CoResearch

CSIRO's staff newspaper Dec '84/Jan '85 276

New space office set up

CSIRO has set up an Office for Space Science and Applications (COSSA) to co-ordinate and expand its space research and development.

The Chairman, Dr Wild, said the office would concentrate CSIRO's effort on areas where Australia had particular needs or advantages, including communications, meteorology and remote sensing.

'Our program will be designed to assist Australian industry to establish itself in specific areas of the international space market,' Dr Wild said.

'Australia's space effort is lagging badly. While Canada, Europe, Japan and USA spend from US$2.50 to US$25 per head on space research and development, Australian expenditure is about 33 US cents per head.

'By the end of 1985, Australia will have spent about $500 million on operational space systems such as Intelsat and Aussat, but relatively little of the satellite equipment associated with these systems has been manufactured in Australia.'

cont. p.7

Changes:

New planning strategy

The most significant changes to CSIRO's research planning and management since those resulting from the Birch Inquiry will come into effect in 1985.

The changes stem from two decisions by the Executive late last year. They are intended to improve CSIRO's ability to respond to the changing environment in industry and the community and to cope with periods of little or no growth in funding.

The first decision was to set up Executive working parties to advise on five difficult issues:

- the distribution of CSIRO resources across industry sectors, research areas or technologies
- the concentration of its research effort into fewer programs
- the redeployment and retraining of staff
- how to measure the benefits of CSIRO research
- how to transfer most effectively the results of CSIRO research to industry and the community.

In a letter to Chiefs and O-i-Cs the Chairman, Dr Wild, said the conclusions reached by the five working parties, which comprise Executive Members and Directors, would be considered by the Executive in the first half of this year.

'These deliberations will form the basis of an Organizational strategy for coming to grips with these challenging questions in the years ahead,' he said.

'Before such a strategy is finally decided upon, the Executive will circulate a draft document to all Divisions and Units inviting comment and discussion from all staff.'

The second decision was to accept the recommendations of the committee which reviewed CSIRO's strategic research planning activities. The Committee said CSIRO should adopt a system of corporate planning similar to those used in the private sector but adapted to its special needs. The Committee was chaired by Dr Keith Boardman and included a science policy expert, corporate planner and nominees of the Advisory Council and the Australian Science and Technology Council.

RESEARCH PLANNING

The Committee said the recommended corporate planning system should be primarily concerned with the planning of research.

Its aims would be to ensure continuing relevance of CSIRO's work by fostering close co-operation between users, scientists and research managers; to identify and assess new research opportunities with special relevance to Australia; and to free resources from lower priority areas for new opportunities so that CSIRO stays at the leading edge of technologies most relevant to Australia's future.

The Committee said the corporate planning system should decentralize research planning and define more clearly the planning responsibilities of the Executive, Directors, Chiefs and senior administrators.

Chiefs, with the assistance of their program leaders, were best placed to develop most plans for research expansions, contractions, terminations and re-orientations at the program level, the Committee said.

'Institute Directors and full-time Members of the Executive should be responsible for integrating Chiefs' plans into Institute and Organization-wide plans, and for injecting into these plans broader perspectives and ideas, taking account of industry and community needs and government priorities.'

'The Executive and the CSIRO Advisory Council should continue to interact on the most important strategic issues relating to the planning of research and the management of the Organization.'

cont. p.8

And mind you don't lose it

A theoretical physicist turned atmospheric scientist has won this year's David Rivett Medal.

Dr Jorgen Frederiksen of the Division of Atmospheric Research was awarded the Medal by the Officers' Association for his work on atmospheric dynamics.

He provided the first comprehensive theory capable of providing a unified explanation of the formation of a very wide range of atmospheric disturbances.

Dr Frederiksen has developed a three-dimensional theory on atmospheric instability and incorporated it into a mathematical model that seems to reflect the real-life situation.

The theory is rapidly becoming accepted internationally as an explanation for 'blocking' — the scourge of the TV weather person who has to explain why predicted weather changes do not occur.

