micropedologist.

He graduated from the University of Sydney in 1941, and in the same year joined the Division of Soils in Adelaide, and carried out soil survey with Bob Smith in the Moulamein district.

After a break during the war years when he served with the RAAF he returned to the Division to carry out soil surveys in the Riverina (with Bruce Butler), Hunter Valley, New England, Sydney and Canberra areas.

He moved to Canberra in 1949 and from 1950 devoted most of his time to micropedology; to improve the techniques and to apply them to provide a better understanding of soil genesis and behaviour.

He has published the monograph 'Fabric and Mineral Analysis of Soils', is a co-author of 'A Handbook of Australian Soils', a contributor to 'The Encyclopedia of Soil Science', 'Glossary of Soil Micromorphology', 'The Jubilee Book on Australian Soils' and has published more than 50 scientific papers.

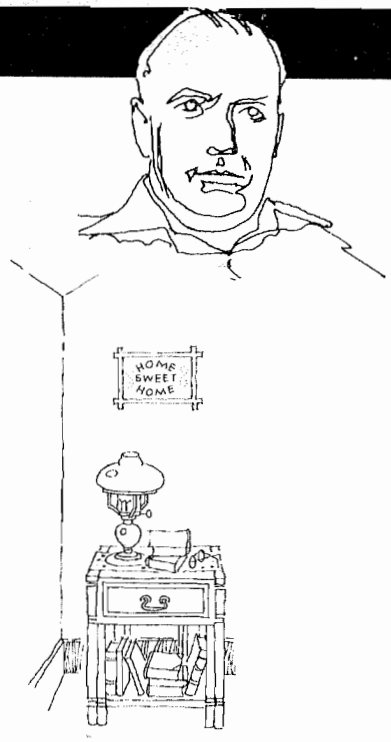
His monograph 'Fabric and Mineral Analysis of Soils' played a significant role in the recent increased use of micromorphology not only in pedology and applied soil science but also in Pleistocene geology and soil zoology and elevated him to top status among the micromorphologists of the world. The monograph has been quoted more than 270 times since it was published in 1964 and has become a Citation Classic.

He was awarded his D.Sc. by the University of Sydney in 1963, a Leverhulme Trust Fellowship 1964-65, and a Commonwealth Research Fellowship 1971-72.

Dr Brewer was Senior Vice-President of Commission VII International Society of Soil Science 1960-64, Secretary of Commission V IXth International Congress of Soil Science, Adelaide 1964-68, President of the A.C.T. Branch Australian Society of Soil Science 1959-60, Convenor of the Sub-Committee for Soil-stratigraphic Nomenclature 1967-70, member of the Editorial Board Geoderma 1967-79, and a member of the Working-Group on Soil Micromorphology ISSS 1969-73.

He has been appointed an Honorary Research Fellow with the Canberra Laboratories and hopes to complete two monographs in the near future, but the latter now have a low priority behind travelling, house painting, gardening and golf.

McMahon



AUTUMN BARBECUE

Sitting:
within the scent of embers where the last
of smoke-blued sun-rays run
along their slanting path through glass.
And catching
colour from the claret, patch the matching
eastward-leaning shadows with their shafts
of wine-stained sun.

Listening:
to voices gleaning decades as they send
their memories back for names retained
in half-light where the legends end.
Restoring
half-forgotten plots to epics. Calling
people in from silence. Shadows blend
with light again.

Thinking:
that, although contracting days match hands that time
has shrunk and shaken as it passes,
(hands that spill a little of the wine
in pouring)
years stand still within these tellers. Stories
colourful as claret pour from minds
as clear as glasses.

WALKING WORKWARDS

Mt Ainslie looks like Hobbit country. Mists fold light
in canopies and white
cloud-shrouded hollows now begin
to ring as currawongs bell winter in.

The tea-cup tempests that will punctuate my day
lie half an age away.
For now I'm Gandalf-shadowed and
I walk along a tolling, Tolkien land.

BAROSSA NOCTURNE

The others married and then moved away.
But Ern, the youngest of my brothers, stayed
and helped my husband work the farm. We've kept
the boys' room for him still. You'll see it through
the peppers in the yard. He always goes
off early in the evenings — books you know.
Always the reader, Ern, but secret yet —
and selfish too.

He'll overturn that lamp one night. I've seen
it burn 'till morning. Reading, yet! It seems
that parents always spoil the youngest son.
I told my husband we should have the power
put in that room already. Only then
will I feel safe again. You can't depend
on Ern these days; besides, he's eighty-one
and shaky now.

CORESEARCH CLASSIFIEDS

Looking for new piston rings for your veteran Stutz Bearcat? Or an ivory-inlaid tsetse fly switch from Upper Volta? Perhaps a tape recording of the suicide call of Lesser Myopic Fish-catcher as it dives into a dry lake bed from a height of 3000m?

The odds are that one of CSIRO's many eccentrics will have the item you seek. This issue of CoResearch offers news of a way of contacting the person you seek.

CoResearch Classifieds will help you close the gap, putting you in touch with an audience of 7000, scattered across our continent.

If you want to take your wife and nine kids on a cheap holiday, away from Sydney's smog, there's bound to be somebody in Perth crazy enough to swap houses for a week or two.

And if your chief pleasure is lying in a fetid swamp near Booligal, festooned with tiger snakes, in the forlorn hope of photographing a moth-eaten snipe on its annual pole-to-pole migration, there are probably others of similar persuasion waiting to hear from you.

Altitude migraine addicts can use CoResearch to contact soulmates for a crippling weekend in the Snowies, panting up vertical slopes in the teeth of a midsummer blizzard.

If your Division has an electron microscope that perpetually blows fuses, you may be able to palm it off on some other unfortunates elsewhere—Divisions are littered with redundant equipment awaiting the touch of some inspired gadgeteer in another poverty-stricken laboratory.

CoResearch classifieds are open to any member of staff, and will be free of charge. Depending on the number and type received, they may be grouped in specific sections.

Future editions of CoResearch will revert to a four-page format, and will be produced monthly.

Editorial and advertising material should be submitted by the 8th of each month to meet production deadlines.

All advertisements should carry the advertiser's name, address and telephone number, although this information need not necessarily appear in the body of the advertisement.

Advertisements should be sent to:

CoResearch Classifieds
PO Box 225
Dickson, ACT
2602

Asbestos and your health

World attention has been focused in recent years on the cancer risk associated with asbestos.

The following article is reprinted from 'Review', the journal of the Australian Public Service Association, in the hope that CSIRO staff will become acquainted with the hazards of exposure to asbestos.

What is asbestos?

Asbestos is a naturally-occurring rock fibre. It is mined as lumps, and these are broken down into fine, loose fibres by milling.

Types of asbestos

The two forms of asbestos most commonly in use are white asbestos (chrysotile) and grey asbestos (amosite). Blue asbestos (crocidolite) may be found in insulation materials applied before 1970. In the opinion of most regulatory authorities the levels of exposure to blue asbestos which can be regarded as non-hazardous are so low that it is not possible to achieve them in a practical situation. On no account should blue asbestos therefore be used for new work.

All types cause diseases.

Why is it so dangerous?

The fibrous dust is so fine, it reaches the tiny air sacs in your lungs. Many fibres become trapped there and cause scarring of the lungs. This makes breathing difficult and sufferers get breathless and tired.

It causes cancer, and it also increases the risk of cigarette smoke causing cancer.

The dust is so fine that you may not be able to see it.

The symptoms of these diseases take ten to forty years to appear.

Where is it used?

- Cement sheet ("fibro").
- Cement flue pipes, water pipes and sewerage pipes.
- Insulating material for electrical switch boxes, stoves, fireproof panels.
- Fireproof blankets, mats, gloves, clothing, rope and string.
- Brake and clutch linings, friction bearings, gaskets.
- Floor tiles, refractory caulking and asbestos paper.
- Lagging for pipes, boilers.
- Sprayed insulation for fire and sound proofing, for example, in libraries, in swimming pools, auditoriums, trains.

Is there a safe dust level?

The World Health Organization has now stated that *there is no safe level of exposure to asbestos dust.* There are, for example, cases of people with very low exposure (sawing asbestos cement sheet at home, or washing asbestos contaminated overalls) who contracted mesothelioma 40 years later.

The safest approach is to reduce the amount of asbestos to as little as is possible. The less dust you breathe, the lower the risk of getting a disease caused by asbestos.

But there is no safe level.

Is the use of asbestos essential?

No! For most uses of asbestos there are now substitute materials available.

Which operations creat dust?

Sawing, drilling, sanding, bevelling. Preferably do not machine products which contain asbestos without special equipment, such as that fitted with vacuum lines or water feed. If these are not available, wet down all work before you start.

Handling products. Sheets rubbing together create dust. Bags of asbestos nearly always leak. Rope loses fine fibres even though you can't see them coming off.

Lagging. Repair of lagging always creates dust. Take precautions.

Brake repair. Brake drum dust contains fine asbestos fibres. Take precautions. Don't use air lines to blow out drums. Use a damp rag.

Spraying insulation. This is very dangerous. Asbestos should never be sprayed. Alternatives are available and should be used.

Sweeping up. Preferably use approved vacuum cleaners. Small quantities of dust can be wet down and wiped up. Dispose of in sealed plastic bags.

Are masks effective?

Some special tissue masks are available and these are satisfactory under some dust conditions, but not if you have a beard or more than one day's stubble. The same applies to cartridge respirators.

The only effective protection is from full-face hoods fed by an external air supply, and these are very cumbersome.

Diseases caused by asbestos

Asbestos is made up of very small, very sharp fibres. If you breathe them in, it is very hard for the body to get rid of these fibres.

They can irritate the lung, to cause different diseases:

- Asbestosis: The fibres irritate the lung to cause inflammation. The lung becomes scarred, and does not work as it should. This is called 'asbestosis'—it can't be cured.
- Lung cancer: Asbestos can irritate the air tubes of the lung. Several years after the irritation has begun the lining of the air tubes grow abnormally as a cancer.
- Mesothelioma: Asbestos fibres can get to the lining of the lung (the pleura) and irritate it. This can cause the cancer called mesothelioma, many years after asbestos dust is breathed in.

The Government's "safe" level of 2 fibres per millilitre of air will result in disease.

If you are working in dust at 2 fibres per millilitre of air, in one 8 hour shift you will breathe in about 16 million fibres. Up to one person in ten working at this level will get a disease caused by asbestos.

—Acknowledgements to *Review* (Australian Public Service Assoc.)

Perspective

A forum for comment by CSIRO individuals. Views expressed in this column do not necessarily reflect CSIRO official policy, and should be read only as a perspective on a subject of interest.

Aunty neglects Australian science

We're drowning in current affairs

GRAEME O'NEILL is a science journalist with the Bureau of Scientific Services. He is editor of CoResearch, and also contributes to Ecos. His special interest is the communication of science to the layman, particularly through the electronic media.

Those discriminating people of CSIRO who watch or listen to the ABC may feel a certain empathy with Aunty as she enters the 1980s. Aunty, you may have read, is being Reviewed.

The review might seem of marginal interest to an organisation such as our own, yet there is one important area of the ABC's activities which concerns not only CSIRO but all Australian scientific and technological research institutions.

It is the area of science broadcasting, the window through which the illumination we provide may shine upon a generally unenlightened public.

In the wake of its own review, CSIRO is emphasising (and rightly so) direct communication with its research customers, particularly in manufacturing industry.

But direct communication thrives best in an atmosphere of receptivity. And Australians, be they laypersons or industrialists, aren't very excited about science and are not generally receptive to new ideas.

Australian science and technology suffers an awareness problem. It is partly due to our taciturn scientists and also partly due to the Australian media, which reports science rarely and poorly.

In recent years the more responsible of our newspapers have finally come to grips with the fact that not only is science news, it is occasionally big news. CSIRO's own Media Group can claim much of the credit for this.

As far as I am aware, only Melbourne's 'Age' newspaper has a full-time science correspondent on its staff, but it would be fair to say that science gets a far better deal in newspapers than in the electronic media.

The commercial electronic media is a madhouse where the stolid, rational, muted voice of science is drowned out by blare and hype.

Science is too hard to report, too expensive to make, unless the subject is UFOs, parapsychology or monsters. These latter subjects 'rate' with a public already dangerously addicted to such pseudo-sciences. The equally mind-bending realities of orthodox science are largely ignored.

The 'feed-'em-what-they-like' mentality is ever-present in commercial broadcasting. The prospects for improving exposure of science are poor because the public doesn't like science because the public doesn't understand science because commercial broadcasters don't program science because they don't understand it either.

This places particular responsibility upon the ABC which theoretically at least is free of the distracting need to 'rate'. The emphasis is on catering for minority audiences.

Two media are potentially available for the benefit of science—radio and television.

ABC Radio 2 has in Robin Williams' 'The Science Show' a program of quality which mixes Australian with overseas science and rarely manages to become dull or incomprehensible.

But realistically, radio is limited in its potential for creating a public awareness of science and technology.

Not many people listen during working hours, and evenings are dominated by television, not radio. That leaves only weekends, which are hardly an ideal time to program science. Usually only those already converted will tune in.

Television on the other hand tends to capture an audience during leisure time, and can deliver it at least to the opening credits of a science program.

If the program has been promoted earlier in the week or the same evening, the prospects of people watching it are greatly enhanced.

So science must look to television to project its message, and particularly to ABC television.

Some might see science as just another sectional interest, seeking to further its own ends by demanding greater exposure. Is there any compelling reason why it should be placed on an equal footing with, say, arts-oriented programs, or programs which are purely entertainment?

Perhaps it is enough to say that most scientific research is conducted to improve mankind's lot, not to further science itself.

Funds shortage

Unfortunately, the evidence is that the ABC doesn't seem to see it that way when allocating funds for home-grown productions.

ABCTV's efforts in science programming deserve to be damned with faint praise. It screens a lot of good science programs, and many more which could be described as peripheral science—but the bulk of these are from overseas.

When it comes to Australian science, the ABC doesn't appear terribly interested.

The problem doesn't seem to rest with the ABC's science program producers, who are as enthusiastic and scientifically aware as one could wish.

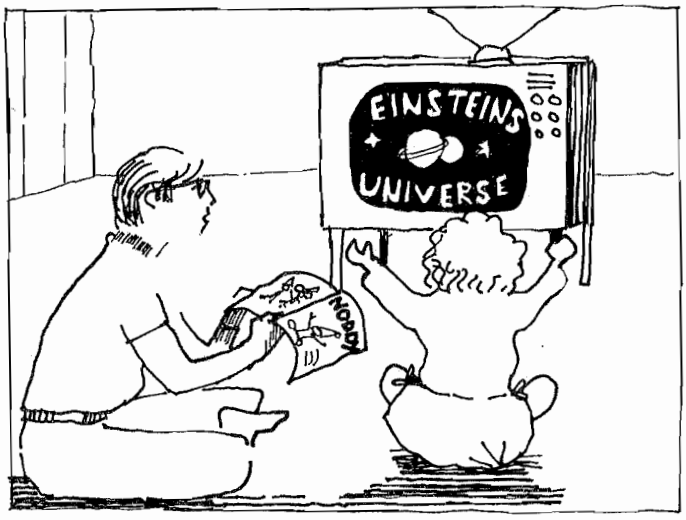
It rests somewhere in the grey corridors of middle management, where programming policy is determined as budgets allocated.

Even in times of financial stringency throughout the ABC, the ABC Science Unit seems to be suffering more than its share of budgetary problems.

Science programs are expensive to make; perhaps as expensive as any locally-made program, and an output of perhaps half a dozen programs in a year which has 365 nights is all that is possible within present financial constraints.

Compare that figure with ABC's saturation coverage of news and current affairs. While nobody could seriously argue against either the volume or quality of ABC's news services, its activities in current affairs demand closer scrutiny.

'Nationwide' goes to air four times a week, with the fifth week night left to 'Statewide'. Saturday sees 'Four Corners' in prime-time



viewing, with a repeat on Sunday.

How did people get along before television went overboard for current affairs? Do we need current affairs seven days a week?

One suspects that the current affairs behemoth that ABCTV has created is suffocating its nest-mates. It is by far the largest consumer of manpower of all the ABC's daily operations, with the possible exception of news.

With such an obsessive interest in the events of today, tomorrow doesn't get a look-in.

Science rarely makes it into current affairs.

I once contacted a young 'Nationwide' reporter to provide information about a significant advance by CSIRO in computer technology which ranked with anything in the world in its field.

He was singularly unimpressed by the suggestion that 'Nationwide' do a segment on the fact that Australian science could still shine in an area dominated by countries like Japan and the US.

He first accused me of wanting to use the ABC for CSIRO's propaganda purposes, but then said 'Anyway, where's the story? There's no controversy in it'.

His attitude was alarming, because it epitomises a more general attitude that science can only be interesting if it is controversial—if the story is about radioactive wastes, mutagenic herbicides, computer technology displacing workers, carcinogenic asbestos or cloning.

The public is thus led to believe that science is not only not a good thing, but is downright dangerous.

For the past four years, the ABC's programmers have had before them a proposal for a science current affairs program which would go to air in one of the present 'Nationwide' slots.

The proposal has been shelved repeatedly, in spite of the fact that there is more than enough good Australian science to fill it.

If the response by viewers to peripheral science programs like 'In the Wild' and 'The Inventors' is any guide, it would attract a significant audience.

The Canadian Broadcasting Corporation initiated such a program several years ago, in an obscure time slot. It moved to prime time because of public demand, and was subsequently expanded to occupy an hour, once a week. So much for science not being in public demand.

CBS in the United States has recently inaugurated a high-budget, prime-time science program hosted by Walter Cronkite. Other science programs continue to draw large audiences, far larger than most program managers would predict (witness ABCTV's own 'Einstein's Universe', re-screened in prime-time by public demand).

Overseas newspapers are employing specialist science writers. Universities are running science journalism courses. New science magazines are being launched, older ones dusted off to meet swelling demand.

Inevitably Australia's electronic media, and to a lesser extent the print media, are slow to recognise the trend.

Science is news. Its events concern us all.

Science has a duty to inform anybody who will listen about what it is doing, to excite people about its potential—but the duty cannot be discharged effectively without the co-operation of the media, and particularly of television.

For all its minority audiences, ABCTV remains a pacesetter in Australian television. It already sets the pace in science broadcasting, but it is to be hoped that the committee of review of the ABC will recognise that the pace at the moment does not match the requirements of either Australian science or the public it serves.

Letters

Sir,

I am prompted by your article on flextime schemes in CoResearch No. 227 to draw your attention to the flextime system that this Division has developed.

In our system all accounting and file manipulations are carried out by computer. This has allowed us to use very simple attendance forms, minimize human effort, and provide full accountability. No calculations are required by employees or office staff and results are quickly returned to employees.

The system has been operating in this Division for three years and has been well received by administration and staff.

About 110 forms are processed each fortnight and the total computer cost, including file storage, is about $55 per month.

At present four Divisions/Units are using the system and others are examining its use.

James P. Higgins
Division of Entomology, Canberra.

(An article on the computer flextime scheme used by the Division appears on page5).

Sir,

In your publications No. 226 and 227 (column "Letters") I did not find any error at all concerning the dimensions of the speed of light as both writers are right—fortunately.

The S1 unit meter (metre) is called a "base unit". In order to avoid the inconvenience of too small or too large numbers (here 300 000 000 m) one has to use prefixes (10^3 = kilo, hence 300 000 km).

Prefixes are recommended according to the "Metric Handbook" of the Australian Metric Conversion Board, 18-24 Chandos Street, St. Leonards, 2065, N.S.W.

This procedure is common practice and legal for many decades overseas, too.

Heinz Konczalla
Division of Soils
Glen Osmond.

CoResearch

CSIRO's staff newspaper *May 1980* 229

Chinese scientist joins CSIRO

The first of 12 Chinese scientists who will begin project training with CSIRO in the next 12 months arrived in Canberra in April.

He is Mr Liu Shu-Sheng, a 25-year-old post-graduate student from Zhejiang Agricultural University in China.

Mr Liu will spend three years with the CSIRO Division of Entomology in Canberra participating in a three-year project on the biological control of several pest species of aphids.

During this period he will be involved in mass rearing wasp parasites, in releasing them in scattered locations in the field and in monitoring their effect.

In the laboratory he will study the identification of aphids and prepare the insects for microscopic study.

Like the other scientists who will join CSIRO projects, Mr Liu is sponsored by the Chinese Government which is paying all direct costs.

His working visit was arranged by the Australian Development Assistance Bureau and CSIRO's Centre for International Research Cooperation (CIRC). ADAB arranged a month's English language training for Mr Liu at the English Preparation Centre in Sydney.

The scientists who will work with CSIRO Divisions are among a total of about 80 which the Chinese Government is sending to Australia under a world-wide program designed to provide wide experience for research scientists and to help raise levels of expertise in China.

The Chief of the Division of Entomology, Dr D. F. Waterhouse, said Mr Liu would work on several pest species and a number of their natural enemies.

'The work will be under the general supervision of the Assistant Chief of the Division, Dr R. D. Hughes,' Dr Waterhouse said.

'Mr Liu will work closely with Dr M. Carver, a recognised world authority on aphids and their parasites. He will also benefit from the long experience of Mr L. T. Woolcock in biological control techniques.'

Dr Waterhouse said the Division welcomed the opportunity to make closer contacts with Chinese entomologists working on biological control programs.

Scientists still to come will work with the Divisions of Atmospheric Physics, Fisheries and Oceanography, Cloud Physics, Mineralogy, Environmental Mechanics, Chemical Physics, Food Research, Mineral Chemistry, and the Australian Numerical Meteorology Research Centre.

Another 80 scientists during the same period will be involved in studies at other Australian research institutions, predominantly in universities.

Those who have arrived in Australia so far have impressed Australians with their enthusiasm, motivation and intelligence.

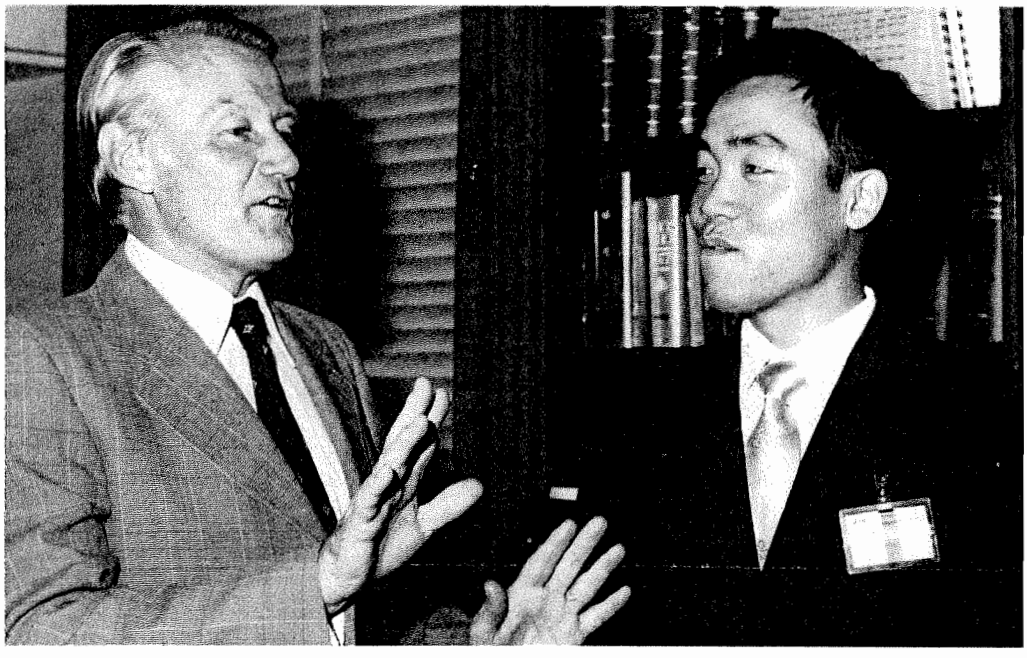
A number have completed a 12-month course in English in only five months.

Liu had already studied English formally before coming to Australia, but says he found a four-week 'refresher course' in Sydney of great benefit.

Cheerful to the point of effervescence, Liu is one of five children in his family—he has three brothers and a sister.

He was among hundreds of young Chinese who applied for positions which would enable them to study overseas, and had to pass an examination set by the Ministry of Education before being accepted.

The Minister for Science and the Environment, Mr David Thomson, talks with Liu Shu-Sheng after his arrival in Canberra.



Fisheries, Oceanography will be split

New marine research centre for Hobart

The Division of Fisheries and Oceanography will be restructured to form two new Divisions, the Division of Fisheries Research and the Division of Oceanography, later this year.

The new Divisions will share a $25 million marine science complex in Hobart, which was announced by the Government recently.

Under the new arrangement, the Division of Oceanography will be part of the Institute of Physical Sciences, while the Division of Fisheries Research will form part of the Institute of Biological Resources.

The decision on the creation of the two new Divisions was made by the Executive in February, and will become effective as soon as possible after the present Chief of the Division of Fisheries and Oceanography, Mr J. D. Rochford, retires in September.

The Executive has identified marine science, particularly oceanography embracing physical, chemical and biological aspects, as an area of highest priority in the wake of Australia's declaration of a 200 nm Australian Fishing Zone around its coastline.

The new Division of Oceanography will pursue physical, chemical and where appropriate, biological studies aimed at gaining a better understanding of oceanographic phenomena.

In the area of chemical oceanography, studies are expected to be centered on marine pollution, particularly from land sources, and nutrition of marine life—the latter being a field of potential collaboration with the Division of Fisheries Research.

The new Division of Fisheries Research will be concerned with studies of the population dynamics of commercial and potentially commercial fish species, particularly in the Australian Fishing Zone, and will provide other scientific support to the Australian fishing industry.

Advertisements for new Chiefs of both Divisions have already been published in Australia and will appear shortly overseas.

The new Divisions and their shared facilities at the regional laboratories at Marmion (WA), Cleveland (NSW) and Karumba (Qld.) will be known as the CSIRO Marine Laboratories.

Both Divisions will have headquarters at the new marine science complex in Hobart and, where feasible, will share facilities including the new multi-purpose oceanographic vessel which is to be acquired at a cost of $9 million.

The complex is expected to be fully operational within five to seven years, and will provide an increased CSIRO presence in Tasmania.

The Chairman of CSIRO, Dr Paul Wild, has welcomed the new centre, saying that Australia faces a clear need to step up its quest for knowledge about the resources and physical characteristics of the Australian Fishing Zone.

'CSIRO has for some time been one of several organisations advocating increased support for marine science, so the decision on the marine science complex comes as welcome news,' he said.

Dr Wild said the Prime Minister's announcement on the acquisition of a multi-purpose oceanographic research vessel meant that Australian scientists would be able to step up their investigations into the physical, chemical and biological aspects of the oceans around Australia.

The complex is expected to be fully operational within five to seven years, and will provide a considerable CSIRO presence in Tasmania.

The Government's decision to establish the complex, and to move the present Division from its headquarters at Cronulla, appears to have taken pressure off the Division of Forest Research in Canberra to be moved to Tasmania.

Canberra creche begins operation

After the sweat, child's play

A continuing problem facing parents in the work force with young children has been to find suitable long term child-care but in Canberra this has now been partly alleviated by the recent establishment of the CSIRO Creche.

In 1967 staff on the CSIRO Black Mountain Site worked with parents at the ANU to establish a child-care centre.

The University eventually provided accommodation and in 1968 the ANU Child Care Centre was started, but within a short time intake was restricted to the children of people at the ANU.

CSIRO parents were again without facilities. In 1974 the Joint Staff Associations Committee conducted a survey on the Black Mountain Site which showed an overwhelming majority of people favoured the provision of on-site child care facilities.

A meeting of interested people was called in December 1978 and the CSIRO (ACT) Creche Association Inc. was formed with the ultimate aim of providing an on-site creche as a staff facility.

Because we have not received any financial assistance for initial costs, nor is it likely we shall receive any in the near future because of present financial and political climates (the Government does not wish to be seen to be favouring its employees), this may turn out to be a very long term objective!

In the meantime we have had to settle for operating in a local hall with only the parents' fees to cover our operating costs.

Approaches to local Departments for finance or accommodation proved ineffectual and anyone who has had the misfortune to deal with high-level bureaucracy will understand how utterly frustrated we became when, after seemingly overcoming all problems, we were delayed for **four months** waiting for approval to operate the creche.

Eventually, our patience exhausted, we asked a local Senator to intervene on our behalf—he got a positive result overnight!

So, after much hard work by Association members and friends the centre finally opened in March 1980, 15 months after its inauguration.

The centre operates from a community hall set in parkland—an idyllic spot for children's nature walks and 'sausage sizzles' on nearby barbeques—and is convenient to the main body of CSIRO workers in Canberra.

Inside, the creche has been furnished with donated equipment and liberal amounts of imagination and, thanks to voluntary (and sometimes coerced!) labour, the outside area has been transformed into a lively playground with swings, sandpit, tunnel and climbing equipment.

Our most valuable asset by far is the staff. They are all qualified and experienced and bring with them a wide range of complementary interests, skills and personalities.

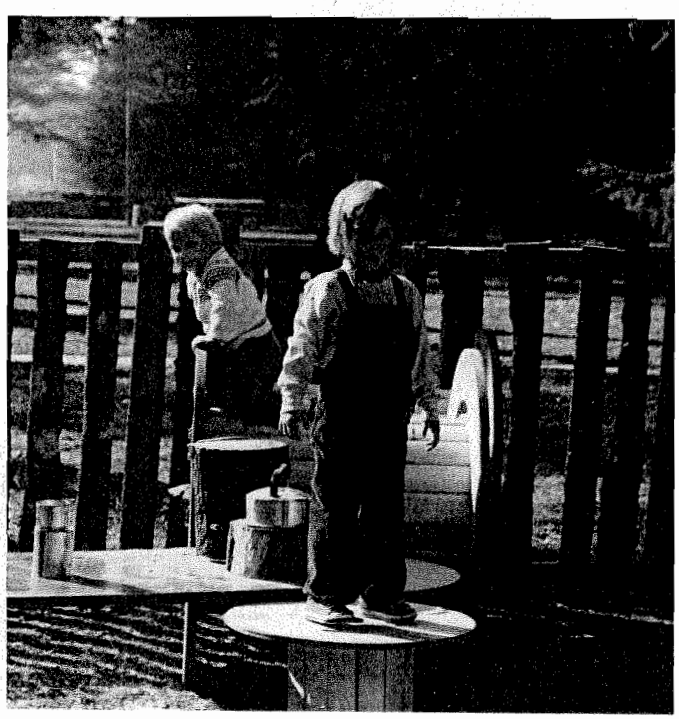
They provide creative and stimulating programs for the children, which in itself is quite a challenge as the ages of the children range from 18 months to 5 years.

At present to help cover some of our costs, the creche is open to the general community and offers full time, sessional and occasional care.

Besides this, emergency care, for which there is very little provision in Canberra, is also available. A 'back up' service for the care of 'marginally sick' children (i.e. those not well enough to attend the centre but not sick enough to stay in bed) has been established and we believe this service to be unique in Canberra.

We can call on qualified nursing staff who will look after the child either in its own home or in their own.

This would be ideal, say, for a child recovering from an infectious disease whose parent, for whatever reason, could not afford to take time off work.



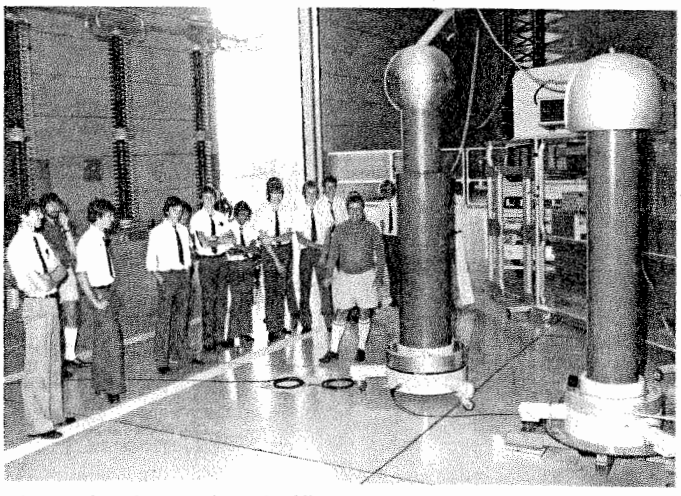
We do not see the establishment of the creche as an end in itself but as the starting point to providing parents with a comprehensive range of child care, including assistance with social and physical problems.

Before long we hope to expand our care to include children only a few weeks old thus relieving parents of the worry of having to find alternative types of care for their children until school age.

Our immediate and most basic aim is to provide a secure, caring environment for children where they are happy and content; in fact, an alternative home.

Perhaps our success in establishing a child care centre offering the kind of care we would like to have available will encourage others in CSIRO to do likewise.

Jane Vickers
Public Officer for
CSIRO (ACT) Creche Assoc. Inc.
c/- Division of Environmental Mechanics



Science students from a Sydney school listening to a commentary by David Brown in the High Voltage Laboratory.

In response to numerous requests from science teachers, the Division of Applied Physics arranged for students from Sydney schools to visit the National Measurement Laboratory on two days in April.

In contrast to previous open days when no restrictions were placed on the numbers attending from each school, it was decided as an experiment to limit each group on this occasion to six students and one teacher.

It was hoped that this would result in only the keenest science students taking part in the visit.

Invitations were sent to all government and private schools in the Sydney metropolitan area and more than 60 accepted.

Thirty-five laboratories were open for inspection, in five circuits. Each group visited seven laboratories accompanied by a staff member to guide them through the complex.

At each exhibit an expert was on hand to explain the work being carried out. The students inspected displays of mass, length, time and frequency, thermometry, holography, water vapour studies, and many other aspects of the work of the Laboratory.

Before the 'walking tour' they saw a new audio-visual presentation about the work of the Division prepared recently by the CSIRO Film and Video Centre.

FRS for Hal Hatch

Dr M. D. 'Hal' Hatch of the Division of Plant Industry, has been made a Fellow of the Royal Society for his contributions to knowledge of plant metabolism.

Fellowship of the Royal Society is one of the highest honours which can be given to a scientist.

Dr Hatch is best known for his research with Dr Roger Slack on the elucidation of the biosynthetic pathway of the so-called C-4 plants, particularly the way such plants assimilate carbon dioxide during photosynthesis.

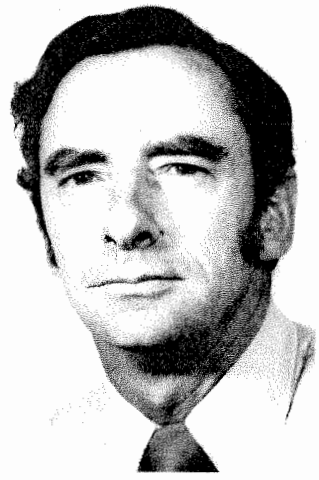
The C-4 pathway is commonly referred to as the 'Hatch-Slack' pathway, in recognition of the two scientists' discovery.

Dr Hatch has made many contributions to the field of plant metabolism in C-4 plants, and in the past few years has concentrated on the mechanisms of regulation of C-4 pathway enzymes.

He is pre-eminent among the scientists who have helped to build up a detailed picture of the many chemical reactions of photosynthesic and transport reactions in C-4 plants, and has been instrumental in opening up a new field of research aimed at identifying substances which might interfere with specific enzyme reactions to act as selective herbicides for C-4 plants.

The research is of great significance, as the world's worst weeds are almost exclusively C-4 species which grow among crop species using the 'conventional' form of photosynthesis. Selective herbicides would be of enormous benefit in controlling these weeds.

Dr Hatch is president of the Australian Society of Plant Physiologists, and has attracted many research collaborators in his specialist field.



Dr M. D. Hatch

CORRECTION

In the last issue of CoResearch, it was reported that Dr R.J. Millington, Acting Director of the Institute of Earth Resources, had been made a Member of the Order of Australia in the Australia Day Honours list. The award was in fact made to Dr A.J. (John) Millington, formerly Officer in Charge of the Kimberley Research Station in Western Australia. CoResearch apologises to both for the error.

Two new Chiefs appointed

Professor Robert Brown, an engineer with strong links with Australian manufacturing industry has been appointed Chief of the newly-created Division of Manufacturing Technology.

Professor Brown will bring to the new Division wide experience in manufacturing and university research.

Announcing Professor Brown's appointment, the Chairman of CSIRO, Dr Paul Wild, said Professor Brown had worked closely in establishing and developing technology transfer in Australia.

Professor Brown, 50, is at present head of the Department of Mechanical Engineering at the University of Western Australia.

During the past two years, he worked with the Commonwealth Department of Productivity in the establishment of the Technology Transfer Council, and is presently Chairman of the Council's executive group, planning the detailed operation of the transfer body.

Professor Brown graduated as a Bachelor of Mechanical Engineering from Melbourne University in 1954, and until 1964, was a lecturer in the University's Department of Mechanical Engineering.

Following one year, in 1969, as a visiting Associate Professor at Carnegie-Mellon University, Pittsburgh, USA, Professor Brown was for six years Associate Professor in the Department of Mechanical Engineering at Monash University before moving to Western Australia in 1976.

Professor Robert Brown

Dr Wild said Professor Brown had developed a close understanding of a wide range of industry problems through his work with the Technology Transfer Council, and as a member of the Institution of Engineers' task force on manufacturing.

"This expertise, coupled with his knowledge in the fields of metallurgical performance, will give the Division invaluable experience which will be of key importance to a diverse number of local industries," Dr Wild said.

The Division was formally created on April 1. Professor Brown expects to take up his appointment during August.

Dr John Lowke, a world renowned Australian physicist has been appointed Chief of the Division of Applied Physics.

Dr Lowke brings to the appointment wide experience in industrial and university research.

Announcing the appointment, the Chairman of CSIRO, Dr Paul Wild said Dr Lowke would bring to the position invaluable experience relating to the problems and application of industrial research.

This would be of great importance for the Division which was placing greater emphasis on applied research of importance to industry and the community.

Dr Lowke, 45, graduated BSc(Hons.) from the University of Adelaide in 1956 and PhD (in Physics) in 1963.

In 1964 he joined the Westinghouse Research Laboratories, Pittsburgh, USA, as a Senior Physicist.

"During his 12 years with Westinghouse his pioneering researches on electrical discharges in gases made him a world leader in this field," Dr Wild said.

He has worked, in particular, on discharges in high power gas lasers, in circuit breakers, and in arc lamps.

"His distinguished scientific contributions were combined with active involvement with Westinghouse's manufacturing divisions."

Dr John Lowke

Dr Lowke returned to Australia in 1976 to join the School of Electrical Engineering at the University of Sydney.

He became a Reader in Electrical Engineering in 1979.

He will take up his appointment as Chief on June 2.

His appointment follows the retirement in August of the former Chief, Mr F.J. Lehany.

Dr Alan Rodwell, a Chief Research Scientist at the Animal Health Research Laboratory at Parkville, has been awarded the Klieneberger-Nobel Award, a recently established prize in mycoplasmology created in honour of Emmy Klieneberger-Nobel, herself a notable scientist in the mycoplasma field.

The award is made to a person actively engaged in research who has made outstanding contributions in the field of mycoplasmology.

Dr Rodwell's is the first award made and it will be presented at the Third Meeting of the International Organization for Mycoplasmology at Custer, South Dakota, USA, in September this year. He will give an address at the ceremony.

Dr Rodwell has worked in the Animal Health Research Laboratory since 1940 when he joined as an Assistant Research Officer.

His early work was on the biochemical aspects of the clostridia group of bacteria, then on aspects of *Lactobacillus* and then on vaccination against *Brucella abortus* infection.

Since 1953 he has spent much of his time on research on aspects of the metabolism of mycoplasmas.

He was successful in developing an artificial medium for *Mycoplasma mycoides* subsp. *mycoides* in which all components were chemically defined and he also elucidated the role of sterols and fatty acids in the growth of mycoplasmas.

Dr Alan Rodwell

More recently, he has been attempting to define the ultra-structures seen in the rho forms and is now using two-dimensional gel electrophoresis to study the protein composition of mycoplasmas.

A spokesman for the Division said the award to Alan from the International Organization for Mycoplasmology was an appropriate one for an effective, kindly, imaginative and persistent scientist who has made such excellent contributions over so many years.

Dr Jarrett retires

Dr Ivan Jarrett retired in late March after 14 years with CSIRO, all of which have been spent in the Animal Nutrition Laboratories in Adelaide and at the Division of Human Nutrition which succeeded the earlier Division in 1975.

Dr Jarrett graduated at the University of Adelaide with a B.Sc. in 1939 and subsequently obtained a Doctor of Science in 1964.

He had achieved Senior Principal Research Scientist status before the Division of Nutritional Biochemistry was replaced by the Division of Human Nutrition and subsequently was promoted to Assistant Chief of the new Division as Chief Research Scientist.

Throughout his long scientific career, Dr Jarrett was concerned with the study of metabolism and nutrition, first in the ruminant and later in the human.

He was able to make important observations on the dramatic changes in metabolism which take place when young ruminants change from milk feeding to rumination concurrently with the colonisation of the rumen.

He was also among the first to indicate many points of similarity between some of the metabolic pathways in ruminants and those characteristic of fasting or diabetes mellitus in man.

He was the first to establish experimental diabetes in the sheep and used this model to study aspects of diabetes and insulin action.

He was able to contribute to the understanding of the regulation of intermediary metabolism and he became an international expert in metabolic control mechanisms and in general endocrinology, particularly as related to the adaptation to nutritional changes.

During his career he contributed extensively to a number of scientific societies, particularly the Physiological Society of the UK, the Australian Biochemical Society, the Nutrition Society of Australia and the Endocrine Society of Australia.

He was President of the latter from 1970 to 1972.

Dr Jarrett established a metabolic program at the Division which has been productive over a long period. His interest will be continued after his retirement by scientists whom he personally attracted to the Division, subsequently encouraged,

Dr Ivan Jarrett

and who have achieved wide recognition for their original work.

He will continue to collaborate with the Division and hopes to foster the relationship with the staff of the Queen Victoria Hospital in a joint study on the optimum nutrition of the premature infant.

He will also pursue his longstanding interests in art and music which the additional time available should make even more pleasurable.

Dr Jack Piddington, who retired from the Division of Applied Physics in 1975 and is now a Senior Research Fellow, has been elected a member of the New York-based Explorers Club, with the designation of 'Fellow'.

Dr Piddington was invited by the directors of The Explorers Club to join last August, as they were aware of his distinguished scientific career, in particular his interest in and contributions to the field of radio astronomy.

Membership in The Explorers Club is limited. 'Members' constitute those men who, by vocation or avocation, have distinguished themselves in their respective fields and who have evidenced a sustained interest in the furtherance of world knowledge, thus contributing in broad terms to exploration or research.

'Fellows' comprise men who have actively participated in exploration or who have substantially enlarged the scope of human knowedge through scientific achievements, with published reports, books, articles or institutional accreditation.

Dr Piddington is in distinguished company. Some current members of The Explorers Club are Neil Armstrong, Thor Heyerdahl, John Glenn, Prince Philip, King Leopold III, Jacques Piccard, Prince Peter of Greece and Denmark, Sir Fred Hoyle, Lord John Hunt, Tenzing Norgay and Laurence Gould.

Earlier Explorer members included Charles Lindberg, Roald Amundsen, Admiral Robert E. Peary, Admiral Richard E. Byrd, August Piccard, also Akeley, Wilkins, Nansen and Shackleton.

Dr Tony Priestley of the Division of Chemical Technology in Melbourne has won a major award for his work in water purification.

Dr Priestley has been awarded the Humphreys and Glasgow Prize, presented annually each year by Humphreys and Glasgow Ltd of London, for an outstanding contribution to chemical engineering in Australia.

The award, which is open to all chemical engineers under 35, carries a $1000 prize and a gold medal.

The award was made to Dr Priestley for his work in developing Sirofloc, a water treatment process based on the use of magnetic particles, which is cheaper and quicker than conventional processes.

continued on back page

Letters

Sir,

Even after nearly 15 years in the Organization I can still be staggered anew by the arrogance of Head Office.

The introduction to CSIRO Policy Circular No. 80/9–'Safety Guidelines for Motor Driving'–implies that the Executive, Directors, Chiefs and Officers-in-Charge all alone and in a spirit of *noblesse oblige* decided to issue the guidelines, prompted only by an unbounded concern for the well-being of the staff.

I have personal knowledge that at least one staff association (CSIROTA) has been seeking for over 10 years to have these guidelines promulgated.

K. Rattigan
Land Use Research
Canberra

Sir,

I am indebted to your perceptive reader, P. R. Smith of Mineral Chemistry, for the spotting of the mistake in the chronology of Henry VIII's building of the Tennis Court at Hampton Court.

The date cited, 1579, is no doubt a misprint as Henry had played his last game long before.

However, I cannot verify whether the fault was mine or the printer's as the article was in itself historical and the manuscript is lost.

It was commissioned about 1975 by an Editor of CoResearch, who showed a morbid interest in the peculiar pastimes of her readers.

Immediately on receipt of my article CoResearch shrank to minimal size, and thus the article was strangled soon after birth.

Some years later, a distraught Editor of the OA Bulletin, with blank pages and zero hour for the next issue approaching at the speed of light, heard of its existence and asked if he might publish it.

The present Editor of CoResearch, oblivious of the article's pre-history, asked if he might reprint the article. It was thus printed, in slightly altered form, in another place, rather later, like so many a scientific paper before it! The alert reader will pick up evidence of its transmogrification.

There were other errors: Dirk Zeidler is now Sir David Zeidler; he is no longer Chairman of ICI as he has retired; the figure of 70 members of the club should be 'about 500'.

These rectifications of error can only make the article better on its third and fourth printings!

Clive Coogan
Chemical Physics
Clayton.

Sir,

Publication No. 226, page 3, column 4 (CSIRO defines the ultimate metre) contains a **misprint.**

It is by no means a one thousand times error as mentioned in No. 227, page 7 ("Letters") but only a one hundred times misprint (question mark and/or dots never count).

Everbody knows that the speed of light is approx. 300 000 km per sec.

Therefore, just putting a decimal point between figures 2 and 4 gives the proper answer, namely, 299 792.45 km/sec. for the speed of light or 299 792.45 km sec $^{-1}$ according to the latest SI standards.

Heinz Konczalla
Division of Soils
Glen Osmond

People

Dr Ian Mackerras, distinguished medical scientist, entomologist and zoologist, who spent much of his research career with the Division of Entomology, died in Canberra in March.

Dr Mackerras graduated from Sydney University in 1924 with degrees in both medicine and science, and in 1928 was appointed to a senior position in the CSIRO Division of Economic Entomology, later to become the CSIRO Division of Entomology.

His major work was in veterinary entomology, and by 1939 he had made important contributions to the study and control of the sheep blowfly, buffalo fly, tick fever and ephemeral fever, all major sources of economic loss to the pastoral industries.

Dr Mackerras returned briefly to CSIRO after the war, but in 1947 was appointed first Director of the newly-founded Queensland Institute of Medical Research, which under his guidance established an international reputation for research into infectious diseases.

In 1961 he returned to the Division of Entomology as a Research Fellow, undertaking the editing and production of the now famous volume 'Insects of Australia', first published in 1970.

Dr Edmund Potter, a section leader in the Division of Process Technology at North Ryde, has accepted the honour of Foreign Fellow Membership of the Institute of Electrostatics Japan.

The Institute was established in 1976 and at present has 508 Members and 18 Foreign Fellow Members.

Dr Potter joined the Division of Process Technology (then Mineral Chemistry) in 1968, to study electrostatic precipitation. His work now also includes the processing or iron ore and the fluidized bed combustion of coal.

Irrigation Research knows how to meet its challengers–by beating them.

The ICI Research Station at Griffith challenged Irrigation Research to an equal overs match.

Came the fateful day, and Sue Keeley (IR) and Wendy Brayne (ex IR, now ICI) were appointed as stimulating scorers. Irrigation Research won the toss and sent ICI in.

By the time 37 overs, 99 runs and much libation had taken place, both teams felt the pangs of thirst (shades of NSW Sunday trading) and adjourned for cakes and ale among the gumtrees. Best performances by Irrigation Research were Ron Locke 3/5 and Barry Kay 2/9.

After lunch Irrigation Research was full of eagerness and with cries of 'More Courage' took the sunburnt field.

When 126 runs had been counted by Misses Keeley and Brayne, the trophy was presented.

Then the ecstatic Irrigation Research team celebrated until the mosquitoes gained the upper hand. Man of the Match was John Lockhart.

Coresearch Classifieds

CoResearch Classifieds are open to all members of staff, at no charge. Deadline for classifieds is the 8th of each month. Send to: CoResearch Classifieds, PO Box 225, Dickson, ACT, 2602. All advertisements should carry the advertiser's name, address and telephone number, although this information need not appear in the body of the advertisement.

BOOKS, *cloth bound except where mentioned, on history of Queensland–John Moffat's Empire (Mining, Cairns Hinterland) $10 (paperback $6), Pioneer Pageant (Mackay District) $10, Northern Outpost (Sugar industry, Mossman) $8, all postage paid. Discount $1 per book after the first. John and Ruth Kerr, 11 Camira Street, St Lucia 4067.*

CSIRO horticulturists interested in establishing a native plant seed exchange write to Graeme O'Neill, 21 Pulleine Cr. Mcgregor, ACT.

Holiday accommodation available at Kenthurst, Sydney, from 18 August to 12 September 1980. Four bedroom house available FREE in return for feeding 2 horses, chickens, cats, dog and birds. W. Colebrook, Division of Animal Production, PO Box 239, Blacktown, NSW, 2148.

McMahon

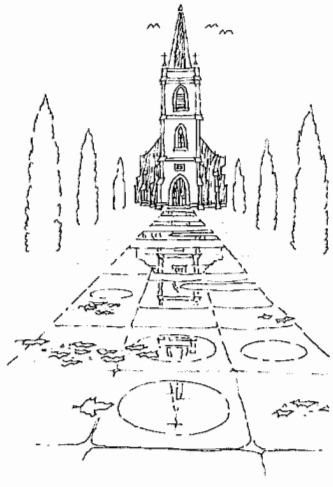
CHURCHYARD PAVING – BAROSSA

Concaved by a century of feet they lay
near silent pines and underneath a clear,
insistent litany of bells.
Inside, the glass and varnish bore their own
unspoken witness to a hundred years
of care but none displayed
encapsulated history as well
as those eroded stones.

Their sunken centres trapped the weather where
the remnants of the autumn drizzle filled
the hollows in the flag-stones. Chains
of fractured, slate-cupped tower-reflections held
within the rain-filled craters lay as still
as Sunday morning, clear
as lead-lined, diamond-patterned window panes
or testaments of bells.

* * *

A concrete mixer waited near the gate.
Form-work framed the rain-chains in the slate.
How neatly they repair the wearing there.



'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 4477. Editor: Graeme O'Neill.

CAT

Wendy Parsons, Chairwoman of the newly-formed Communication Advisory Team (CAT) is the first contributor to what we hope will be a new column in CoResearch; Wendy is Media Liaison Officer with the Division of Forest Research.

The communicators of CSIRO–its liaison and information people, its writers, graphic designers, photographers and film-makers–have sometimes felt rather keenly that they do not belong to the mainstream of CSIRO operations.

What Divisional Information Officer has not occasionally felt that he has been employed to help get rid of those problem people from outside the Organization wanting to know what is going on inside? Those pesky inquirers can hinder research activities!

Now, with the Birch recommendations being taken up, the business of getting the message across, particularly to industry, has taken on a new importance.

And the communicators of CSIRO, together with the research staff, need to face this challenge of defining the message, its audience, the best means of getting it across and, most importantly, of finding efficient feedback systems.

To back up its professional communicators and to feed ideas into the system, a CSIRO Communication Advisory Team has been formed, made up of a representative from each Institute, from Headquarters, RAOs and the Bureau of Scientific Services.

CAT will not fulfil its aims without the opportunity for regular feedback from involved people throughout the Organization, and so the CAT column is open to comment from anyone in CSIRO.

CAT's aims are:

. to encourage collaboration between central and regional communicators and to foster a sense of professionalism among CSIRO communicators;
. to disseminate information on communication processes and techniques;
. to be available through the Director of the Bureau of Scientific Services as a source of advice to the Executive and to Institute Directors on communication strategies.

Some of the CAT activities already under way are:

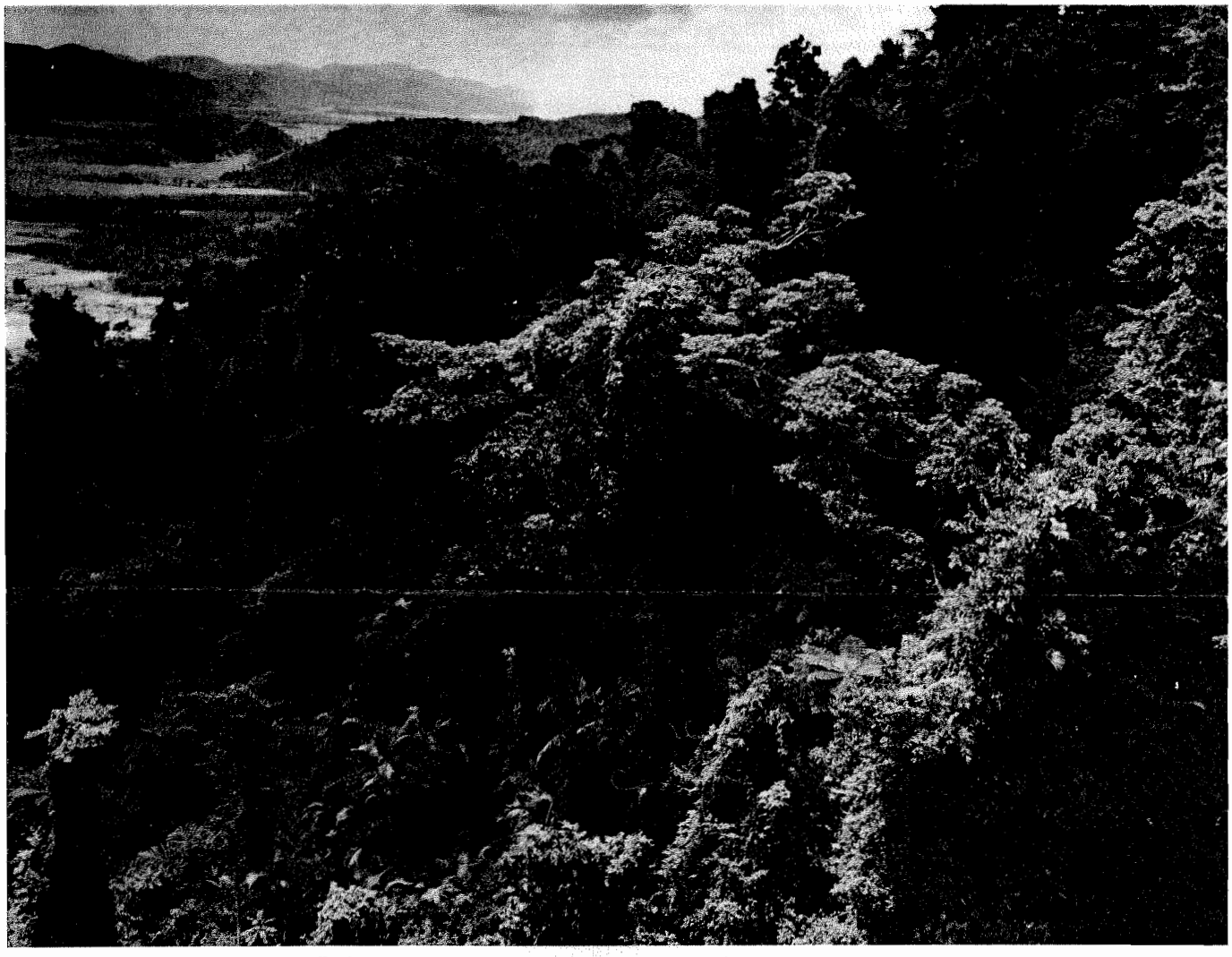
. Promotion of material useful to communicators. First will be a report prepared by LRM's Bill van Aken on the state of the art in film strip equipment. Film strips have come a long way since their smudgy school room days, and they offer a cheap effective means of communication to meet needs in CSIRO, particularly for Divisions. Other reports are being gathered for listing in the CAT column and for distribution to communicators.
. Active involvement in thematic displays for industry and public.
. Setting up contact with universities and other organizations who have a regular flow of visitors, many of them involved in some aspects of communication. CAT would ask these people to include CSIRO in their program if possible.

CAT would like your constructive comments on how CSIRO's communication activities can be improved. Please send them to:

Dr Michael Dack,
Secretary,
CSIRO Communication Advisory Team,
PO Box 225,
DICKSON, ACT 2602

CoResearch

CSIRO's staff newspaper *June 1980* 230



Mt Bellenden Ker, north-east Queensland, one of the important rainforest areas remaining in Australia. Photograph: COLIN TOTTERDELL.

Rainforest: Our ancestral flora

SE-Asian origin debunked

For more than 150 years botanists have regarded Australia's rainforests, typified by the profusion of Mt Bellenden Ker in Queensland, as the rag-end of the great rainforests of South-east Asia.

The theory suggested the rainforests invaded Australia when continental drift brought our continent into contact with Asia via the Indonesian archipelago.

Studies by Dr Len Webb and Mr Geoff Tracey of the Rainforest Ecology Section of the Division of Plant Industry have helped bring about a radical reassessment of the origins of these dwindling forests, which occur in a large coastal arc from northern Australia, down the east coast into Tasmania.

Dr Webb is now convinced the rainforests are not an alien presence in our flora, but represent the ancestral flora of our continent, from which the typically 'native vegetation' of our landscapes descended.

Dr Webb's views are outlined in an article in the most recent edition of Ecos.

He points to the fact that Australia has the world's greatest concentration of primitive flowering plant families in north-east Queensland rainforest. This points to the possibility that Australia may have been part of the region where flowering plants first developed.

Two primitive flowering plant families found there are found nowhere else in the world's rainforests.

Dr Webb says the latest evidence from continental drift shows Australia came into proximity with Asia only about 12 million years ago, yet pollen from rainforest species very similar to those occurring in northern Australia can be found throughout 40-75 million-year-old sediments across southern Australia.

He says the most surprising finding from recent rainforest studies is that our present rainforests are little more than 8-12,000 years old.

When Europeans first arrived in Australia the rainforests were actually continuing an expansion which began at the end of the last glacial period. During the glacial period they had contracted to small, protected pockets.

Many of these areas from which the post-glacial expansion of rainforest began, have been identified by the Rainforest Ecology Section.

They are of great scientific interest, because they contain many rare and primitive species of plants.

Dr Webb is concerned that they be identified and preserved wherever they occur, and warns that many have already been lost through the logging of rainforest.

Rainforest logging has reduced the forests from a former area of 1 per cent of Australia's land area at Euaopean settlement, to just a quarter of this figure today.

Dr Webb believes the new discoveries about the great antiquity of our rainforests, and their place in the ancestry of 'modern' Australian plants, should change the way Australians think about them—if anything, the case for their conservation is even stronger.

Evidence for climatic change

CO_2 levels may underlie trend

Australia's climate may be changing because of increasing concentrations of carbon dioxide in the atmosphere.

Despite the great difficulty in distinguishing abnormal climatic trends from the background 'noise' of normal climatic fluctuations, the first evidence of carbon dioxide-induced temperature increases and changed rainfall levels, is emerging from studies by the Division of Atmospheric Physics.

The Chief of the Division, Dr Brian Tucker, told the recent ANZAAS jubilee conference that it was now well established that carbon dioxide levels in the atmosphere had increased by about 10 per cent during the past 30 years. The burning of fossil fuels was one major source of atmospheric carbon dioxide.

A recent analysis of temperature and rainfall figures for Australia in the past 30 years had shown significant increases in certain areas.

Dr Tucker said it had been predicted that a doubling of carbon dioxide levels in the atmosphere would cause an increase in temperature of 2^{o}C in northern and central latitudes of Australia, and a rise of 4^{o}C in the south.

It was also forecast that rainfall would increase by about 35cm a year in parts of the north and centre, but would decrease in the southernmost areas of the continent.

If such a trend were occurring, it could be expected to show up already in the form of a one-tenth increment towards the predicted figures over the past 30 years. Dr Tucker said that evidence consistent with this was beginning to emerge.

In providing evidence for the trend, however, he warned that many apparent changes were not statistically significant.

Analysis of the daily minimum temperature at stations in the Australian wheat belt between 1950 and 1979 had shown an average 0.8^{o}C rise in temperature at four stations in South Australia.

This was actually twice the increase which would be predicted. However, no positive rises in maximum temperatures or rainfall had been observed.

Rainfall data for the whole of Australia for the same period had been analysed and significant increases in summer rainfall of between 15cm and 30cm a year had been found in the north-west and centre of Australia—much greater than the predicted rise of 0.2mm a day.

Dr Tucker said that only small changes in rainfall for the southern parts of Australia had been predicted.

One of the most serious aspects of the predictions was the forecast reduction in rainfall between the latitudes of 40^{o} and 50^{o}, where most of the northern hemisphere wheat belts were found, particularly those of the US and Canada.

The southern hemisphere wheat belts of Argentina and Australia were further toward the equator, and it was predicted there would be little change in rainfall in these areas.

Climatic changes caused by increasing carbon dioxide may not necessarily be for the worse in Australia, but they pose a serious problem for the northern hemisphere, he said.

There was a need for more detailed information and observations on a global scale to confirm these climatic trends.

Dr Graham Pearman, also of the Division of Atmospheric Physics, also told ANZAAS that there would be a 2^{o}C to 3^{o}C warming of global temperatures if, as expected, atmospheric carbon dioxide levels doubled in the next 100 years.

He said it was likely that well before this time small variations in the distribution of sensitive climatic variables would force quite massive shifts in land use patterns.

Future energy use patterns would be one of a number of important variables needed to be taken into consideration in predicting these trends.

The ANZAAS conference was also told that increased industrial pollution could reduce rainfall and have a severe effect on world climate.

Dr Keith Bigg of the Division of Cloud Physics warned that the increasing incidence of small particles in the atmosphere, particularly ammonium sulphate and sulphuric acid particles discharged by industry, could have a marked effect on the ability of clouds to produce rain.

He described the potential for climatic alteration by particles through their influence on clouds as 'enormous'.

When rising air cooled, he said, droplets formed on the small particles in the atmosphere. The number of cloud droplets formed depended on the number of particles present.

The more particles, the more cloud drops are formed—but the smaller they grow, the less likely it is to rain.

Death of fisheries expert

One of CSIRO's best-known fisheries scientists, Mr J. S. 'Stan' Hynd, died in Sydney recently after 32 years with the Division of Fisheries and Oceanography.

Stan Hynd joined the former Division of Fisheries of CSIRO at Cronulla in January, 1948, and at the end of that year became officer in charge of the new Thursday Island research station, which was studying the culture of pearl shell and pearls.

During a 12 year period with the station, he became an expert in the field. He found time to build his own yacht, the Shaula, a 27ft sloop which he sailed back to Sydney after leaving Thursday Island in 1960.

Resuming at Cronulla in 1961, he became involved in studies of tuna. He pioneered the use of the infra-red radiation thermometer in low flying aircraft, to locate water temperature fronts where tuna congregated.

The resultant increase in catch in some seasons was as high as 20 per cent, with concomitant savings in search time and fuel.

In 1969 CSIRO was asked to investigate a steep decline in the banana prawn catch in the Gulf of Carpentaria. Stan Hynd was nominated to the job by the then Chief of the Division as 'the best fisheries biologist on my staff.'

As leader of the Northern Prawn Project for 4½ years, he initiated a fisherman's daily log routine, began an intensive tagging program of adult and juvenile prawns, introduced float planes into the Gulf to overcome difficulties of terrain, access and distance, and originated the use of float planes to spot prawn 'boils' for the trawler fleet.

In 1974 Mr Hynd was transferred to the Fish Biology Group and went overseas to gather information on acoustic fish searching and computing techniques.

He returned to organise the equipping of the Division's new research trawler 'Courageous' with echo-sounding systems coupled to an on-board computer which interpreted their signals.

In 1977 he transferred to the Crustacean Biology Group at the new Cleveland prawn research laboratory near Brisbane, working on an analysis of the Northern Prawn Project data until he retired through ill-health in January this year.

Mileage rates may be inadequate

What does it cost you to use your personal car as a means of transport during business hours, when for any reason a CSIRO vehicle is unavailable or not suited to your needs?

CoResearch has made some inquiries which suggest that the mileage rates allowed for use of a private vehicle for CSIRO purposes are quite inadequate when the *total* expenses associated with running a vehicle are taken into account.

The gap between the rate paid and the cost per kilometre to the owner is increasing, as running costs rise almost daily against mileage rates which are reviewed only once a year—so that even if rates were adequate at the time of fixing, by the end of the year they may be inadequate as compensation for use of a private car.

The source of the figures quoted in these articles is the Motoring Cost Schedule prepared by the National Roads and Motorists' Association (NRMA).

It is worth noting that they were prepared in September last year, three months before the Executive last reviewed mileage rates for the Organization, so that using the 'full accounting' method suggested by the NRMA, the rates were already inadequate when adopted in December 5.

The rates used by CSIRO are a reflection of rates used throughout the Australian Public Service, which are set through the management-staff consultative body, the Joint Council of the Australian Public Service.

The rates are set after extensive review of costs, in an exercise not dissimilar to that undertaken by the NRMA. On the basis of the rates calculated, however, the methods used must differ considerably.

The current rates used by CSIRO recognise four categories of piston-engined cars and their rotary-engined equivalents (an equivalent rotary-engined vehicle has half the engine capacity of its piston-engined counterpart). The mileage rates are:

Over 4000cc	18.1c/km
2000-4000cc	15.5c/km
1500-2000cc	14.4c/km
1500cc or less	13.3c/km

The figures chosen for comparisons are based on owners covering a low annual mileage in their vehicles, on the premise that people are using their cars less as costs rise.

As a result, the costs per kilometre are higher than for the same cars covering medium or high mileages, for which the NRMA also calculated costs.

The mileage figure selected was 16,000 km per year. In each of the following tables, the bracketed figure represents the official CSIRO allowance, for comparative purposes.

Running costs

This table takes into account costs associated with fuel, oil, servicing, routine replacement of parts etc.

1300cc Toyota	5.3c/km (13.3)
1600cc Gemini	5.17c/km (14.4)
3300cc Kingswood	5.17c/km (15.5)
4900cc Fairlane	8.4c/km (18.1)

On the basis of the above figures, use of one's private car for CSIRO business purposes would appear to be a profitable enterprise. However, the NRMA points out that there are the less obvious costs of owning a car to be considered as well.

There are costs such as a driver's licence, NRMA membership (or other state equivalent body), registration and third party, and comprehensive insurance.

In addition there are standing costs relating to purchase—depreciation and the cost of hire purchase interest.

With all these costs added to the preceding table, the picture changes quite dramatically.

Total running costs

1300cc Toyota	18.82c/km(13.3)
1600cc Gemini	19c/km (14.4)
3300cc Kingswood	24.37c/km(15.5)
4900cc Fairlane	35.75c/km(18.1)

The difference between mileage rate and actual running costs is smallest for the two small cars, at 5.52c/km and 4.6c/km respectively.

A driver using his automatic Kingswood would be losing at the rate of nearly 9c/km, while a Fairlane owner would lose at 17.65c/km.

People

Dr J. S. Russell, Assistant Chief of the Division of Tropical Crops and Pastures in Brisbane, is one of two recipients this year of the Australian Medal of Agricultural Science awarded by the Australian Institute of Agricultural Science.

The awards were announced by Institute President, Mr John Mackenzie. Dr Russell's award was made in recognition of his important contributions to both applied and basic research and especially his role in elucidating the problems and potential of the brigalow country in Queensland.

Dr Russell's research in the brigalow country included studies of the fertility problems of the soils in which he defined both nutritional needs of adapted legumes and grasses. His studies of soil organic matter and nitrogen under native forest and pasture and the effects of cropping systems on soil organic nitrogen have been of considerable importance to agriculture.

Dr Russell was directly involved in the identification and evaluation of pasture grasses and legumes for the brigalow and of grain legume crops suitable for Australia's summer-rainfall cropping areas.

His studies of climatic classification significantly refined the search for suitable pasture and crop plants for northern and eastern Australia.

A Silver Medal for outstanding contribution to the science of metallurgy has been awarded to Dr W. J. McG. (Greg) Tegart of the Executive.

The Chairman Dr J. Paul Wild, said today, Dr Tegart had received the award from the Australasian Institute of Metals during its annual conference held in Auckland, New Zealand.

Dr Tegart attended the conference on May 20 to deliver a keynote address: "The Role of Metals in Meeting Future Energy Needs."

"This recognition by Dr Tegart's colleagues is a reflection of the significant contribution he has made in this field of scientific research over more than 30 years," Dr Wild said.

Dr Tegart's research speciality was the hot working of metals and alloys.

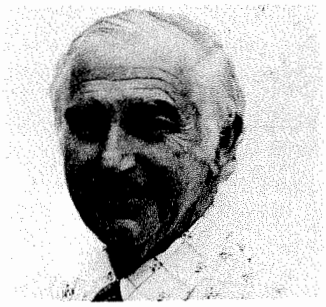
Dr Tegart is a fellow of the Australian Academy of Technological Sciences, and a Fellow of the Institute of Metallurgists (London).

The Australasian Institute of Metals' Silver Medal is its premier award and has been given only eight times during the last 20 years.

Reg Sutton retired from CSIRO after 31½ years service as the combined Foreman of Pre-Press and Machining Departments.

Many issues of CoResearch, along with numerous other CSIRO publications have passed through his capable hands.

His dedication to his work and ever-watchful eye on quality has helped set the high standard of printing the Organization enjoys.



Dr Garth Paltridge of the CSIRO Division of Atmospheric Physics has recently been elected a Fellow of the Australian Academy of Science in recognition of his outstanding contributions to the fields of atmospheric radiation, computer modelling of the growth of trees, crops and pastures, and global dynamics and climate.

In addition, at the International Union of Geodesy and Geophysics General Assembly in Canberra in December, 1979, Dr Paltridge was elected Secretary of the International Radiation Commission, a sub-commission of the International Association for Meteorology and Atmospheric Physics.

George Lee, a Drafting Officer at the Division of Textile Industry, has been named Victorian Airman of the Year 1979-80. George is shown receiving the award from the Mayor of Melbourne, Cr Ralph Bernardi, at a recent ceremony held at the Laverton RAAF Base.

George enlisted in No. 21 (City of Melbourne) (Auxiliary) Squadron in September 1974 as a Provisional Airframe Mechanic and passed the examination for confirmation in his mustering in November 1975.

In July 1978 he remustered to become a Supplier, and during 1979 he qualified as a Supplier at both the Aircraftsman and Leading Aircraftsman trade tests.

The citation to the award said that George's performance was commendable both for the high standards he achieved and for the fact that his RAAF activities were not related to his civilian occupation with the CSIRO.

During 1979 he had played a major role in a relocation project at the Base Store Townsville and had received high commendations from his supervisors at both the Laverton and Townsville Base Stores.

Since joining the Division of Textile Industry in 1967, George has been involved in a variety of projects.

Currently, he is part of the Division's group investigating new packaging materials for wool and the feasibility of compressing wool to reduce storage and transport costs.

Dr John Lowke

In the last edition of CoResearch, the photographs of Dr John Lowke, Chief of the Division of Applied Physics, and Dr Neville Rodwell of the Division of Animal Health, were inadvertently transposed. CoResearch apologises to Dr Rodwell and Dr Lowke for the error.

Dr Neville Rodwell

Letters

Sir,

We object to the patronizing tone of the article 'Chinese scientist joins CSIRO' in CoResearch 229.

Our particular objection is to the statement that the Chinese scientists "who have arrived in Australia so far have impressed Australians with their enthusiasm, motivation and intelligence."

Had Australia been visited by a team of white Caucasian scientists, no doubt such qualities would have been taken for granted. The objectionable sentence would have been more suitable when discussing dolphins or chimps.

F. Timmerman
D. Zerman
K. Armstrong
Technology Transfer Unit
Division of Building Research
Highett.

EDITOR'S NOTE: Apart from defending my right to report an unusual event in an appropriate and informative manner, I would point out that almost identical remarks were made about white Caucasian young unemployed people training with CSIRO under the Special Youth Employment Training Program two issues ago, and no protest was made. I cannot believe my critics could object to my use of the words 'motivation' and 'enthusiasm' in describing our Chinese guests, and must presume that their objection is to the word 'intelligence'. It seems that in today's sensitive social climate, the use of this word must be avoided at all costs where non-Caucasians are being discussed.

Sir,

We understand that CILES, in conjunction with the Science Communication Unit, has designed and is about to mass produce a CSIRO "cheap" polythene carry-bag.

The intention, no doubt a worthy one, is to bring the name of CSIRO to the general public.

We would like, however, the organisers of the scheme to pause and consider whether it is good for the image of CSIRO for the name to be associated with such a gimmicky article as this.

We have been instrumental in bringing the name of this Division, as well as that of CSIRO, to the attention of the public by means of an exhibit at agricultural shows and field days.

The exhibit is designed to illustrate the assistance the Division has given to the wool industry and emphasises worthwhile research effort.

We believe that this is a far better image to present than that achieved by printing "CSIRO" on a multitude of plastic bags which are destined to find their way into garbage bins or worse still, form litter around the countryside.

H. G. David
J. W. Snaith
Textile Physics
Ryde.

Sir,

Australian fishermen may have difficulty in dropping a net into the new Australian Fishing Zone (CoResearch 229 p.1) if it is really only 200 nanometres wide. Perhaps the unit intended was the nautical mile, which Australian Standard AS 1000 requires to be abbreviated n mile.

May I add a final comment on the speed of light? Heinz Konczalla (No 229 p.4) has it nearly right. The mysterious digit (?) shown in No. 226 should have been an 8, and the unit should have been m/s, thus c = 299 792 458 m/s.

Philip Ciddor
Applied Physics
Sydney.

Sir,

With reference to the article in CoResearch May 1980 on the new marine research centre for Hobart I am most surprised to be informed that the Executive in its wisdom has considered that a fishing zone around Australia of 200 nm contains physical, chemical and biological aspects warranting high priority in effort and financial expenditure.

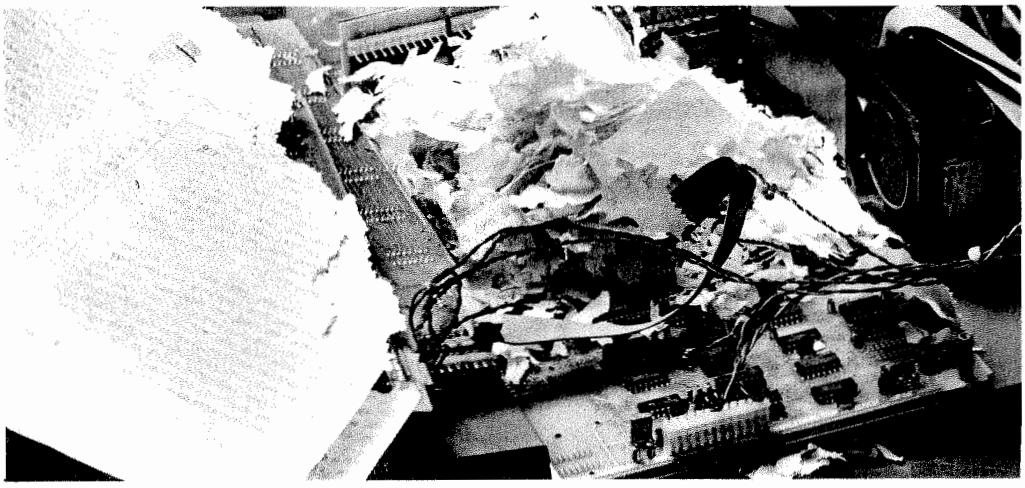
The older spectroscopists in our organization would be more familiar with the use of angstroms and would probably consider that in a zone 2000 A wide any biological studies would certainly warrant the high priority purchase of a number of electron microscopes.

I would refer you, Sir, to either the Weights and Measures (National Standards) Regulations Schedule 1 or AS 1376-1973 Table 1 for the correct symbol, namely "n mile".

Incidentally most of the fish I catch must live entirely within *your* Australian Fishing Zone!

Maurice Puttock
Applied Physics
Sydney

The byter bitten



Mice were smarter than men in an experiment conducted by the Division of Environmental Mechanics at Griffith this year.

The experiment involved measurement of the evaporation of ammonia gas from the soil following the application of urea fertilizer to a field of sunflowers.

An essential part of the measurement was the recording of wind speeds from anemometers mounted at nine levels above the field.

A mini-computer was used to record the pulses for the anemometers, convert them to wind speeds and display the results on a TV screen, from where they were hand-copied on to data sheets.

During a week's absence by the experimenters, the mobile lab in which the computer was housed was invaded by a colony of mice, who chewed up the data sheets to build a nest in the memory of the computer, right where the results originated.

The mice managed to demolish five days data and transfer it back to the computer in a mouse-coded form, in almost real time.

Footnote: Duplicate copies of the data do exist, but the Division is now recording them on tape as well.

McMahon

AUF SPATERSEHEN

Barossa-deutsch meaning "see you later"

On Sunday mornings scarfed and Lutheran-suited
he creaked his Nugget-booted way towards
one of the many bells that ring among
humped, wind-chafed ranges and across broad floors
of vine-lined valleys huddled in the sun.

So much for winter Sundays. During waves
of work-day harvest heat he'd lubricate
each hour by charging up his pannikin
three fingers high with sherry that he slaked
with water poured from bags that swung where thin

and tattered shade splashed patches under vines.
Hemp-scented sherry! Stunned, numb-tongued, I peered
across the spinning valley. As I gagged
between the heaving vines he roared "Great year
for sherry yet, but crook for water bags."

He spread his hospitality around
like measles and was hurt when I refrained
from sharing in his harvest fuel although
I still taste it when I hear "Auf Spatersehen"
the call he bawled through she-oaks by the road.

I taste it, too, when Summer hazes hills
or she-oaks swing in wind by blue-stone walls.
Or when old yarns are spun round bottles. Then
sherry-misted reminiscences recall
enamel pannikins and absent friends.

BAROSSA SUNDAY – APRIL 1945

Thirty miles of church-bells chiming, thirty miles
of vineyards climbing,
over corrugated hillsides; tidy lines of serried
gold.
Thirty years since last I saw them but the autumn
leaves they wore then
still reflect in recollections that grow clearer
growing old.

Stone-grey church-towers standing squarely every
mile or so and rarely
could I find an untolled furlong as the autumn
morning swelled
with the sound of ringing steeples greeting
gatherings of people
summoned in through slanting sunlight by the
beckoning of bells.

Tidy, too, the gravelled churchyards where the
tombstones, like the vineyards,
keep a neat, Silesian order in their pine-tree
bordered plots,
bearing Martin Luther's virtues rolling out
from bluestone churches
over granite-carved inscriptions that begin
"Hier ruht' in Gott".

On some future Sunday morning when I stand by
April awnings
that the vineyards wear, I wonder if the bells
will seem as near
as those sounds in inner hearing or the light
on leaves appearing
undiminished by a distance dimmed by nearly
thirty years.

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CAT

Wendy Parsons, Chairwoman of the newly-formed Communication Advisory Team (CAT) is the first contributor to what we hope will be a new column in CoResearch; Wendy is Media Liaison Officer with the Division of Forest Research.

A form of communication perhaps most neglected in CSIRO is communication between scientist and peers and scientist and users of research results.

More often than not, when a scientist tells peers or users of research results, the visual aids used—overhead transparencies, slides and so on—are just not good enough. They don't help make the message clear and in many cases they can complicate it.

The actual delivery of a talk, whether it be from a scientific paper or part of a seminar session, can be disastrous if the person is not aware of some of the basic aspects of public speaking.

In the UK, private industry is telling universities that it wants graduates who not only have know-how but the ability to communicate that know-how.

One response to this at the University of Wales, is a compulsory unit in communication for all engineers going through that university.

Here in Australia, at least one Division of CSIRO, Land Resources Management, is recognizing the importance of this kind of communication, and with the support of CAT has proposed collaboration with CSIRO's Staff Development Group to develop a training package designed for use throughout the Organization.

The aim would be to improve the public performance of CSIRO staff, initially through a major series of programs around Australia to introduce the package and provide training.

More news of this in this column as things develop.

CAT BRIEFS

The Executive has accepted the recommendations of the report "Communication: CSIRO's Other Role", prepared by Michael Dack and presented to the Executive by the Director of the Bureau of Scientific Services, Mr Sam Lattimore.

The report dealt with Recommendations 16, 17, 64 and 104 of the Independent Inquiry into CSIRO.

Copies of the Report are available on request from CAT from the address below.

Other items of interest also available from CAT are:

Planning a CSIRO Function, a guide to the organisation of special events within CSIRO edited by Dorothy Braxton and Sandra May (1979), and *Looking at the Links between CSIRO and Manufacturing Industry*, an address to the Jubilee ANZAAS Congress, Adelaide, 1980, by Brian Woodruff and James Lumbers (Science Communication Unit).

Synopsis to the address: Scientific research and the encouragement of others to utilise the results of such research are not necessarily compatible activities. A number of studies, including one by the Science Communication Unit, have shown that few industrialists turn to CSIRO as a source of technical information. Recent changes in CSIRO are designed to improve the flow of information to industry and to increase the amount of feedback received by the Organization.

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CSIRO Communication Advisory Team
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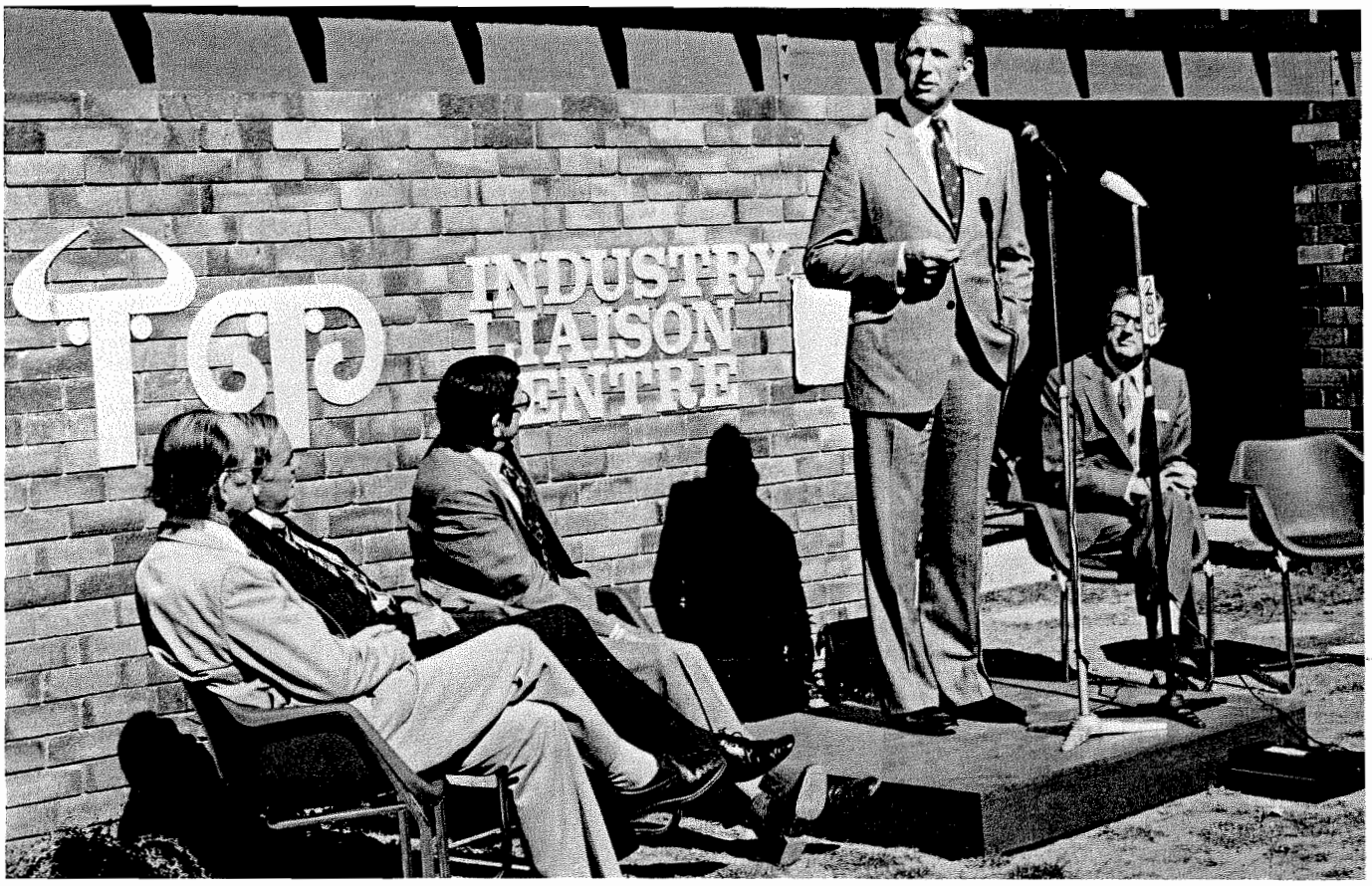
Dickson, A.C.T. 2602

CoResearch

CSIRO's staff newspaper *July 1980* 231



The Chairman of the Australian Wool Corporation and former part-time Executive Member Mr David Asimus officially opened CSIRO's new Industry Liaison Centre at the Pastoral Research Laboratory near Armidale recently.

The new centre will provide facilities for seminars, meetings and displays for the various Divisions with laboratories at Armidale.

Built with a grant from the Wool Industry Research Trust Fund, the centre comprises two offices, a kitchenette and a large meeting room.