Dr Frederiksen has also successfully applied statistical mechanical methods for the first time to a number of problems in atmospheric science, such as growth of errors in numerical weather prediction models.

A Principal Research Scientist, Dr Frederiksen, 38, has an international reputation, collaborates extensively both nationally and internationally and has an extensive publication record.

He was awarded the David Rivett Medal as a young CSIRO officer doing outstanding research within the Organization.

The Medal is given every two years, alternately for work in the biological and physical sciences, and commemorates Sir David Rivett, Chief Executive Officer and later Chairman of the Council for Scientific and Industrial Research (CSIR).

The President of the Officers' Association, Dr Roy Bond, appears to be telling Dr Jorgen Frederiksen not to lose his David Rivett Medal, which was awarded to him at the Division of Atmospheric Research recently.

Photograph by David Whillas

Letters to the Editor

Dear Editor,

Is CSIRO Capable of Change?

We have heard much in recent months about how CSIRO has changed, and will continue to change. We have been told that CSIRO is becoming more responsive to the needs of the Australian community at large, and that it is now better able to develop to commercial reality its numerous inventions and discoveries.

Let us hope that this is all true and that indeed these worthwhile changes will be made so that CSIRO is even better than the generally excellent organization it now is. I for one, however, treat some of these recent pronouncements with a degree of scepticism. On past performance I find it difficult to believe that public servants of the types we appear to have in parts of our Canberra administration will be able to muster even a fraction of the entrepreneurial skills and drive needed for the commercialization process to be carried out successfully. The example on which I base this scepticism is as follows.

The eight *Discovering Soils* booklets, produced by the Division of Soils, have collectively been sold in numbers now exceeding 300 000 copies. I don't know what the profit has been from the sales of these booklets but if it were very conservatively put at $0.50 per booklet, that is a lot of money.

Despite these sales figures, there was no money available for the printing of No. 8. We had to *give* the manuscript to an outside publisher in order to get it printed at all.

With recent pronouncements, notably in Policy Circular No. 84/22 (CSIRO Revenue), one would have thought that success would not have been further penalized. Not so, as we have recently found out during the production of booklet No. 9. The money for printing this booklet has been provided, but despite earlier verbal assurances from Finance Section, it now transpires there is no money for other preproduction expenses or for a modest (ca. $2500) expenditure on publicity.

Thus, despite the probability that a reasonable amount of publicity will generate profits of at least $25 000 in the first year of publication (the booklet is about potting mixes and the care of plants growing in them), the 'system' is so unimaginative and conservative that it cannot commit a fraction of this or past profit to generate further profits. At present, therefore, the general rule seems to be that the more successful you are in producing popular publications, the poorer you become. Some incentive!

I suggest that Finance Section adopt the Chairman's recent discussion theme and create some years of change. One outcome of their forced activity would be for them to set up a Publications Fund. The capital of this fund would be used to produce saleable publications (other than the journals). Part of the money collected from sales would maintain this Fund with the rest going to Treasury as at present. The Fund would be used to pay publication costs (drawings, artwork, typesetting, printing). Any CSIRO author wanting to publish a saleable publication could approach the trustees of the Fund for finance — surely a much simpler procedure than that currently in vogue.

I understand that our Editor-in-Chief, and some of the people in BOSS have been trying for years to get something like a Publications Fund established, so far without success.

With the current emphasis on change, efficiency and accountability, it appears reasonable to bring these elements to the saleable publications area. If not, we will be justified in concluding that the pronouncements from HQ are nothing more than a lot of hot air from a bunch of small-minded chair-warmers.

K A Handreck
Scientific Liaison Officer, Soils
19.12.84

The Editor,

Within the final two paragraphs of his letter to the Editor, (October, 1984), the Chief of the Division of Chemical Physics suggests that mechanisms ought to be introduced in CSIRO for accelerating the removal of unproductive permanent staff. I should like to point out that to wield an axe within the Organization's 'dead-wood' would be to strike at the very structure of its foundation.