The two offices are occupied by industry liaison officers.

Record demand for CSIRO's aid

CIRC helps keep Divisions' costs down

CSIRO's scientific and technological contribution to Australian aid for developing countries is running at an all time high, in spite of severe financial constraints on Divisions.

And according to Mr A.F. Gurnett-Smith, Officer-in-Charge of the Centre for International Research Cooperation, a recent CIRC-organised seminar on assistance to developing countries demonstrated that CSIRO scientists were thinking seriously about both the quantity and quality of aid.

CSIRO includes in its charter contribution to overseas aid, and it was apparent that there was a genuine desire to assist the developing countries, evidenced by the very positive attitude of scientists who went overseas on aid projects, Mr Gurnett-Smith said.

The high volume of requests from overseas, particularly for short-term consultancies, was however bringing home to Divisions the need to organise such consultancies in a manner which would have the minimum impact on their research programs and tight budgets, he said.

Delegates to the seminar had agreed that the old ad hoc approach to such consultancies was no longer appropriate—new circumstances meant that some of the less visible costs of providing consultants could not be ignored, and the impact on research programs was more keenly felt.

The cost to a Division of loaning a research scientist for a two-week research project was superficially only a small one, both in terms of human and financial resources.

But Divisions now appreciated that such consultancies often required a further two week's preparation, two week's report writing in the wake of the visit, and perhaps another two weeks for 'cranking up' a research program which had run down during the scientist's absence.

The interruption to research continuity was a particular problem to be considered, because financial constraints were requiring scientists to take on extra responsibilities in their research work which in more favourable times would be delegated to technical staff who could maintain some continuity in the scientist's absence.

Mr Gurnett-Smith said CIRC existed to help Divisions with such problems, first by removing some of the administrative load entailed in Divisions dealing with requests for aid, and also by making arrangements with aid-funding agencies for the reimbursement of costs of personnel, equipment and resources, not just for the period of the scientist's absence, but for the pre- and post-consultancy periods.

The recent CIRC-organised seminar was told by Executive Member Dr Greg Tegart that before the establishment of CIRC, it was not surprising that CSIRO's international research activities had been somewhat haphazard, at least at the official level.

For developing countries which required sponsorship of aid projects, a third party usually needed to be involved—the aid donor.

The very breadth and diffuseness of CSIRO presented difficulties to the donor who was seeking the Organization's help in aid programs, and had no doubt contributed to the recommendation by the Birch Committee that CSIRO should have a more specific mandate to assist Australia's foreign aid programs.

Dr Tegart emphasised that CIRC's responsibility was primarily in the area of relations between the scientist (and his Division) and the external body, whether the latter was an aid agency such as the Australian Development Assistance Bureau, or a department managing an intergovernmental science agreement, such as the Department of Science and the Environment.

Cont. page 2

CIRC's impressive track record

Projects in 19 countries to date

CSIRO's Centre for International Research Cooperation (CIRC) celebrates its second birthday this month, and has already notched up an impressive track record in international company.

CIRC was established in mid-1978 to provide a focal point for CSIRO research cooperation in developing countries, to plan and evaluate CSIRO's contribution to Australian assistance to developing countries, and to encourage the efficient deployment of CSIRO resources in this area.

By December last year, CIRC had handled projects in 19 countries, involving 42 CSIRO officers representing 17 Divisions.

CSIRO consultants have been provided for countries in Africa, Asia, South America, the Middle East and the Pacific Islands.

Expenditure by CSIRO on projects on behalf of a variety of donor agencies exceeded $2.9 m, $2.5 m of which went to the Centre for Animal Research and Development, the joint Australian-Indonesian development near Bogor in Java.

CSIRO usually acts as a contractor to the agency requesting its services, so scientists involved can travel overseas under CSIRO terms and conditions, maintaining their scientific association with their own laboratories.

Usually it is possible to reimburse a Division fully for the 'borrowing' of a scientist, and where long-term absences are required a term appointment may be provided in compensation.

There is a constant demand for short-term consultancies—up until December, 15 scientists from 11 Divisions completed a total of 58 weeks in consulting work.

CIRC's Officer in Charge, Mr A. F. Gurnett-Smith, says his group responds to requests for both research and administrative aid in the area of science and technology, within the limitations imposed by a project's likely demand on scientific equipment.

'We attempt to provide all types of aid, to demonstrate to developing countries that we're there to help,' Mr Gurnett-Smith said.

'We're not looking directly for a return for any investment in aid, but most scientists who have taken part in projects return with information of direct value to Australia.

'This was illustrated recently when Dr J. Wheeler of the Division of Animal Production brought back from Kenya a considerable amount of information on sodium deficiency in animals.'

Mr Gurnett-Smith identified three main areas of CIRC activity.

The first was a 'fixit' role, in which CSIRO provided advice, information, or transferred technology, with little research required.

This was often the easiest type of activity, requiring little interruption to Divisional research programs.

A more difficult activity was training people from developing countries in the art of research, which would encourage self-reliance later on.

Perhaps the best example of this type of approach was the Centre for Animal Research and Development at Bogor in Indonesia.

Another project was in progress with the Himalayan country of Bhutan, in which the Bhutanese were being helped to develop skills in food preservation and transport to maximise the value of the fruit and vegetables which are the mainstay of the economy.

The Bhutan project also involved some training of Bhutanese personnel in Australia with the Division of Food Research and with short-term assignments in other Australian groups.

Another type of aid involved activities which were not specifically associated with the development of any one country, but which had international importance—for example, the provision of research and administrative expertise to bodies such as the International Rice Research Institute in the Philippines.

CIRC also helped developing nations to gain access, and to contribute to, information data bases. Many such countries had poorly organised or inadequate data bases which hampered their research.

Aid to developing countries could also take the form of provision of items such as eucalyptus seed to countries which needed to grow trees as a source of firewood.

A recent example of this type of aid has been the provision of a card-based information file developed by the Division of Land Use Research which allows countries to identify which fruits, vegetables, nuts and spices might be suitable for their climatic conditions and soils.

According to Mr Gurnett-Smith there have been quite profound changes both to the volume and style of international scientific aid in the past decade.

'It is no longer a matter of developing countries taking what they can get,' he said.

'Rather, they are getting to know more clearly what they want and so can be highly specific in their requests. For example, it is not uncommon for a developing country to request the assistance not only of a particular Division, but of a particular scientist within that Division.'

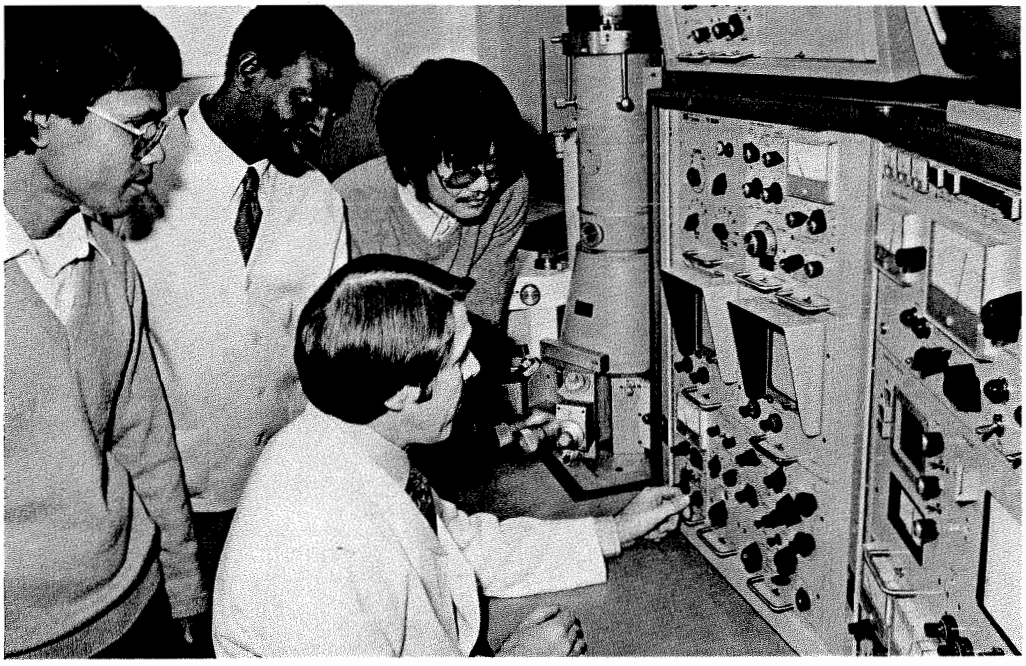
Mr Gurnett-Smith said the attitude of scientists going overseas on aid projects had also changed.

An overseas trip was no longer regarded as the grand adventure it was 15 years ago—today the scientist would often decide whether his research was relevant to the needs of the country requesting assistance, and if he was unable to see positive benefits, might decline to make the trip.

Mr Gurnett-Smith said there was now a very high degree of awareness of the importance of aid projects, as evidenced by the successful seminar on CSIRO's international aid activities in Canberra recently.

More than 50 people, drawn from throughout CSIRO, had participated and made constructive suggestions and criticisms of the current environment of involvement in development assistance.

Major topics discussed included short-term consultancies, longer-term projects, training of overseas scientists in CSIRO laboratories, tools for aid projects, CSIRO aid in agricultural projects, CSIRO aid in post-harvest technology and manufactured food projects, aid in physical and engineering sciences, and patterns of aid.



Dr Harry Greaves of the Division of Building Research explains to trainees from Malaysia, Ghana and Sarawak the use of the scanning electron microscope for examining the surface structure of timber, concrete and other building materials.

Record demand for CSIRO's aid cont. from page 1

CIRC's responsibility did not extend to management of the research program—its function was simply to serve as a focal point for aid requests, and to oil the wheels and protect the interests of CSIRO, its Divisions, and most importantly, its scientists.

The seminar was also told by the Chief of the Division of Plant Industry, Dr J.R. Peacock, that in meeting many requests for short-term consultancies, the continuity of research programs could be seriously prejudiced.

There was particular concern that the requests were often made at short notice and with inadequate documentation.

'This has had a detrimental effect on our programs, and under such conditions, scientists cannot be expected to apply the same scientific standards to a consultancy that they would to their own research programs,' he said.

Dr Peacock questioned whether short-term consultancies were indeed the most effective approach to overseas scientific aid.

While recognising that because of Australia's economic and political relationships, particularly in South-east Asia, and with CSIRO's established policy, there was an obligation to make research expertise available.

Dr Peacock said the problem was to determine an efficient way of providing scientific knowledge and experience, and in such a way as to minimise the disturbance to ongoing research.

He suggested the most benefit would be imparted by involvement in longer-term programs—most agricultural problems and research were of a longer-term nature, and a continuity of effort might be the most efficient way of providing aid.

Technology and methodologies relevant to the problems of the recipient organisation would often be best developed in Australia in the context of ongoing research programs.

Once techniques and expertise were developed, training could be provided in Australia, and there could be liaison with engineers and scientists from other organisations better fitted to applying the work

Where short-term consultancies were required, the preferable approach could be for well-established scientists to come to Australia for specialised training.

If they possessed the background of scientific, social and economic conditions of their country, they should have a clear idea of what was relevant to their needs.

In this way, CSIRO's programs would not be disrupted to the same extent, and training should be of greater benefit to the recipients.

Trainees would be able to concentrate their attention on science, methodology and instrumentation appropriate to their own research environments, without having to overcome the problems of inappropriate preconceptions of visiting experts.

A further benefit was that the recipient of training would be able to gain valuable spin-off from the diversity of research within the Division giving training.

From the Division's viewpoint, the trainee was likely to make a positive contribution to the research program, clearly a desirable feature of aid programs.

Dr Peacock said his Division concluded that short-term consultancies were of value only where preliminary assessment by other bodies had been exhaustive, where the itinerary had been carefully planned, and the scientist could address himself to a specific and significant research program.

Industry's gain

Manufacturing industry in Australia has a "very bright future", according to Dr Peter Robinson, 45, who this month (July) left CSIRO to take up a key post in industry.

He believes the key lies in local industry gearing itself to the short-run, sophisticated market type of manufacturing based on the utilisation of local materials.

"This is an area where Australian ingenuity and inventiveness, backed by sound and innovative technology, can really lift local manufacturing industry," he said.

Dr Robinson was Chief Research Scientist with the newly-formed Division of Manufacturing Technology, based in Melbourne. (The other branch of the Division is in Adelaide.)

Now he has taken the position of Group Technical General Manager of Metal Manufactures Limited, a consortium consisting of 24 works in NSW, Victoria, Queensland, SA, WA, and New Zealand.

The Group has more than 6000 employees and its prime activity is centred around materials for energy production and distribution.

Main works include the production of non-ferrous metal tubing, rods and cables for power generation and distribution; plastic tubing and ducting for water, gas and telecommunications; and foam-polyurethane products.

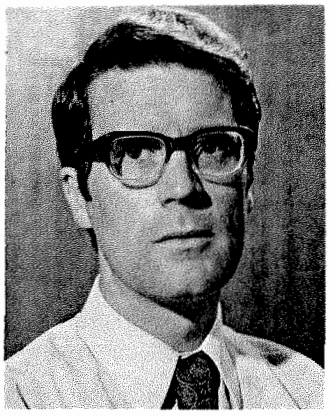
Dr Robinson, who joined CSIRO in 1965, is a leader in metallurgy in Australia.

As Executive Officer of the CSIRO Manufacturing Industry Committee he was closely involved in the administrative creation of the new Division, which is aimed to provide a focus for the needs of Australian manufacturing industry.

"I guess I'm a victim of my own propaganda," he told Coresearch.

"I have long been an advocate of winning the hearts and minds of manufacturing industry by going on to the shop floor and actually demonstrating that new technology does work—and works better than many of the old ways," he said.

"Naturally I am sorry to be leaving the Organization, but in my new job I will be responsible for the technical side of the Metal Manufactures Limited Group's activity—a pretty challenging task and one in which I hope to be able to implement some of the innovations we worked up at CSIRO.



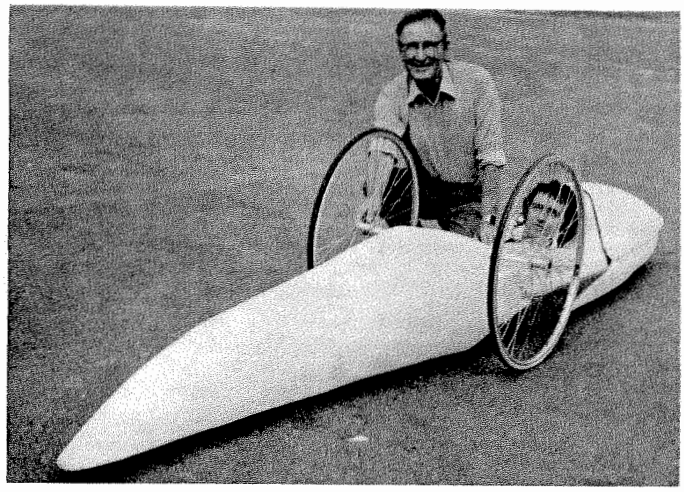
Dr Peter Robinson

Dr Robinson is widely respected for his work in fostering industrial implementation of research through a number of industry groups and research associations.

He was a member of the Executive Committee which set up the newly formed Technology Transfer Council—a Department of Productivity project.

He is President of the Australasian Institute of Metals, a past President of the Melbourne Branch of that Institute, and a Fellow of the Institute of Metallurgists.

He will be based in Sydney.



It's not often a man participates in a fuel economy trial, records 707 miles per gallon, and places nowhere in the field.

But that was the fate of Lindsay Derriman, driver of the Division of Land Resources Management 'special' in the recent world-record setting economy run at the Warwick Farm racing circuit in Sydney.

Lindsay, a workshop supervisor with LRM, constructed the car with Tom Bromilow, an electronics engineer with the Division, and travelled all the way from Perth to Sydney to compete.

Their car was the lightest in the field, tipping the scales at only 17 kilos. It was constructed of lightweight materials and covered in Solafil, the shrinkable plastic used by model aircraft makers to provide a tight, smooth surface for maximum aerodynamic advantage.

Power was provided by a 15cc TAS two-stroke engine—a mistake according to Lindsay, because while the motor was simple, it was quite thirsty.

The winning entry was a car also entered by a Perth engineer—Ralph Sarich. Sarich's car used a 10cc diesel motor from a model aircraft, and shattered the world record with a consumption figure equivalent to 2684 miles per gallon.

Lindsay believes the car suffered because the two-man team was unable to put too much time into design evaluation and preparation.

They chose a small rear wheel, driven by the motor, to ensure it was protected by the car body, reducing air drag.

Lindsay beleives a large bicycle wheel would have provided better results, because of its lesser rolling resistance.

To minimise air drag between the roadway and the body, the CSIRO team chose to build the body close to the ground, whereas building it high off the ground may have been the better alternative.

The Sarich car's engine ran continuously during the test after being started electrically at the beginning of the contest, avoiding the weight of a starter system.

The CSIRO team's car used the 'whip' method of running—alternatively accelerating, then switching off to allow momentum to run down before restarting. The need for a starter mechanism added to the weight penalty.

Lindsay, as the lighter of the two CSIRO men was still heavier than the Sarich car's lightweight lady driver. But he and Tom enjoyed the experience, and will probably try again.

●

CORRECTION

In correcting the transposition of photo-correcting the transposition of photographs which occurred two issues ago, CoResearch used a wrong christian name for Dr Alan Rodwell of the Division of Animal Health. A further apology is in order, if inadequate.

●

Hale medal to Dr Wild

The Chairman of CSIRO, Dr J. Paul Wild, has won an international award for his research work in solar astronomy.

He has been named as the recipient of the George Ellery Hale Prize, awarded by the Solar Physics Division of the American Astronomical Society for his "outstanding contribution" to solar astronomy.

Dr Wild received the award at a ceremony at the University of Maryland last month where he delivered the Hale Prize Lecture to the American Astronomical Society.

The Hale Prize, which takes its name from the pioneering solar physicist, E. G. Hale, is awarded every two years. Dr Wild is the second to receive it, the first being Professor Eugene N. Parker from the University of Chicago.

Dr Wild's research work has been in solar physics and radio astronomy. He is recognised as a world leader in both fields.

As a research scientist in the CSIRO Division of Radiophysics, he played a central role in establishing Australia as a leading nation in solar radio astronomy.

Among his achievements are:

- The discovery of the ejection of bursts of high-energy electrons from the sun.
- The discovery that large explosions on the sun give rise to shockwaves which travel outwards through interplanetary space, causing effects in the Earth's atmosphere.
- The invention of the dynamic radio spectrograph for studying disturbances at radio wave lengths high above the surface of the sun.

Making a house call

In February CSIRO presented a written submission to the Joint Parliamentary Committee on the ACT—Inquiry into ACT Energy Supplies.

This was followed on April 28 by CSIRO appearing before a public hearing of the Committee.

CSIRO was represented by Dr H. Worner, Dr. J. Brotchie (Building Research), and Mr M. Wooldridge (Mechanical Engineering).

Afterwards the Committee expressed an interest in visiting CSIRO at Highett. This they did on May 29 and discussions and demonstrations were held on low energy consumption housing, solar energy utilization, and battery development for electric vehicles.

Representatives from the Division of Mineral Chemistry (DMC), Building Research (DBR) and Mechanical Engineering attended this meeting.

They are seen with the Parliamentary Committee inspecting the low energy consumption house.

Letters

Sir,

Mr H.G. David and Mr J.W. Snaith of the Division of Textile Physics were kind enough to send us a copy of their letter of 4th June which commented on the proposal to obtain polythene carry bags for packaging CSIRO publications.

The use of these inexpensive and practical bags, often with very attractive designs, could hardly be described as 'gimmicky' when leading departmental stores including one of the most progressive marketers of wool garments package their products in this way.

We believe they can in fact complement the excellent exhibits such as those with which Messrs David and Snaith have been associated.

At all such shows and field days a multiplicity of printed material is available.

Without the assistance of a carry bag it is this material rather than the bags which is destined to litter the countryside; and the bags can be put to alternate use by the recipient at a later date.

These views and the others expressed in our earlier memoranda to Divisions would appear to have been supported by the 40 or so Divisions and Sections who have between them ordered over 60 000 bags.

C. Garrow
Manager
Central Information Service
Melbourne

Coresearch Classifieds

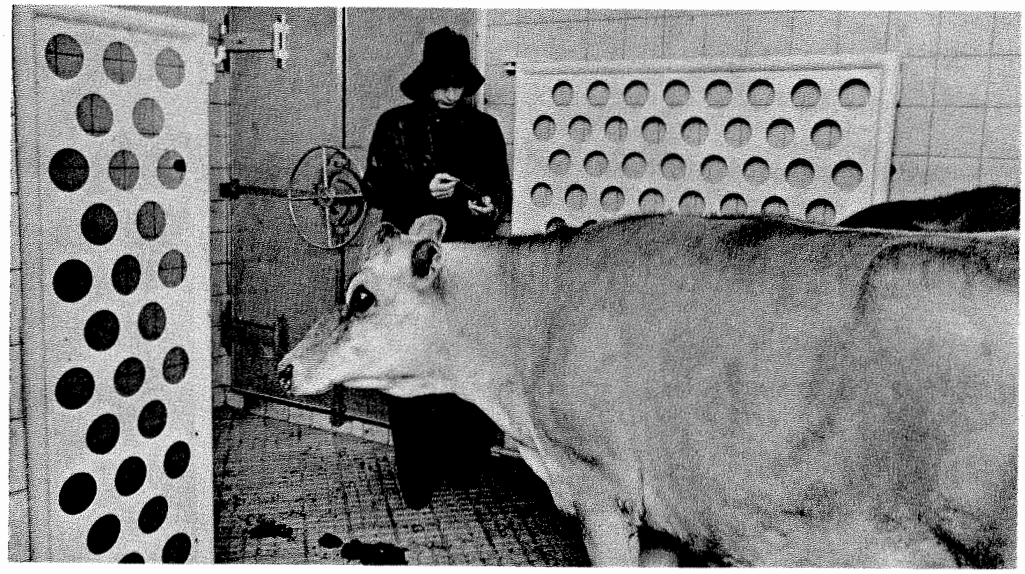
CoResearch Classifieds are open to all members of staff, at no charge. Deadline for classifieds is the 8th of each month. Send to: CoResearch Classifieds, PO Box 225, Dickson, ACT, 2602. All advertisements should carry the advertiser's name, address and telephone number, although this information need not appear in the body of the advertisement.

REPAIR, servicing and calibration of temperature, humidity, rain and water level recording instruments. Newly established laboratory workshop, competitive prices. For further details, contact Sylvester Knedlhans (ex CSIRO), RMB 97B, Old Cooma Road, via Queanbeyan, NSW. Ph. (062) 975886.

WANTED: Victa jet outboard unit, with or without engine. G. Byrne, Land Use Research, Canberra—062-465284.

THIS SPACE VACANT —SEE ABOVE

Science at work



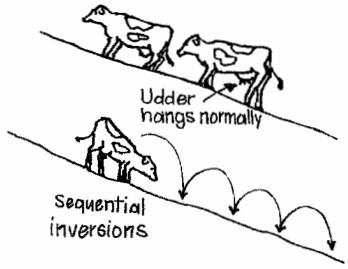
A revolutionary cell fusion technique has allowed the Division of Bioengineering to breed this chimeric dairy cow for an aid project in mountainous Tibet.

A hybrid between the giant Italian chianina breed and a specially selected compact line of Jersey, the animal's configuration will be particularly suited to dairying in terrain where slopes often exceed 45 degrees.

Provided grazing activity is oriented uphill, metabolic interruption associated with gravitational compression of lactation pathways in normally-conformed dairy breeds is eliminated (see diagram).

The breed does, however, exhibit gross locomotory deficiency and an unusual vent-over-udder action when animals re-orient downhill in the evenings to avoid the katabatic winds which are a feature of the diurnal weather pattern of mountainous areas.

The disadvantage may be turned into an asset—by selecting further for animals with high milk fat yields, episodic sequential inversions of the type described should result in the cows yielding semi-processed butter, a staple dietary item among the people of the area.



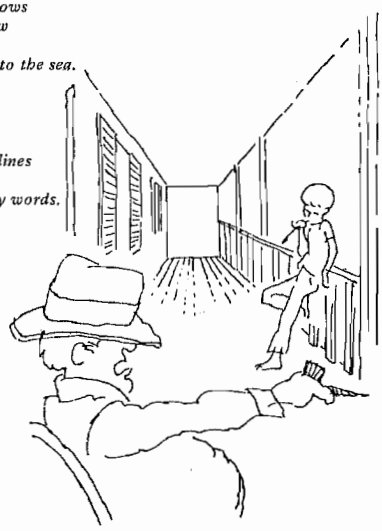
McMahon

THE RIVER
(for Jack Holmes)

It begins here, where the land tilts
westward and thin winter sun quilts
patches on the mountains. Where wind
strips yellow from whipped willows, eddies spin
gold-flecked and clear
in this moulting season of the alpine year.

Where I began it runs grey-green
and pelicaned. A folded stream
deep-creasing heat-bleached plains it flows
on easy in its years past cliffs that show
the course it cleaved
through ages in its long, slow shamble to the sea.

I soaked in stories there. Old, tall,
pipe-stem-punctuated tales drawled
along verandahs. But I find
that ambling sagas limp in print, their lines
and colours blur
in faded phrases and I choke on pygmy words.



The CAT column is open to all members of CSIRO who wish to comment on communication matters. Letters and articles should be sent to the Editor of CoResearch in the normal way.

CAT

The schools system is an important audience for CSIRO. Students passing through the system are the researchers of the future; they are also potential decision makers and voters. Unlike other methods of communicating with the public (often a hit or miss affair), communication with students and teachers in the schools system can be assured if Australian science is continuously presented to teachers as examples of science at work.

The Organization is about to increase its assistance to the schools system by setting up a Science Education Centre on its Highett (Melbourne) site.

For some time, the Science Communication Unit of the Bureau of Scientific Services has conducted a program aimed at making a systematic input to the schools system by:

- communicating science information to teachers;
- reducing the number of individual requests to CSIRO from teachers and students; and
- encouraging 'socially responsible' attitudes in the young to such subjects as energy conservation, human nutrition and the environment, and the understanding of potentially controversial subjects such as genetic engineering.

While the Unit developed its education-liaison activities, the Division of Mechanical Engineering was attempting to rationalise its own liaison with teachers and students.

Early in 1979, after discussions with the Bureau, the Division proposed establishing a Science Education Centre in its old conference building where permanent displays could be set up and where groups of students and teachers could be accommodated.

This proposal received support from the Division of Building Research and the Dairy Research Laboratory, so that it evolved into a project for the Highett site as a whole.

The Division of Mechanical Engineering would provide and maintain the building, while all Divisions would contribute to the exhibits and working models.

But a condition was placed on the project—the Centre should be operated by a senior science teacher seconded from the Victorian Education Department.

The Science Communication Unit had already been independently investigating the feasibility of seconding a science teacher to help with education liaison in the Melbourne region.

And so, after an approach by the Bureau of Scientific Services to the Director-General of Education in Victoria, a senior science teacher will be selected by CSIRO to begin work soon at the Highett site, on a continuing basis.

Still employed by the Victorian Education Department, the teacher will:

- conduct a pilot study of (i) the need for the Science Education Centre and (ii) its requirements;
- assist CSIRO in its communication activities with the schools system;
- visit Melbourne Divisions (on request) to identify areas of interest to educationists and to put Divisions into contact with educational bodies able to promote these areas (eg. Teaching Resource Centres); and
- prepare materials for the Science Education Centre and test their effectiveness on students.

The CSIRO Science Education Centre will act as a centre where science information can be gathered for use by teachers and students, where classes of students can experience science at work, and where teachers can receive in-service training in science developments.

It could eventually act as a focus for science education activities in the Melbourne area—one which could serve as a prototype for similar centres in other States.

'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 4477. Editor: Graeme O'Neill.

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CoResearch

CSIRO's staff newspaper *August 1980* **232**

Who roo?

After decades of being investigated by scientists the Kangaroo recently extracted some small degree of revenge. One hopped into the Division of Mechanical Engineering to determine if stories were true about people living in solar heated houses. However, Norm the Kangaroo (a North Melbourne supporter) was apparently more impressed with a solar powered hat. He could use this to give him more lift in his escape from scientists and to keep his cool in summer. The Division denies that it is publicity hungry and that it would do anything for a few minutes on TV. You are not bound to believe this but it is claimed that the interview with Norm was done for a programme called Shirl's Neighbourhood (a national entertainment show for children). The Division was jumping for the whole day waiting for Norm and Shirl to arrive (apparently Claude Crow is not allowed on location). Politicians, executive members and other VIPs have not created such interest. The two photographs show Mike Wooldridge flanked by Norm and Shirl (the ex-lead singer of the Skyhooks) and Norm with his solar-powered hat.

Court halts biocontrol project

The High Court of Australia has extended to August 29 an interim injunction which prevents CSIRO making further releases of insects to control the weed known as Paterson's Curse.

An interim injunction was obtained on July 18 by a group of four people—two apiarists and two graziers.

The injunction prevents CSIRO from releasing four insect species which have been imported from Europe for control of the weed, which each year carpets thousands of hectares of grazing land in temperate Australia with its brilliant purple flowers.

Under an agreement with the plaintiffs, endorsed by the Court, CSIRO has covered plants in the Braidwood, Jugiong and Deniliquin areas upon which one species of insect had already been released.

While CoResearch is unable to discuss the merits of the case because the matter is *sub judice*, the following background information on the history of the biological control proposal is provided for the information of staff.

CSIRO's investigation of the biological control possibilities for Paterson's Curse *(Echium plantagineum)* began in 1972.

The plant is a declared noxious weed in most of the areas where it grows, and CSIRO's Division of Entomology sought the formal views of the States on a control program.

Among the matters considered were:

- The value of the species to the honey industry and also to graziers in the semi arid zone, where it can serve as a source of stock fodder when very little other fodder is available.
- The availability of better stock fodder plants which could be utilised with better management practices.
- The extent to which the weed suppresses other pasture species with its vigorous growth.
- The weed's potential toxicity to livestock, including pigs and horses.
- The effect of a reduction in the weed's abundance on honey and pollen availability.

CSIRO has pointed out to the honey industry that biological control will not eradicate Paterson's Curse. The weed and its control agents will achieve a dynamic equilibrium in which both persist in the field, if the program is successful.

In response to a request to CSIRO by the Australian Honey Board, the Organization agreed not to proceed with the program until the State Departments had been given the opportunity to make a further assessment of the situation.

Because of the controversy, it was decided to refer the matter to the Standing Committee on Agriculture to consider whether biological control should proceed.

The Organization presented a paper to the 114th meeting of the Standing Committee.

CSIRO recommended that consultative procedures be developed to ensure that in future, adequate consideration would be given to all relevant viewpoints before any weed species is accepted as a candidate for biological control.

The meeting of the Standing Committee in fact recommended that control organisms for Paterson's Curse should **not** be released, but referred the matter to the Australian Agricultural Council for final decision.

The Council did not reach a consensus, and referred the matter back to the Standing Committee for fuller consideration.

Because of this development, CSIRO and the Minister for Science made it clear that the Organization would not release any control organisms without a clear consensus from the Australian Agricultural Council that such a program should be undertaken.

It was stressed that unanimity was essential, as the insects would spread across State boundaries wherever the weed occurred.

The January 1979 meeting of the Standing Committee reversed its earlier stand and recommended biological control, and the recommendation was accepted by the Agricultural Council.

CSIRO then proceeded with steps to import from southern Europe, the weed's homeland, four organisms selected for biological control of the plant in Australia.

These are a leaf-mining moth *(Dialectica scalariella)*, a stem-boring beetle *(Phytoecia coerulescens)*, and two leaf-eating flea-beetles *(Longitarsus echii* and *L. aeneus)*.

In March last year the Federal Council of Australian Apiarists' Associations made further representations to the Minister for Primary Industry, asking for a delay in the introduction and release of insects until the industry's views had been fully considered.

These views were put to the Agricultural Council, but the Council affirmed its earlier decision.

The first consignment of insects arrived in Australia in September last year, and another species was imported soon after.

Entomology wins Fun Run again

Longstaff eclipses race record

Rosemary Longstaff led the Entomology team to its fourth consecutive victory in the Black Mountain Fun Run last month, establishing a new course record in the process.

A total of 105 runners competed in the Fun Run, with the first two home carving large chunks off last years' record of 21 min 59sec set by Chris Barnes of the Division of Environmental Mechanics.

Rosemary recorded 21:24, 35 seconds under the record, while Environmental Mechanics' Greg Heath came home in 21:41, 18 sec under the record.

The top 10 finishers were:

Rosemary Longstaff (Entomology) 21:24, 1st.

Greg Heath (Environmental Mechanics) 21:41, 2nd.

Kim Pullen (Entomology) 22:03, 3rd.

Peter McWater (Animal Health) 22:15, 4th.

Bill Begg (non CSIRO) 22:19, 5th.

Trevor Dowling (Land Use Research) 22:29, 6th.

Ken Lewins (Textile Industry) 22:33, 7th.

David Bagnall (Plant Industry) 22:43, 8th.

Tony Pryor (Plant Industry) 22:50, 9th.

Dan Faith (Land Use Research) 22:58, 10th.

The first over 40 runner was Tom van Gerwen of Entomology in 22nd place, with a time of 24:07, and the first over 50 runner was Sydney's Neil Schafer (Process Technology) in 42nd place with a time of 25:22.

Entomology had a comfortable two-minute margin over Environmental Mechanics in the teams competition, which is judged on the first four runners over the line for any team. Third was Land Use Research. Interestingly, Plant Industry was the first team to have four runners over the line, just ahead of Entomology, but Entomology took the honours because of its lower elapsed time. Results were:

Entomology (Rosemary Longstaff 1, Kim Pullen 3, John Feehan 13, Roger Farrow 16), total time 1:30.33, 1st.

Plant Industry (David Bagnall 8, Tony Pryor 9, Rod King 12, Keith Chapman 15), 1:32.37, 2nd.

Land Use Research (Trevor Dowling 6, Dan Faith 10, Lee Belbin 14, Gordon Burch 35) 1:33.55, 3rd.

Textile Industry (Ken Lewins 7, John Baker 21, Jerry O'Kane 28, John Warner 37) 1:36.06, 4th.

Environmental Mechanics (Greg Heath 2, David Smiles 25, John Finnigan 41, Keith Perroux 48) 1:37.01, 5th.

Wildlife Research (Keith Newgrain 19, Ian Mason 27, Mark Hardwicke 30, Bill Price 56) 1:39.38, 6th.

Canberra RAO (Ian Lowth 20, Martin Gilby 34, Peter Lockwood 38, Ian Ross 53) 1:40.26, 7th.

Mathematics and Statistics (Ross Cunningham 29, Mark Diesendorf 40, Bob Anderssen 51, John Carlin 59) 1:43.09, 8th.

Computing Research (Jack Palmer 31, Theo Scholte 47, Graeme Scarlett 52, Greg French 61) 1:44.33, 9th.

Headquarters (David Hinds 36, Jeff Culnane 39, Jeff Sinclair 73, Steven White 75) 1.48.21, 10th.

Administrative Systems (Hank Thijssens 57, Geoff Koochew 79, Brian Quant 87, Norman Pummeroy 95) 2:01.30, 11th.

Herbarium (Judy West 101, Alison Rowell 102, Rosemarie Purdie 104, Helen Hewsen 105) 3:06.34.

This year's Fun Run testified to the growing popularity—and competitiveness—of the event. There were more than 30 runners more in the field this year, and times were generally faster.

While Entomology's dominance continued, Environmental Mechanics found itself displaced from the second position it achieved in last year's run.

Among the teams which headed it was a visiting team from Textile Industry Geelong, whose success in coming 4th should encourage other centres outside Canberra to enter next year.

Women are still conspicuously few in the field—only seven ran, four of them in the Herbarium team. Organisers will be seeking more entries from women next year.

ABOVE: Rosemary Longstaff and Kim Pullen celebrate Entomology's win, after finishing first and third respectively. BELOW: Runners toil up the mountain after the start.

? ? ? ? ?

An article in the December edition of Architectural Science Review which discussed the search for new and improved structural materials went to pains not to confuse its readers with in-house jargon.

Any reader baffled by the abbreviation 'F.R.P.' was referred to the foot of the page for an explanation.

'F.R.P. is the Australian terminology for G.R.P.', the author ventured helpfully.

No thanks to the journal, CoResearch has established that Australians call Fibre Resin Polyester 'Glass Resin Polyester'.

We land a haymaker

Hay-making has always been a race against time, particularly with lucerne. It's a mad dash to get a stand cut at just the right stage of growth, then dried, raked, baled, and safely in the shed before it can be spoilt.

Recently, a completely new way has been developed which uses an old agricultural technique. The age-old way of producing sultanas is by dipping grapes in a mixture of wood ash and olive oil and setting them out to dry. The method was first documented in AD 60 by the Romans.

The method worked well, yet the reason was found only recently. Dr John Possingham, Chief of the Division of Borticultural Research, discovered that the chemicals in the wood ash (potassium carbonate) and in the olive oil wet and penetrate the waxy cuticle of the grapes, allowing the water to seep out and evaporate from the surface.

Using this information Dr Jeff Tullberg at the Queensland Agricultural College and Dr Dennis Minson of the Division of Tropical Crops and Pastures tried the method on lucerne being made into hay.

Not only did it increase the drying rate but the quantities of potassium carbonate required were extremely small, costing only $2 a hectare. The hay also dried faster and retained more leaf, and yields were increased.

The information was released in *Rural Research No. 100* so that farmers could test the method in different environments and develop the most practical ways of applying the 2 per cent solution of potassium carbonate at cutting time.

The response from industry was very encouraging. Two groups of lucerne growers have overcome the teething problems and are now applying the method on a large scale—one in Biloela Queensland and the other in Scone, NSW. A premium is being paid for treated hay.

Perhaps the most encouraging report came from a farmer in America, who having read the Rural Research article, cut and treated 20 hectares of lucerne one morning, baled it the same day and was so excited that he rang Dr Tullberg to tell him of his success.

The Queensland Department of Primary Industries is now preparing an advisory leaflet describing farmer experience using the technique. To stimulate interest in the new development, the term K-hay has been adopted (derived from the formula of potassium carbonate, K_2CO_3.

NEW LABORATORY

CSIRO's new Animal Health Immunology Laboratory at Chiswick, near Armidale (NSW), will be used for research on immunity to work parasites and bacterial infections in livestock.

The new laboratory was officially handed over to CSIRO by the Department of Housing and Construction recently.

Built at a cost of more than $200,000, the new building features innovative design including roof skylights for warmth and light, and solar heating panels.

It will be manned by research staff from the Division of Animal Health, but was designed and located as part of an overall plan for development of the Chiswick site, which is under the control of the Division of Animal Production.

Royal Medal for Dr. Wild

The Minister for Science and the Environment, Mr David Thomson, has described the awarding of a Royal Medal to the Chairman of CSIRO, Dr Paul Wild, as a 'great personal achievement'.

Mr Thomson said the award of the medal by the Royal Society last month, upon the approval of the Queen, also recognised a significant Australian scientific development.

Dr Wild's Medal recognised his conception of the basic principles of the Interscan aircraft landing system and the guidance of its development to a successful conclusion.

Dr Wild led a team of CSIRO scientists and engineers which in collaboration with engineers and officers of the Department of Transport took the microwave landing system from a laboratory concept to an international reality,' Mr Thomson said.

'The system has been adopted for world wide use by the International Civil Aviation Organization as the future standard system for all weather landing guidance.

'This means that every country has the opportunity to develop its own hardware for the system.

'In Australia it is being developed by Interscan Australia Pty Ltd in partnership with a US company, Wilcox Electric Inc.

'Dr Wild is a member of the Board of Interscan Pty Ltd and so retains a close interest and involvement in the project.

'The medal marks the tremendous amount of enthusiasm, ingenuity and scientific knowledge which he contributed over the Interscan project since its conception.'

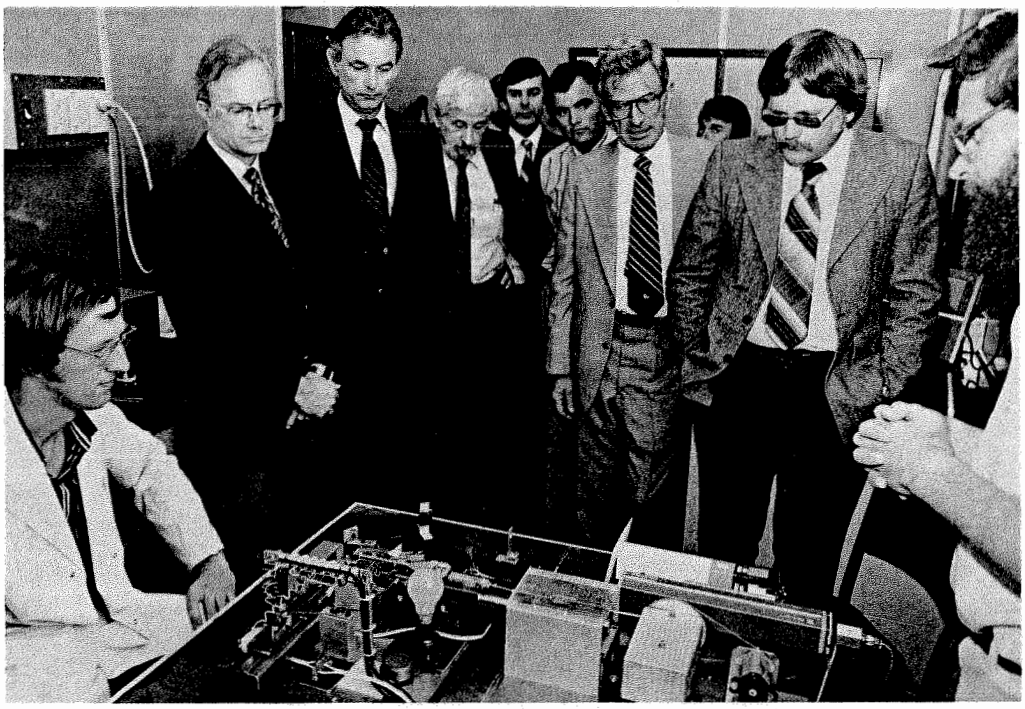
Three Royal medals – also known as the Queen's Gold Medals – are awarded each year to scientists within the Commonwealth on the recommendation of the Council of the Royal Society—two for contributions to natural knowledge, the other for distinguished contributions to applied science.

The Royal Medals are one of the oldest and most prestigious awards for scientific research. The first were awarded in 1825.

Dr Wild has been invited to receive the medal in London on December 1 this year.

Dr Wild's research work has been in solar physics and radio astronomy. He is recognised as a world leader in both fields.