A H Reisner
Molecular Biology
13.12.84

Computers demystified

Eminent physicist, Vice President and Chief Scientist of IBM, Dr Lewis Branscomb, delivered this year's David Rivett Memorial Lecture.

He examined the most significant elements of evolving information technology, both at the microelectronics and systems levels, and how these changes were ushering in a whole new working environment for scientists and engineers, university faculties and students.

He also discussed 'Distributed Science': the sharing of not only research equipment, but the knowledge and ingenuity of scientists themselves. He explained how these same trends will ultimately affect end users in all kinds of commercial and public institutions and how expert systems and other 'Artificial Intelligence' may further reinforce the rising demand for computing power.

For all those who struggle with computers, word processors or even just small hand calculators, Dr Branscomb went unerringly to the crux of the matter:

I'm sick and tired of this machine; I wish that they would sell it.

It never does just what I want, but only what I tell it.'

Above, Dr Branscomb, centre, speaks with guests at a luncheon held in his honour in Perth. From left, the WA Attorney General and Minister for Budget Management and Prisons, Mr Berinson, the Chief of Groundwater Research, Mr Perry, Dr Branscomb, the Chairman of the Advisory Committee for the David Rivett Memorial Lecture, Professor Craig and Professor Cole of the University of Western Australia.

Photograph by Bill van Aken.

But what's it for...?

In the lead up to the Federal Election in December, Senator Fred Chaney, Leader of the Opposition in the Senate, examined car parts of the future (metal/ceramic reaction bonded joints) which were developed at the Division of Chemical Physics. Senator Chaney said he was surprised and pleased at the diverse nature of the many applied research projects he was shown, and at the enthusiasm of staff.

Experts to co-ordinate topical research

A new form of research co-ordination that crosses divisional boundaries in the Institute of Biological Resources has been initiated.

Institute Director Dr Michael Pitman has appointed specialists in the fields of plant pathology and root/soil biology to co-ordinate research in those areas.

Dr Albert Rovira from the Division of Soils in Adelaide will work on integrating the Institute's plant pathology research and will liaise with State Departments, universities and industries which use that research.

Both he and Dr John Passioura, who will take the same position for root/soil biology, will advise the Director and Chiefs on their areas of research and on opportunities for the development of that research.

Dr Pitman said this was the first time such a step had been taken in the Institute's research management. He hoped that it would help communication between scientists in similar areas throughout the Institute, as well as provide useful advice to the Chiefs and himself about potential for development in these areas.

Dr Rovira said he would carry on his research program on soilborne root diseases of the pasture cereal rotation system in southern Australia, but would step down as head of Soil Biology at the Division. He would visit Canberra and Brisbane to familiarize himself with CSIRO's plant pathology research early in 1985.

His appointment follows the Review of Plant Pathology, which decided not to set up a Division of Plant Pathology because the research was so diverse and widespread in the Institute.

Dr Passioura said he would take about six weeks each year to visit those parts of the Institute involved with root/soil biology and would organize an annual workshop for the Institute. Although these would involve some non-CSIRO researchers, and he would take every opportunity to study work done outside CSIRO, his area did not involve as much outside liaison as Dr Rovira's.

He would also continue his research at the Division of Plant Industry, which is about the physiology of drought and salinity affected plants; and particularly their roots.

Health and safety policy revised

The Executive has reviewed and revised the Organization's policy on Occupational Health and Safety.

Dr Wild said the new policy statement stated that it was a fundamental requirement that CSIRO's activities be carried out in a healthy and safe way.

'The objective is the elimination of all incidents which could result in personal injury, occupational health problems or adverse effects on the environment.

'A prime responsibility of all the Organization's staff is to ensure that their jobs are performed safely and without detriment to themselves, other members of the staff or the community.

'The Organization will provide healthy and safe working conditions, define and implement safe working practices, and provide information on, and control measures for, hazards in the workplace.

'Staff with responsibility for the management or supervision of other staff will be held accountable to the Organization for the occupational health and safety of people working under their direction.

'Conformity is required with relevant Commonwealth legislation and with the provisions of the Code of General Principles on Occupational Safety and Health in Australian Government Employment.

'In the absence of appropriate Commonwealth legislation, it shall be the Organizations's aim to conform to the standards prescribed by the laws of the State or Territory in which each site or location is situated.'

The Manager of the Health and Safety Unit, Mr Gary Knobel, said that all Directors, Chiefs and O-i-Cs would arrange for a review of all their current health and safety policies and practices to bring them into line with the new policy.

Every staff member will be accountable for ensuring her or his work environment is conducive to good health and safety, though Chiefs and O-i-Cs will be responsible for setting and maintaining safety and health standards and practices.

The new policy was developed by CSIRO's Health and Safety Committee and Mr Knobel will discuss its implementation at Institute meetings of Chiefs and O-i-Cs.

A full policy statement will be released later this month.

Publishing:

Aid for Indonesia

CSIRO Editorial and Publications Service is now involved in publishing an agricultural research journal for the Indonesian government.

Based in tropical Bogor, in the hills outside Jakarta and near CSIRO's animal research station in Ciawi, an editor is establishing and running the *Indonesian Journal of Crop Science* (IJCS) for three years.

The Australian Centre for International Agricultural Research (ACIAR) is funding the project and the Editorial and Publications Service with its extensive experience in publishing the national journals of research, was chosen to manage it.

Mr Paul Stapleton, an experienced editor, is helping the Indonesians set up the journal and establish the refereeing, editing and production procedures necessary in a research-level publication. He has worked for CSIRO and has more than 10 years experience in science publishing in Australia and Europe.

The Indonesians first suggested the project as a contribution to their agricultural research system. With the country's rapidly growing population, there is a desperate need to increase agricultural production, and a primary research journal is seen as one way of disseminating major advances in the field.

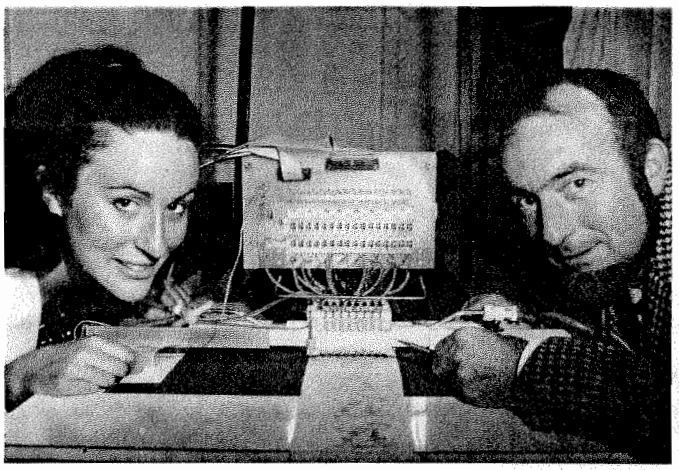
'Everyone here agrees that this is a worthwhile project,' Mr Stapleton said, 'but it is a major undertaking for an Indonesian scientist to write a paper in English. Australian scientists have trouble doing it and they are working in their own language!'

'As a result of Indonesia's ambitious education programs, more and more trained research personnel are entering the agricultural area, and starting important research programs. In the future IJCS will be a perfect means of publishing the results from these.'

'As well as running the journal I have now run three science-writing workshops. They are well-received but experience is showing that the existing science-writing manuals have not been written with a foreign audience in mind. Consequently I am writing a 'guide to science writing' aimed at non-native English speakers.

'I will also be teaching a print communications course at the Bogor Agricultural University as part of an extensive 'Rural Communications' MSc course that aims to produce agricultural extension workers to interpret the primary research results for the farmers and managers, who can best use the knowledge,' he added.

Printed wool for all



Mr Les Wills and Ms Miranda Devine of the Division of Textile Physics pose with the essential machinery of a new computer controlled technique which should bring printed woollen fabrics out of the exclusive high-fashion bracket into more general availability. The technique will reduce the preparation time for new print designs from two months to two hours.