The men from Varian



Earlier this year a party of managers from the world-wide instrument company Varian Associates, visited the David Rivett Laboratory of the Division of Chemical Physics and were shown some of the research activities of the Division. Also represented in the group was the Melbourne-based branch Varian Techtron Pty. Ltd., which pioneered the manufacture of atomic absorption spectrometers. The picture shows Mr Graham Plant (extreme left) and Dr I. J. Wilson (extreme right) demonstrating a Varian Techtron grating ruling engine to (from left to right) Dr Walter Nickel (Varian-MAT GmbH, West Germany), Mr Jim Monoghan (Varian Instrument Division, Limerick, Eire), Mr Frank Kelly (Varian Instrument Division, Walnut Creek, California), Mr Geoff Stockdale and Mr Greg Kemm (Varian Techtron Pty. Ltd., Melbourne) and Mr Jim Heywood and Mr J. L. Hendrickson (Varian Instrument Division, Palo Alto, California). The ruling engine has been housed for some years in the David Rivett Laboratory and various improvements have been made to it during collaborative research with the Division.

Think tank

The Division of Land Use Research in Canberra has signed a 10-year agreement with the Department of Defence under which it will continue to conduct research into the management of Army training areas.

Since the early 1970s, The Division's Woodland Ecology group has been helping the Army at its Puckapunyal (Vic.) training camp in a program aimed at stabilising large tracts of land which had been severely disturbed by tank training operations.

This program will continue under the new agreement. The Army is concerned not only that it should be able to continue to use its training areas through avoiding their degradation, but that erosion of soil in an important catchment area of the Goulburn River should be minimised.

The Division will assist the Army in developing management policies for training areas in a number of areas—at Shoalwater Bay, Wide Bay and Canungra in Queensland, Holsworthy near Sydney, and at other sites in South Australia's Flinders Ranges and in Western Australia.

At the Army's Tropical Trials and Research establishment at Innisfail in Queensland, the Division will investigate how jungle training can be organised to cause minimum disturbance to rainforest.

The Division will act as a source of expert advice on land use and management by identifying training areas which will meet requirements while involving the least risk of damage or expense to the Army through vehicles becoming caught in untrafficable terrain.

CSIRO-DIAL a success

"CSIRO-DIAL", a unique recorded telephone information service operated by the Division of Building Research is now in operation.

The service will allow the Division to disseminate information about building and construction on a 24-hour a day seven day a week basis.

CSIRO-DIAL works at two levels:

- **manual** operation by each of the Division's Information Officers on his own machine if the enquiry he is handling relates to one of the topics for which messages have been recorded.
- **automatic** operation on a 24-hour a day seven day a week basis. Separate telephone lines and machines have been installed for this purpose.

The 10 topics chosen for the CSIRO-DIAL service were decided after staff of the Division's Technology Transfer Unit conducted a survey of enquiries made to the unit.

The service allows topics to be changed according to seasonal demand (e.g.: "Home Heating" in winter may become "Keeping Cool" in summer).

The contents of the messages have been carefully prepared so that they will answer nearly all of the points a potential enquirer would ask an Information Officer.

CSIRO-DIAL has also been provided with two additional lines.

One allows staff running the service to meet either special demand (for example a message relating to roof repairs following violent storms in Melbourne) or prepare special messages for all or sections of industry (perhaps information on changes to the Uniform Building Regulations in Victoria).

The second line contains an index to current CSIRO-DIAL topics.

An assessment of the CSIRO-DIAL system is being carried out using matters especially designed by Divisional staff.

The Division has the capacity to supply copies of all the topics to any RAO or Division that wishes to establish a similar service.

Copies of seven CSIRO-DIAL messages have already been sent to the RAO in Perth for this reason.

Further information on the CSIRO-DIAL system can be obtained by contacting Hal Christian at the Division of Building Research on (03) 556 2546.

BRISBANE SHOW

For this year's Brisbane Royal National Association Show (7-16 August) attention was focused on some of the work of CSIRO's Long Pocket Laboratories at Indooroopilly.

Three main displays were used—on the paralysis tick, insects that transmit virus diseases of animals, and the biological control of aquatic weeds.

Before children began their August holidays, 2000 notices advertising the display were distributed throughout south-eastern Queensland schools through the courtesy of the State Director-General of Education, Mr Clyde Gilmour.

New leaflets describing the three exhibits were prepared for distribution, and up-to-date display panels and models of ticks, insects and solar-controlled traps constructed.

There was plenty of movement and some discreetly flashing lights. Long Pocket staff welcomed the chance to "meet the public" and to pass on their research results.

ALP's views on science policy

This is the complete text of a speech delivered recently to the National Science Forum in Canberra by Senator John Button, Opposition spokesman on Education and formerly spokesman on Science. Next month's CoResearch will publish the text of a speech by the Minister for Science and the Environment, Mr David Thomson, to the same body.

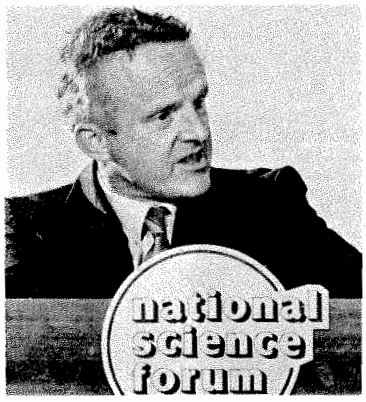


Photo: The Canberra Times

To many people, science policy in the past has been more or less a matter of saying science is a 'good thing', like motherhood.

For this reason, we support it, but we won't give it a terribly high priority—we will just let scientific matters tick along, with the usual course of ad hoc decision making taking care of what needs to be done.

Events have now rendered this attitude untenable. Things have not so much changed from within science, but rather from the raising of issues in which science is inextricably concerned.

I refer to environmental matters, resource use, and to technological change, which are concerns throughout the world.

And in Australia, I don't think that it is exaggerating to say that science and technology policy is one of the areas at the heart of a complex of matters relevant to our survival and development as a nation in the 80s and beyond.

I refer particularly to the creation of new industries, to new employment opportunities for Australians, and the question of how we are going to convert the wealth from our mineral and energy resources into permanent benefits to this country.

I am pleased to say that, at a national level, we are at last raising the level of debate on these matters. We have seen a number of thoughtful and well argued reports in recent years which deal with science and technology and related matters.

For example, I would mention the Jackson Committee Report on Manufacturing Industry and the Crawford Report on Structural Adjustment.

More directly on science and technology, there have been several reports from ASTEC, and the report of the inquiry into CSIRO.

What is lacking is action and thinking on the political resolution of the problems raised. Inquiries and the preparation of reports sometimes seem to be our own growth industry.

Nonetheless, I believe that it is essential that we develop a rigorous national ongoing school of science and technology policy study.

Even today there are only a handful of university departments in the area, and a few other bodies such as the commercial study group of CSIRO.

The study of science policy should be closely linked with economic and sociological areas, and also with the study of the political process.

In this connection, the ALP discussion paper which I released in March is something of a 'political' look at the issues.

It is not, and cannot be, a study of policy in the depth required.

We must realise, however, and with respect—academics must also realise—that politics in the broadest sense is an essential part of the development and implementation of science and technology policy.

There are big interest groups involved—industry bodies, trade unions, the Public Service and political parties.

Ultimately, progress will be achieved from interchange between these groups.

Therefore, the issues must be addressed in a way which is relevant to each of them.

I might add in passing that our education policy in the coming three years, which I released last week, provides for the setting up of a number of independent research institutes in specific areas of national importance as alternative sources of policy advice.

I said earlier that the level of national debate on science policy had improved.

I have some qualifications about this in terms of the response to the ALP discussion paper on science and technology. It is instructive to look at what happened.

The paper was widely distributed to various Government science bodies, to industry leaders, academics and the media.

To my knowledge, not one newspaper or section of the electronic media made any reference to it at all, other than the ABC Science Show which dealt with it in some detail.

It is sometimes said that the media decides the agenda for political debate, and if this is so, on the experience of this paper the outlook for a serious political discussion of science policy is not encouraging.

On the other hand, the Government back-bench committee is making a close study of the paper—with a view to indulging in a bit of their traditional larceny no doubt—and the response from industry and government scientific organisations has been detailed, fulsome and constructive—even some of the highest captains of industry have themselves put pen to paper.

These responses have, however, not been without qualifications which generally relate to particular vested interests—another difficulty in the implementation of science policy.

The paper covers a wide range of areas. It classifies science and technology activity and points out that different policy and organisational principles apply to different areas.

It examines the state of science and technology in Australia. Its conclusions are similar to those of the OECD, finding it to be heavily concentrated in basic and government-supported research, with too little emphasis on industrial and technological work.

Secondly, it examines the organisation of the public sector, and the principles which should govern the employment of professionals in this area.

The last Labor Government, to put it quite frankly, got itself into needless hot water in 1975 by an unfortunate attempt to hive off a part of CSIRO under the principles discussed.

> "We are light years behind . . . in setting conditions to handle technological change."

This would not happen again, (and the integrity and independence of CSIRO is specifically supported).

At the same time, there is a need for scientific organisations to work in the national interest, subject to policy direction at a high level.

I emphasise the 'high level'. It does not mean compromise of the professional expertise or integrity of the scientist or technologist.

In its second half, the paper deals with technological change and discusses means by which we should encourage and finance industrial research and development and product commercialisation in Australia.

This part is intended, frankly, as a contribution to the debate which is going on in Australia over technological change.

I might add that one of the main forums is within my own party. People in the Labor movement are, quite understandably, fearful of loss of jobs through technological change. They have some reason to be. Hence there is suspicion and fear of change. The position is not helped by the lack of debate, or sympathy and understanding, from many on the employer side—or from the Fraser Government for that matter.

We are light years behind countries such as West Germany, Sweden and the UK in setting conditions to handle technological change.

The paper argues, briefly, that in a world where technological advance is occurring apace, we have no choice but to do likewise if we wish to remain a modern, wealthy country.

It sees acceptance of this as a necessary prerequisite to the debate which must be stepped up, and must be founded on a policy of spreading the benefits and the costs of change equitably.

It is the latter which is seen as a proper concern of a social democratic, or Labor, party.

It is argued that the key to greater benefits for all, including those whom the Australian Labor Party represents, is to increase the wealth of the country as a whole.

That is a necessary but not a sufficient condition for a proper policy—the real concern is in socially equitable accommodation of the change.

Otherwise, the paper demonstrated how science funding has not grown in the past five years. It does this by reducing budget figures to real figures, correcting for inflation by using deflators derived from the national accounts.

There is no doubt that under the Fraser Government science has been a particularly 'flat' area. What seeming growth there has been is almost always accounted for by a specific big capital project, such as the Australian National Animal Health Laboratory at Geelong.

I am not for one moment saying we do not need those facilities, but their extraction from the budget shows that, in the ongoing recurrent research side, there has been almost no growth and—in some areas—contraction.

The exception is energy research, but that is not enough. I might add that in all the responses I have had to the paper, whilst issue has been taken with some points, no-one has disputed that analysis.

I would like briefly to mention some specific proposals discussed in the paper and the response to them—

STAFF MOBILITY—we endorsed the idea that fresh challenges and opportunities should stimulate creativity among scientists and technologists, and that mobility was therefore essential. Superannuation portability was specifically endorsed.

The response to this was very favourable. I think it was almost universally supported. I might add that we have advanced a similar proposal in our education policy released last week for academic staff.

> "Fresh challenges and opportunities should stimulate creativity . . . mobility is therefore essential."

Personally, I would like to see a common superannuation scheme among a very wide range of professional people in Australia—commonwealth, state, private industry and academic, together with other aids to mobility, such as voluntary early retirement. Employment in these areas should be highly mobile and less limited by institutional constraints.

CONCENTRATION OF R & D EFFORT—The paper recognised the need, in a comparatively small industrial economy, to concentrate effort on chosen areas. It purposely did not propose machinery for this, because I believe that if such a policy is to succeed, it must be approached co-operatively as between industry researchers, government and government research bodies.

It did discuss some of the political risks, such as the inevitability of some loss and waste of government or public investment, and how this would have to be accepted.

There are certain to be 'knockers'—it is a sensitive area—and the widest possible consensus is necessary to neutralise destructive criticism before action is taken.

By and large this concept has met with approval (we are not the first to propose it, of course).

We were told that support is widespread. I therefore think that the time is ripe for getting all the parties—such as ASTEC, the Australian Industries Research Group and others—together to discuss it.

It should be done by this government, but probably won't be. It is something we would do on attaining office.

CONTRACT RESEARCH—the paper endorsed the idea of government giving a lead on direction for work on matters of national importance by means of offering contracts, open to government, universities and private sector laboratories.

It made two provisos—(1) That they should be long-term to allow some security and planning time, and (2) that in the case of government-funded bodies, there should continue to be a large base level budget for use at those bodies' discretion and to provide continuity.

The response to this has generally been favourable, but with some misgiving.

The doubts relate to the two caveats I mentioned, and I emphasise the need for these qualifications. One researcher, for instance, drew my attention to the vast potential for wasting research time in making proposals, in monitoring the fashion of the contracting body, and in adapting accordingly.

I believe there is probably some validity in this criticism, but perhaps the answer lies in writing contract specifications which are fairly wide and do allow considerable discretion to the researcher.

Perhaps there should be a provision allowing a certain proportion of funds to be spent on various by-ways which open up during the work.

In spite of these qualifications, it does seem to me that it may be a way of aiding the specialisation which I talked about in a manner which is free from some of the political pitfalls.

Poet quest

CSIRO's poets have until September 30 to lodge entries for the ACTU's annual Mary Gilmore Poetry Award.

The competition carries prizemoney of $750 for first, with five supplementary prizes of $50 each.

In addition, the Australian Natives Association 'Walter G. Smallman' prize of $50 will be awarded to the best poem selected with an Australian theme.

The competition is restricted to previously unpublished works or works which have not won prizes or been commended in any other competition.

Entrants are restricted to three poems, each no longer than 100 lines. Each must have a separate entry form.

The ACTU will hold the rights to the first Australian publication of the winning and commended poems. Winners will be announced on December 8.

Interested persons should send for further details and entry forms to the following address:

The Secretary,
Australian Council of Trade Unions,
254 La Trobe Street,
Melbourne, Vic. 3000.

PHASES OF A PROJECT

1. Enthusiasm
2. Disillusionment
3. Panic
4. Search for the guilty
5. Punishment of the innocent
6. Praise & Honors for the non-participants

ALP's view on science policy (cont.)

I have mentioned that we propose the setting up of an independent research institute on technological change.

One reason for this is that we are way behind in planning for and raising public awareness of its impact.

One suspects—and perhaps it is an unkind suspicion—that the Myer Committee report will not provide any blueprint on these matters.

I have a suspicion that there is another special reason for science and technology studies with an economic emphasis in Australia—a reason which is shared by only a handful of other countries.

The strength of the reason will depend very much on our perception of ourselves.

The reason lies in what we consider ourselves—as a developed country (DC) or an underdeveloped one, or lesser developed one (LDC) as they are sometimes called.

Conventionally, we rather fancy ourselves as a DC. We have the high living standards and educational standards of those countries.

We are European and Western in culture and outlook. But I wonder of we are not kidding ourselves a little?

Culturally we became that way by virtue of our history. But how did we get there economically? Essentially it was on the basis on our great pastoral industries. And on our mining industries.

We were, and are, an important source of raw materials. Exports of those raw materials paved the way for the development of the infrastructure of service industries and, later, manufacturing industries which our political and cultural structure demanded.

This was fine while our population was smaller, while the influence of multinational corporations was much less than it is today, and while the greater part of the rest of the world was much less developed than it is today, and whilst we were not competing with the growing economies of South-east Asia. It meant, for instance, that a policy of import substitution and essentially fragmented growth was workable for our manufacturing industry.

But times have now changed. Several notable LDCs, such as Korea, are moving up in the technological stakes.

In so doing they are evolving policies to handle the introduction of high technology—not so much on the social side, but in technological transfer so that it benefits others beside the multi-nationals who tend to be the ones importing it.

So we must look at what countries like Korea, Sweden and perhaps particularly Norway, are doing.

This does not mean that we will accept the social and income distribution set-up in countries such as Korea.

It simply means that we accept that as a recipient of multinational corporation capital and technology, we look at what these countries are doing in transfer of technology. We must recognise that we *do* have a lot in common with them, that we *do* have this hybrid character of part DC/part LDC country.

Perhaps consumer-wise, socially and politically, we are DC; economically and in world trade terms we are LDC.

We share this characteristic with Canada and New Zealand. Like them, we have a comparatively small population, we are raw material suppliers, and are recipients of multinational attention.

We must not let this 'big league' aspiration prevent us being tough in our own interests.

We are not the US, West Germany or Japan.

My misgivings in these areas are reinforced by two studies which I have recently seen:-

> "The old laissez-faire way just will not do any longer."

The first, a paper read at the Australian Mining and Petroleum Law Association Conference in Sydney recently, by Paul Grant of CSIRO, deals with international transfer of technology for secondary processing of minerals in Australia.

This is a particularly important and timely topic, because while mining development will not provide all the jobs that we need, secondary processing and manufacturing based on it could go much further towards doing so.

This paper argues that we pay too much for technology, that we allow multinationals to import it in 'package deals', tightly controlled, so it is not available to others.

It casts doubt on our hitherto solid support for a patent system which operates basically to the advantage of industrially-developed nations.

If we are to turn secondary processing into a major industry, we should follow this up.

The second is a paper by Hyung-ki Kim, of the Korean Ministry of Science and Technology. It argues that an industrially underdeveloped country should put research last in development after engineering and adaptation of overseas technology.

In Australia, we already have a considerable research facility, although it is biased towards agricultural research and basic research rather than industrial, applied research.

Taken together with the first paper I mentioned, it suggests to me that we may need action to ensure freer availability of imported technology in Australia, followed by more emphasis on industrial, applied research to apply it to our industry.

International action, and changes to our own patent law, may be necessary to accomplish this. We should also adopt a more aggressive stance in bargaining with transnational companies coming into Australia.

It seems to me that in some matters, for example, cheap energy, we are offering a good deal, and could afford to demand more in technology transfer and in secondary processing.

I believe we need an integrated technology, mining and industrial development policy.

Several responses to the discussion paper made the point that Australian subsidiaries of overseas companies were unable to support Australian R & D because of restrictions placed on them by the parent company.

Restrictions mentioned included inability to pursue particular lines of work, or to contribute to and cooperate with university research work.

It has also been suggested that we should be more sympathetic to joining international suppliers groups in future.

However, perhaps it is idle for us to talk of joining an international suppliers group in our national interest when we cannot even get our states to act in concern in the national interest!

After all, we do already have the machinery for the states acting together in the national interest, but we don't seem to be able to use it properly—the machinery is called the Commonwealth Government!

It is this area that I have one of my principal differences with the Fraser Government. The old laissez-faire way will just not do any longer.

If we let the international market place, both political and economic, decide these issues, there is no guarantee that we are going to make the changes necessary to meet new challenges and new conditions.

We face further alienation of our resources and curtailment of our national independence.

One need not enter into an ideological discussion about the free market place versus planning to see this.

One merely needs to note that the international market is not free. It is not free because of vertical integration in transnational companies, because of transfer pricing, because of cartels and because of international patent law.

I do not pretend to come here today with clear-cut answers on these things. But you might say there is a prima facie case along the lines I have indicated.

We must look urgently at these matters, because we cannot consider domestic science and technology in isolation.

There is, perhaps, another important lesson to be drawn from the past, and which is alluded to in our paper.

It concerns what we have done in the agricultural industries in the past, compared to what we have not done, or are only now thinking of doing, in the secondary and tertiary industries.

In the rural industries, we have evolved a large and elaborate structure in two areas, marketing and research. It has been done through a combination of government and producer organisations.

No such effort has been made in the manufacturing or mining industries. Admittedly, conditions are different, but it may be no accident that those industries in which we have been very successful, and which have formed a large part of the basis of our national well-being, we have had government/producer co-operation, research and marketing in the national interest.

In conclusion, I make a plea for the same sort of approach to be applied to secondary industry, in the national interest.

I put forward the paper I have released as a contribution. I look in vain for an answering contribution from the Government. By that I don't mean a stand-off, adversary debate, but something constructive—the response we have got shows a basis at least for a national policy.

I commend the organisers of this forum for their initiative in furthering debate, and I hope the science and technology community will contribute to the resolution of these questions.

Overseas study award winners

Securing an overseas trip can be a hard row to hoe, but Neil Dalgleish's many supporters in the Division of Tropical Crops and Pastures are delighted that his application for a CSIRO Study Award has been successful.

Neal is based at the Katherine Research Station in the Northern Territory.

He is a TO1 working in a team which is developing a ley farming system for the semi-arid tropical regions of northern Australia.

The system will integrate grain cropping with livestock production, with benefits to both enterprises.

A vital component of this integrated system is the use of zero tillage or direct seeding, whereby a maize or sorghum crop is seeded into a legume pasture in a single operation which prepares the seedbed, sows the seed, presses it into place, and applies herbicides to kill the existing pasture and any pasture or weed seedlings which may germinate subsequently.

The potential benefits of direct seeding include lower energy costs, reduced soil erosion, more favourable temperature and moisture conditions for seedlings, and higher grain yields than conventional tillage.

While zero tillage is a new concept in northern Australia it is used on a limited scale in subtropical and temperate Australia.

Last year Neal made a study tour of research stations and commercial operations in south-eastern Queensland.

Copies of his report of this study tour are available in the Cunningham Laboratory library.

His CSIRO Study Award will be used to visit research centres, machinery manufacturers and commercial farms in the USA, where zero tillage is a firmly established practice.

CSIRO Study Awards have also been made to the following people:

GRANTLEY CHAPLIN an Experimental Officer with the Division of Food Research, North Ryde, will make an extensive tour overseas to study the post-harvest treatment and handling of tropical and sub-tropical fruit.

Australia's north provides ideal conditions for growing many species of tropical and sub-tropical fruits, and embryonic industries are already operating at such places as the Ord River, Broome, the Top End of the Northern Territory and, of course, Queensland.

While the fruits can be grown successfully, a major problem arises in transporting the fruit to the major metropolitan centres where premium prices are paid for such products—most tropical fruits suffer chilling injury at temperatures below 12°C, ruling out refrigerated storage.

Grantley will visit Hawaii, California, Florida, Israel, England, France, Taiwan and the Philippines during his study, investigating the various storage and handling treatments for such fruit as mangoes, avocadoes, lychees and custard apples.

In England he will look at the end-point of the marketing chain, the New Covent Garden Market, as well as visiting the Tropical Products Institute in London, which has extensive experience in extension work in overseas countries.

He also hopes to study alternative storage methods, including low-pressure and controlled atmosphere storage.

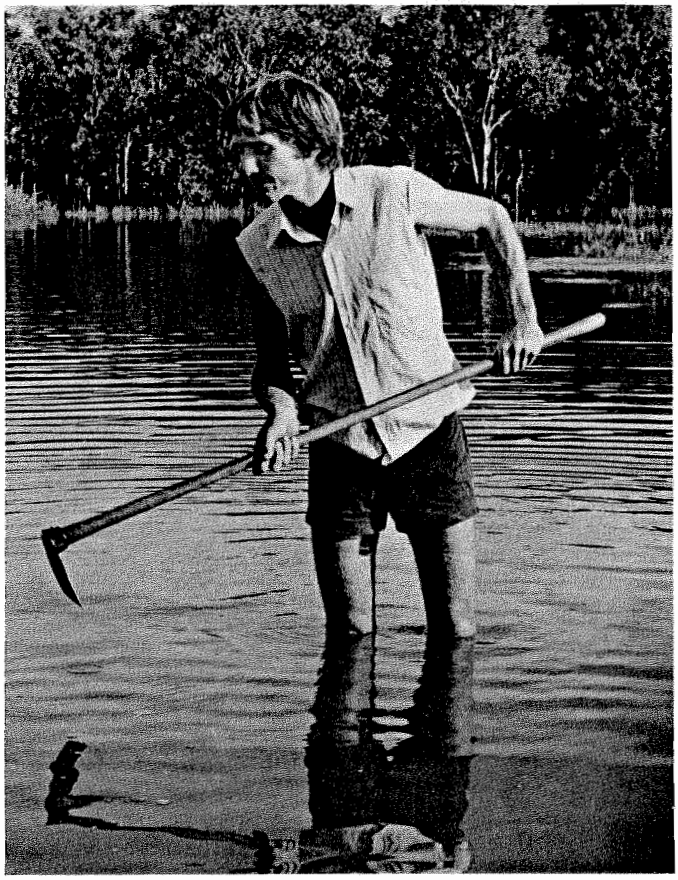
BERNARD MITHEN, an Administrative Officer with the Centre for International Research Co-operation in Canberra has received an overseas study award to study the management and evaluation of research in international collaborative projects.

There is a need for more experience and expertise in Australia in running research projects for developing countries, and Australia at present depends heavily on overseas experience.

Bernard will visit such overseas establishments as Canada's International Development Research Centre, and the headquarters of such bodies as the United Nations Development Program, the World Bank, and the Rockefeller and Ford Foundations, and other institutions concerned with international aid in Britain, Holland, Sweden, Italy and Hawaii.

During his trip he will observe the management and evaluation of research for development and current trends in the broad area of research management, including research liaison.

He plans to apply his experience through CSIRO's Centre for International Research Co-operation in working with aid donors, recipient countries, collaborating countries and institutions.



NORMAN BASS, a Senior Technical Officer with the Division of Applied Physics in Sydney, will travel overseas to study techniques in the design and construction of high temperature platinum resistance thermometers.

Platinum resistance thermometers are the basis of all precision temperature measurement below 630°C, and above this temperature the present measuring instrument is a standard platinum-platinum-rhodium thermocouple for which the best precision is only 0.2 to 0.3°C.

For some time there have been strong moves to extend the platinum resistance thermometer into the thermocouple region and laboratories around the world are working to bring this about.

The work has received a major boost with the energy crisis, which has shown the need to improve thermodynamic efficiency of engines operating within the 700-900°C region—the accuracy needed for investigations is in the order of 0.02°C or less.

The techniques and skills for constructing suitable thermometers are difficult to acquire, and Norman will visit the only two countries with expertise—the US and Japan.

He hopes to bring back to Australia the skills in design and construction of thermometers needed for when such instruments are required commercially in Australia.

Dr. David retires

Mr H. G. "Dave" David has retired from the Organization after 30 years service, the last 20 of which were spent with the Division of Textile Physics.

He graduated with first class honours in physics from the University of Bristol, U.K. in 1937. The Faculty in that year included Professor Sir Neville Mott FRS, later Cavendish Professor of Experimental Physics at Cambridge, Professor C. F. Powell FRS who received the Nobel Prize for Physics in 1950. Professor A. M. Tyndall FRS was then head of the School of Physics at Bristol.

One of Dave's prized possessions was a photograph of his year with these distinguished physicists, but sadly it was lost in the fire which destroyed his laboratory at Textile Physics in September, 1975.

After graduation (and a Dip.Ed.) Dave was on a "holiday" course in radar in September 1939 when war broke out, and was commissioned into the RAF Volunteer Reserve shortly after the war broke out.

He saw service as Officer-in-Charge of mobile radar stations in France, Egypt and Ceylon and as a Squadron Leader on the staff was with radar in India.

He returned to the U.K. in 1944 and was posted to 60 Group, the Headquarters of radar where his work was concerned with radar navigation aids.

After the war he spent three years in Iraq with the Iraq Petroleum Company in a technical capacity and joined the CSIRO High Pressure Laboratory of the Division of Industrial Chemistry in 1950.

The Laboratory eventually moved to the site at Ryde occupied by the Division of Textile Physics, to which he transferred in 1961.

His early work in the Division was concerned with the physical and physiological aspects of clothing, but in later years he took a leading part in the development of the objective measurement of raw wool.

He has carried out research to establish sampling routines for raw wool testing, devised and run international interlaboratory "harmonising" trials on wool yield and fineness, and is a well respected figure in the international wool testing scene.

His retirement is a considerable loss to the Division but is partly offset by having him back on a part-time basis, to indulge his interest in computerising masses of data.

He is to design the Textile Physics library computerised referral and loans record systems.

Dr Ken Whiteley has joined the Division of Textile Physics in Sydney as a Senior Principal Research Scientist, to work in the Division's objective wool measurement program.

Dr Whiteley was formerly Associate Professor, Fibre Science, with the University of NSW, and was responsible for lecturing, research and extension activities in Fibre Science.

His specific area of research interest with CSIRO is the development of better, more economical means of testing wool for yield and other measurable parameters.

Dr Whiteley has Bachelor degrees in both Applied and Pure Science from the University of NSW, and a Ph.D (in textile chemistry) from Leeds University.

He is a member of the Australian Institute of Agricultural Science, and a Fellow of the Textile Institute.

Dr Whiteley replaces Dr David David, who retired last month.

Dr Peter Webster, a Principal Research Scientist with the Division of Atmospheric Physics, has been awarded by the US National Science Foundation a Certificate of Appreciation and Commendation for his efforts on behalf of the Monsoon Experiment (MONEX), and regional component of the First GARP Global Experiment.

The citation states that Dr Webster's activities "were carried out in a superior fashion over a prolonged period of time, and, as such, they are worthy of note and commendation".

Life on earth

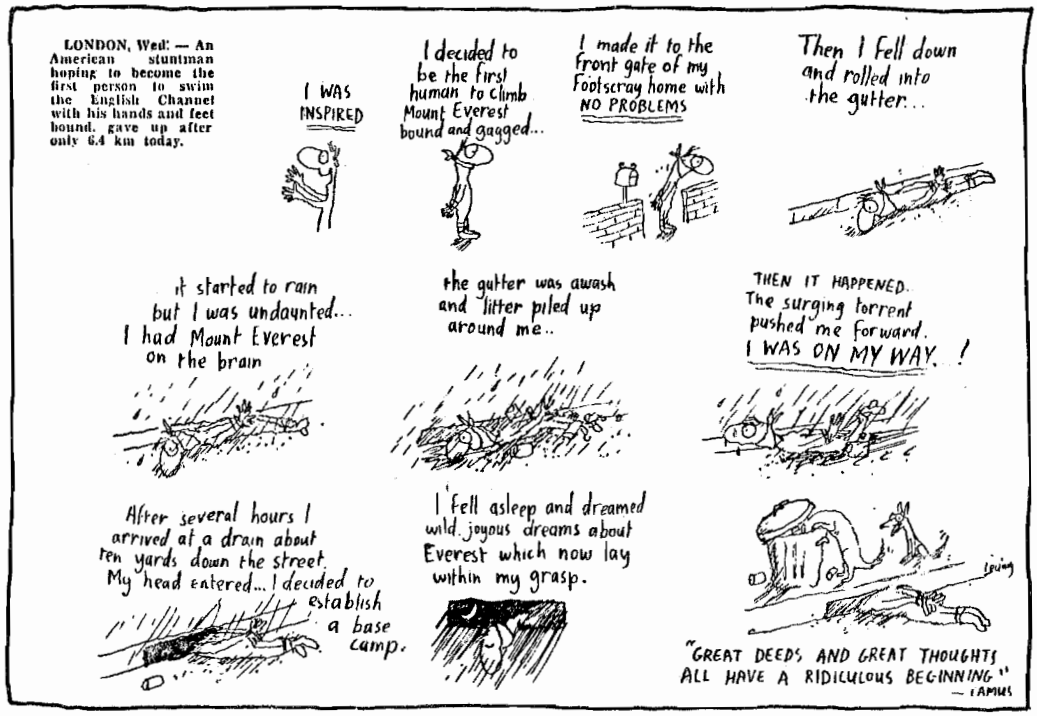
For all those CoResearch readers whose eyes occasionally drift upwards from their desk or bench-tops to contemplate The Great Unknown and their place in It, something a little different this month...

Michael Leunig will be known to many past readers of Nation Review, and more recently to readers of the Melbourne Age.

He may well be the best cartoonist working in Australian newspapers today, or perhaps anywhere in the world. His brand of humour owes nothing to any other person. It is, to use the word in its strictest sense, unique.

Leunig's world is familiar to most of us. It is a world of small, sad people who, having been overwhelmed by their own insignificance in the grand, incomprehensible scheme of things, colour reality to a more acceptable hue.

The cartoon on this page was published recently in the Age, and is reproduced here with the kind permission of Leunig himself.—THE EDITOR.



McMahon

FLAG IRISES

At last we found the vintage Reo by
a ruined house beneath a spur that dimmed
the landscape where it thrust across the sky
and brooded westward, braced against the wind.
The house stood roofless, dead and empty eyed
in mountainshadow-grey except where thin,
spur-sharpened shafts of morning sunlight blazed
through swaying beds of iris flowers and glazed
cracked walls which let faint, flag-flecked shadows in.

I wondered, as I sheltered by a wall,
what kind of woman changed this windswept scarp
into a home. Did she arrive with all
the joy youth brings, live fully, and depart
in constant love? Or had she gone toil-galled
and gaunt? Where did she lie at last? Dark hearths
and sky-lit rooms can't tell. I only know
she must have loved those irises that blow
each spring and bring her living epitaphs.

WHIPSTICK-MALLEE CRITICS — 1935

Literature was served up to me raw
while waiting in the Dodge that day. Bar doors
flew wide and two bruised critics rolled
out roaring in the sun. The footpath throbbed
to thumping feet. A rising dust cloud fogged
a ring of cheering men and four
ecstatic dogs.

My uncle, propping up the limestone wall
schooner-handed, mentioned that the brawl
began with words on writers.
One, he said, was Lawson. In his view
both those pounding clowns were wrong. He knew
that Paterson outwrote them all.
And the dust cloud grew.

Years later, when our English tutor sneered
his way around Australian poets, "here
no writer's worth re-reading", those
two mallee academics seemed to swing
across my memory. Noisy sunlight ringed
a crowded dust cloud. Years are clear,
transparent things.

A glossary of gloss

WHAT THE AUTHOR SAID	WHAT AUTHOR MEANT
It has long been known that.....	I haven't bothered to look up the original reference, but.....
Of great theoretical and practical importance	Interesting to me.
While it has not been possible to provide definitive answers to these questions....	The experiment didn't work, but I figured I could at least get a publication out of it.
.....in the dark	The lights failed.
The operant conditioning technique was chosen to study the problem.....	The guy in the next lab already had the equipment set up.
Three of the subjects were chosen for detailed study.	The results on the others didn't make sense.
.....the Patagonian Chemical Co.	We found some unlabelled white powder in a drawer.
Typical results are shown.....	The best results are shown.....
Digest for 17½ hours.	I slept in.
Agreement with the predicted curve is: excellent good satisfactory fair	 fair poor doubtful imaginary
It is suggested that.....It is believed that..... It may be that	I think.....
.....at 15° to 35°C.....	The waterbath thermostat broke down.
It is generally believed that.....	A couple of other guys think so too.
Detected nanogram quantities.....	The chart recorder hiccuped.
It is clear that much additional work will be required before a complete understanding..	I can't understand it.
.....less than one microgram.....	I couldn't find any.
Unfortunately, a quantitative theory to account for these results has not been formulated.	I can't think of one and neither has anyone else.
Correct within an order of magnitude.	Wrong.
Filter through a 0.45u filter.....	The solution was made up with sweepings from the floor.
Thanks are due to John Gletz for expert technical assistance and to Joe Doe for valuable discussion.	Gletz did the work and Joe explained what it meant.
't' tests were carried out.....	The amount of scatter made the results meaningless.

Coresearch Classifieds

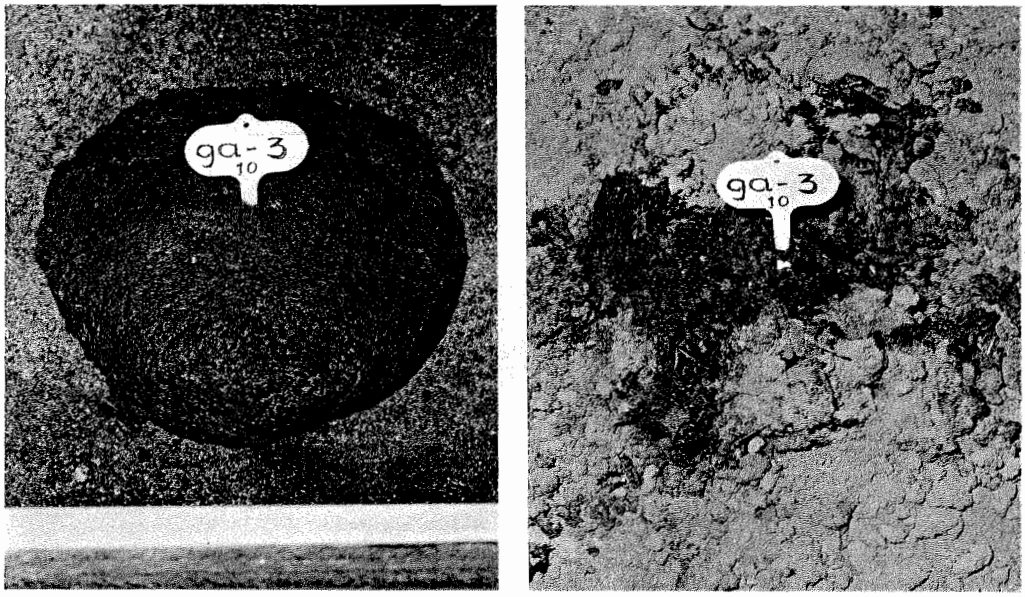
CoResearch Classifieds are open to all members of staff, at no charge. Deadline for classifieds is the 8th of each month. Send to: CoResearch Classifieds, PO Box 225, Dickson, ACT, 2602. All advertisements should carry the advertiser's name, address and telephone number, although this information need not appear in the body of the advertisement.

Does molecular weight concern you? Take our Hewlett Packard Osmometer. F. Sweett, Division of Mineral Engineering. (03) 541-1162.

To promote the game of GO I have imported a number of sets of GO stones, to enable interested persons to obtain a set at the minimum cost. Medium quality Korean glass, $6 per set plus freight, B. Scott, Division of Oceanography, P.O. Box 21 Cronulla.

VEGETARIAN RESTAURANT. Do you picture vegetarian food as plain, dull and tasteless? Allow us to change your views. Delicious vegetarian meals cooked in the French style at Chez Chantal, 8a Hughes Street, Potts Point, NSW 2011 (opposite Wayside Chapel). Open for lunch and dinner, Tuesday to Saturday. (02) 358 1457.(CSIRO staffer's wife).

Science at play



The Division of Macrobiotic Confectionery has upstaged the dung beetle with a totally new approach to the biological control of cattle dung. A slow-release pellet of photo-reactive gallium-arsenide-3 is coated with a palatable gel containing an ultra-violet inhibitor, and scattered on pastures. Eaten by a cow, the pellet lodges in the rumen and gallium-arsenide is released into the digestive system and thus finds its way into the offending pad. Exposure to UV light causes a violent reaction, and the pad explodes. An initial increase in dung production is noted, but the animals are soon conditioned to the sudden noise of exploding pads. The Division is now working on self-cleaning fans for milking sheds.

Letter

Sir,

With reference to the article 'Mileage Rates May be Inadequate' in the June 1980 issue, it really seems to me that you have put forward a good case, backed by independently derived data, for reducing the mileage allowance paid for the use of private vehicles.

I suppose it is possible that somewhere in CSIRO there is someone who has purchased a car specifically so that he may use it during business hours on CSIRO business.

However, I am sure that this is the exception rather than the rule and that most people who use their personal car as a means of transport during business hours in fact use a car that they would have owned irrespective of such use.

Under these circumstances, I can see no justification for taking account of the cost of NRMA membership, registration, third party insurance, or the cost of hire purchase interest.

Since depreciation is to some small extent affected by 'mileage' (with apologies to the Division of Applied Physics), then some account of depreciation could be taken and I suppose that most people's comprehensive insurance includes a requirement for the insuree to pay the first $100 or so of any claim and this could equally be taken into account.

I suppose also that if an accident does occur then this could lead to loss of no-claim bonus and this risk too could be reflected by an increase in allowance.

However, both the component due to depreciation and that due to comprehensive insurance should be very much less than the amount calculated on a straightforward mileage ratio.

Please do not look at travel allowances.

S. Lattimore
Bureau of Scientific Services
Canberra.

CSIRO COMMUNICATION SYMPOSIUM

A three-day residential communication symposium will be held at the Australian National University in Canberra between November 30 and December 3 this year.

About 100 delegates from various sections of CSIRO are expected to attend, including information officers and scientists from Divisions, senior Headquarters staff and members of the Executive.

More than seven years have passed since the Organization last examined its communication activities at such a symposium.

During this period, an increasing number of people have become converted to the view that scientific research loses much of its value unless it can be communicated to people in a position to exploit it.

The intention of this symposium, therefore, is to assess the effectiveness of CSIRO's past communication programs in transferring information to specific audiences and to discuss possible initiatives for the future. By doing so, the organisers hope to increase the awareness in CSIRO of:

- the greater responsibility now being placed on scientists to communicate the results and intentions of their work to a wider audience than their peers;
- CSIRO's current information-transfer activities to primary and secondary industries, and options for the future;
- CSIRO's obligation to communicate with non-industry sections of the community (eg. the education system) and the public at large;
- the way in which new technology is changing the whole process of information transfer; and
- internal communication (non-administrative) in CSIRO.

The symposium will also give Divisional information officers—many of them working by themselves—the chance to discuss their problems with one another. It will also give CSIRO an opportunity to invite outside speakers to give their view of the Organization's efforts at communicating.

For example, Mr Phillip Adams, well known for his advertising achievements and social comment, has agreed to talk about 'Image-making in the 80s'.

Professor Henry Mayer of the University of Sydney will discuss 'Science in the Media'.

In addition, representatives from secondary industry will participate in a panel session with two CSIRO Chiefs, while speakers from the SA Department of Agriculture and the Australian Wool Corporation will analyse problems in communicating with the rural audience.

The encourage the participation of scientists in the communication process, each Division has been invited to nominate one scientist as well as one communicator to attend. Even if the scientists do not emerge from the symposium fired with a need to communicate, they should at least gain some appreciation of the difficulties faced by communicators in performing their job.

The symposium organisers hope that the proceedings of the symposium will serve as an input to the Executive on a communication policy for the Organization.

NEW SCIENCE MAGAZINE

CAT has had an approach from Dr Peter Pockley, science editor of a new science-oriented magazine 'Omega' to be published bi-monthly from November by Sungravure.

Dr Pockley is looking for a wide range of high quality, carefully selected CSIRO material, both written and pictorial, for the magazine.

He is particularly seeking 35 mm, or preferably 2¼ inch, colour slides for pictorial features.

Anyone with suggestions about suitable CSIRO material should contact the CAT Secretary, Dr Michael Dack (P.O. Box 225 Dickson, A.C.T. 2602).

CAT CIRCULATED DOCUMENTS

Copies of the following documents can be obtained from the authors:

No. 7 "Daniel in the Lion's Den"

A paper delivered to the Jubilee ANZAAS Congress in Adelaide by members of the Communication Group of the Division of Land Resources Management (Private Bag, P.O. Wembley, W.A. 6014).

This paper describes the experiences of the Communication Group in attempting to improve information transfer.

No. 8 "The Marketing of Research Results".

An informal account compiled by Bob Couper of the Division of Building Research (P.O. Box 56, Highett, Vic. 3190) of the hurdles facing Divisions in bringing research results to the stage of implementation.

No. 9 "Communicating Science and Technology—What's Happening Overseas?'

A report by Wendy Parsons on a CSIRO Jubilee Study Award tour of the U.S., Canada, the U.K. and Europe (March/June 1979).

Copies are available through Divisional libraries on inter-library loan.

CAT MEMBERS

Comments and suggestions regarding communication activities in CSIRO can be passed on to the appropriate member of CAT. Member, and the section of CSIRO they represent, are as follows:

Ms Wendy Parsons, Division of Forest Research (Institute of Biological Resources).

Mr Maurie Woodward, Division of Land Resources Management (Institute of Earth Resources).

Mr Fred Darby, Division of Mechanical Engineering (Institute of Industrial Technology).

Dr Andrew Watkins, Division of Chemical Physics (Institute of Physical Sciences)

Mr Barry Johnson, Division of Food Research (Institute of Animal and Food Sciences).

Ms Doris Leadbetter, Headquarters Library (Headquarters).

Mr David Thomas, R.A.O. Brisbane (RAOs State Committees).

Ms Yvonne Esplin, Regional Information Office, Sydney (Bureau of Scientific Services).

Mr Brian Woodruff, Science Communication Unit (Bureau of Scientific Services).

'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 4477. Editor: Graeme O'Neill.

CoResearch

CSIRO's staff newspaper *September 1980* 233

Chewing over the biltong at a recent communications seminar in Sydney are, from left, Harry Brown, Minerals Research, Yvonne Esplin, CILES, John Platt, Textile Physics, Alan Driver and Anne Jack, Applied Physics. The biltong, or meat jerky, a form of dried meat, was supplied by Bill Spooncer from the Meat Research laboratories, who is based in Sydney. A report on the seminar appears in the CAT column on page four.

Manufacturing Technology: Industry campaign

CSIRO's newest Division—Manufacturing Technology—is undertaking an aggressive national campaign to bring itself to the notice of local manufacturers.

Its promotional theme—"manufacturing technology: making things a better way"—is the basis of a multi-coloured brochure currently being distributed to key personnel in manufacturing industry.

Initial distribution is being achieved through specialised mailings to more than 20,000 members and associates of three major industry groups.

These are:

- The Victorian Chamber of Manufactures;
- The Metal Trades Industry Association; and
- The Chamber of Manufactures of New South Wales.

The groups themselves are meeting the cost of mailing the brochures which form inserts to their regular publications.

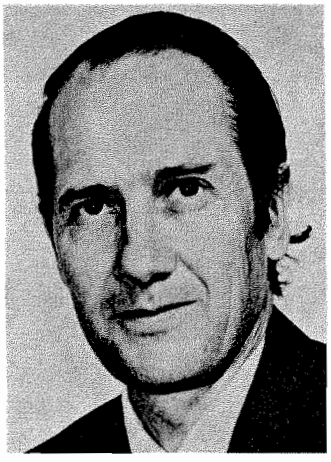
Other distribution points for the brochure include the Commonwealth Department of Productivity's Business Information Centre in Swanston St., Melbourne, CSIRO's own Parkes (NSW) Visitors Centre and CILES (Melbourne and Sydney).

COLLABORATION

Chief of the Division of Manufacturing Technology, Mr R. H. (Bob) Brown, praised "the willingness and helpful collaboration" of the industry groups and the Department of Productivity in helping to publicise the Division.

"We were created to provide a focus for the scientific and industrial research needs of Australian manufacturing industry," he said.

"I hope our initial promotional campaign will let manufacturers and some of the wider community know that we are up and, if not quite sprinting, at least out of the starting blocks."



The Chief of CSIRO's new Division of Manufacturing Technology Mr Bob Brown

Bob Brown, 50, formerly Professor and Head of the Department of Mechanical Engineering at the University of Western Australia, took up his post as Chief of the Division on 11 August.

The Division, formed earlier this year from part of the Division of Materials Science, has premises in Melbourne and Adelaide.

Budget: Two new labs get funding

Two new laboratories costing a total of $11.75 million have been approved for CSIRO in this year's Federal budget.

A new laboratory complex costing $8.85 million will be built for the Division of Materials Science at Clayton in Victoria, and a $2.9 million crop adaptation laboratory for the Division of Plant Industry will be built at Black Mountain in Canberra.

Funds have been provided through the budget appropriation to the Department of Housing and Construction and work on both buildings will begin during this financial year.

The new laboratory for the Division of Materials Science will enable staff to be transferred from highly congested accommodation at the University of Melbourne and Fisherman's Bend.

CONTINUED ON PAGE THREE

Minister supports 'pluralistic approach' to Aust. Science

In a time of expenditure restraint, the scientific community should be pleased with the outcome of the 1980-81 Budget, the Minister for Science and the Environment, Mr David Thomson, told a National Science Forum lunch in Canberra last month.

Mr Thomson said the Science Ministry had received a 12 per cent increase—or $32.2 million—over last year.

"As you are aware, the Government has continued to focus on constraining expenditure. The Government does, however, recognise the national importance of research and development," he said.

"I am gratified that support for these activities has been increased in several key areas, including areas outside my portfolio such as energy research, industrial research and development, and health."

Mr Thomson pointed out that CSIRO had received $170 million—an increase of 8.4 per cent.

"I am very pleased that the Budget sees the first funds allocated towards a CSIRO oceanographic research vessel," he said.

"This has been the subject of discussion between CSIRO and the Government for some years.

"The Prime Minister's announcement in April and the funding provision in the Budget underline the Government's commitment to the vessel's construction.

"The Budget provision for $90,000, is 1 per cent of the $9 million purchase price. The program is for tenders to be called later this year and then let towards the middle of next year."

The Minister continued: "The Australian Research Grants Scheme will receive approximately $16 million for grants in 1981 to maintain the existing real level of activity under the scheme.

"Marine Science has been given high priority with a total allocation of $7.5 million. This is, at least in part, the result of the Commonwealth's new responsibilities in relation to the extended 200 Mile Off-shore Zone.

"Of this, $2 million will be provided for Marine Science and Technologies Research Grants. This is five times the amount spent last year. Funding will be directed towards projects involving research on the Great Barrier Reef, in Bass Strait and the North West Shelf as well as other areas.

"The Australian Institute of Marine Science, at Townsville, is to receive $5.5 million, an increase of approximately 55 per cent over last year's allocation. There is funding for the recruitment of 21 additional support staff.

"This honours a commitment to provide additional funds and will enable the Institute's studies on the Great Barrier Reef to be accelerated.

"The Great Barrier Reef Marine Park Authority has been allocated $1.8 million to continue and expand its research and management work. This represents a 68 per cent increase.

"There is an increase of 170 per cent to the Australian Biological Resources Study. This will mean progress in such projects as a new Flora of Australia and an Australian Faunal Directory. The work of many Australian biologists will be supported by the allocation of $1.1 million to the study.

"Australia's Antarctic program also receives additional support.

"Provision has been made for the allocation of $1.2 million for Australia to participate in the BIOMASS Program. This is a major international study of the marine living resources of the southern ocean, designed to provide information for a management plan under the recently negotiated Convention for the Conservation of Antarctic Marine Living Resources.

"In addition, $1.6 million will be made available for the charter of another ice-breaking supply vessel. This will allow rebuilding of Australia's Antarctic bases to continue. The total cost of this program is estimated at $52 million over 10 years.

"Initial design studies will also be undertaken with a view to acquiring an Australian ship to serve the Antarctic stations and carry out marine research.

"Some $3.6 million is allocated to programs under the Environment Protection (Alligator Rivers) Act, an increase of $1.7 million or almost 50 per cent. Amongst other things, funds will be directed towards a permanent laboratory at the new township of Jabiru.

"As I announced recently, the Government has undertaken to support the recommendations of the Academy of Science by establishing a committee to monitor recombinant DNA research and its applications. This task had previously been performed by the Academy. I believe that this will become an area of great importance and opportunity to Australia."

Turning to science policy, the Minister said the last decade had not only been one of changing community attitudes to science and technology, but also one of significant Government activity in the development of associated policies in Australia.

"In line with community expectations, the general emphasis has been to ensure that the scientific effort be responsive to national needs and as effective as possible," he said.

"It has been the Government's view that national science objectives can best be achieved through a pluralist approach to science policy.

"We believe such a policy is most effective when in line with society's expectations and needs as embodied in different sectors. These sectors reflect different socio-economic objectives. For example, research and development policy for energy matters would be considered quite separately from, say, health.

"The Government's pluralist approach to policy making is reflected in the array of Government Departments and advisory bodies concerned with science and technology. The Government has rejected the concept of a single central science authority.

"This is not to say that attention has not been given to co-ordination and priority setting among the various sectors.

"One of the major achievements in providing the knowledge necessary for co-ordinated development of research and development policy in this country was the 1979-80 Science Statement, presented to Parliament in May of this year.

"This first Science Statement was prepared by the Department of Science and the Environment with the assistance of other Departments and organisations.

The Minister for Science and the Environment Mr David Thomson, speaking at the National Science Forum in Canberra.

"I believe the Statement represents a big step forward. It is a most successful attempt to present a comprehensive statement of Commonwealth Government funding of research and development. It will be of great value to policy developers and the interested community. I hope to see it repeated annually.

"When I tabled the Statement I took the opportunity to identify a four-fold plan for Government science policy.

"The elements of this plan are:

- One, to develop a capability in basic research to provide a store of knowledge and expertise for the future;
- Two, to develop a capability in applied research;
- Three, to transfer research achievements, through development into the market place; and
- Four, to ensure that any undesirable social and environmental impacts of technology are minimised.

"These elements reflect the range of public attitudes towards science and its applications. We are all familiar with the first three elements, which correspond to long-standing public expectations of scientific research.

"The fourth element is more a development of the past decade. It reflects community concern over possible side effects of new technologies on both the social and physical environment. I hope to see this fourth element properly balanced with the rest of the plan.

"An example of a recent development in this area is Australia's intention to participate in the World Conservation Strategy.

"The Government has asked me to consider the development of a national strategy, and I hope to be in a position to make an announcement shortly.

"I wish to see a strategy developed which provides for balance between conservation and development. We will be looking to science and environment writers to assist in fostering public participation in this campaign."

Mr Thomson said he saw the Science Forum as an "imported initiative in science communication in line with public expectations on science and technology.

"More is expected in terms of scientific solutions to problems—yet concerns over undesirable side effects have increased. The organisers of the Forum have clearly been sensitive to this and have seen the need for better communication. I congratulate them on their initiative," he said.

"Community perceptions of science have obviously been influenced by the technological changes of the 1970s. I also regard as extremely important the social and economic changes of the same period—changes experienced not only by Australia but by most other OECD nations.

"Public reaction to these changes is of particular importance to the group here today and communication is crucial to informed public reaction.

"The credibility of the scientific community depends on clear and open communication.

"For the scientist, communication beyond his own discipline is often difficult. I can appreciate the difficulty confronting the scientist in communicating his ideas to the layman, He cannot afford to sacrifice precision—but he must *make* himself understood.

"For the science writer the problem is to make issues which often have a complex technical basis interesting and understandable. This has to be done without over-simplifying the scientific aspects.

"The public is understandably confused and perturbed by disagreement among experts. Some disagreements, like the debate between physical and medical scientists on lead in the atmosphere, are heightened by communication difficulties. Here the science press has an important role in bridging the gap between the experts and the community."

In conclusion, Mr Thomson turned to fundamental scientific research—"an important but often unpopular aspect of science."

"I believe that the quest for basic knowledge is one of the highest motives of mankind. Pursuit of knowledge through science is one of the way we can maintain the vital balance between the material and the philosophical sides of our nature.

"New scientific concepts can influence the way we think about ourselves and our place within the Universe. Science is an essential element in intellectual progress.

"I conclude with a quote from Bronowski's Ascent of Man: 'We are a scientific civilisation; that means, a civilisation in which knowledge and its integrity are crucial'."

New Editor

CoResearch now has a new Editor—Jeannie Ferris of the Media Liaison Group.

The group, part of the Science Communication Unit, now has responsibility for production of CoResearch.

People

Brian Potter's work in the Division of Human Nutrition in Adelaide on the effects of alcohol on the unborn child has attracted a great deal of interest in the Australian Press.

But he was a little surprised recently to receive a letter from **Dr David Ratkowsky** of CSIRO's Division of Maths and Stats regional laboratory in Tasmania, enclosing two clippings from an Italian newspaper on the fetal alcohol research.

It seems David read the articles there while on holiday in Italy. They were published in La Stampa and Corriere Della Sera.

□

One of Australia's most eminent agricultural scientists, **Professor Eric Underwood**, has died.

Professor Underwood had a long association with CSIRO, first as a member of the Advisory Council and as Chairman of the WA State Committee and then as a part-time member of the Executive. In 1976, Professor Underwood received the Order of Australia for service in the fields of agriculture and education.

□

A Winston Churchill study award has been given to **Mr G. Kimpton**, a technical officer in the Division of Materials Science in South Australia. He will study, in the USA, the applications of electroslag welding to steel structures, and investigate the potential of the technique in other applications.

□

Research into production limits imposed by root growth in fine textured soils received a boost with the appointment of a new member of staff at CSIRO's Division of Irrigation Research at Griffith. **Dr Warren Mason** previously worked with the US Department of Agriculture in Iowa on dryland soybean production.

Dr Mason was born in Leeton near the Division's laboratory.

□

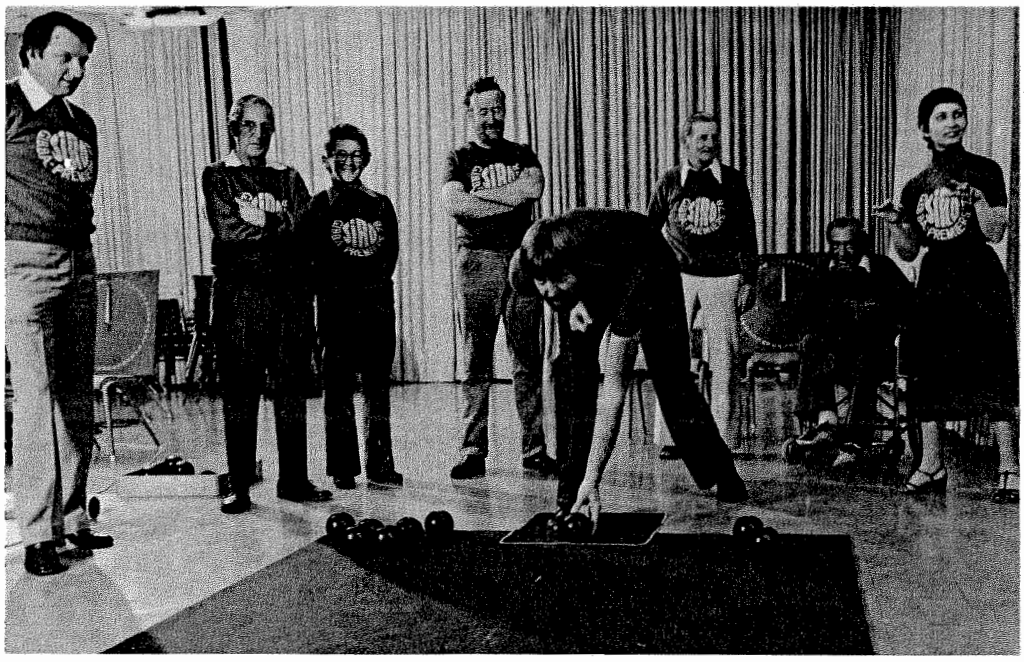
CSIRO's deputy chairman **Dr Keith Boardman** and **Dr Hill Worner** have been elected to an eight-member committee to examine the problem of liquid fuels.

Their findings will be published in a report after presentation at a major seminar to be held about March next year.

□

The Division of Forest Research's security officer in Canberra, **Warwick George**, had the living daylights scared out of him recently when on a security check, he turned on the lights in the Division's theatre at Yarralumla. He found himself face to face with a female corpse . . . "Resusci Anne" had been left in the room overnight.

No bias at Textile Industry



For the third consecutive year, the Division of Textile Industry's bias bowl team has taken out the Grand Final of the Geelong Indoor Bias Bowls competition. The team, which includes Victoria player Les Lawrence and ex-State players Ken Drayton and Wal Hayward, was also runner up in the competition in 1977. Les Lawrence demonstrates the technique which has helped Textile Industry's team take out the competition. Left to right: Ian Angliss, 'Trany' (Ralph) Marshall, Wyn Hayward, Chris Pickersgill, Wal Hayward, Ken Drayton and Maria "I'm not going to push him" Correia.

SIROSEARCH 80

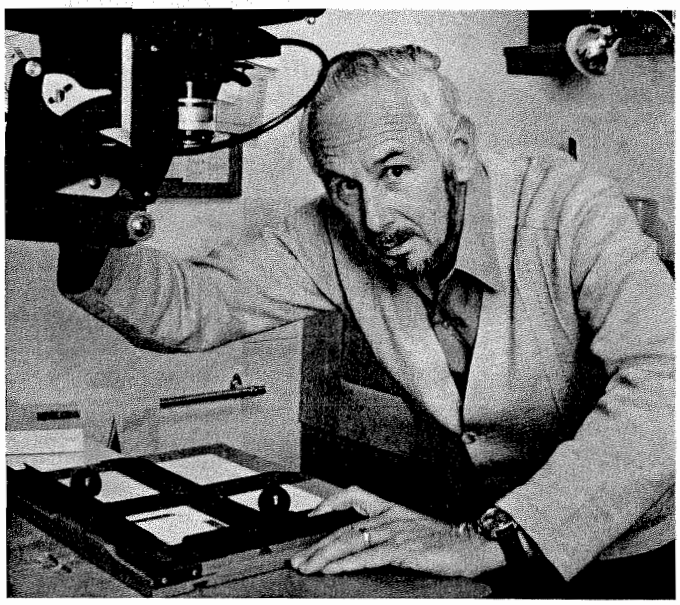
Aufwuchs and Alternaria, Phytophthora and Pistachio and all things that grow in an irrigated country "garden" will be on show at Irrigation Research, in late October.

Called SIROSEARCH '80, the two open days on Friday 31st October and Saturday 1st November will involve all divisions of the Institute of Biological Resources.

The contribution to Australian agriculture is the central theme to SIROSEARCH '80. However, the diversity of research presented by other Divisions will highlight the breadth of CSIRO research in Australia.

To the many CSIRO staff who would like to make a family weekend visit to Griffith and its wineries—and SIROSEARCH '80, Irrigation Research extends a welcome to all. —John Addeney.

International award



Ted Lawton at work in his studio at the Division of Horticultural Research.

Ted Lawton, photographer for the Division of Horticultural Research, was recently awarded the certificate of Registered Biological Photographer.

The award was made by the Biological Photographic Association Inc, an international professional society devoted to furthering the study and application of photography in the biological sciences.

His is only the second RBP awarded to an Australian and the first to be awarded to a member of CSIRO. Ted has been photographer for CSIR and CSIRO at Merbein for more than 30 years.

The Biological Photographic Association operates an educational and examination program leading to certification as a Registered Biological Photographer. Assessment comprises a three-hour written examination, a practical portfolio of at least thirty assignments and an intensive oral examination by a panel of senior photographers.

Ted successfully completed the examination program and received his RBP certificate in Boston, Massachusetts, recently, as part of an eight-week private study trip to North America.

The award was presented at the 50th Annual Meeting of the BPA at which Ted gave an illustrated paper entitled "Some techniques and applications of photography in Horticultural Research in Australia". His portfolio was considered to be one of the best ever received by the Association.

Whilst overseas Ted also attended a biophotographic workshop conducted by the BPA at the Brookes Institute in Santa Barbara, California in June and visited biophotographic departments at horticultural and medical research centres in the United States of America and Canada.

Budget details

FROM PAGE ONE

The crop adaptation laboratory, to be built on the Black Mountain site, will provide a modern centre for staff engaged on research to increase the yield of existing non-irrigated and dryland crops.

The new building will also provide long-term storage facilities to permit the storage of genetic material.

APPROPRIATION

The 1980/81 Budget Appropriation has provided $170,275,000 for CSIRO.

This is made up of $166,275,000 for salaries and operational activities and $4,000,000 for major items of equipment, minor building works and developmental expenditure.

This represents an increase of $13,175,000, or 8.4 per cent, over the Organization's expenditure of $157,100,000 from Appropriation in 1979/80.

A significant proportion of this increase, $4,422,000, will meet increased costs associated with the provision of laboratory equipment, supplies and services. This represents a 10% increase over operating expenditure in 1979/80.

An amount of $8,275,000, a 7.9% increase on the Organization's expenditure on salaries in 1979/80, will provide for inescapable increases in the salaries of the Organization's current level of staffing.

PROJECTS

An allocation of $478,000 has been provided to meet the costs of the following projects in 1980/81:

- the salaries and operating requirements of the Materials Research Laboratory (Maribyrnong) transferred from the Department of Defence to CSIRO;
- the additional costs associated with the provision of research support to the Department of Primary Industry in its role of monitoring and managing resources of the Australian Fishing Zone;
- increased costs associated with the planning and development of the Australian National Animal Health Laboratory at Geelong, Victoria.

CAT

Prompted by the CAT (Communications Advisory Team) Committee, the first of a series of informal lunchtime seminars was held at the Division of Applied Physics last month. The audience was composed of the Sydney-region information and liaison officers and interested communicators from the research staffs of Sydney divisions.

Since information/liaison officers tend to be one-of-a-kind in divisions, they can suffer from a sense of loneliness and isolation without the presence of understanding colleagues to share experiences and discuss problems.

The seminars should provide a forum for regular inter-divisional discussion, with the added spice of input from varying scientific staff. Ultimately, all delegates are concerned with the public image of CSIRO and the best methods of projecting it.

Gastronomically, the high point of the luncheon was the biltong (or meat jerky or dried meat), which was provided by Mr Bill Spooncer of the Meat Research Laboratories who is based at the Hawkesbury Agricultural College.

This delicacy, although well-known as an ancient dish in Asia, has been re-invented, upgraded and promoted for Australian use. It is easy to hold (stiff, no plate required), it is easy to store (dry, large quantities can be kept on hand), is eminently nutritious (pure meat, no additives needed) and keeps guests busy for long periods, as long as they have good tough jaws. Perhaps one needs a good, tough jaw for these occasions anyway! As Father William said: 'The muscular strength, which it gave to my jaw, Has lasted the rest of my life'.

SPEAKER

The guest speaker for the first of these lunchtime sessions was Mr Brian Woodruff of the Science Communication Unit, who has just returned from a study tour of the USA, Canada, England, the Philippines and Indonesia, where he looked at communication techniques used by various scientific organisations.

He chose to focus on three organisations in the USA—the National Science Foundation, the American Association for the Advancement of Science (AAAS) and the National Academy of Sciences, looking at the way they took science to the American public. He was particularly interested in the Academy's methods of releasing the reports of its expert panels, which often dealt with controversial environmental or health issues.

While in Washington, Brian was fortunate in being able to talk with people at AAAS about their recently released 'Science 80' magazine, which is aimed at a popular audience. During his talk he contrasted the philosophy behind AAAS's magazine with that of 'Omni', a glossy new bookstall magazine published by the Penthouse Group. Omni, with its lavish photogravure, shows a penchant for para-science, and science fiction, but obviously has market appeal as indicated by a circulation of 900,000 copies.

Brian Woodruff's talk triggered off a wide-ranging discussion on how best to take science to the public.

QUESTIONS

What section of the population do we want to aim at? The child? The taxpayer? Is the popularization of science becoming such big business that we should leave it to the commercial interests? Should we promote only CSIRO research—bang our own drum—or present a more general picture of international science? What about public mistrust of the Government/Science nexus?

EXPECTATIONS

It has become apparent to staff at the Sydney Technical Information and Liaison Office that members of the public expect to be given an *absolute* answer from that august body, CSIRO, who they view as a father-figure, the final arbiter on objective scientific opinion. Dare we dispel this attitude, to try to develop a more mature view that science is an ever-changing exploratory adventure, since this view too, is dangerous, because people may feel insecure and then ask: 'How do we know where we are going? We may be near the brink'. These are the type of questions which were tossed around by the members of the luncheon group and which surely must pass through the minds of all who are concerned both with the corporate image of CSIRO and with communication with the public.

It is hoped, on future occasions, that we shall have other speakers to stir the brain and encourage us to think on these issues. Any Sydney staff with ideas on the subject, who would like to attend and who are prepared to chew the biltong, could let me know. —Yvonne Esplin.

Course for communicators

The CAT column has received an interesting response to its June 1980 comments on scientists as communicators. Dr N. A. Goodchild, Dean of the Faculty of Agriculture, University of Western Australia, has sent the following details of a course his faculty has been running for the past five years:

"The Faculty of Agriculture of the University of Western Australia has been aware of the poor level of communication of many scientists for some time and has taken action by introducing a compulsory course of Scientific Communication for all its undergraduates. This course has been running for 5 years . . . students from the Faculty of Science have enrolled in it and several workshops have been run for outside organisations such as the Forests Department and Department of Agriculture. We believe that this has been very successful and on the whole is appreciated by the students."

CAT would very much like to hear from people who know of other courses like this one.

The Minister for National Development and Energy, Senator Carrick officially launches CRRERIS, the Commonwealth Regional Renewable Energy Resources Information Service. At left is Mr Clyde Garrow, Manager of CSIRO's Central Information System (CILES). On the right is Dr Greg Tegart, Member of CSIRO's Executive.

CRRERIS: A new information aid by computer

The Commonwealth countries of Asia and the Pacific will share information on renewable energy resources via a computer hook-up under a new scheme launched in Melbourne last month by the Minister for National Development and Energy, Senator Carrick.

The system, called the Commonwealth Regional Renewable Energy Resources Information System, is based on CSIRO's own Renewable Resources Data Base in Melbourne, which already collects energy resource data Australia-wide.

The CRRERIS energy information system is expected to be fully operational within six months.

SERVICES

Initially, services will include a computer-based bibliographical information system for renewable energy technology, a document clearing house and a published index.

The participating countries—Australia, Bangladesh, the Cook Islands, Kiribati, India, Malaysia, Nauru, New Zealand, Papua-New Guinea, the Solomon Islands, Sri Lanka, Tonga and Western Samoa—will be able to assess the relevance of the latest developments in renewable energy research to their own resources and energy needs.

The sharing of information is expected to stimulate joint research projects and developmental efforts, and thus reduce overall costs of energy research.

Some 3500 scientific papers on renewable energy resources have already been computerised, under a plan initiated at the 1978 meeting of the Commonwealth Heads of Government Regional Meeting.

In launching the scheme, Senator Carrick said it was the responsibility of the few countries with a surplus of energy resources, such as Australia, to help their less priviledged neighbours.

CSIRO will manage CRRERIS under contract to the Australian Department of National Development and Energy.

The CRRERIS Network Centre in Melbourne is managed by Mr Bob Croll, until recently Editor of the Australian Science Index and the CSIRO Index.

Coresearch Classifieds

CSIRO Ski Club members and others are respectfully invited to the solemn cremation of the 1980 ski season to take place at Phillip's Foote Bistro, 101 George Street North, The Rocks, Sydney, at 6 pm on Saturday 25th October 1980. Broken skis and skiers welcome. Funeral arrangements—John Connolly—4676111.

'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 October 1980 234

Rochford retires:

An era ends in CSIRO's Division of Fisheries

When David Rochford joined the fisheries section of CSIRO on a bush-clad site at Cronulla in 1939 as a fresh-faced graduate from the University of Sydney, he little knew that he was beginning a career which forty-one years later would see him still on the same site, working close to the building in which he began.

Mr Rochford retired this month as Chief of the Division of Fisheries and Oceanography, ending a career which has taken the group from relative obscurity to one with an important priority within CSIRO.

EARLY WORK

As a young science graduate, he joined the Division as an oceanographer-chemist, working as the only oceanographer and fitting in with a group of individuals who were mainly biologists.

The outbreak of World War II saw CSIRO's first research vessel being handed over to the Navy, and the Division of Fisheries as it had then become, directed towards ways of stimulating food production.

"My job was to try to encourage oyster growth, and for almost 10 years I worked on the production of oysters in estuaries," he recalled.

The group worked in a building which had been erected on the Cronulla site soon after the turn of the century to house a Norwegian researcher who established a fish hatchery to introduce species of fish to the southern waters.

The building, of hand-made bricks, still stands and is used today to provide accommodation for researchers including taxonomists. Mr Rochford believes it could possibly be classified by the National Trust.

Mr Rochford recalled how the importance of oceanography as a science began to emerge in the late forties and fifties, largely as a result of work done during the war by the Americans and Russians.

During his career Dave Rochford has watched the emergence of oceanography as an exacting and skilled science, yet it is not the area where he believes his Division has made the greatest contribution to Australian marine science.

Although the discovery of the eddies, and research associated with the Eastern Australian current is close to his heart as an oceanographer, it is marine biologist Ian Munro's work on prawn stocks in the Gulf of Carpentaria which Mr Rochford believes to be the most important.

"Ian's work during the early sixties, under tremendous difficulties, fighting mosquitos and working in the most primitive research conditions fostered the establishment of the important Gulf prawn industry Australia now has," he said.

"His vision during those early days certainly stands out to me as the most important piece of research in my time here," he added.

Mr Rochford believes the development of satellites and computer technology in marine science has greatly simplified the collection and analysis of data important to research.

"But people still have to go to sea in ships, research vessels are still needed, and all these things have become horrendously expensive.

"The need to co-operate has never been more important," he added.

HOBART

Sitting in his office with a magnificent view out to sea, and close to the bush-covered hills of the adjacent national park, it's easy to see why so many individuals within the Division have objected to the recent announcement of the move to Hobart.

According to his colleagues within the Division, Dave Rochford had not expressed a personal opinion on the planned move because his retirement meant he was not affected by it.

He was less reticent in his interview. "I can understand the dilemma of individuals who face relocation; I too would have had family problems, my wife would have been aghast and the odds are that I wouldn't have gone if retirement had not intervened," he said.

"But we had reached a point of no return on this site—we have no docking facilities and it's been increasingly difficult to get proper wharf space and storage in Sydney.

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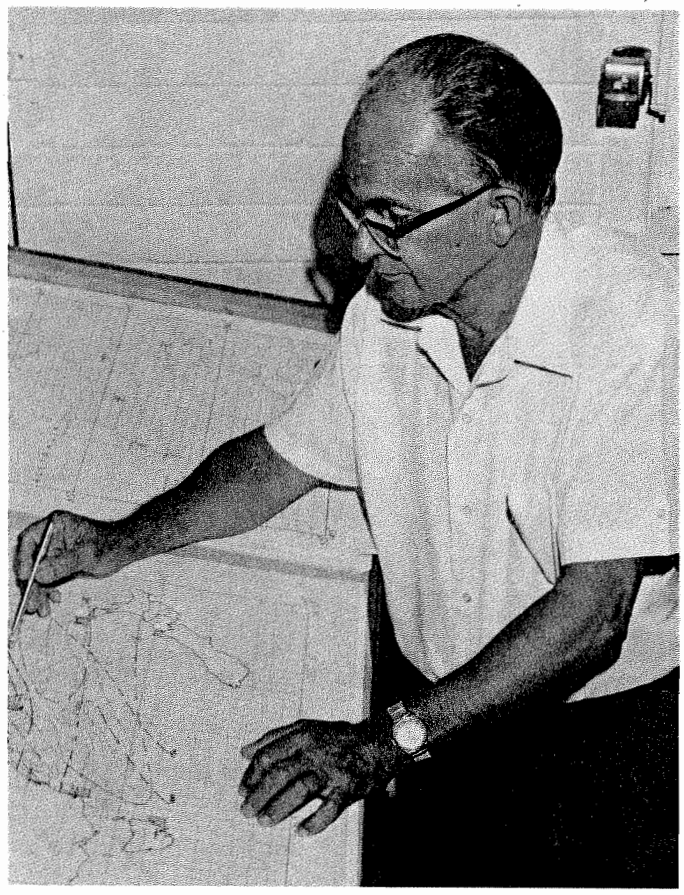


The retiring Chief of the Division of Fisheries and Oceanography Dave Rochford, working at an oceanographic map in his office.

Scientific suppression?

Individuals engaged in environmental research and teaching in Australia and New Zealand were likely to be subjected to pressures to suppress their work, according to a research assistant at the Australian National University.

Speaking at the National Science Forum in Canberra on September 29, Dr Brian Martin listed 10 individuals who he said had been subjected to suppression because their opinions on environmental matters had been controversial.

These 10 cases represented the tip of the iceberg, but many other individuals did not want publicity for personal or career reasons he said.

Dr Martin, a research assistant in the Faculty of Science at the ANU, had chosen as his subject 'Suppression of Australian Research—How Widespread Is It?'

Using an example, corporate and government-influenced suppression of the forestry area in Australia, Dr Martin claimed that this area illustrated links between powerful interest groups inside and outside the scientific community.

"There appear to be strong links between university forestry departments, government forest services and research organisations and the forestry industries, including informal networks of communication, professional and commercial organisations, planning and consultation concerning appointments," he said.

Dr Martin gave examples of key staff movements between posts in forest industries and government forest services and said there were quite a few leading figures in the government forest services who on retirement had taken positions with forest industries.

"Many key officials in the government forest services, who have decision-making power over research, themselves have little or no scientific training or experience in scientific research, or are out of touch with what training and experience they once had.

"These individuals are administrators rather than scientists but have power over the direction and use of scientific research," Dr Martin said.

CONTINUED ON PAGE TWO

Three divisions represented at International wool meeting

SIROSINGERS

Giving a hearty rendition of Waltzing Matilda during a recent tour of South Africa are these happy CSIRO scientists. Holding the microphone is Dr Gordon Crewther, Chief of the Division of Protein Chemistry. On his left is Dr Don Taylor, Chief of the Division of Textile Industry, and Dr Ian Watt, Assistant Chief of the Division of Textile Physics. (see article at left)

A strong CSIRO contingent was among the 200 or so delegates to the Sixth Quinquennial International Wool Research Conference, held at Pretoria, South Africa, from 27 August to 3 September.

Research staff from the three wool textile research Divisions—Protein Chemistry, Textile Industry, and Textile Physics—presented over 20 papers on a wide range of aspects of wool science and technology—from the basic structure of the wool fibre, through developments in objective measurement of the properties of the raw product to new approaches to the industrial printing, shrinkproofing and mothproofing of wool.

The Quinquennial Wool Research Conference was first held in Australia in 1955, and the venue since then has rotated amongst the major wool-using or producing countries.

SPONSORS

Sponsored by the International Wool Secretariat, the Australian Wool Corporation (AWC), and the other worldwide wool-promotion organisations, the conferences provide a forum for wool scientists and technologists from all over the world to meet to discuss progress.

Nineteen countries were represented at this year's conference, and, as well as CSIRO, Australia was represented by staff from the University of New South Wales and the Research and Development Department of the AWC.

CHORISTERS

At the final social event, delegates from the different countries were called upon to give a rendition (you couldn't really call it singing) of their national song.

Needless to say, the Australian group, ably supported by expatriates John McPhee (ex-Textile Industry, now Deputy Managing Director, IWS) and Ken Baird (ex-Textile Physics, now Technical Director, IWS), outshone everyone with Waltzing Matilda.

Scientific suppression?

FROM PAGE ONE

Dr Martin said universities tended to be freer than governments or corporations when it came to employees doing work on or speaking out about controversial topics.

"Dissidents in government or industry generally keep quiet, learn a new set of standards, or quietly exit," Dr Martin added.

"Especially in industry, few publicly voice criticism and stay around to tell about it."

Instances of suppression quoted by Dr Martin included staff from the Australian National University, LaTrobe University, the University of Adelaide and the Institute of Medical and Veterinary Science in Adelaide. One example was quoted involving a former employee of CSIRO.

Dr Martin said suppression on the basis of political beliefs was widespread in Australia during the 1950s, expecially after the Petrov affair, but continued today although it received little attention.

Aborigines at Chiswick under NESA job plan

Six Aborigines have joined the staff of the Division of Animal Production at their field station, 'Chiswick', near Armidale and are employed under NESA, the National Employment Strategy for Aborigines.

The men will spend varying lengths of time with CSIRO, with two of them as indentured apprentices, three working as farm labourers and one as an animal attendant.

One of the apprentices, Barry Lockwood, recently won the CSIRO Technical and Trade Committee's award for NSW for a welding jig and, according to the station's instrumentation officer, Bob Nicol, who is himself something of an electronics wizard, looks like going on to greater heights.

Barry's latest achievement has been the completion of all the welding components of a one-off array of anenometers, the batteries of which are kept charged by solar panels.

The instrument was required for use in a shelter belt project where experiments are being made into the effectiveness of providing sheep with protection from the weather.

The scientist involved in the project, Justin Lynch, found the commercially-available equipment came only in a standard height and he needed something which would measure the count of the wind run across the anenometer cups at varying levels.

A system of cups spaced at different heights was devised to meet the requirements and to keep the electronics involved working indefinitely. Solar cells, specially stepped up to 6 volts for the occasion, were added to the mechanism.

The second apprentice, Robert Cutmore, is a motor-mechanic and will be with the Organization for three years. Brian Dennison will spend a year learning to be an animal attendant while Kevin Briggs, Michael Quinlan and Les Hoskins, all of whom are farm labourers will each have six months with the Division.

Rochford retires

End of an era

FROM PAGE ONE

"I could see a situation of frustration and stagnation looming—scientists working on highly exacting research in buildings which go back to the turn of the century.

"The patch-and-mend situation could continue no longer—I could see that within five years the Division may have had to close down altogether because of site limitations here at Cronulla.

"By taking the Hobart incentive, the Division will get everything it needs to become an important international centre for marine scientific research—modern laboratories, a deep-water port and storage, things we would never have been able to achieve at Cronulla.

"I truly believe that for the ultimate good of the Division, Hobart was the only real alternative and although in the short-term—say five years following transfer—it will have difficulties, in 15 years it will be a centre of international excellence."

Mr Rochford said he hoped the Cronulla site could be kept in some way so that the 10 to 12 scientists working on programs on the coastline could maintain their work.

"I think there is every chance this will happen," he said.

Mr Rochford was less enthusiastic about the planned change in divisional status which will see the establishment of separate Divisions of fisheries and oceanography.

"Personally I feel the world-wide trend in this area is towards a combined approach," he said.

THE FUTURE

Mr Rochford will remain a research associate of the Division and maintain his links with international bodies involved in marine science.

Science handbook for high school students

More than 100 simple scientific experiments which can be carried out by high school students in their school laboratories, will be included in a handbook now being prepared by CSIRO.

The project is being handled by Dr Michael Dack of CSIRO's Science Communication Unit and is supported by the Australian Science Teachers Association.

The book, to be published early next year, aims to show Australian science at work. It will be used by teachers and is designed to be useful for all secondary science students.

The experiments have come from almost all Divisions of CSIRO and cover the range of biological and physical sciences. They have been planned so that students can use existing equipment in the laboratories.

Dr Dack said he hoped the book would encourage teachers to look at science as a working discipline.

'We want teachers to know what CSIRO is doing and each of the experiments will be accompanied by an explanation of what the Organization is doing in the particular area,' he said.

Dr Dack said he was happy with the breadth of research covered in the experiments. He hoped the book could be updated from time to time as new material became available.

All set for the SIRO - SEARCH

Papier mache and polystyrene letters are invading Irrigation Research, Griffith for Sirosearch '80.

More than 50 displays are being constructed, ranging from mouse plagues to Landsat and warming plant roots to how aquatic plants live under water.

Electron micrographs of phallic hypae infecting plants are being constructed of papier mache to highlight the infection process.

A comprehensive information booklet to be given to all visitors will contain a map of the Division and brief descriptions of all displays.

Many local schools requested invitations to Sirosearch '80 even before invitations were sent out.

It will be the first time that all Divisions of the Institute of Biological Resources will be "on parade" together.

All staff of Irrigation Research are looking forward to meeting colleagues in Griffith at Sirosearch '80 on Friday 31st October and Saturday 1st November.

Using what must be the world's most expensive coffee table, the Governor-General puts the visitors' book from the Division of Forestry onto his Rolls Royce. Sir Zelman and Lady Cowen visited the Division to talk with staff and inspect research programs.

Breaking in to the Bureau in Canberra

Some reflections by Ian Watt, a scientist from the Division of Textile Physics, who left the comforts of Sydney to brave Canberra's winter, and probe the mysteries of 'the Bureau'.

To lift scientists out of Divisions and return them as better scientists is the aim of Sam Lattimore, Director, Bureau of Scientific Services.

The experiment has been performed—I was the guinea pig—but the apparatus is still intact and is ready to be used again. The results of this initial test-run will become apparent after my 'post-trial processing' back at Textile Physics.

What does the Bureau have to offer someone like me? Briefly, a knowledge of a variety of support services which the Divisions may call upon, but mostly too little and often too late. I went to Canberra on a 12-week secondment so that my Division would have at least one scientist who could not escape from knowing about the Bureau's inner workings.

Escape was made more difficult by Canberra's winter weather which encouraged me to remain inside the towers of Limestone Avenue, CAGA and Canberra Savings, the buildings in which the Bureau staff hibernate.

PRECONCEIVED NOTIONS

Despite preconceived notions of the luxury of Headquarters, the Bureau has little space to spare; my office was that of whoever happened to be out of town for the day—including the Director.

In addition to living out of a suitcase, I was working out of a briefcase. We all agreed that it was important for me to undertake the normal tasks of Bureau staff.

Dr Ian Watt of the Division of Textile Physics.

How successfully is a matter for the Director to judge.

My greatest interest lay with the Commercial Group. There is no quick road, or need, for becoming a patent attorney, but to the innovative scientist there is much to be gained from the proper use of the patent literature.

This serves the double purpose of preventing the rediscovery of the wheel and pinpointing the latest technological trends in any field.

It was a happy coincidence that some of my work with the Group involved the transfer of technology from my own Division to industry.

COMMUNICATION UNIT

The Science Communication Unit has the function of writing about CSIRO science in a manner that attracts its own readership—a facility that should be the envy of all scientists.

The Unit and other sections of the Bureau feed off the input they gain from the Divisions. But eventually it is the scientist in the Division who benefits from their output.

My experiences at the Bureau have been varied and relevant to the expressed aim of Sam Lattimore. Most Divisions can afford to spare a research scientist for a time. Can Divisions afford to miss an opportunity to know the Bureau better?

In the public eye

CSIRO Divisions have been in the public eye recently on the following topics:

Researchers at the Division of Fisheries and Oceanography announced the tracking of two new ocean eddies off the New South Wales coast.

According to the Division, the two eddies named Leo and Maria are "very large and slow, and constantly go around in circles."

□ □

A leaflet from the Division of Building Research used the media to promote some useful advice for home owners on the design of gutters and downpipes.

□ □

According to Dr Grantley Chaplin of the Division of Food Research, the future of commercial horticulture in Northern Australia will depend as much on the quality of the produce when it reaches the market as the quantity available.