Invented by CSIRO over eight years, the exclusive rights to develop the new 'jet printing' technique were signed over to Wilcom Pty Ltd in Sydney recently.

Sprightly to the end

RV Sprightly *arrived in Hobart under the CSIRO banner for the last time in mid-December. Dr Angus Mc Ewan, Chief of the Division of Oceanography was on hand to welcome* Sprightly's *Captain George Cavill, left.*

Photograph by Thor Carter

***Research Vessel Sprightly* finished her last marine science cruise when she docked at the new Marine Laboratories on 13 December.**

Captain George Cavill, who commanded *Sprightly* for the 11 years she was chartered by CSIRO, was at the helm. Later, the Laboratories gave him a champagne and chicken farewell and a photograph album of his part in the *Sprightly* era.

Sprightly began service with CSIRO in 1973 during oceanographic and fisheries studies off the West Australian coast. Oceanographer Mr Frederick Boland was on board, as he was during the last cruise, and witnessed just one of many *Sprightly* incidents.

On that very first voyage, as she was returning to Fremantle, the oil stove in the galley caught fire, flooding the wheelhouse with smoke. Captain Cavill didn't turn a hair, but the pilot panicked somewhat and threw all the windows open.

On another occasion, a crew member broke his leg, necessitating a return to harbour. In his haste and enthusiasm, another crew member leapt overboard to tie the boat to the wharf...and broke his leg. The previously radioed ambulance arrived and carted him off to hospital but had to be recalled to collect the original casualty.

Since 1978, *Sprightly* has been involved mainly in oceanographic research and has logged almost 100 cruises, from single day excursions through the Sydney Heads to collect pre-placed current meters, to a month long trip to the Solomon Islands, where she took part in studies for the Intergovernmental Oceanographic Commission of UNESCO.

During the same year, 1982, *Sprightly* circumnavigated Australia in a series of cruises during Aurorex (the Australian Regional Oceanographic Research Expeditions).

Her last cruise had scientists from the Marine Laboratories, the Division of Atmospheric Research and Victorian Institute of Marine Science, and made conductivity, temperature and depth (CTD) profile surveys near the oil platforms in Bass Strait and off the NSW coast near Eden and Merimbula.

The *Sprightly* era began 41 years ago, when she was used as a salvage tug by the British Navy.

After being transferred to the RAN in 1944, *Sprightly* rescued a number of ships, including *SS Ormiston*, which was torpedoed by a Japanese submarine off the NSW coast near Coffs Harbour.

After the War, she was used for salvage and rescue work and general duties until mothballed by the RAN.

Purchased in 1969 as a salvage rescue tug by Tom Korevaar and Sons Pty Ltd, a marine contracting firm, she was a weather stand-by ship in Bass Strait for a year.

The Bureau of Mineral Resources chartered *Sprightly* for a round Tasmania survey and several oil exploration companies used her for survey work before she was again laid up for a year and chartered by CSIRO.

Since *Sprightly* was converted to scientific research purposes, she has covered nearly half a million nautical miles from the Antarctic Circle to the Equator.

However, she is now likely to be laid up once again, though Tom Korevaar said he was keen to keep her working as a survey research vessel.

'She's not young, but she's in peak condition and there are at least four and probably ten years of work left in her,' he said.

The Chairman is on holiday

Two to answer to and for

In the Ministerial reshuffle following the Federal election, Senator Button has taken over the technology component of the science and technology portfolio to become Minister for Industry, Technology and Commerce.

His new Department will absorb the technology responsibilities of the old Department of Science and Technology.

The former Minister for Science and Technology, Mr Jones, becomes Minister for Science, with responsibility for CSIRO, the new Department of Science and the Commission for the Future.

He is also Minister assisting the Minister for Industry, Technology and Commerce.

Animal welfare c'tee set up

CSIRO has established a special committee to advise the Organization on ethical and social issues associated with the care and use of animals in research.

Dr Keith Boardman, Member of the Executive and chairman of the new committee, said the committee would include leading proponents of animal welfare, representatives of the livestock industries and academics.