Dr Chaplin has recently completed a report on the post-harvest handling of tropical fruit in Northern Australia.

□ □

The Division of Building Research issued a warning to home-owners about the dangers involved in using house bricks which have not matured long enough after firing.

Dr Bill Cole said fresh bricks used in walls often caused cracks in the construction because they were insufficiently aged before use.

□ □

Work will begin soon on the new $10 million laboratory for the Division of Chemical Technology at Clayton in Victoria, according to a Divisional spokesman.

The new complex will comprise organic and general chemical laboratories, technical laboratories for large-scale research work and prototype industrial process bays for organic and general chemistry as well as pulp and paper processes.

Eastern Australia could be in for an early, severe fire season unless the area gets heavy spring rains, according to Mr Phil Cheney from the Division of Forest Research.

He said that without this substantial and widespread spring rain, the fuel and soil of the forests would remain very dry, so that with hot weather and strong winds, dangerous conditions would exist.

Mr Cheney said that the conditions were almost the same as in 1968 when the country had bushfires stretching from Bega up to north of Newcastle.

□ □

The Division of Irrigation Research at Griffith announded the result of research to come up with onions which were most suitable for dehydration.

They found that some of the most common table varieties were composed of 90 per cent water and were therefore not suitable for drying.

The scientists graded 10 varieties of onions into low, medium and high percentage of dry weight.

□ □

Better and cheaper methods of making stretch wool yarns for socks were announced by the Division of Textile Industry at Geelong.

The method involves modification of a CSIRO-developed machine which has already revolutionised wool spinning.

According to Mr Stan Boston, the Division's liaison officer, the yarns produced by the new method are cheaper than equivalent yarns spun by conventional processes.

□ □

Scientists from three Divisions have been working on a joint project at the Division of Irrigation Research at Griffith to find out where nitrogen fertilizers go after they have been applied to irrigated crops.

The work involved Dr John Freney from Plant Industry, Dr Tom Denmead from Environmental Mechanics, and Warren Muirhead from Irrigation Research.

The birds in the trees around CSIRO's Division of Mechanical Engineering in Melbourne have lost one of their most interested observers, with the recent retirement of Miss Pat Glancy, secretary to the Chief Dr Barry Rawlings.

Pat notched up 43 years of continuous service to the Organization, the last five as secretary to the Chief of Mechanical Engineering.

Perhaps the highlight of Pat's career was her position as secretary to Sir Frederick White for 18 years while he was Chief Executive Officer, Deputy Chairman and finally Chairman. For her services to CSIRO Pat was awarded the British Empire Medal in the New Year honours earlier this year.

According to her colleagues, Pat's avid bird-watching activities have taken her to most of the swampy parts of Victoria, and on some great adventures overseas.

In the past three years she has been known to sample eskimo hospitality in Alaska and goodness knows what on safari in Africa.

She is wished well in retirement; with all her interests she will never know how she found the time to come to work.

□ □

Moya Campbell of the Canberra RAO was the envy of her colleagues at a recent headquarters barbecue when she held the winning ticket for a magnificent Ricoh camera which was the first prize in the social club raffle.

The camera prize came about through the generosity of **Paul Grant** of the licensing group who was given it in gratitude by a Japanese company. Paul donated the camera to the social club for the raffle.

□ □

CSIRO's visitors' centre at Parkes will shortly have a model of NASA's space shuttle thanks to the generosity of the staff at Mt Stromlo Observatory in Canberra.

At present the model is being admired by all those who visit the office of **Dorothy Braxton** in the Science Communication Unit in Canberra.

The shuttle, complete with its miniature Starlab telescope, will be suspended against a simulated star-studded sky in the centre at Parkes. And those sharp-eyed visitors might just be able to see the miniature kangaroo and maple leaf insignias on Starlab, illustrating the co-operation in the venture by Australia and Canada.

□ □

Housewives in south-east Queensland, looking for a tender piece of steak, can now ask their butchers for some.

No, it's not called SIROSTEAK, but it could be ... the "green brand" meat that has gone on sale in south eastern Queensland is the first of **Dr Des Walker's** tender-stretch beef from the Cannon Hill Laboratories. The new brand was launched recently by the Queensland Primary Industries Minister, Mr Ahearn.

□ □

One of the more unusual requests to come in to the Tasmanian office ... a farmer at Margate whose chooks have been laying eggs with green shells.

Poultry researchers looking for new program incentives, please note.

□ □

The new chief research scientist in the Canberra-based Division of Land Use Research, was formerly one of the CSIRO research team which introduced myxomatosis to Australia in the fifties.

Dr K. Myers is presently Professor of Zoology at the University of Guelph, Canada.

In his new job, Dr Myers will help develop new research programs on conservation and national park management.

Miss Pat Glancy with her farewell cake, aptly decorated, at the function held in her honour. She is pictured with, from left, Emeritus Professor Hill Worner, the Chief of the Division of Mechanical Engineering Dr Barry Rawlings, and former Chief of the Division, Mr Roger Morse.

Dr Valerie Brown, a Canberra educationist and psychologist has become the first woman on the CSIRO Advisory Council.

Dr Brown, 50, married with three children, will serve for three years from 9 September 1980.

Dr Brown gained a Bachelor of Applied Science Degree from the University of Queensland in 1952, majoring in botany and zoology. In 1972 she gained a Graduate Diploma in Education from the Canberra College of Advanced Education. In 1974 she gained a Master of Science degree from the ANU, specialising in environmental psychology and personality psychology. In 1978 she gained a PhD in human sciences and education from the ANU.

Dr Brown is currently a lecturer at the Centre for Adult Teaching at the Canberra College of Advanced Education. She has lectured on subjects ranging from health education, the nature of adult learning, human adaptability and mental health.

She is a member of the Higher Education Research and Development Society of Australasia, the Family Planning Association, Health Education Association of the ACT, and the Health Care Consumers Association of the ACT.

□ □

Yet another visitor to China has been **Dr Dick Millington** from Land Use Research, who attended a Land Evaluation workshop held at the Academia Sinica.

□ □

While on the subject of China, don't offer watermelon to **Dr Bruce Champ** of Entomology, who recently returned from a visit to China. Seems it was the peak of the watermelon season, and everywhere Bruce and his colleagues travelled, they were offered plates of watermelon. Being able to spit the pips on the floor didn't really help after a while according to Bruce.

□ □

Cruising in the Great Australian Bight ..in the cause of science..are nine scientists from the Division of Fisheries and Oceanography. 'Soela' and her crew are carrying out an acoustic survey within the 200-mile zone.

Successor to Minnett named at Radio-physics

The next Chief of CSIRO's Division of Radiophysics is Dr Robert Henry Frater, at present Associate Professor of Electrical Engineering at the University of Sydney and Director of its Fleurs Radio Observatory.

He will succeed the present Chief, Mr Harry Minnett, FAA, FTS, in September 1981.

Announcing the appointment, CSIRO's Chairman Dr Paul Wild said Professor Frater would bring to the position invaluable experience in radio science and in electronic systems problems arising in industrial contexts.

'This will be of great importance for the Division, which will continue its involvement in applied research of importance to industry and the community, as well as its researches in radioastronomy," he said.

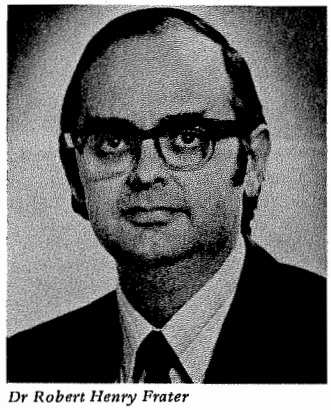
Professor Frater, 43, graduated from the University of Sydney in 1959 and later received his Doctorate from the University. He joined the staff of the University in 1961 and became Associate Professor in 1974.

Professor Frater has been responsible for the instrumentation of the Fleurs Synthesis Radio Telescope and is head of a major research project in the signal and image processing area.

He has also led research in the field of electro-acoustics which has produced a computer controlled testing facility for loudspeakers.

He has been involved in a wide range of engineering consulting activities on electronic system problems both in and outside Australia.

He is one of the Design Study Group for the proposed Australian Synthesis Telescope.



Dr Robert Henry Frater

New Chief appointed at DSIR

Colleagues of Dr David Kear, Assistant Director-General of the Department of Scientific and Industrial Research in New Zealand since 1974, will be interested to learn that he has been appointed Director-General to replace Dr E. I. Robertson, OBE, who retires in December.

Before his appointment as Assistant Director-General, Dr Kear was Director of the New Zealand Geological Survey, Lower Hutt from 1967.

A Fellow of the Royal Society of New Zealand, he is an Associate of the Royal School of Mines, London, and a Member of the Australian Institute of Mining and Metallurgy.

Past president of the N.Z. Geological Society and a Chairman of the Auckland Branch of the N.Z. Association of Scientists, Dr Kear was Home Secretary and Vice-President of the Royal Society of New Zealand, and a past chairman of its National Committee on Geological Sciences.

CSIRO's Safety Officer, Mr J. W. Hallam, retired at the end of August after 16 years service with the Organization.

During that time he played an important role in the development of the Organization's safety policy.

He encouraged CSIRO staff to be more aware of the importance of safety and to develop safe practices in all the activities of the Organization.

Mr Hallam obtained his Associate Diploma in Applied Chemistry from the Royal Melbourne Institute of Technology in 1947, and was made a Fellow of the Royal Australian Chemical Institute in 1962.

From 1942 to 1945 he worked as a chemist at the explosives factory at Maribyrnong and St Mary's.

He was a research chemist at the research laboratories of Australian Paper Manufacturers Limited from 1946 until he joined CSIRO in 1964.

Mr Hallam's role as CSIRO Safety Officer has been taken over by Mr Gil Barnes, formerly of Headquarters Staff Section.

□ □

CSIRO has awarded 18 postdoctoral studentships to graduates of universities in Australia, New Zealand and the United States.

Two of the recipients of the scholarships will spend their study at CSIRO's Division of Plant Industry in Canberra.

Dr N. Pickles-Fuad who graduated from the Australian National University in Canberra will research the fluroescence of chlorophyll in reconstituted chloroplast membranes.

Dr J. A. Wolfe who also graduated from the ANU, will work at Plant Industry on cellular responses of plants to dehydration or drought stress.

□ □

Up at Headquarters, staff are wondering whether their social club president **Tony Culnane** is on higher duties. It seems Tony's desk has suddenly been elevated a foot or so. Seriously, Tony has a back complaint and his newly elevated desk is in treatment thereof.

□ □

The Secretary of CSIRO, **Gratton Wilson**, is spending the northern autumn in Belgrade as deputy leader of the Australian delegation to a UNESCO meeting.

Gratton is the Chairman of the Australian National Commission for UNESCO and is taking part in the 21st biennial conference.

He'll spend six weeks in Belgrade, and another week as a guest of the Chinese Government in Peking.

Jack Coombe is standing in as Secretary during Grattan's absence.

□ □

Dr Christine Happey-Wood from the University College of North Wales (Bangor) who will spend her sabbattical leave at CSIRO's Division of Irrigation Research, Griffith.

Dr Happey-Wood is a freshwater biologist and during the next 12 months will investigate the problem of slime development in rice crops.

Green and brown slime are periodically a problem, particularly at the seedling stage, throughout southern rice growing districts.

Ricegrowers control slime by flushing bays with fresh irrigation water or by the application of copper sulphate. Neither method is completely satisfactory.

A survey conducted by **Dr David Mitchell** (Irrigation Research) and **Dr Jim Noble** (L.R.M. Deniliquin) has confirmed the widespread occurrence of slime.

From the survey data Dr Happey-Wood hopes to sample previously affected soils prior to sowing and water samples during the growing season to identify the organisms responsible for slime development.

Colin Smith, CSIRO's archivist, came across a delightful letter in one of the Organisation's older files.

It was perhaps the first attempt by women to ensure equality in scientific research in Australia.

The letter was written on St Valentine's day 1916 by Miss Ellinor G. Walker, secretary of the Girls' Social and Political Union (non-party).

She wrote:

To the Hon the acting Prime Minister of Australia. Dear Sir, I have the honour to forward you the following resolution which was passed by the Union on the 10th.

"That in view of the proposed formation of a National Bureau of Science and Industry, the Prime Minister be reminded of the fact that a very great share of the burden of industry is borne by women, and that it is therefore most important and desirable that women should be included upon any committee or managing staff which is appointed in connection with such a Bureau."

The letter was acknowledged two days later, but the files do not indicate how successful the girls were in their endeavours.

□ □

Members of the food tasting panel at the Division of Food Research don't always get gastronomic delights to tempt their palates.

Recently the volunteers found themselves on anything but a sweet lurk—they had to test for salinity in food as part of a project to determine salt tolerance.

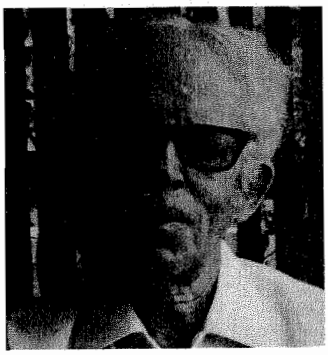
Small consolation that they were offered a sweet biscuit to take away the taste.

□ □

Riding a bicycle to work is not without its hazards. Some staff at Land Use Research on Canberra's Black Mountain have fallen victim to the great Canberra bicycle thief. They've met and devised new plans for bicycle security.

□ □

When **Doris Leadbetter**, librarian extraordinaire at Headquarters won second prize in the social club's sportsman's raffle, bets were on about what she'd buy in the way of sporting equipment from the local store. But while **Doris** was trying to make up her mind between a batting box and a pair of rugby briefs, her husband nipped out and invested in a new pair of runners for that great Canberra past-time of jogging.



Sir Otto Frankel

Sir Otto Frankel, one of CSIRO's most senior scientists, will celebrate his 80th birthday next month at a gathering with an international flavour.

The occasion, beginning on 4 November, has attracted guests from the United States and Great Britain, who will come to Australia to present papers at a seminar organised by the Division of Plant Industry.

Wheat Science—today and tomorrow—is the title of the two-day seminar which will be held in the Division's conference rooms in Canberra.

Speakers at the symposium will include Dr Lloyd Evans, former chief of the Division, and Sir Otto himself who will talk about the development of the wheat flower—its genetics and physiology.

The idea of the symposium came from the Division's Chief Dr Jim Peacock and Lloyd Evans.

Those interested in celebrating Sir Otto's birthday symposium are invited to attend a barbecue dinner to be held at the Division on Tuesday night. Tickets for the spit roast are available at $15 a head from Mrs Noeline Deveson at the Division.

□ □

Staff at the Lindfield laboratory of the Division of Applied Physics gathered outside recently to watch **Ken Murray** plant a tree in one of the courtyards.

Ken joined the Division in 1970 as a gardener while the Division was still located on campus at Chippendale. Ill health has forced his retirement.

His hard work in the gardens at Lindfield have transformed the grounds and he will be long remembered.

Packing his bags for a 12-day trip to China on November 2 is CSIRO's Dr Clive Coogan who will accompany the Victorian Premier Mr Dick Hamer on his second visit to China.

Dr Coogan, former assistant chief of CSIRO's Division of Chemical Physics, is making the trip as Chairman of the Australia Scientific Industry Committee (ASIA), and member of the Victorian Government China Advisory Committee.

While in China he hopes to establish contact with scientific colleagues and the scientific instrument industry. He will also call on the Singapore Minister for Trade Mr Goh Chok Tong.

During Mr Hamer's first visit to China last September, ASIA arranged for a collection of scientific instruments of merit, all made in Victoria, to be given to the Chinese Academy of Science.

AUSTRALIAN IMAGE

Dr Coogan said it was hard to break the "wheat, wool and hides" or "kangaroos and koalas" image of Australia, even in China.

"I believe our world class scientific instruments will be a short-cut demonstration to the Chinese that we have high-technology abilities," Dr Coogan said.

"When Interscan, the new world-standard aircraft landing guidance system developed by CSIRO is installed in China, it will be a permanent reminder of Australia's ability to breast the bar with the best of the ringers in the high-technology games," Dr Coogan added.

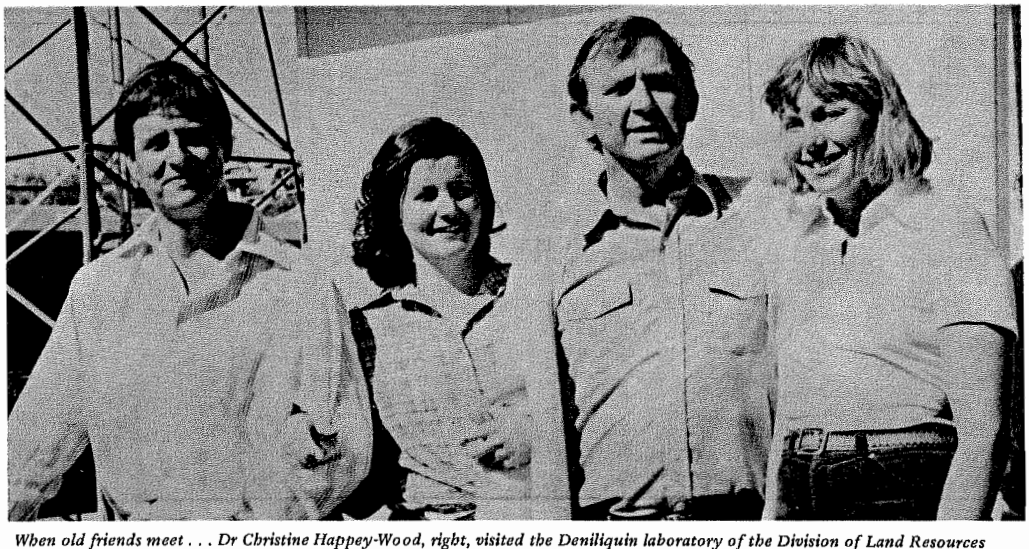
"There also are a number of Chinese exchange students already working in divisions with CSIRO, for example in the Division of Chemical Physics where two students are learning the techniques of electron microscopy and electron diffraction," he said.

Victoria has established links with the Jiangsu province, and has set up cultural and scientific exchanges with the State. "Mr Hamer's visit returns a tour made last November by a large party of officials and members of the Revolutionary Council of Jiangsu, led by their Chairman Mr Xu," Dr Coogan said.

Among links being discussed were the establishment of a typical Victorian house, an Australian beef cattle farm, a library of Victoriana and exchange visits by students.

Already Victorian marsupials have been established in a zoo in Nanking, the capital of the province.

□ □



When old friends meet . . . Dr Christine Happey-Wood, right, visited the Deniliquin laboratory of the Division of Land Resources Management for a happy reunion with Dr Jim Noble, a researcher at the laboratory. Jim Noble completed his PhD in the room next to Christine at Bangor University in Wales, and the two families have become friends. Also in the photograph are Mrs Glennis Noble, and Dr David Happey-Wood, far left.

Industry profiles for research scientists

When it comes to size, the Australian powdered metals industry could very easily be overlooked .

It centres on fewer than 10 companies, and accounts for just 0.2 per cent of the total fabricated metal products in Australia.

But in terms of technological excellence, the powdered metals industry has few peers. Its state-of-the-art methods are actually in advance of current research, and well in line with international standards.

All this would seem to make it an unlikely candidate for attention by CSIRO. However, the powdered metals industry is the subject of the first of an occasional series of industry profiles which will present information about the basic processes and requirements of selected industries to CSIRO's scientists.

The industry profiles are the brainchild of Dr Russ Wiley, a senior scientist with the Division of Applied Physics in Sydney, who was looking for a means of increasing the effectiveness of communication between science and industry.

The profiles are intended to provide information and ideas which may stimulate research staff to investigate areas other than their own mainstream in research.

Hopefully, this will enable knowledge within CSIRO to be more effectively deployed, and may catalyse new research projects.

The aim is not so much to stimulate problem-solving for the industries profiled, but to help refine techniques, apply them in new areas, or even to develop new techniques based on new fundamental research findings.

The powder metals industry, subject of the first profile prepared by the Bureau of Scientific Services, is gaining increasing attention around the world because of its capacity for fabricating metal products without extensive recourse to energy-intensive processes like melting, and machining.

The powder metal industry turns out a wide range of metal products with complex shapes.

Powdered pure metal or alloy, or even a heterogeneous mix of metals and alloys are mixed together with a lubricant to reduce die-wall friction, and are pressed without heat into the required shape or form.

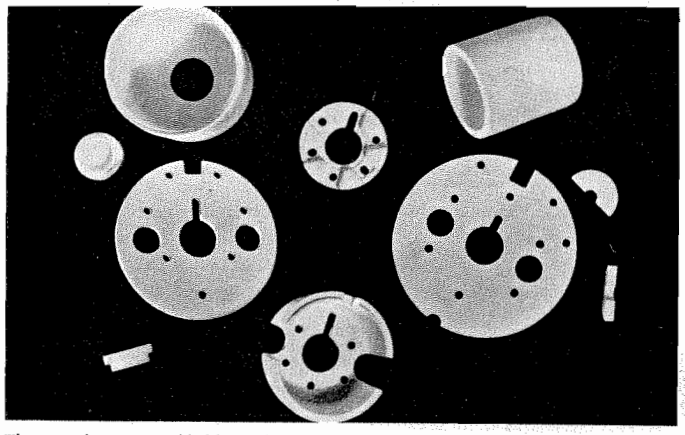
These 'green' products are then sintered to increase bonding between the compacted particles, usually in a reducing atmosphere to prevent oxidation. Drilling, machining or heat treatment can be employed to turn out the final high-strength product.

The major processes involved in the industry are powder production—most powders are imported—powder mixing, die filling, pressing, sintering and coining.

The industry profile identifies a number of areas requiring investigation in the industry, and breaks down processing into areas of possible research.

It also provides a list of contacts within the industry.

Further information can be obtained from either Lionel Wisbey or Dr Bob McCredie in the Bureau of Scientific Services in Canberra (062) 484211, or directly from Peter Buszynski of the Powder Metal Industry Association on (062) 496360.



The ceramic parts moulded by Hubert Wooterlood of the Division of Process Technology.

Bernadine's back

After three months before the mast and deep in the jungle, Bernadine Atkinson is finding her studies at ANU a little less exciting these days.

Bernadine (20), a final-year science student, earlier this year received a grant from the Science and Industry Endowment Fund which allowed her to join an international expedition following the route taken by Sir Francis Drake 400 years ago.

With the other members of the expedition, she worked as a crew member on the British sailing brigantine "Eye of the Wind" as it sailed to the Indonesian island of Sulawesi.

According to Bernadine, it was a once in a lifetime experience which was satisfying and rewarding—despite exhausting patrols, difficult collecting and surveying tasks, drenching rains, flooded streams and a lack of fresh food.

She survived a canoe capsize at sea and the discovery of a large snake under her sleeping bag one morning.

And after three months of either walking, sailing or travelling by canoe she finds the western preoccupation with motorised transport harder to come to terms with.

At Headquarters last month Bernadine showed slides of her adventure and thanked the trustees of the Science and Industry Endowment Fund for their support.

A CSIRO scientist of the Division of Process Technology recently used his ingenuity to overcome a problem.

Some vital ceramic parts of a particular instrument needed to be replaced, but the price quoted by the overseas manufacturer was high, with considerable delay before the parts arrived in Australia.

So the scientist, Mr Hubert Wouterlood, devised a way of making the parts himself. He saved time and money, and demonstrated that ingenuity flourishes even in stringent times such as these.

Mr Wouterlood explained, "The obvious method of using steel moulds to press the ceramic parts was too expensive for just a few items. Cheaper, and possibly easier, would be the use of silicone moulds, but this required a special ceramic mix that would set hard enough for the mould to be peeled off."

A local ceramics firm, Morganite Pty Ltd, was able to help. They gave Mr Wouterlood a recipe for a fine slurry that might be suited to silicone moulding.

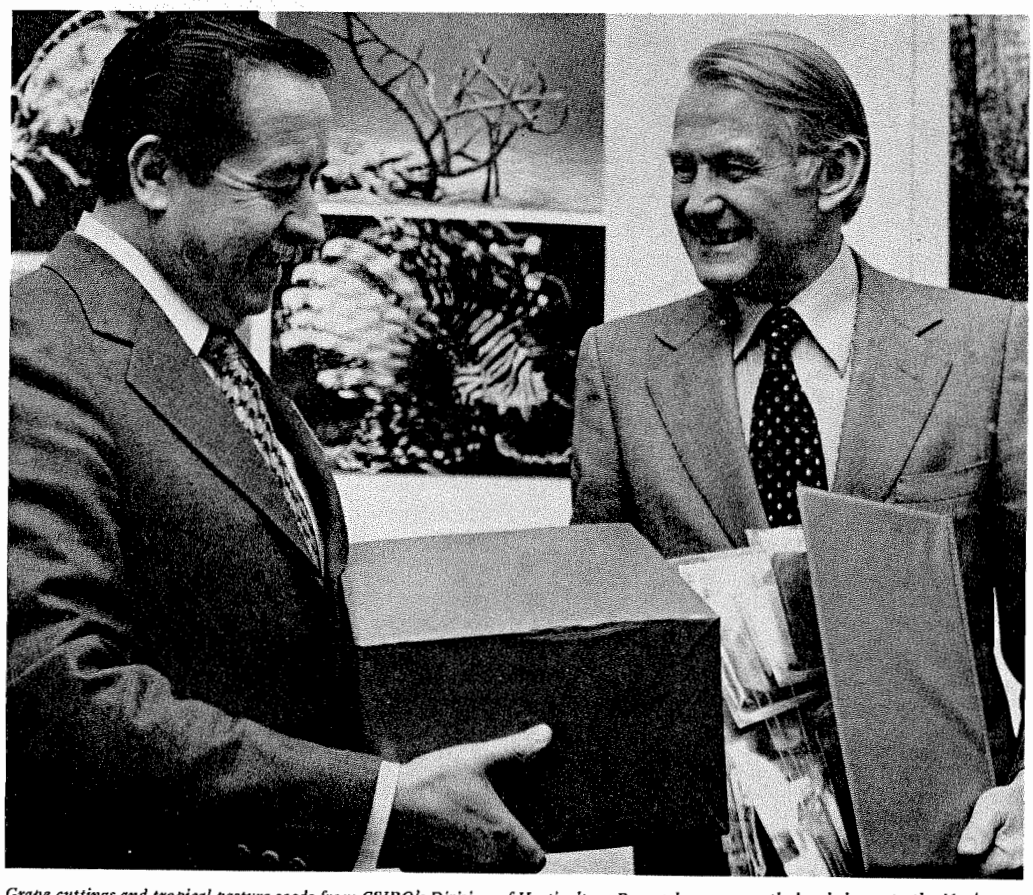
The original, broken ceramic pieces were glued together so that silicone moulds could be made. The slurry was poured into these moulds and left to set, rather like concrete. The silicone rubber was then easily pulled off, without damaging the "green" ceramic parts.

The next step was firing, and again Morganite were able to help. They suggested an appropriate firing cycle and offered to do the firing to 1400°C.

"They were surprised by the fine detail reproduced with the silicone moulds," Mr Wouterlood said.

"The set slurry didn't shrink, unlike the mix normally used for steel moulds, I got out of the kiln an exact copy of the original," he added.

Now the instrument is back in use again, after only a short time out of action, and has cost the Division far less to repair than at first feared.



Grape cuttings and tropical pasture seeds from CSIRO's Division of Horticulture Research were recently handed over to the Mexican Ambassador in Australia Sen. Cabrera at a ceremony held in the office of the Minister for Science and the Environment, Mr David Thomson. In return Mexico will supply the Division with genetic material from avocadoes and other perennial fruits.

History as it happened... Bill's got it all mapped out

An interest in history and training as a cartographer have been combined in the most spectacular way by Bill White, of CSIRO's Division of Land Use Research in Canberra.

Bill has produced in his spare time, a traditional illustrated map, showing the colonisation of Australia by Western man.

It's been a labour of love that has taken this softly-spoken, modest Englishman five years, half-way around the world and into museums with designs of the sailing ships that carried early explorers to Australia.

Bill first conceived the idea of compiling a discovery map of Australia about ten years ago, but he began research into the project only in 1975.

The finished map, shown below, is 20 inches by 22 inches, has been painted in eight colours and combines traditional cartography with modern lithography and photo-chemical techniques.

Bill's research took him to the Rijks Museum in Amsterdam to look at the records of the Dutch East India Company, and to see the copies of original plans and sketches of the wooden sailing ships, and to the Maritime Museum in Greenwich to search through records relating to trips by the British explorers.

He has spent five years of his leisure time drawing the most exacting detailed sketches of the birds, animals and flora of the country, the vessels and coats of arms of the explorers and lists of the principal explorers and their journeys.

FASCINATION

During his research, Bill became fascinated by the wooden sailing ships.

"As I pored over the original plans and sketches, I became aware of the hardships that were endured by those valiant crews," he said.

"Within the decorative hulls of these vessels were quarters so cramped it was not difficult to imagine the conditions under which the men laboured, with weevil biscuits for dinner and twenty lashes for dessert."

RECORDS

Bill had little difficulty in tracing the records and routes of the Dutch vessels since the logs and journals of the East India Company masters were well kept, as were the logs for voyages undertaken by Captain Cook and Matthew Flinders.

Unfortunately Bill was not able to find similar records for the Portugese explorers, although he firmly believes they were in Australian waters many years before the Dutch or British.

Bill's working life with CSIRO began in 1962 when he says he "fronted up" to a committee at Australia House in London to check the wanderlust which had in the previous 10 years taken him on exploration surveys with British Petroleum.

Originally he began his working life in the London theatre, training in stage design at three theatres, and supplementing his meagre income with commercial designs and cartooning.

He served in a British parachute unit during World War II, and at the end of hostilities, found himself in Israel where he undertook a fine arts course at Haifa University.

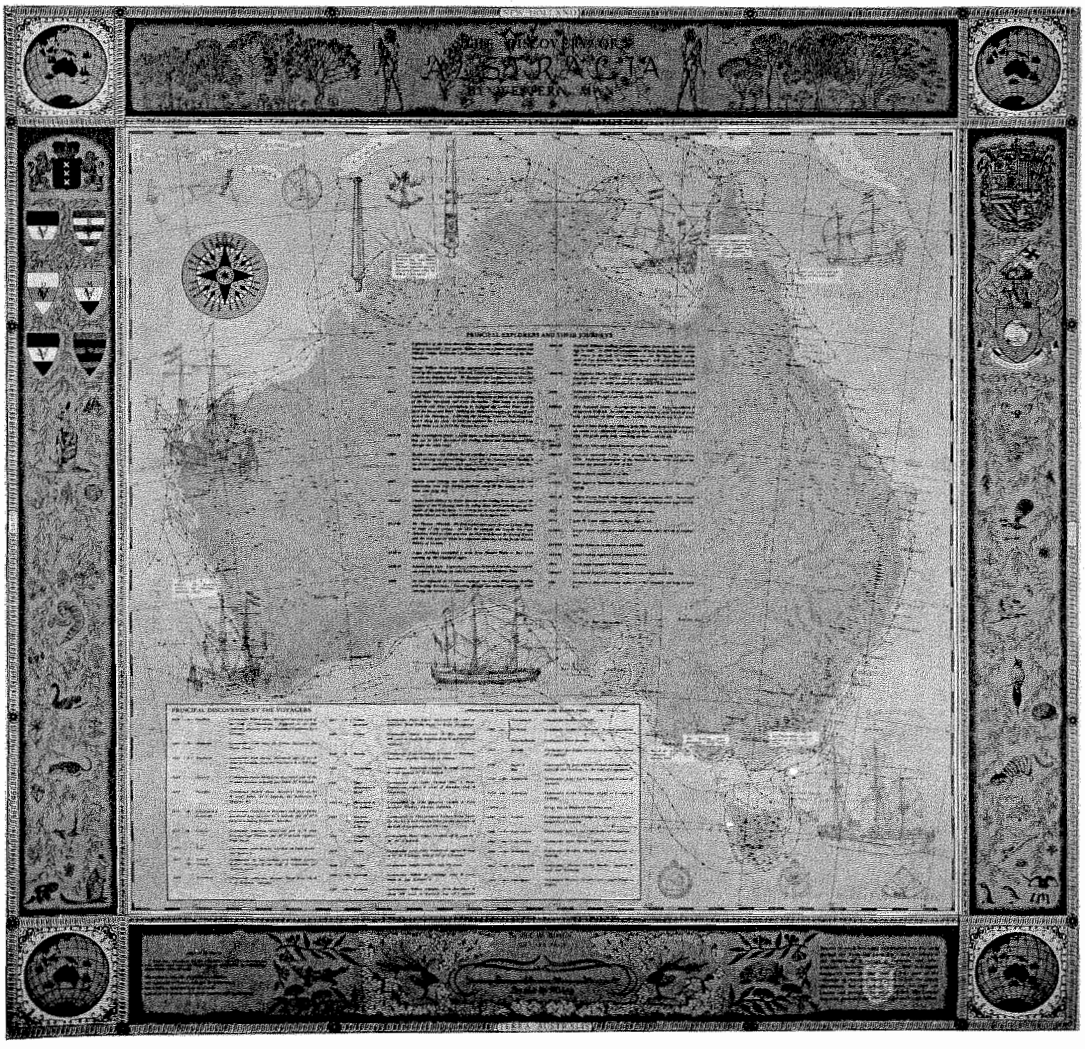
He continued formal training in cartography at London University while working on aircraft detail design and overseas surveys.

Bill's wife shares an interest in history and design, and accompanied him on his trips to museums as part of his research for the map.

The original sketches which have been made into overlays for the published map will be displayed in the Division of Land Use Research in Canberra within the next week or two.

Bill has copies of the map available for sale, at $8 each, or $10 if postage in a tube is necessary. He can be contacted for details at the Division by telephoning 464911.

Mr Bill White at his desk in CSIRO's Division of Land Use Research in Canberra, and below, his illustrated map of Australia.



Seminar on mathematics

A seminar on the application of mathematics in industry is to be held at the Coombs Lecture Theatre, Australian National University on Wednesday December 3.

Joint sponsors are the Division of Mathematics and Statistics, and the A.N.U. faculties of pure and applied mathematics.

It aims to bring together academic mathematicians with little first-hand experience with the application of mathematics to industrial problems and the non-academic with an ongoing industrial responsibility.

Those interested in attending should contact Mrs Barbara Hartley at the Division of Mathematics and Statistics, Black Mountain.

Science at play

CAT

The CAT column is open to all members of CSIRO who wish to comment on communication matters. Letters and articles should be sent to the Editor of CoResearch in the normal way.

The Library Task Force is engaged in putting together its Report, after visiting almost every library in CSIRO, seeking the advice of Chiefs, research staff and librarians, as well as visiting a number of other libraries whose practices and views have a bearing on the future direction of the Organization's own network.

The Task Force was set up by Sam Lattimore of the Bureau of Scientific Services, and consists of Peter Dawe the Chief Librarian, Doris Leadbetter the Headquarters Librarian, and Peter Russell the Black Mountain Librarian.

The Task Force has found the exchange of views most stimulating; it hopes that the Report will go far in satisfying the needs of the libraries' users and in developing innovative strategies for management.

It's still not too late to contribute to their thinking, but better use the 'phone.

INFORMATION

At a recent CAT meeting, Clyde Garrow, Manager of the Information Service in East Melbourne, asked members to remind you that his group is happy to handle requests for information from anywhere in the Organization.

Either telephone, or telex—Clyde endeavours to provide a reply within 24 hours. Telex no. 30236.

PRESTEL

You may have heard of the International Prestel Market Trial, which is linking seven countries into an on-line data base developed for the trial from the British system. It is primarily aimed at senior businessmen at this stage, but if it develops as expected, it could have much wider use in Australia.

Headquarters Library and Information Service is joining in the trial, to gain experience of this kind of information provision, and to evaluate its service in the Headquarters context. Among the information banks directly accessible at the moment are news and forthcoming events; exchange rates; market research reports; economic indicators; government, political and economic surveys; travel information, including living costs guides, health regulations, hotel booking facilities, details about entry regulations, currencies, travel facilities, etc.

Anyone interested in learning more about Prestel should drop a line to Doris Leadbetter at Headquarters.

SCANFILE

Headquarters Library and Information Service issues a weekly abstract journal called SCANFILE, which covers literature on Science Policy, Science Management, Administration and General Science topics.

Any article abstracted is available as a photocopy, on request.

Headquarters is now able to offer this service to the Divisions; please ask your Librarian to make the arrangements.

—Doris Leadbetter

Communication course at Melbourne Uni

A second university has responded to recent remarks made in the CAT column concerning science communication.

The senior lecturer in agricultural extension Dr H. S. Hawkins, has written from Melbourne University to draw attention to the subject 'scientific communication' which is offered as a third year subject in the agricultural science course.

Dr Hawkins said the subject has been offered since 1975, and several members of CSIRO's CILES group in East Melbourne have contributed to lectures and demonstrations on information storage and retrieval each year.

His attached copy from the faculty handbook shows that a total of 18 hours are devoted to the subject in terms one and two.

Overseas

Enjoying part of the USA autumn is Dr Paul Kriedemann. of Irrigation Research.

He's presenting a paper at a NSF workshop "Plant Criteria for Irrigation Scheduling", held at Duke University, North Carolina.

He will return to Australia on 20th October after visiting research centres concerned with stress physiology and crop plant response to microclimate.

Letters

Dear Editor,

You were good enough to publicize my request for material for a forthcoming magazine, entitled 'Omega' (CoResearch, 232, August 1980).

I would like to let your readers know that I am no longer associated with this publication.

I—and many other erstwhile contributors and organizational supporters—withdrew when it became clear that the publishers, Sungravure Ltd, were going to follow an editorial direction which ran counter to the original understandings. The magazine is now proceeding with overseas material drawn from a U.S. source, 'Science Digest', which can generously be described as being of the second rank, and with some local articles. UFOs, ESP and fiction are part of the fare.

Another precipitating factor was the recent decision to accept tobacco advertising. You may have noted that overseas science magazines such as 'Science 80' (USA) and 'New Scientist' (UK) do not accept tobacco advertising.

These decisions were taken against the advice offered by leaders of the scientific, technological and medical research communities. 'Omega' will thus be a different magazine to the one originally planned with me.

Sincerely, (Dr) Peter Pockley,
University of New South Wales.

A number of CSIRO contributors intend to supply articles to early issues of Omega. The magazine will be the first from a major Australian publishing company aimed at providing science-oriented articles for a mass audience. It may turn out to be a valuable means of providing information about CSIRO research to people who are not reached by more academic publications.

Write this down, Smithy: 'The A-horizon exhibited high moisture levels, and organic material included crocs. Agricultural potential appears unlimited.

While we would probably all prefer the magazine to be devoted entirely to authoritative articles about science, the fact that it will contain other material does not seem sufficient reason to shun it. By providing early issues with articles of good quality about Australian science, we may help swing the emphasis of the magazine in the direction most of us would favour.

Perhaps we should withhold judgement on Omega until we have seen the first couple of issues.—Editor.

New research directory is published

The 1980-81 edition of *CSIRO Research Programs* is now available. This comprehensive directory brings together in one handy volume descriptions of all CSIRO's research programs and sub-programs.

It is a valuable source of information for people in industry, government, research and educational institutions and elsewhere who have an interest in CSIRO's work.

The directory describes the problems being tackled and possible implications of research findings, as well as the research itself. Details of locations, staff numbers and expenditure are given, and supplementary indexes make the information readily accessible.

Copies may be purchased for $12.50 from CSIRO's Editorial and Publications Service, 9 Queens Road, Melbourne, Vic. 3004.

'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 1980* 235

Canberra Symposium:

The importance of effective communication

A symposium designed to emphasise the importance of effective communication will be held by CSIRO at the Australian National University in Canberra later this month.

Delegates attending will represent 38 Divisions and Units within the Organization as well as Headquarters' administration, the CSIRO Advisory Council and representatives from Institutes and the Bureau of Scientific Services.

The Symposium has been organised by CSIRO's Science Communication Unit, a unit within the Bureau.

The Symposium will be formally opened on Sunday November 30 by Dr Keith Boardman, a Member of CSIRO's Executive. Another Member of the Executive, Dr Greg Tegart will also outline his views on the extent to which scientists in CSIRO should be concerned with communication.

PROGRAM

During the following three days, papers will be presented by a wide range of speakers representing rural and manufacturing industries, the media and CSIRO staff.

The Acting Officer-in-Charge of the Science Communication Unit, Mr Brian Woodruff, said the Symposium aimed to provide an opportunity for face-to-face exchanges of opinions and ideas between people involved with communication activities and scientists.

"There is now a greater responsibility being placed on scientists to communicate the results and intentions of their work to a wider audience, and each Division was invited to nominate a scientist as one of its two delegates," Mr Woodruff said.

"The program has been arranged to enable delegates to take part in discussion groups of about 20 following the presentation of papers," he added.

PARTICIPANTS

Four themes have been developed, one on each day. Following the theme on the Monday 'Communication with the Users of CSIRO's Research', speakers will discuss the rural audience and manufacturing industry. Invited speakers include Mr T. Valenta, of the Australian Wool Corporation, and Dr D.F. Smith, Director-General of Agriculture in Victoria.

The keynote speaker will be Dr Earle Hackett, science broadcaster and former Chairman of the Australian Broadcasting Commission who will discuss scientists who seek or avoid publicity, the media of public communication and the pitfalls.

On Tuesday, the theme will be 'Communicating with the Public'. Speakers will be Professor Henry Mayer of the University of Sydney and Mr Phillip Adams of the advertising agency Monahan Dayman Adams Pty Ltd.

Professor Mayer will discuss the press coverage of science, the general factors determining it and the attitude of the media towards science. He will look at the relationship of CSIRO towards the media and the advantages and disadvantages of a more active media policy. Mr Adams will argue that the scientific community is unwilling to communicate with the public —and so is encouraging "the luddites, the ignorant and the pseudo scientist". He claims the tide can be very easily turned.

Continued on page 2

Ross had all the good numbers... electronically

Two years ago, Ross Cunningham chose as his case study for a masters degree, the statistical prediction of Australian House of Representatives elections.

His computer program, used for the first time in the recent Federal elections, enabled the Channel 10 television network to accurately predict the outcome of the election less than an hour after the polling booths closed.

Ross, an applied statistician at CSIRO's Division of Mathematics and Statistics in Canberra, enabled Channel 10 to become the first Australian television network to use a predictive computer in its election night coverage.

Ross explained that his method was based on early counts and calculated the chance that each of the major parties had of winning each of the seats.

"The method took into account the way in which preferences were likely to be distributed, analysed expected bias in early returns from particular polling booths, and the fact that the percentage swing was unlikely to be uniform over the whole country," Ross said.

"I tested the concept before the election by carrying out an analysis of the voting patterns in the New South Wales seats during the 1974, 1975 and 1977 Federal elections," he added.

"The method was subsequently refined and was programmed to run on a mini computer with the assistance of a divisional colleague Mr Kim Malafant."

The computer's first analysis came at 8.33 pm when less than three per cent of the votes had been counted, and at 9 pm, Ross was able to predict that the Liberal-National Country parties would govern with a 19 seat majority.

"We never gave the Australian Labor Party a chance at any stage," Ross added.

The current program still makes individual seats hard to predict, although Ross claims notable success with Lowe, the seat held by former Prime Minister Sir William McMahon.

"The computer always showed that he would hold the seat even though the experts were predicting a Labor victory," he said.

The Division is now negotiating with television stations for the future use of the method.

Three chiefs celebrate the 80th birthday of CSIRO scientist Sir Otto Frankel at a dinner held recently in Canberra. With Sir Otto and Lady Frankel are, left, the present Chief of Plant Industry Dr Jim Peacock and the former Chief Dr Lloyd Evans. Sir Otto was Chief of the Division from 1951 to 1962.

CAT

The CAT column is open to all members of CSIRO who wish to comment on communication matters. Letters and articles should be sent to the Editor of CoResearch in the normal way.

The following talk was given by Senator Chris Puplick on a recent edition of the ABC's Science Show.

No one now recalls who first said "it's not *what* you know but *who* you know that counts". However, I do remember a former Minister going one better and telling me that in politics it's not *who* you know but *what you know about them* that matters. Nevertheless the idea of not "what" but "who" still has a great deal of validity as far as the processes of Government are concerned. There is nothing sinister about this; far from it, nor indeed does this apply only to politics. Ask any academic seeking promotion, ask any researchers seeking grants, indeed ask any broadcaster seeking more time on air. What this does mean is simply that it is all very well discovering the secrets of the universe, but it is equally important to know how to be able to put these discoveries to use through the political process in democratic societies like Australia.

The late C. P. Snow was very worried about the growth of what he saw in his famous phrase as "the two cultures"—one scientific and the other non-scientific, which were developing along different lines with no real relationship and very little communication between them. I'm afraid that much the same is happening in most democratic societies at the moment, only the division seems to me to be growing between those who are actually in Government and those who are responsible for electing Governments. This division manifests itself in the failure of so many people and groups to make proper and effective use of the representatives who they have actually elected to govern them, and nowhere is this failure to utilise the political process more apparent than when one is dealing with scientists and with issues that arise in science. But more of that anon.

Earlier this year the consumer magazine *Choice*, published an article entitled "Using Your M.P.—Is It Worth your While to Try?" After giving a great deal of useful advice about the role of M.Ps, the article concluded "Your M.P. can help you cut through bureaucratic red tape within Government. But your ability to influence your M.P.'s stand on local and national issues, and through him or her the Government, is limited".

I believe that such a conclusion is quite wrong, and particularly so far as scientific and technological policy questions are concerned. I wouldn't want to give the impression that nobody understands how to make effective use of their senators or members; indeed quite the contrary. We all know that the big, powerful, well-organised groups in society do manage to wield a great deal of political power. They influence both individuals and governments. The powerful lobbyists, be they big companies, trade unions, or whatever, have always understood how to use the political process to their own, if not always the nation's, advantage.

PRESSURE GROUPS

But it's not only the large and powerful groups that have been able to apply pressure to governments. Very often quite small groups have become successful lobbyists. You only have to look at some of the decisions made in areas such as tariff policy to see how very small groups have been able to get national policies adopted which suit their quite limited and particular needs. Similarly, well organised groups who really understand how the political processes work can bring about many spectacular changes in national policy. For many years, I've been actively involved with project Jonah—the Save the Whale Campaign. Jonah, working entirely through the processes of talking to and persuading politicians to act, has managed, in the course of only a few short years, to turn Australia from being a whaling nation to being one of the foremost leaders of the international anti-whaling movement.

PROBLEM-SOLVING

Matters which relate to Government or to Government Department decisions are usually not too difficult to handle, but very often people with legitimate complaints only come to their politicians when they have literally exhausted all other avenues of redress—almost when it's too late to do anything. Whereas, if they had come to us first we could have saved them a great deal of time and trouble, and very often a great deal of expense.

The point I'm labouring, is that many people and groups do know how to use their politicians effectively. The one group, which I think fails to do so most spectacularly, is the scientific community, especially on an individual basis, because leaving it all to ASTEC, which I find a little too establishment, just doesn't work. Perhaps it is because just as politicians tend to regard scientists as all too often impractical theorists, so scientists regard politicians as essentially irrational manipulators, with the result that nobody bothers speaking to anybody else.

It's true that the processes of Government and politics are poorly understood in Australia. For instance, I think that political science is one of the few fields of science, if you can dignify it as such, never to have been explored on the science show. Indeed, regular listeners to the science show, probably know more about the processes of Recombinant DNA technology than they do about the processes of Government and decision-making in Australia. Yet they will never be DNA researchers, but they are in fact involved, at least at election times, in those processes of political decision making which they only partly understand.

If I may come back to the relationship, or lack of it, between science and politics, there are two key points I'd like to make.

CSIRO researchers on safari at the Wide Bay army training area in South East Queensland undertook a joint survey of difficult terrain the easy way—in an armoured personnel carrier from 4 Cavalry Regiment. Left to right are Rob Bennett (Woodland Ecology Group, CSIRO Division of Land Use Research; Sgt Peter Leslie; pedologist Peter Bleeker, LUR, crew commander 4 Cavalry Regiment; botanist Laurie Adams, (Herbarium Australiense); plant ecologist Andy Gillison (LUR), and the driver from 4 Cavalry Regiment.

The survey undertaken by the researchers aimed to provide basic information for future land management of the training area. The Wide Bay area is increasingly used as an army training area and the land management program is being developed to ensure that environmental impact on the area is minimised.

CSIRO's Woodland Ecology Group within the Division of Land Use Research is currently involved in management advice to the Australian Army on other training areas including Puckapunyal, Woomera and Shoalwater Bay.

The first is that in the last analysis the great decisions in science are very much political decisions. It is the politicians, not the scientists, who will make the ultimate decisions about the use of nuclear power, pollution control, preservation of the environment, research funding, the regulation of genetic engineering, the patent ability of living organisms, the use of advanced technology in medicine, control of pharmaceutical products, space exploration and all the rest. Consequently the scientist's stake in having correct political decisions made, is a great one, and one which he ought, individually, and in concert with his colleagues, be attempting to influence.

SCIENTIFIC ILLITERATES

The second point is that the vast majority of politicians are scientific illiterates. Most of us wouldn't be able to tell the difference between a Henry and a Pascall, would have no idea if a nano second was greater or smaller than an atto second and wouldn't be surprised to find E. Coli growing in our back gardens. This means that generally we are prepared to be persuaded by argument and will listen carefully to the views put to us by experts. Once persuaded, we can then work out how to use our expertise in Government to make progress in the desired direction.

For the last two years I've served as Chairman of the Government's Backbench Committee on Education, Science and the Environment and in that time I've come to have a real appreciation about how much exciting work is being done on the scientific front in Australia, and to appreciate equally how little we in politics know about it, and yet it is we who are expected to make decisions about things like funding for research, which have the most profound effect on Australia's scientific community.

When I visit the Anglo-Australian telescope at Siding Spring or the Institute of Marine Science at Townsville, or the Commonwealth Serum Laboratories at Parkville I get excited about the work in progress, and it makes me determined to help them from a political point of view. But, in Canberra, I'm only one of 188 politicians, and a pretty junior one at that. My individual capacity to influence decisions is limited and I find it doubly difficult when my colleagues have no real knowledge, interest or background in the issues involved in the various scientific debates. If you check Hansard, you will find that very few Senators and Members really involve themselves in these discussions.

HELP AVAILABLE

This does not mean that we can't do anything to help. Even as a junior politician, I can arrange meetings for people who talk to key figures in Government. I can exert pressure for greater research funds in a budget. One can agitate for changes in legislation, such as that recently made to improve efficiency of the CSIRO or CSL. One can help develop policy when moving into entirely new areas being opened up by science. One can help to get the right people appointed to crucial positions.

Scientists and politicians have a profound effect upon each other's lives whether we fully realise it or not. Both of us have wider responsibilities to the Australian community. In order to discharge those responsibilities properly, we need to get our collective act together far better than we have done in the past. And like so many other problems affecting the human species the first and most significant step to take is simply to start talking to each other.

Communication Symposium

From page 1

Later in the day, speakers on the subject 'What the Media and the Public want from CSIRO', will include Mr Robyn Williams of the ABC Science Show, Mr Richard Eckersley from the Sydney Morning Herald and Mr Allen McCann from the Australian Federation of Consumer Organizations Inc.

The fourth theme, 'Internal Communication', will be covered on Wednesday December 3 with speakers including Dr Clive Coogan of the Bureau of Scientific Services, Melbourne.

Participants in the following panel session include Mr Gratton Wilson, Executive Secretary of CSIRO, an Institute Director and a Divisional Chief.

The former politician and author Mr Fred Daly will be the after-dinner speaker at the Symposium Dinner on Tuesday night.

Mr Woodruff said he hoped the proceedings would serve as an input to the Executive on a communication policy for the Organization.

Jim Whittem, until earlier this year the Councillor (Scientific) at the Australian High Commission in Washington, will make a brief return to Australia later this month.

Jim is spending a year as visiting scientist at the Department of Health, Education and Welfare at the National Institutes of Health, Bethesda, Maryland. He and his wife **Dorothy** are returning to Australia to attend the graduation of their son Ted in Melbourne. They expect to make a brief visit to Canberra.

□□

Colin Totterdell, Plant Industry's photographer is probably best known for his superb photographs of Australian flora and fauna. But his montage of photographs of **Sir Otto Frankel** to commemorate his 80th birthday, earned him many compliments at the birthday celebrations. The photographs, many supplied by Sir Otto's wife Margaret, cover Sir Otto's babyhood in Europe, his arrival as Chief of the Division in the early fifties, and the conferring of his knighthood by Lord Casey.

□□

Dr Dick Millington is back with his Division of Land Use Research, Canberra, after acting as Director of the Institute of Earth Resources.

Ivan Newnham has recommenced duty as Director of the Institute.

□□

A graduate of the Kyushu University, Fukuoka, Japan, **Dr Shun Takeya**, has begun a two-year stint at the Melbourne office of the Division of Computing Research. Shun is accompanied by his wife Yuko and son Gen.

As a post doctoral research fellow, he will be working on a collaborative project with CILES, Melbourne.

□□

Pedal power is on the increase in Canberra. Following the item about bicycle security at the Black Mountain research laboratories, Entomology have come up with a solution—building a bicycle shed. It's to be located near the dung-beetle mass rearing pens, and discussions are now under way on size, shape and so on. **Vic Southwell** in the Division's workshop is in charge of plans.

Multi media personalities are currently lurking in several CSIRO Divisions.

If they keep sizing you up in close-ups, wide shots, zooms or pans you must forgive them—they've just finished a cram course at the Australian Film and Television School in Sydney.

Communications was the core of the course—choosing the best medium to get the message across and understanding some of the difficulties.

Twelve people, representing nine Divisions and the Bureau of Scientific Services, attended the course arranged by the were scientists presently involved in communications, while the remainder were liaison or information officers or Organization journalists.

While the course was conceived to assist in script and narration writing it did far more than that.

During the course each participant was involved in drawing up a storyboard for a 60 to 90 second film, shooting, editing, and putting a sound track on it, and editing a video tape version of the same film.

They were instructed and used colour video portapak equipment, with some extraordinary results, and set up an interview situation in a television studio where all experienced the difficulties encountered by the interviewer and interviewee, through the floor manager and cameraman to audio operators, vision mixers, video tape recorders and even the director.

Half a day was spent on slide/sound programs—a useful alternative for the less affluent.

The course was voted an outstanding success by all those participating who were: Christine Astley-Boden, (Division of Process Technology); Mark Lawson, (Mechanical Engineering); Helen Dornom, (Dairy Research Laboratories); Justin Murphy, (Land Resources Management); John O'Hagen, (Entomology); Wendy Parsons, (Forest Research); Natalie Provis, (Media Liaison Group); Peter Rothlisberg, (Fisheries and Oceanography); Bill Silvey, (Tropical Crops and Pastures); Stephen Williams, (Meat Research Laboratory); David Zerman, (Building Research); and Graeme O'Neill, (Media Liaison Group).

They came away convinced that the course was a must for all CSIRO personnel involved in communications.

Australia's foremost rainforest ecologist, Dr Len Webb, has retired from CSIRO after a 36-year career with the Division of Plant Industry.

Dr Webb gained international respect for his pioneering work in the classification of rainforests, and in recent years has been among the foremost advocates of a moratorium on further logging of Australia's remaining areas of virgin rainforest, which account for little more than 0.25% of the continent's area.

With his long-time colleague Mr Geoff Tracey, Dr Webb comprised the total staff of the Rainforest Ecology Section at Indooroopilly in Brisbane.

The combination of Webb, the ecologist, and Tracey, the skilled taxonomist, made substantial contributions to the understanding of how Australia's rainforests function and are organised.

During his long career, Dr Webb developed a deep empathy with rainforests, and was in the vanguard of a movement which suggested they should be preserved for their scientific and aesthetic value, rather than logged for their commercial value. He recently gave expert evidence to the inquiry into the logging of rainforest at Terania Creek.

Dr Webb has also urged that urgent action be taken to identify rainforest refugia, protected pockets where rainforest survived dry climatic epochs, which are of great scientific interest.

His retirement brings about the demise of the Rainforest Ecology Section. Mr Tracey will continue his taxonomic work with the Division of Forest Research at Atherton.

Dr Webb has taken up an appointment as an honorary research Fellow at Griffith University in Brisbane.

□□

The Division of Entomology's evil weevil fun run T shirt emblazoned with the 'mountain masochist' is about to go international. **Rosemary Longstaff**, who was the winning woman in the recent Frankston to Melbourne Big M marathon, plans to wear the T shirt when she runs in the Boston marathon next year.

Rosemary's trip to Boston came as a prize in the marathon and it will be her third overseas trip to take part in an international running event.

Rosemary became interested in running five years ago when she read a book on fitness, and now averages 100 km a week when she is training. Apart from the quick trot up Black Mountain in the lunchtime, Rosemary also runs to work from her home in Fraser 16km away. Her husband **Barry**, also at Entomology, is also interested in fitness—he is a racing cyclist.

□□

Kosciusko Alpine Flora, a book published last year as a colourful and comprehensive guide to the flora of the alpine area, has gone into reprint.

The book is the work of **Dane Wimbush, Max Gray** and **Colin Totterdell**, of CSIRO's Division of Plant Industry in Canberra, and **Alec Costin** who formerly worked at the Division and is now at the Australian National University's centre for Resource and Environmental Studies.

The original print run of 5,000 sold out and the reprint of 2,500 copies is available now at the same price of $25.

□□

There'll be a highland flavour added to the research into Jarrah dieback, with the appointment this month of **Dr David Murray**, a scientist from Dundee University. Dr Murray has been appointed to the West Australian regional station of the Division of Forest Research.

New face at S.A. Division

An internationally known South Australian medical scientist who has spent his last twelve years at the University of Alberta in Canada has been appointed Assistant Chief of CSIRO's Division of Human Nutrition in Adelaide. He is Dr J. S. Charnock BSc, PhD, DSc.

The Chief of the Division, Dr B. Hetzel said Dr Charnock would bring to the Division a great deal of skill and experience in the study of human nutrition.

Working from the Division's Glenthorne Laboratories in the southern suburbs of Adelaide, he will be establishing a special research group to study the biochemistry of fats and their movement in the body.

Dr Charnock said he was being given a unique opportunity to participate in a research program of immediate relevance to the health and social welfare of Australia.

Dr Charnock first worked with CSIRO in 1949 as a cadet scientist with the then Division of Biochemistry and General Nutrition in South Australia.

He undertook part-time Bachelor of Science studies with the University of Adelaide and later gained his PhD in 1961.

He was awarded both the Bailieu Prize in Medical Research and the Senior Roche Products Prize in Pharmacology. In 1979 the University awarded him the degree of DSc.

Dr J. Charnock

In 1961 he was awarded a postdoctoral Fellowship by the National Health and Medical Council enabling him to undertake three years in Canada and USA.

Dr Charnock was born in Adelaide, and met his wife, Barbara, when they were both working with CSIRO's then Division of Biochemistry and General Nutrition in Adelaide. Mrs Charnock worked in the library.

John Hine, an experimental officer at the Division of Textile Industry in Geelong, has reason to look happy. He was photographed as the winner of the Melbourne-Warrnambool classic cycle race, becoming the first amateur to win the race. John is a world-class rider—he won a silver medal at the Tokyo Olympics. John, aged 40, told his local newspaper after the win that "it proved that amateurs aren't all mugs". —Photo courtesy "The Geelong Advertiser".

In the public eye

CSIRO Divisions have been in the public eye through the media in the last few weeks on the following topics:

Researchers in the Division of Human Nutrition released the results of a study of 500 10-year-olds in Adelaide which showed that an improvement in physical fitness led to better classroom behaviour.

The study aimed to find out what effect physical activity had on coronary heart disease risk factors in primary school children.

As a result of the survey, the South Australian education authorities developed a wide range of fitness program material and 60 per cent of primary schools in the State became involved in these activities.

★

Scientists from the Divisions taking part in SIROSEARCH '80 at Griffith found themselves under scrutiny by a group of seven rural journalists from the national press. The journalists formed a press tour arranged by CSIRO's media office in Canberra which resulted in a range of press articles following the tour on October 31.

★

Tarrango, a light red wine made from CSIRO-bred grapes, has just been released commercially.

The release represents almost 15 years work at CSIRO's Division of Horticultural Research at Merbein, Victoria, and is both a new wine grape and a new wine style for Australia. The commercial release is a collaborative venture with the wine-makers Brown Bros of Millawa, Victoria.

★

The Division of Chemical Technology announced that it had developed a new process called explosion pulping to make paper from convenient annual crops such as flax, elephant grass or residues like wheat straw and bagasse.

Paper made from flax using the explosion process is unusually tear-resistant, making it suitable for use as banknotes or specialty document papers.

★

CSIRO's archivist Colin Smith has called for a central repository to store product publicity as documentation for the hardware which ended up in museums of technology.

Writing in the publication Media Information Australia, Mr Smith said archivists and manuscript librarians came across a lot of material in this category but threw a good deal of it away because there was no central repository for it.

He said all existing collecting archives should encourage firms and organizations to deposit record copies of all their publicity.

Three films from CSIRO's Film and Video Centre have been included in the program for educational access television through Channel 7, Melbourne. The films are 'Energy and Agriculture' and 'The Rabbit in Australia', both made during 1979, and 'I Can Never Resist that Challenge', a profile on Dr Tom Pressley, made earlier this year. The films have been screened this month.

★

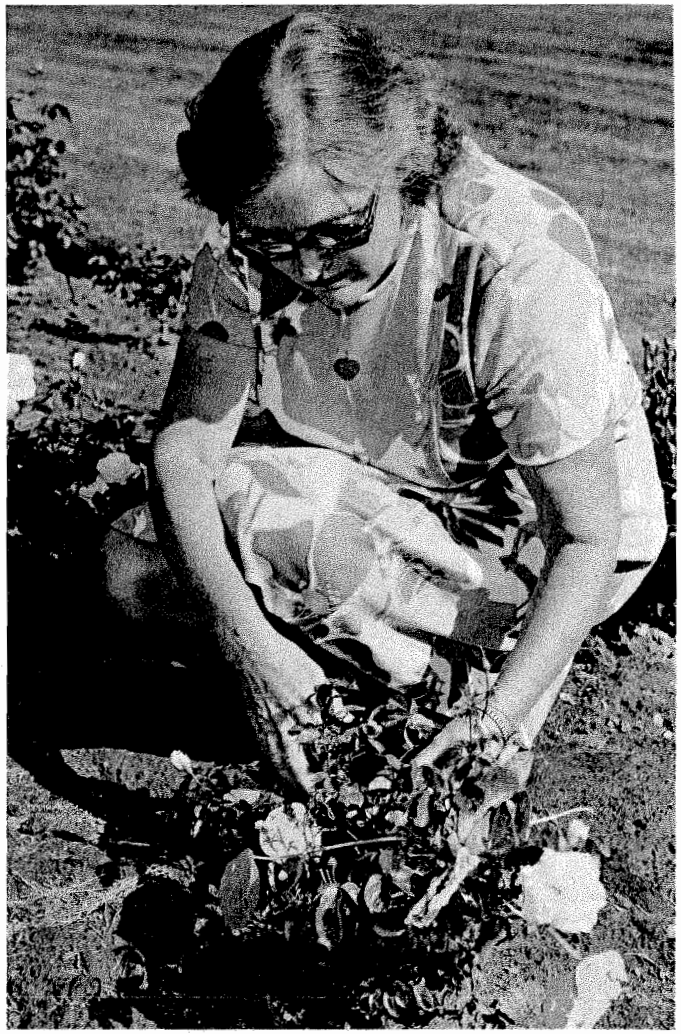
The Division of Manufacturing Technology has announced that an agreement has been signed on world rights to manufacture and distribute an automated microfiche reader developed by the Division in Adelaide.

The reader, which allows handicapped people to read books at the push of a button, will be made and marketed by an Adelaide firm, R. W. Bowman Manufacturing Pty Ltd.

Making the announcement, the Minister for Science and Technology, Mr David Thomson, said the reader offered "great potential in helping the handicapped."

★

Scientists from three CSIRO Divisions and from the Department of Science and the Environment are cooperating on a wind energy survey of north-west Tasmania. The people directly involved include Dr Jetse Kalma and Mr Haralds Alksnis from Land Use Research, Dr Mark Diesendorf and Mr John Carlin from Mathematics and Statistics, Mr Jim O'Toole from Atmospheric Physics and Mr Kim Briggs from the Cape Grim Baseline Monitoring Station. The work is supported in part by a grant from the Tasmanian Energy Research Committee.



Mrs Betty Lee from CSIRO's Division of Entomology in Canberra, places soy bean leaves containing a predatory mite on a plant in the National Rose Collection which has been infested by two-spotted mite. The Division is co-operating with Canberra's city parks administrators in using biological control to naturally reduce the effect of two-spotted mite. The experiment will be checked during the summer.

Coresearch Classifieds

CoResearch Classifieds are open to all members of staff, at no charge. Deadline for classifieds is the 8th of each month. Send to: CoResearch Classifieds, PO Box 225, Dickson, ACT, 2602. All advertisements should carry the advertiser's name, address and telephone number, although this information need not appear in the body of the advertisement.

For Sale in Sydney: Boat trailer which suits a 12 foot surfcat or similar, galvanized, registered and with new wiring for $250.

Contact Rosemary Sutton on 713 9494 (a.h.) or at Wheat Research North Ryde, 880 211.

ESPERANTO

Anyone interested in using this language for international communication, including scientific publication, correspondence, or travel, is invited to contact the undersigned. Please indicate whether you already use it, or would like to learn it, or simply would like to know more about it. **Keith Bowling, Division of Process Technology, P.O. Box 136, North Ryde, 2113.**

HOLIDAY EXCHANGE: Family of 5 (children 17, 15, 11) wishes to exchange house in Melbourne, approx. 9 km from GPO, for house in Sydney over 2-3 weeks of Christmas Holidays. Contact J. Middleton, Division of Applied Organic Chemistry, GPO Box 4331, Melbourne, Vic. 3001.

Apply now for 1982 fellowships

The Winston Churchill Trust is now calling for applications from Australians of 18 years and over who wish to be considered for Churchill Fellowships tenable in 1982.

Completed application forms and reports from three referees must reach the Churchill Trust by February 28, 1982. People wishing to be considered for a 1982 fellowship should send for information to the Trust's Canberra office, PO Box 478, Canberra City, 2601.

ANZAAS tries for new members

ANZAAS, the Australian and New Zealand Association for the Advancement of Science, has embarked on a membership drive.

In a letter to scientific colleagues around Australia, the chairman of the ANZAAS Council Mr J.B. Davenport appealed for assistance in their efforts to promote science and scholarship around Australia.

"ANZAAS could be much more effective than we are at present, but our activities are limited because financially we are dependent on a small but loyal membership which has been static in numbers for some time," Mr Davenport said.

The letter asked that members renew their subscription and that non-members be encouraged to join. The annual membership fee is $30 which is tax deductible.

ANZAAS is currently planning its 1981 annual congress which will be held in Brisbane from May 11 to 15. The theme of the congress is Energy and Equity.

Letters

Dear Editor,

In order to clear up any confusion that may exist as to who does what about science and technology in the ABC, there are now, more or less effectively, three science units in this organisation:

1. The Science Unit, Radio, which produces, inter alia, "The Science Show", "Science Bookshop", "Investigations".
2. The Science Unit, Television Features, which produces documentaries covering the broad range of science and technology.
3. The "Towards 2000" Unit, Light Entertainment Department, which is planning to make non-science high technology programmes.

There is no connection between any of the units.

Yours sincerely,

(Michael Daley)
Executive Producer,
TV Science,
ABC-TV Features,
Australian Broadcasting Commission

'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 *December 1980* **236**

Communication policy

Everyone can have a say

CSIRO staff have been invited to contribute to the formulation of a communication policy for the Organization.

This was announced at the Communication Symposium held in Canberra between November 30 and December 3 by the Acting Officer-in-Charge of the Science Communication Unit, Mr Brian Woodruff.

Mr Woodruff said the Executive Secretary, Mr Gratton Wilson, had told him that the Office of the Executive was preparing a paper for consideration by the Executive as an input to a possible communication policy for CSIRO.

Mr Wilson had said he would be happy to receive submissions as soon as possible from any member of staff with an interest in the subject.

The symposium was attended by representatives of 38 of the Divisions and Units within CSIRO and was organized by the Science Communication Unit, a unit within the Bureau of Scientific Services.

It was arranged to give communicators and scientists an opportunity to exchange ideas and opinions on information transfer.

During the three days, a wide range of opinions and ideas came from visiting guest speakers, scientists and communicators from within the Organization. A Member of CSIRO's Executive, Dr Greg Tegart, delivered an address on communication to the opening session on the Sunday, November 30.

Dr Tegart said research scientists in particular should see themselves as the eyes and ears of the Organization, the people who needed to keep in touch with the worlds of science and industry and translate this knowledge into opportunities for constructive research.

'I know that we have many officers who fulfil this role admirably but I am equally sure that we have many areas where we could do a lot better,' he said.

'Clearly our research scientists have a difficult and challenging role.

'Getting the message across to the public also obviously presents a significant challenge to professional communicators,' Dr Tegart added.

Dr Tegart said he firmly believed that today's research scientists could not seek refuge in research papers as a tool for ensuring rapid development of their work.

'It's no use an organization like ours saying that all its results appear in the scientific literature waiting to be used, because the literature only caters for fellow scientists and as a communication exercise it fails with groups such as small industry, politicians and even agricultural extension officers who may not have the training to understand or obtain research papers.

'People in the community who can be described as decision-makers—whether they be in industry, politics or government service—must be made aware that CSIRO is a source of information in certain fields.

'I understand that coverage in the mass media, for instance, has achieved exploitation of CSIRO's research on several occasions when more traditional methods were producing slow or few results,' Dr Tegart continued.

'The reason lies in the fact that not all firms with a potential interest in an invention or service can be contacted directly through a trade magazine or technical data.

'Everyone, however, reads newspapers, listens to the radio and watches television, where an account is normally couched in elementary terms.'

Other speakers at the conference outlined many ways in which CSIRO could enhance its image to communicate more effectively with particular sections of the community.

Full texts of the addresses given by these speakers will be contained in the published report of the symposium which is expected to be available in March next year.

Max calls it a day... after 42 years at CSIRO

As teenagers, Max Day and Douglas Waterhouse passed many happy Saturday afternoons with Doug's Uncle Athol, exploring the Sydney region looking for insects.

The trio ranged from the Blue Mountains to Bulli and up the Hawkesbury River, collecting and identifying insects, and kindled in Max what had previously been simply a boyhood interest in science.

It naturally followed then that the two boys should continue their interest in entomology, and so it was that they both graduated as young scientists from Sydney University's science class of 1937.

Both joined CSIR as it then was in 1938, and both have become Chiefs of Divisions. However, because he was a Christmas baby, Dr Max Day retires this month as Chief of Forest Research, while Dr Douglas Waterhouse's retirement comes in 1981.

Dr Day rather wryly recalls that his boyhood interest in insects enabled him to assemble more information on the subject than perhaps he recalls today.

But in the 41 years he has been a CSIRO staff member, Dr Max Day's career has of course broadened and changed, without really affecting the enthusiasm with which he discusses the general subject of science.

After early work in the Division of Entomology, working on termites, he became Lehman Fellow, at Harvard University where he received a Ph.D., in 1941.

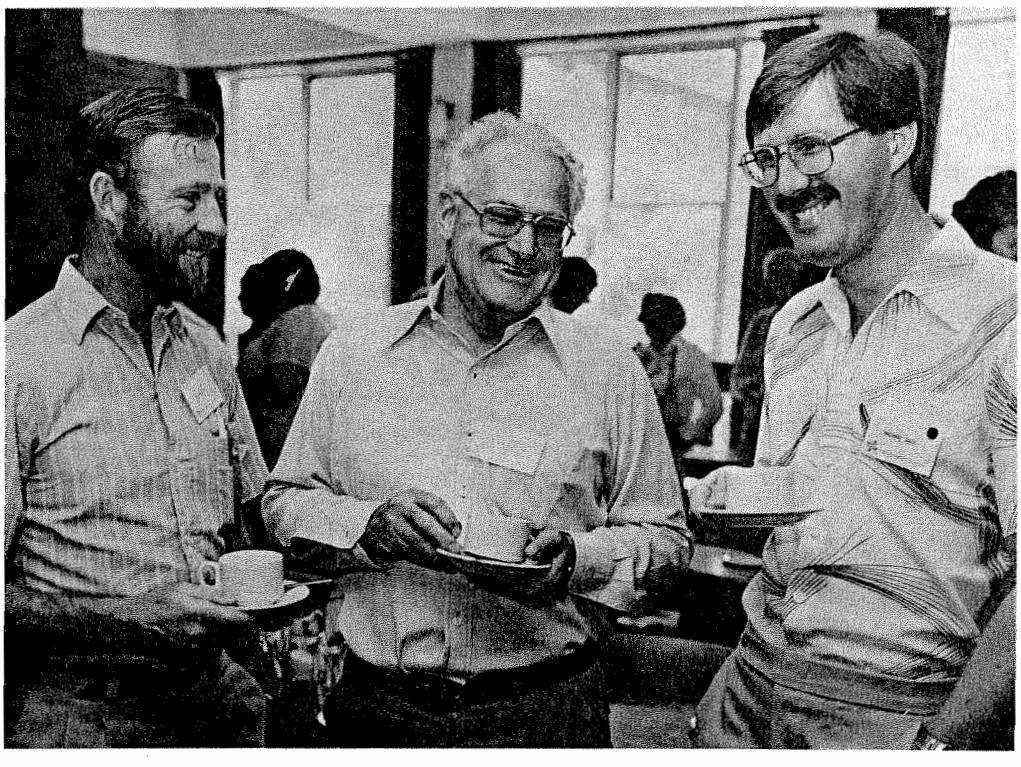
During this period he worked as a biological assistant to Professor Cleveland, and a "marvellous array of world leaders in the field of biology which had developed."

For all of the war years, Dr Day was in the United States, first at the University then as a lecturer at Washington University, and subsequently as Scientific Liaison Officer in Washington until 1947.

In 1963, Dr Day was appointed assistant Chief of the Division of Entomology, a position he held for three years until he was appointed to the Executive in 1966, where he remained for 11 years until as he puts it, "the Executive stopped looking for someone to become Chief of the newly-created Division of Forest Research."

After 11 years as a Member of the Executive, Dr Day saw the Chief's position as an opportunity to follow up areas where he had already established an interest . . . the biological sciences . . . in Divisions such as Plant Industry, Irrigation Research and of course, Entomology.

Continued on page seven



The Executive Secretary of CSIRO, Gratton Wilson, centre, shares an informal moment at the Canberra Communication Symposium with Dr Michael Dack, right, Bureau of Scientific Services, and Tim Healy, Institute of Animal Sciences. More photographs from the Symposium are on page seven.

Workplace...an occasional series on CSIRO staff

Jim Edwards is one of CSIRO's most solitary workers. A member of the Woodland Ecology Section of Land Use Research, he is based in Queensland where he spends his time monitoring and assessing environmental disturbances on the Army's Shoalwater Reserve, about 60 miles from Rockhampton.

About half of Jim's time is spent at a camp site in the middle of a forest on the Reserve, and while he sometimes has the company of colleagues from Canberra, he spends many of his days and nights on his own out at the location.

Not that he's complaining. It's the life he enjoys and he wants it to stay that way.

Most days go along pretty much as usual but at one stage recently things took an unexpected turn.

HAZARDS

One of the hazards at this time of the year is the annual outbreak of forest fires in the hills around the reserve and this October was no exception. The fires could be seen on many nearby slopes and with everything so dry during the prolonged spell they were burning well.

To protect the camp from several in the vicinity and one in particular he'd been warned about—which showed signs of moving down towards him—Jim started his normal burning-off program around the camp. He turned in that night with the smell of fire and smoke in the air but with no undue cause for alarm.

And then during the night he heard the noise of trees exploding and he sensed trouble. A check revealed that the fire he'd lit himself had somehow leapt the break and things were looking a little less comfortable.

CONTROL

It was the end of sleep and for the next 12 hours or so Jim spent his time backpacking portable fire-fighting equipment until he had the situation under control.

CoResearch staff who somehow managed to locate him in the middle of it—all with the aid of a few verbal instructions and a mud map—found him surrounded by blackened trees and bushes, some of which were still burning and falling. The camp site was perfectly safe and Jim appeared remarkably calm after an experience that would probably have scared the hell out of most people.

CSIRO representative at BA-80 meeting

CSIRO was represented at the 42nd annual meeting of the British Association for the Advancement of Science, held recently at Salford University near Manchester.

Attending as an observer was Jim Lumbers, Editor of Rural Research who is presently working in London as an assistant to the Australian Scientific Liaison Officer, Dr Pierce.

Jim has written a paper on the conference which has been submitted for publication in 'Search'.

He said the conference had a fa format to anybody who had been ANZAAS, with 16 sections ranging fron. physics and mathematics through botany and zoology to psychology, anthropology and economics. Applied sciences were also represented with sections devoted to engineering, biomedical sciences, agriculture and forestry.

Excursions undertaken reflected the character and setting of the conference, with visits to factories and institutions, research establishments and laboratories. Even the local Cheshire farmers were visited by the agriculturalists who learned th arket of 16 million people lived a 50-mile radius of the farm front-

-80 is seen as one of the few opport-nities researchers had to communicate outside their narrow professional boundaries, but according to Jim, scientists were not very much in evidence at all.

The total attendance at Salford over the four days was about 3,200, which included about 120 science writers and journalists, 1,200 adult members of the BA and a strong contingent of 2,000 local members of BAYS, the British Association for Young Scientists.

SUGGESTIONS

Jim's paper outlines arrangements made for media coverage of the event, and raises a number of points which could be taken up by organisers of ANZAAS conferences.

Copies of his paper are available on request from the Editor, CoResearch.

Letter to the Editor

Dear Editor,

During the past two months non-smokers in the Canberra RAO have conducted a restrained campaign aimed at encouraging smokers to cease smoking in the tea-room during morning and afternoon tea. The campaign has failed.

Literature pointing out the hazards of passive smoking—involuntary inhalation of the smoker's waste smoke—was made into paper aeroplanes. Smokers have argued that we infringe on their right to smoke, and that non-smokers should remove themselves from the tea room if they wish to avoid the hazards of smoking.

I would welcome tactical advice from non-smokers elsewhere who may have had success in similar campaigns in CSIRO.

I personally find myself at a loss to understand how supposedly intelligent people can callously disregard the well-being of others in the face of abundant evidence that their actions are dangerous to non-smokers, including the unborn child (National Times, Nov. 16, p14).

I cannot follow a logic which argues that those offended against should remove themselves from the presence of those who give offence.

Neither can I understand how people can adopt as a hallmark of their independence and individuality a habit which they took up out of a need or desire to conform.

There is no sacrosanct right to smoke in the presence of others.

Smoking is a dangerous, filthy and offensive habit. There is abundant evidence that it hazardous to non-smokers and smokers alike, however much smokers say there is no evidence.

Smokers who resist moderation and reason have only themselves to thank if non-smokers adopt more militant measures—sadly, there is no other way.

Graeme O'Neill
Science Communication Unit
Canberra.

New face on CSIRO Advisory Council

Sir Peter Derham

Sir Peter Derham, 55, the Managing Director of the Nylex Corporation Ltd, has been appointed Chairman of the CSIRO Advisory Council.

Sir Victor Burley's term as Chairman ends on 31 January, 1981 and Sir Peter will take up his three-year appointment from that date.

The Council, which has 25 members drawn from a wide cross-section of the Australian community, is the major source of independent advice to the CSIRO Executive about the Organization's objectives and priorities.

It provides industrial and economic input and is also concerned more generally with the interests of Australians which may be furthered by CSIRO.

Calling all CSIRO women and a few men

All women and a small number of men employed within CSIRO will early in the new year, receive a questionnaire designed to interpret how they see their roles within the Organization.

The questionnaire is the major component in a survey which is being conducted by the Consultative Council sub-committee on the employment of women.

Its Chairman Dr Judith Koch, a scientist working in Sydney, said the study was an attitude survey on the employment of women within the Organization.

It was expected up to one-and-a-half hours would need to be set aside to complete the questionnaire.

The sub-committee is anxious to ensure that answers in the questionnaire are spontaneous so declined to give details of actual questions.

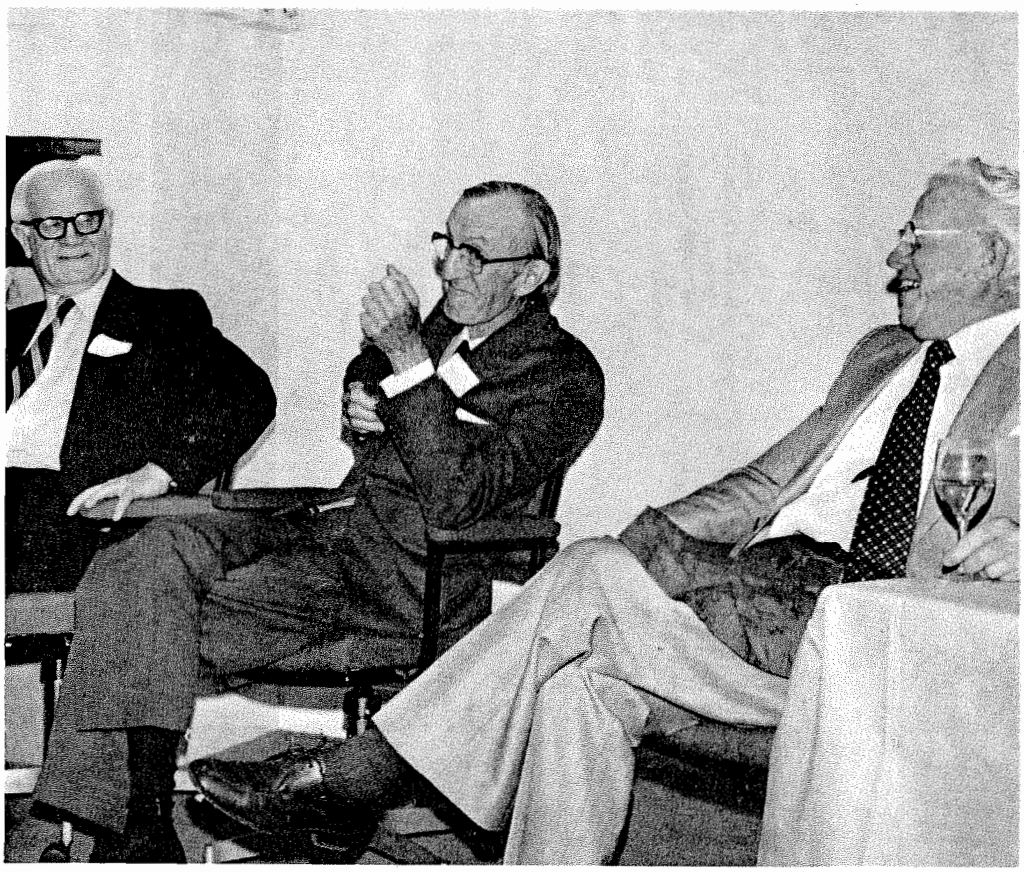
Each individual given the survey could be assured that their names could not be matched up with their answers.

Dr Koch explained that an outer envelope containing the individual's name and Division or Unit would be removed by a person who would not open a second enclosed unmarked envelope containing the actual questionnaire.

'I can assure each recipient that their confidentiality will not be breached,' Dr Koch added.

The questionnaire has been prepared by Dr Cecily Gribbin, a research sociologist with the Division of Building Research in Melbourne.

The results of the survey will form the basis for a paper to be written by Dr Gribbin during next year. It will also be used to provide information about the present role of women within CSIRO and will help interpret other information available to the sub-committee.



Mr Ken Gibson, centre, pictured at a farewell dinner held in his honour to mark his impending retirement as Chairman of the Queensland State Committee. Mr Gibson was a member of the Committee for many years. On Mr Gibson's left is the retiring Chairman of the CSIRO Advisory Council, Sir Victor Burley. The immediate Past Chairman Emeritus Professor F. Norman is on the right.

CSIRO delegates included in Japan S and T tour

Three CSIRO staff members were included in a recent science and technology delegation which spent 13 days in Japan.

Dr Keith Boardman and two Institute directors, Mr Michael Tracey and Mr Sam Lattimore, represented the Organization on the tour which visited Japanese research establishments and industrial organizations.

The visit aimed to further the links between Japanese and Australian science and technology institutions and to discuss areas where co-operation could take place to the mutual benefit of both countries.

IMPRESSIONS

Commenting on his impressions of the visit, Mr Lattimore said in many instances he found there had already been contact between Japanese and Australian scientists whereas in other areas little contact had taken placé although similar studies were being undertaken in both countries.

Mr Lattimore said his area of interest was the physical and engineering sciences and he was particularly impressed by the magnificent buildings and equipment available to Government research staff within these disciplines.

'They also spend less money on staff in relation to support services than we do at CSIRO', he said.

One of Mr Lattimore's visits was to the Central Research Institute of Electric Power Industry at Komae.

The Institute employed 1400 research staff in a total of 10 laboratories to work on problems related to energy generation and distribution,' he said.

'I was shown a copy of an agreement they had with an American institute and it was clear that the company was keen to collaborate with Australia.

'We are now looking at the possibility of arranging a workshop in Japan involving the Electrical Research Board in Australia,' he added.

Another of the research establishments which particularly interested Mr Lattimore was the Public Works Research Institute at Tsukuba.

'The Institute had magnificent facilities for carrying out their research including five wind tunnels and a most innovative, above-ground road tunnel, 400 metres long with a dual carriageway which was used purely for experimental purposes.

'It was here that research was carried out on ventilation, fire and sound absorption.

'They could also use the tunnel to create particular sets of weather conditions to ensure that road signs would be visible to motorists in all weather,' he said.

Mr Lattimore said the delegation had all been overwhelmed by the courtesy and kindness shown by all the Japanese they had met, and all members had found the tour most fruitful, informative and enjoyable.

In the public eye

CSIRO Divisions have been in the public eye through the media in the last few weeks on the following topics:

CSIRO's Film and Video Centre in Melbourne expects to release two films early in the New Year. The first, entitled "What's Agro-forestry?" sponsored jointly by the Division of Forest Research in Canberra and the Division of Land Resources Management in Perth, is a 16-minute film which describes agroforestry research in Australia. It will be released generally.

The second film, in "The Researchers" series, is entitled "Looking at Lobsters". It's a five minute film describing the work of the Divisions of Fisheries and Oceanography, and the West Australian Department of Fisheries. The film will be released to television stations.

● ●

The Division of Building Research has published information on how householders can treat ugly brown stains which sometimes appear on floor coverings coated with clear vinyl veneer.

Scientists investigating the problems have found that the protective coating becomes prone to staining as it ages and have found there are no easy solutions once a stain penetrates the clear veneer.

● ●

Mathematics was crucial to the successful operation of a large section of the Australian economy, a CSIRO mathematician told a conference in Canberra earlier this month. Dr Bob Anderssen was speaking at a one day seminar on the application of mathematics in industry.

Dr Anderssen and his colleague Dr Frank de Hoog both addressed the conference which aimed to bring together people from government, university colleges and industry so that they could learn from each others' experience.

● ●

Christmas shoppers were able to see some ultra hygenic chickens at a CSIRO display in Melbourne earlier this month.

The display, staged by CSIRO's Division of Animal Health was in the Myer Arcade in the city.

The chickens were from the Division's poultry research section which houses a flock of completely infection- and disease-free poultry for research.

The crowds flocked in!

● ●

An innovative rain-making machine is being used in the Division of Soils to study the effect of rain on soil erosion. The researchers, led by Dr John Moss, are using an artificial rain simulator made from six thousand hypodermic syringes in a perspex sheet suspended above a sample hillside.

● ●

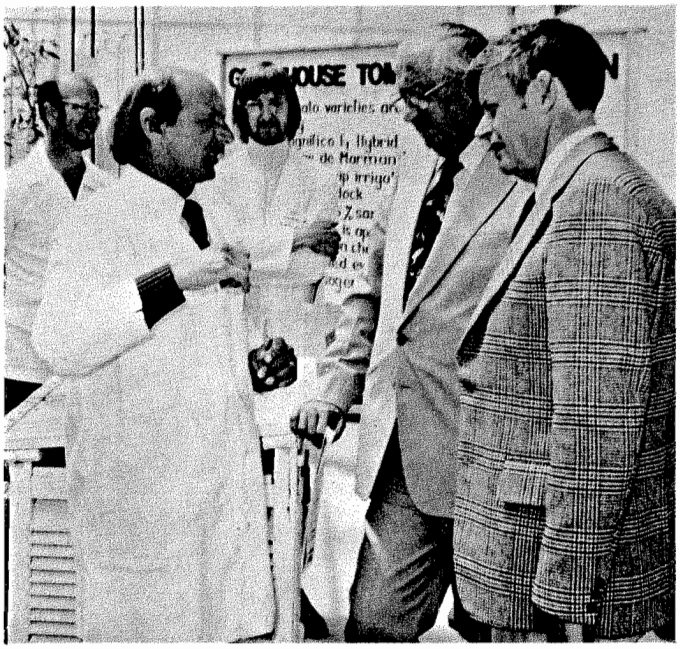
Scientists in CSIRO's Wheat Research Unit have appealed to bakers and millers who have an allergy to flour to come forward to assist in research into bakers' asthma, caused by the inhalation of fine particles of flour.

Dr Colin Wrigley wants blood samples from anyone who has a diagnosed allergic reaction towards any kind of flour.

● ●

Researchers in the Division of Building Research have announced the release of a bright blue preservative to combat rot in wood work and protect timber from decay.

The product has gone on sale under the trade name Blue 7. It has the consistency of thick paint and is water soluble.



Keith Garzoli from the Division of Irrigation Research in Griffith explains the intricacies of the low energy greenhouse to Dr Keith Boardman, right, and the Hon. Lin Gordon, NSW Minister for Water Resources. In the background is the Chief of the Division, Dr Paul Kriedemann, and Mr Bob Fuller from the Division of Mechanical Engineering. Dr Boardman and Mr Gordon visited the greenhouse as part of their visit to SIRO-SEARCH '80, held at the Division.

□□

Two researchers from the Division of Radiophysics, stationed in Canberra, **Dr David Jauncey** and **Mr M. L. Batty**, were recently given a group achievement award by NASA for their work at Tidbinbilla in developing a highly sensitive interferometer, regarded as a unique and powerful astronomical tool. The citation on the award says that its development led to a significant advance in NASA's capability to measure radio positions in the Southern Hemisphere.

□□

In the 'things to do in retirement' file, **Peter Butler**, recently retired from HQ, has joined his daughter Vicky in class . . . art class that is. Peter, always a keen artist, decided it was time to take a more serious approach to the discipline, and has most recently been seen sketching, of all things, potatoes. Keeping his hand in at agricultural science it seems.

□□

It's Christmas in Curitiba for **Dr Ken Harley**, Officer-in-Charge of Entomology's Long Pocket laboratories.

Ken will spend up to 18 months in Brazil at the Division's Biological Control Unit, looking at aspects of interaction between plant and insect.

During Ken's absence, **Dr Jim Nolan** will be Officer-in-Charge at Long Pocket.

□□

It's a fairly good bet that **Dr David Mahoney**, of Animal Health laboratory in Brisbane, will be an avid viewer of the new series of Dr Who, now being planned in England. Dr Mahoney's daughter Janet is the new girl co-star of Dr Who, the BBC's scifi show that is seen in 37 countries. Janet has taken the stage name of Fielding —her grandmother's name—because there is already an actress named Janet Mahoney in England. Janet begins work on the new series next month, playing an Australian air hostess called Tegen who shares the doctor's police box.

Lyn Plumb, a Canberra staff member of the Fuel Geoscience Unit, recently joined her husband and several other Australians on an expedition to the Tibet Plateau, an area of great interest to scientists.

The Plateau covers 2.4 million square kilometres, one quarter of China, and has an average altitude of 4,500 to 5,000 m.

Among Lyn's lasting impressions are the treasure-house of ancient Tibetan culture in the monasteries, now largely preserved as museums, and the fierce independence and overwhelming friendliness of the Tibetan people.

Home just in time for Christmas is **Clyde Garrow** of CILES, Melbourne, who has been in the United Kingdom, Europe and the United States this month. He was selected by the United Nations to join an expert group on new and renewable energy information flows, and took part in a meeting in Geneva from December 8 to 12. Clyde visited various information science experts in Britain and America following his meeting.

□□

The Queensland climate is the envy of many of the Southern Australian residents, but for once recently, Brisbane's RAO **David Thomas** must have wished he was anywhere else.

David braved the sudden hail storm which hit Brisbane's city streets to take meteorological readings. Photographs circulating around the Brisbane office show David looking a little like an early Santa Claus, sheltering amid the "snow" under a cheery red umbrella.

□□

Pedal power proved ...**Bill Roberts**, a veteran member of Forest Research in Canberra, showed that old is gold in the recent great cycle race conducted by the Division. Bill, 63, completed the 16km course in 33 minutes, a little less than nine minutes slower than the winning rider. Bill is a keen cyclist and has been riding his bicycle to work for some years.

□□

The Chief of the Division of Food Research, **Dr John Christian**, has been elected Chairman of the International Commission on Microbiological Specifications for Foods. The body consists of 20 members from 12 countries and exists to provide internationally acceptable and authoritative decisions on microbiological limits for foods commensurate with public health safety.

□□

One of the stranger parcels to leave CSIRO in recent weeks has been one dispatched by **Elvie Anderson** in CILES.

The parcel contains two pairs of mens shoes, size six, and they're on their way to **Gideon Mushi**, a librarian at the Silviculture Research Institute in Tanzania.

Two other CSIRO librarians, **Rosemary Wren** at the Division of Horticulture and **Dorothy Lamberton**, from the Division of Applied Organic Chemistry responded to Elvie's appeal for shoes after receiving a letter from Gideon which said, in part, 'I am confident that through your kindness in the near future I will receive a parcel from you . . . I request shoes friendly as a sister and I pray to God to wish you every success . . . '

□□

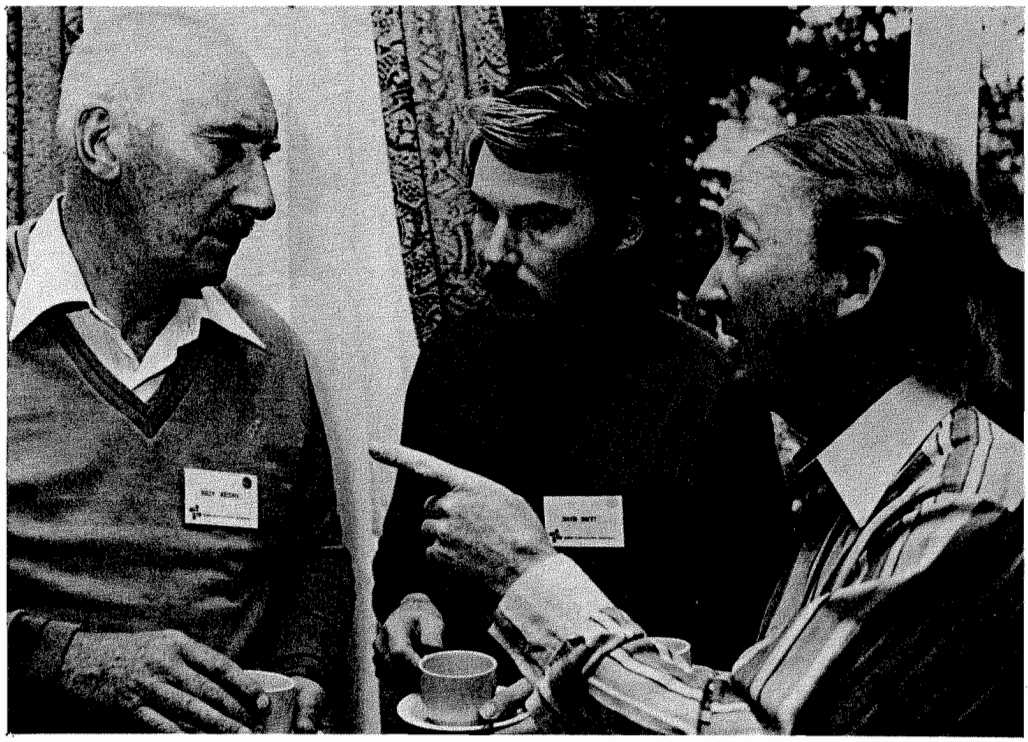
Carol Popham, librarian at CSIRO's Film and Video Centre in Melbourne has become the first woman to hold the position of Deputy Chairman of the Organization's Consultative Council. Carole has been a member of the CSIRO's Technical Association since 1973 and is currently its President.

The Consultative Council is a body composed of management and union and Carole is one of the two representatives from her union.

□□

We have all read of science in the field, but **Rhondda Jones**, from Entomology wants to take it into the backyard—yours not hers. It seems Rhondda is working on the cabbage white butterfly, and has asked for volunteers willing to give a home to three potted cabbages during the summer months. She's hoping volunteers will provide back gardens and take sample caterpillars from the cabbages during the months of January and February.

□□



Jim McNamara, newly-appointed information officer in Perth, makes a point to Dr Kelly Kelsall at the recent communication symposium in Canberra. Dr Kelsall, Chief of CSIRO's Divisions of Applied Geomechanics and Mineral Engineering in Melbourne, was a delegate to the symposium. David Brett, centre, of the Division of Forest Research in Canberra, looks a little bemused due to jet lag.

People... People... People... People... People... People... People... People... Peop

Ms Jan Addeney, who has recently become CSIRO's first woman trainee auditor. Jan has worked with the Organization since 1974, and is studying for a computing degree at the Canberra College of Advanced Education. She was appointed to the position in September and is based with the auditing group at the AMP building in Canberra.

Mr Bob Croll has retired as Manager of CRRERIS, the energy resource data base in Melbourne.

Bob joined CSIRO in April 1962 and became Officer-in-Charge of the Agricultural Research Liaison Section, responsible for the publication of a wide range of liaison publications including Rural Research.

However his links with CSIRO go back to his work during the war into climatic conditions and human health in textile mills. It was during this period of his life that he came into contact with **Sir Ian Clunies Ross.**

An agricultural science graduate before the War, Bob also worked on cereal research carried out by the Victorian Department of Agriculture. Prior to joining CSIRO, Mr Croll was managing the New Holland section of the Sperry Corporation.

Ms Sue Harvey will succeed Mr Croll as Manager of CRRERIS.

Dr J. Craig Mudge will become leader of the VLSI program within the Division of Computing Research and will be based in Adelaide.

Dr Mudge was educated at the Australian National University in Canberra, and received his Ph.D. in computer science from the University of North Carolina. Dr Mudge is currently VLSI Advanced Development Manager for Digital Equipment Corporation, Maynard, Massachusetts.

□ □

Recently returned to Australia from Moscow is **Dr Dal Swaine**, acting Officer-in-Charge of the Fuel Geoscience Unit in Sydney. Dr Swaine was invited to take part in a workshop on environmental implications and strategies for expanded coal utilisation, held in the USSR during October.

□ □

A Fractal, i.e. a triangle, recursively distorted five times and projected onto a sphere, was chosen by **Socrates Paschalidis** for the front cover of the newly designed magazine CSIRONET News, the publication from the Division of Computing Research. The new publication, edited by **Audrey Jitts**, is a 21-page news magazine which will be published each two months.

□ □

Among the jottings in the above publication's column Stings and Things by Scorpio is the following rather optimistic promise:

The new Division of Fisheries in Hobart should be able to cooperate with the Division of Human Nutrition and Computing Research's new VLSI design section in Adelaide to produce the world's best fish and chips.

□ □

Those of us needing a field guide to trawl fish from the temperate waters of Australia can get information from **Garrey Maxwell** at the Division of Fisheries and Oceanography in Sydney. Garrey has just published a book on the subject.

Two Melbourne researchers with the Division of Manufacturing Technology and a former senior scientist with the Division, have jointly shared a prestigious American award for their international contribution to the metals diecasting industry.

Mr Alan Davis and **Mr Ho Siauw** of the Division of Manufacturing Technology, **Mr Peter Robinson** who was formerly with the Division, and **Mr M. Alan Cope** of the Australian Zinc Development Association shared the Nyselius Award which is made by the American Die Casting Institute.

The CSIRO team collaborated with diecasting companies, Australian metal processors and the Australian Zinc Development Association to develop improvements in the design of dies and of diecasting machines and in process control.

□ □

Entomology's evil weevils are now on wheels! **Barry** and **Rosemary Longstaff** were the fastest man and woman cyclist in the recent bicycle race conducted by the Division of Forest Research in Canberra.

Barry completed the 16km course around suburban Canberra in 24.78 minutes winning the perpetual trophy. Rosemary, who is usually faster on her feet, was the fastest woman in the race, completing the course in 31.41 minutes to win a bottle of champagne.

Last year's race winner **Mike Cashmore** was placed third behind another Entomology rider, **Rolf Kohnert**.

The word around Black Mountain is that this year the Forest Research boys were riding machines hand-crafted from selected radiata pine.

□ □

Family planning at its best . . . **Michael Dack** from the Science Communication Unit in Canberra had been a little less his cool collected self these past few weeks and it wasn't just because he was organising the successful communication symposium held a few weeks ago. The stork was due to visit the Dack household slap in the middle of the three-day symposium. There was a sigh of relief all round when baby David arrived safely four weeks early.

A number of CSIRO staff are contributing to a book on Landsat satellites being edited by **Dr Ken McCracken,** Chief of the Division of Mineral Physics.

The book, 'Satellite Images of Australia', is being published by The Australian Government Publishing Service for the Department of Science and Technology and the Division of Mineral Physics. It will be available early next year.

□ □

Ten weeks of field work in the wastes of Patagonia may not be most people's idea of a start to 1981, but for **Dr Bob Galloway** of CSIRO's Division of Land Use Research, it promises the fulfilment of a theory he's had since 1961—that its landforms are similar to those in parts of Southern Australia.

Bob will arrive in Patagonia late next month after Christmas in Canada, and will work with colleagues in Argentina to carry out analyses of soil samples.

Bob first visited Patagonia in 1968 when he was working on a project in conjunction with FAO.

□ □

Dr Wayne Meyer recently took up duties at the Division of Irrigation Research in Griffith, to participate in laboratory and field studies of water acquisition by roots of irrigated crop plants.

Dr Meyer previously worked at the University of Texas and more recently at the Soil and Irrigation Research Institute in Pretoria, South Africa.

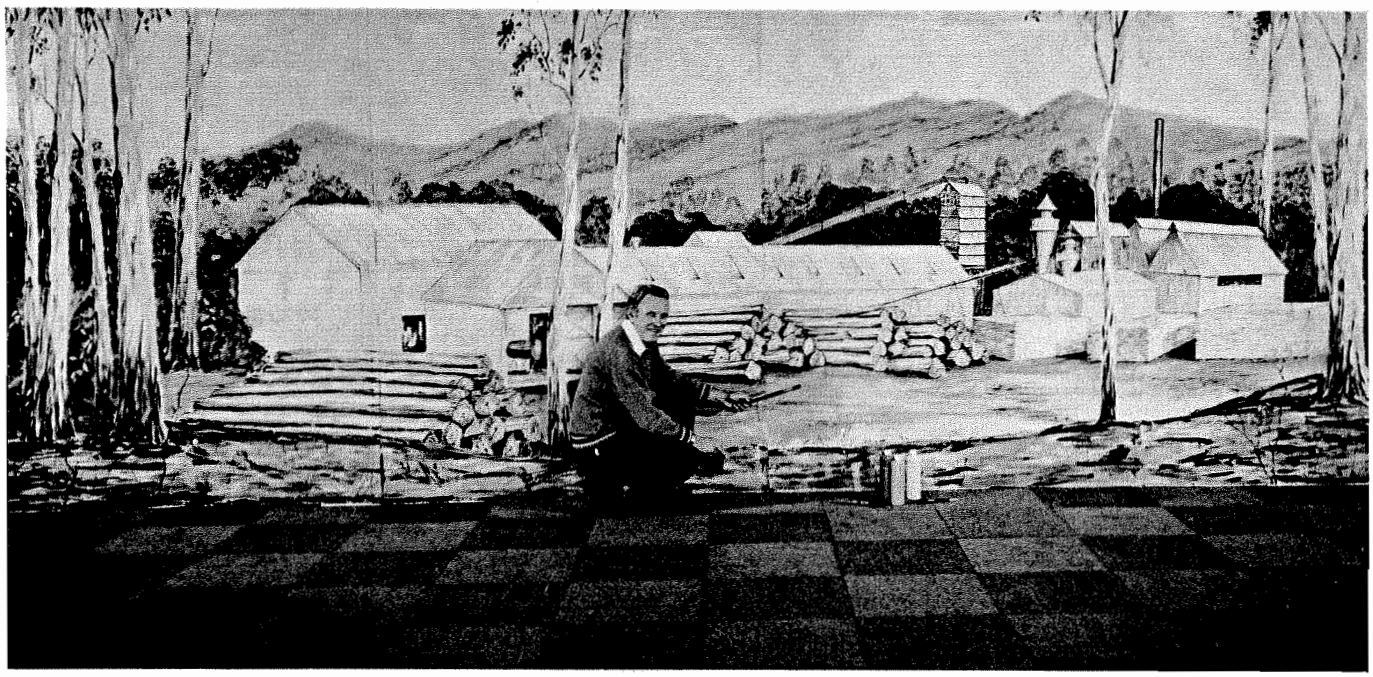
□ □

The degree of Doctor of Science has been awarded by London University to **Dr Godfrey Lance,** former Chief of the Division of Computing Research in Canberra.

Much of the work submitted for the degree was carried out while Dr Lance was with CSIRO.

□ □

The world of the Western rock lobster is under scrutiny by a visiting scientist from the United States. **Dick Ford** is visiting the Division of Fisheries and Oceanography to work for 12 months with **Lindsay Joll** and **Bruce Phillips** on their coastal reef ecology.



This typical Australian bush and sawmill with its realistic log piles and even a sawdust incinerator was created by Bill Lawler, a storeman in the Division of Building Research in Melbourne. Bill, whose hobby is painting, created the scene following a request from the Australian Sawmilling Manufacturers Export Association which used it for a backdrop at a conference and machinery exposition held in Malaysia. Bill used acrylic paints on canvas and took a week to do the artwork.

The Quest for improved scientific understanding

Remember the name 'Questacon'. It could well become Australian science's best-known attraction.

That may seem a bold claim for a participatory science display which began life recently in Canberra's creaking old Ainslie Primary School—but overseas, science displays of a similar nature have hit the jackpot with tourist and science buff alike.

The Questacon is the brainchild of Dr Michael Gore, a physicist at the Australian National University, who was so impressed with similar concepts in Holland and the United States that he decided to seek a grant to do something similar in Canberra.

By his own admission, he wants to keep the whole thing small, at least for the time being. He can only devote part of his time to organisation and administration himself, and the centre will be run by volunteer staff, also on a part-time basis.

The premises are only temporary, on lease to the University from the ACT Schools Authority for a peppercorn rental.

But some gentleman in San Francisco a number of years ago started out in exactly the same way, with makeshift gear in an elderley building, and it now ranks as the city's biggest tourist attraction—the San Francisco Exploratorium.

The jewel of the world's science centres —they're a growth industry in many parts of the Western world—is Philips' futuristic Evoluon in Eindhoven, Holland. It attracts millions every year.

The fatal attraction from the public viewpoint in all such centres is that one can not only see the fundamental scientific principles in action, one can actually participate in their demonstration.

With their natural curiosity, children are particularly susceptible to this lure, and science education becomes not only painless but positively enjoyable.

Canberra's Questacon comprises a series of demonstrations in physics and has two interactive computer terminals.

A harmonograph suspended by four wires from a frame inscribes dazzling patterns with computer-like precision as it obeys the physics of motion in three different directions—the product is an artwork which the student can proudly put up on a wall.

A tall transparent column filled with highly viscous fluid allows the inquirer to observe how the speed of rising air bubbles varies in relation to their frontal area, and how smaller bubbles observe the laws of physics as they are overtaken and flow down and around the large rising bubbles.

Wire shapes dipped in strong detergent demonstrate how surface tension acts to minimise surface area of enclosed spaces.

Old billiard balls leave their traces on butcher's papers to show how angular momentum affects the path of objects after a collision, and ball bearings rolling down straight and curved planes show that the quickest distance between two points is not necessarily the shortest.

People can stand on a roller-mounted disc to demonstrate to their own satisfaction that if they twist the top half of their body one way, their legs will go the opposite way because any action has an equal and opposite reaction.

Two large parabolic dishes (courtesy Telecom) focus the slightest whisper to carry the sound over the length of a long room with crystal clarity, to be detected by a listener standing at the focal point of one dish.

Children can learn the relationship between binary and normal numbers using an interactive computer terminal, while on a second terminal their mathematical skills can be honed as they attempt to land a spacecraft on the surface of the moon without crashing.

It's all stimulating stuff—CSIRO staff who have been through the Questacon were fascinated.

Science's surface hasn't yet been scraped —Dr Gore concedes that so far, the display is largely limited to demonstrations of physics—the other science have not been touched.

He would welcome other displays, but stresses that participatory displays are the most desirable.

CSIRO has rendered assistance, along with many other Canberra educational and community institutions, in establishing the Questacon.

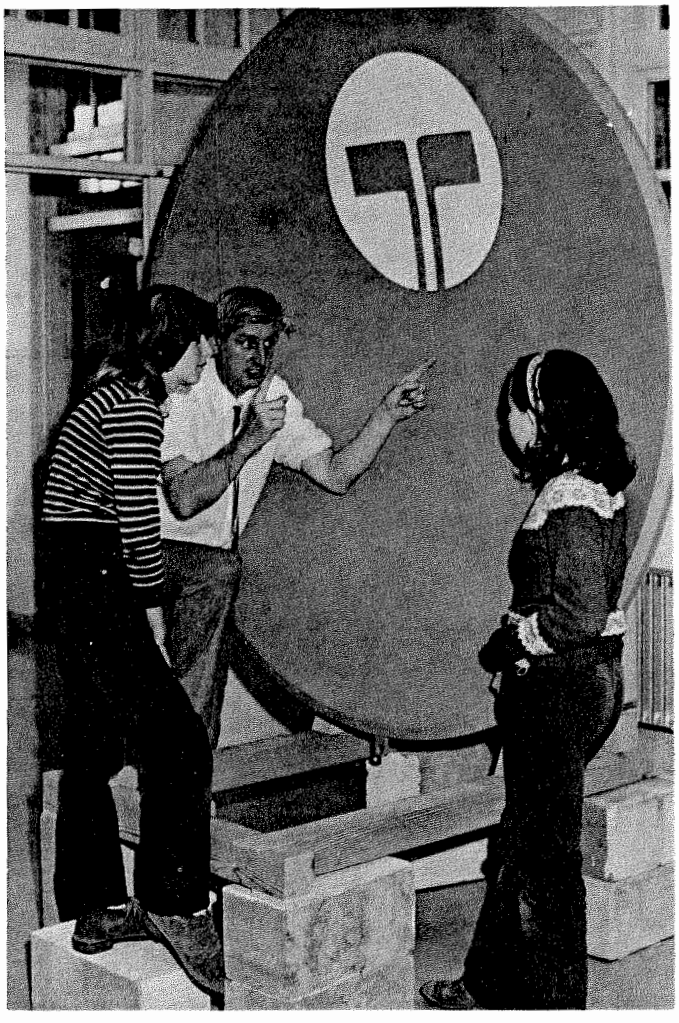
Several eminent, retired scientists, among them some from CSIRO, have volunteered their services for part-time administration of the centre, and are designated 'senior explainers'.

There are also about 60 junior explainers drawn from senior secondary and tertiary students interested in science—everybody seems enthusiastic about the concept.

Initially, the Questacon will open for four half-days each week, because of its reliance upon voluntary help.

It will probably take bookings from Canberra school groups on three on these days, and from a school outside Canberra on the fourth—the national capital is visited by many schools on tour from interstate.

—Graeme O'Neill



Dr Michael Gore, Questacon's Executive Director, with Canberra high school students at the Questacon. The group are examining one of a pair of parabolic dishes donated by Telecom.

International award for CSIRO book

Kosciusko Alpine Flora, the CSIRO publication on the Snowy Mountains, has picked up its second award for design.

The Leipzig Book Fair has awarded the book a distinction in its international book design exhibition "The best-designed books from all over the world". The award will be presented at the 1981 International Book Fair to be held on March 15 in Leipzig.

Earlier, the book was given an outstanding book design award by the Australian Book Publishers Association.

This award was given for an Australian book published during 1979-80.

The citation named CSIRO and William Collins jointly as recipients of the award.

Kosciusko Alpine Flora was written by Colin Totterdell, Dane Wimbush, Max Gray and Alec Costin, and was designed by Alison Forbes.

As reported in the previous issue of CoResearch, the original print run of 5,000 copies has sold out and a reprint of 2,500 has recently been completed.

Applied Physics opens its Melbourne 'branch'

The Division of Applied Physics in Sydney recently opened a "branch office" on the campus of Monash University in the Melbourne suburb of Clayton.

CSIRO's Chairman Dr Paul Wild, officially opened the laboratory at a ceremony on November 24. It's the second "branch" of the Division—the first was opened in the Adelaide suburb of Woodville in 1977.

The new Melbourne laboratory will provide high-precision calibration and measurement services to manufacturing industry in Victoria.

Dr Wild said the new laboratory would concentrate initially on calibration and research in the areas of engineering metrology, physical metrology and electrical measurements.

CONSULTATION

Its staff would be available for consultation by private industry and government agencies.

The Chairman said the laboratory was an important link in the chain relating all measurements back to the fundamental Australian standards held at the National Measurement Laboratory.

The staff of the new laboratory and much of its equipment had previously been employed in the Defence Department's Materials Research Laboratories at Maribyrnong and whose standards function had now been transferred by Government decision to CSIRO.

The Officer-in-Charge of the new laboratory is Mr E. R. Harrison.

Following the opening, two open days were held on Wednesday and Thursday, November 25 and 26, when members of the public were able to see the work of the laboratory.

Graduate salaries

What's the going rate for newly qualified science graduates in Australia?

According to a survey carried out recently by the Monash University Careers and Appointments officer, science graduates who majored in chemistry could expect to start on salaries around $11,500.

The report found that the top pass paid for graduates was $14,600 for law, while a number of graduates from areas such as arts, economics and science had starting salaries of less than $10,000.

An honours degree brought the average starting salary up by about $600 a year.

Starting salaries for Doctors of Philosophy ranged from less than $13,000 in arts, economics engineering and science to $18,000 in all faculties for law.

The survey found that economics graduates majoring in accounting were the "poor cousins" in the starting salary stakes, sometimes beginning on $11,305.

Executive visits during next year

A series of visits to Divisions and Laboratories around Australia have been planned for next year by members of CSIRO's Executive.

The visits will continue the program which first began in 1979 of holding formal Executive meetings in cities and towns in which the Organization maintains a research establishment.

Next year's program will also follow the practice of holding business meetings each second month, with the alternate meetings devoted to "Executive Seminars" on topics of current or emerging interest to CSIRO.

During the past year these seminars have discussed topics such as "Alternative Liquid Fuels", "Maintenance of Soil Fertility", and "Biotechnology". Management topics have also been included.

PROGRAM

The program for next year will begin in February, when the Executive will visit the Division of Applied Physics and the Molecular and Cellular Biology Unit. A seminar on "Using Physics in the '80s" will be conducted at the Division's Lindfield laboratory.

In April, visits are planned for Rockhampton, Townsville and Atherton, with a seminar on "Research in Northern Australia" being held at Townsville.

In June the program will include visits to Canberra Divisions and a seminar on "Australia's Water Resources".

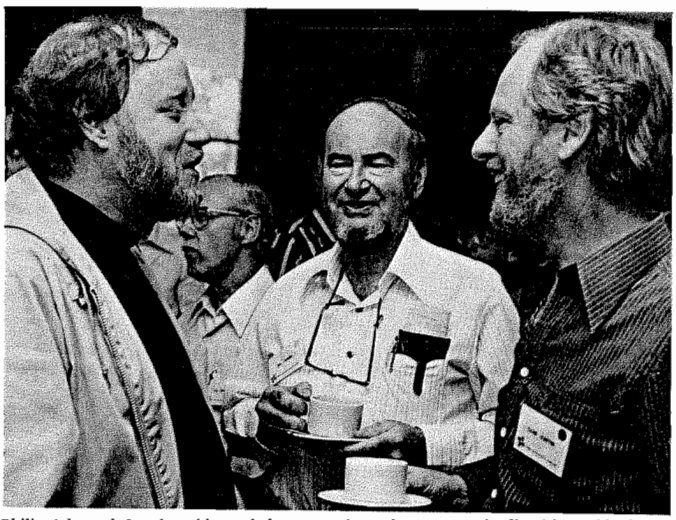
The Division of Animal Production will be visited in August and a seminar will be held in conjunction entitled "Assisting the Mineral Industry — Present and Future".

The Australian National Animal Health Laboratory will be visited during October and a seminar on "The Role of ANAHL" will be held in Geelong.

The last visit for 1981 will be in December when the Executive will visit the Highett site in Melbourne, taking part in a seminar on "Information Technology".

The proceedings of the Executive seminars are included as part of the minutes of the Executive meetings. For further information about the Executive's program for next year, contact Geoff Wines at Headquarters in Canberra, (062-484124).

Mr Brian Woodruff, acting Officer-in-Charge of the Science Communication Unit, right, with Dr Earle Hackett, former Chairman of the Australian Broadcasting Commission. Dr Hackett was keynote speaker at the Communication Symposium held in Canberra earlier this month.



Philip Adams, left, who addressed the symposium, shares tea and talk with David Kimpton from the Bureau of Scientific Services, right, and Gus Berger from the Division of Manufacturing Technology.

Max calls it a day...

Continued from page one

Dr Day sees the past five years as a period of pleasures and successes and some disappointments.

'One of the immense difficulties of the subject of forestry is that in my opinion, most Australians just don't realise the breadth of the problem,' he said.

'Let's look at some of the products of the forest . . . most Australian cities get their water from a forest catchment so that's a major product . . . wood and wood products are surely used by every Australian every day either as a newspaper, document, chair, table or even to boil the billy.

'You can say that of just about no other resource.

'In the third world countries, collecting wood for fuel is equally important as other tasks like grinding grain and collecting water.

'In some countries, for example in Nepal, some women spend six hours a day just collecting wood,' he said.

'Then of course in Australia there are recreational uses, and wildlife habitats which are difficult to put a dollar price on,' he added,

Dr Day sees the future management of forests as a matter of vital concern to all Australians—not simply those with a particular interest in the environmental aspect.

'But it's difficult to sell a non-crisis topic—forests have had a relatively low priority and this makes it hard to keep the future of the Australian forest permanently in the minds of the population at large,' he said.

'You can make films, radio broadcasts, prepare talks and articles but who takes any notice of them?

'It's a subject that hasn't the excitement to create the basic desire to know.'

On the subject of bushfires and forest fires, Dr Day agrees that this is one area that does attract general attention.

'We are going to see more of these big fires—the fact that we haven't had a major catastrophe for the last 10 years or so means little, this could be the year.

'We have been trying to draw people's attention to the difficulties of fire research in the past two years to try to get them thinking about the problem.

'It seemed all the more unbelievable then, that a recent committee of review into this Division recommended that there be no expansion of work on bushfires,' he said.

'People are looking to us for basic research in this area—in this country the fires are so much worse than elsewhere—we must continue this work,' Dr Day said.

After retirement, Dr Day and his wife Barbara plan to see more of Australia—from the ground rather than at 30,000 feet in an aircraft.

They have a son Jonathan who is a ranger at the Kakadu National Park in the Northern Territory, a daughter in Western Australia and another daughter in Cooma.

Perhaps the Cooma-based daughter Pamela may see a little more of her parents than the other two children next year, as Dr Day passes through on his way to Kosciusko where he is collecting information for a book he plans to publish on lichen in the Kosciusko National Park. The photographs in the book are being taken by Colin Totterdell, who illustrated the highly successful CSIRO book 'Alpine Flora'.

Dr Day is a member of a number of international scientific bodies which will take him overseas regularly.

'But I want to see Australia first,' he added.

Interest rate up on Co-op deposits

The CSIRO Co-operative Credit Society Ltd in Melbourne has increased the rates of interest payable on deposits taking effect from December 1, 1980.

A society spokesman, Michael Johnston, said the increased rates now applicable meant that 10 per cent interest would be paid on payroll deductions and direct deposits at call, while 11 per cent would be paid on direct deposits with a minimum term of one year and on a cheque a month scheme.

Further information can be obtained by calling Michael on Melbourne 268 7287.

Workshop on LANDSAT

A workshop to facilitate the most efficient use and transfer of experience, methods and results between Landsat users will be held at the Division of Land Resources Management, Deniliquin Laboratory from February 24-26, 1981.

The aim is to form a national overview of current research and expertise in the field in CSIRO, which is considered timely now the Australian Landsat station has become fully operational.

Organiser of the workshop, Dr Dean Graetz (L.R.M. Rangelands Research, Deniliquin), says it is anticipated greater availability of Landsat products will increase research interest in Landsat's capabilities.

'The workshop will allow users and potential users of Landsat to become familiar with all current projects and provide the opportunity for common interest groups to explore the possibility of software exchange, awareness libraries, common Landsat tape libraries and equipment pools,' he said.

People interested in attending the workshop should contact either Dean Graetz, Max Gentle or Roger Pech, LRM, Private Bag, Deniliquin 2710 or phone (058) 811133 preferably before January.

CSIRO film on rabbits goes international

A copy of the CSIRO film on the rabbit in Australia was included in the luggage taken to Brazil recently by Dr Greg Tegart, a Member of CSIRO's Executive.

The film, released earlier this year by the Film and Video Centre, details the history of rabbits in Australia and explains the introduction of methods to control rabbit plagues.

Dr Tegart presented a copy of the film to Miss Vera de Beaurepaire Aragao during a visit to Rio de Janeiro. Miss Aragao's father Dr H. B. Aragao is remembered in Australia for his work on the use of the myxoma virus for the control of rabbits.

Dr Tegart was in Brazil as a guest of the National Council for Scientific and Technological Development, the Brazilian equivalent of CSIRO.

During his two-week stay in Brazil he visited, in addition to Rio, Brasilia Belo Horizonte, Sao Paulo and Piracicaba.

He saw the CVRD iron ore mine at Itabira, the Aerospace Technical Centre, National Space Commission, the National Atomic Energy Commission and various technological research centres.

CAT

MARCONI young scientist award

Since this is the final CAT column for 1980, the year in which the Communication Advisory Team was formed, it seems opportune to recall CAT's activities during the nine months since it was established.

CAT is composed of 10 people representing CSIRO's five Institutes, the Bureau of Scientific Services, Headquarters and the Regional Administrative Offices.

CAT met three times during the year, in Sydney, Canberra and in Melbourne.

Discussion has taken place on a wide range of subjects, while recommendations on five specific topics have been made to the Director of the Bureau of Scientific Services, Mr Sam Lattimore.

Two of the five recommendations which were made at the second and third meetings have been acted on while acknowledgement has been received of the remaining three.

CAT's first recommendation drew the attention of the Bureau Director to the need for a summary of salient points to be attached to bulky documents from Headquarters.

In reply, Mr Lattimore said the Executive Secretary Mr L.G. Wilson had instructed staff in the Office of the Executive to ensure that any documents generally distributed to Chiefs should contain a summary at the front. Mr Wilson said he had asked Mr Kevin Thrift, Secretary (Personnel) and Mr Howard Crozier, Secretary (Finance and Administration) to give consideration to providing similar summaries for documents initiated by their Branches.

The second CAT recommendation concerned the establishment of a working party, comprising representatives of Divisions and the Science Communication Unit, to prepare an attractive package for use by the Museum of Applied Arts and Science, Sydney.

Mr Lattimore replied that a working party had been established to channel a CSIRO input to all museums, These members, Mr David Kimpton, Mrs Dorothy Braxton, Ms Yvonne Esplin and Mr Colin Smith will prepare a report for Mr Lattimore by March 1981.

CAT's third recommendation drew Mr Lattimore's attention to the lack of any mechanism for handling general inquiries to CSIRO in the Brisbane area. CAT recommended the appointment of an information officer as a matter of urgency.

The fourth recommendation asked that CSIRO's telephone answering services be reviewed. CAT asked that the review aim to develop a system where all requests for information were answered promptly and courteously with the most important requests receiving the attention deserved. Other areas to be included in the review should be the training of telephonists, listing design in telephone directories, use of recorded tapes for repetitive calls and after hours messages.

The fifth recommendation concerned the style of English being used in circulars. It could lead to communication problems within CSIRO. CAT has recommended that, before release, circulars be quickly vetted by a small editorial panel to ensure that they have been written in plain English.

These three recommendations are currently being studied within the Director's office.

Other topics currently being studied by members of CAT are the training of CSIRO communicators and the possibility of visits by overseas communication experts.

CAT's next meeting will be held at the Sydney R.A.O. over two days beginning on February 25, 1981.

Peter Russ, left, editor/writer at CSIRO's Division of Chemical Technology in Melbourne, accepts the Marconi Young Scientist award from the Governor General Sir Zelman Cowen. Holding the award is the recipient last year, Professor Yash Pal, Director of the Space Applications Centre of India's Space Research Organisation. Peter was selected by a committee of ANZAAS. The award will enable him to study at the Aspen Institute for Humanistic Studies, Colorado.

ABC stages VELA X-the Super nova 'detective story'

Four CSIRO radiophysicists are among the "stars" of a program the ABC is describing as the biggest and most provocative documentary it has ever made.

The program is called "VELA X – the Supernova Story" and it will be screened nationally on Monday February 2 at 8.30 pm.

The documentary has been written, produced and directed by Michael Daley, Executive Producer of TV Science in the ABC.

CSIRO scientists who figure prominently in the production are:

Grote Reber, "the wildcat astronomer", inventor of the first parabolic antenna or "dish", now honorary fellow at CSIRO Hobart. He is seen with his original (1937) "dish".

John Bolton, formerly Director of the National Radio Observatory Parkes, who discusses his discovery in 1948 of the Crab Nebula as the first radio star.

Dr Doug Milne, Radiophysics, who discovered with the Parkes radio-telescope in 1966 in the course of research for his PhD thesis, that Vela X is a supernova remnant, measured its distance and tried to determine its age.

Dr Dick Manchester, Radiophysics, who led a remarkable effort to get precise coordinates for the Vela pulsar that subsequently led to the discovery with the Anglo-Australian telescope of light flashes from the pulsar.

Vela X is a detective story on a cosmic scale which produces a radically new view of creation, shows how we humans are "the children of the stars".

The 100-minute film encapsulates the history of science and civilisation around the story of a gigantic star which exploded —became a supernova in other words— thousands of years ago.

SPECTACULAR

The spectacular cosmic event, as witnessed by the Ancient Sumerians, is argued controversially to have been the trigger that initiated civilisation, gave rise to the invention of writing, mathematics and astronomy.

Vela X is what remains. The X is an astronomical rating for "unknown" which radio astronomers gave more than 20 years ago to a mysterious radio source in the constellation Vela.

The film tells the dramatic story of how Australian astronomers have removed much of the X-rating and, in doing so, helped bring about a revolution in science, with profound implications for the story of cosmic creation.

"VELA X" is produced in association with the Anglo-Australian Telescope Board, which controls the 3.9 m telescope at Siding Spring; CSIRO's Division of Radiophysics, which controls the Parkes radio telescope and the US National Aeronautics and Space Administration (NASA).

The film is narrated by well-known actor, Michael Pate.

Filmed in Australia, the United States, Ireland, England, Moscow and at the South Pole, the film has been more than a year in production.

SHOW-CASE

It "show-cases" science in a way that has seldom, if ever, before been done on Australian television, embracing astronomy, (optical, radio, X-ray and Cosmic Ray) archaeology, linguistics, geology, glaciology, climatology, palaeontology and computer modelling.

The breadth of the program is a measure of how pervasive supernovae, the super stars, have become in modern science. They are responsible for the pulsars or neutron stars, for black holes, for the creation of the heavy elements, for, as the film reports, the creation of the solar system, for cosmic rays that may, in the past, have brought about the extinction of the dinosaurs and may be contributing to continuing mutations in life on Earth, including human life. They are also, it appears, the "spark plugs", providing the drive-force for spiral galaxies like our own.

As the film notes, the study of supernovae is producing a new version of the Book of Genesis.

'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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