'The Executive decided to set up the committee in response to the growing community concern for the welfare of animals used in research,' Dr Boardman said.

'What we are seeking to do in setting up the committee is to avoid the polarization between animal welfare groups and scientists that has occurred in some other countries.

'The specific issues we tackle will be determined at the committee's first meeting in February. But clearly a central issue is the continued use of animals in experiments.

'Related to this is the importance of developing and, where possible, using alternatives to the use of animals, such as cell culture techniques.'

The terms of reference of the new committee, called the Advisory Committee on the Ethics of Animal Research, include advising the Executive on:

- ethical issues and changing public perceptions about the care and use of animals in research,
- the views of animal welfare groups on the care and use of animals in research,
- the principles to be followed in the development of codes of care and practice,
- the principles of operation of CSIRO's existing Animal Experimentation Ethics Committees,
- the education of the public about the use of animals in research.

The committee members are:

Dr Keith Boardman;

Dr Alan Donald, Chief of the Division of Animal Health;

Professor Peter Singer, Director of the Centre for Human Bioethics at Monash University;

Professor John McCloskey, of the Department of Philosophy at La Trobe University;

Mr John Strachan, President of RSPCA, Australia;

Ms Christine Townend, Secretary of the Australian Federation of Animal Societies;

Mr Warren Starick, Chairman of the National Farmers' Federation's Livestock Industries Group;

Mr Peter Taylor, a veterinarian and grazier;

Dr Margaret Rose, of the School of Surgery at the University of NSW.

Sun man honoured

Solar physicist Dr Ron Giovanelli, who played a dominant role in Australian physics for more than 40 years, was remembered with a colloquium, 'Past progress and future developments in solar and stellar atmospheric physics' in Sydney recently.

Dr Wild told the international meeting of Dr Giovanelli's passion for the sun and how two of his original concepts — the origin of solar flares and the discovery of the temperatures of free electrons in the sun's chromosphere — had a profound influence on the development of solar physics.

Dr Giovanelli's widow is pictured above at the colloquium with a sundial dedicated to her husband.

Experts to visit under new scheme

Distinguished overseas scientists will be able to visit CSIRO in a new Fellowship scheme announced recently.

The Sir Frederick McMaster Fellowships will enable around three very senior and distinguished scientists in agriculture, veterinary science and related areas to come to CSIRO for three to 12 months each financial year.

Sir Frederick McMaster, a prominent NSW grazier, bequeathed a substantial proportion of the shares in his pastoral company to CSIRO for research in the fields of veterinary science and agriculture.

Following the sale of the shares, the Executive decided to create a number of Sir Frederick McMaster Fellowships to support eminent overseas scientists to work in Divisions and Units in the Institutes of Biological Resources and Animal and Food Sciences.

Selection will be made by the full-time Member of the Executive responsible for these areas of research, the Directors of the relevant Institutes and a part-time Member of the Executive who has some involvement with veterinary science or agriculture.

Selections are also made in consultation with the Chiefs of proposed host Divisions.

The Fellowships have been advertised world-wide and applications close 1 March.

Institute rewards workers of excellence

Two positions to support work of excellence have been granted to Division of Plant Industry scientists, the Director of the Institute of Biological Resources announced recently.

Dr Pitman said Dr TJ Higgins and Dr Jeremy Burden would each be able to appoint a research scientist to support his research for three years.

'These awards are intended for younger scientists who demonstrate the potential for work of excellence,' Dr Pitman said.

'They were awarded competitively under an annual system operated through the Institute.'

Dr Higgins, a Principal Research Scientist working on seed proteins, won the Officers' Association's David Rivett Medal in 1983. The scientist will work with him on directed mutation of one of the protein sequence genes to try and modify the amino acid composition of the legume storage proteins so they provide a better diet for humans and other monogastric animals.

Dr Burden, a Senior Research Scientist, researches rust diseases of cereals and oil seed crops and has recently returned from the major wheat rust laboratory in the USA. The new appointee to work with him will experimentally test the hypothesis of mixed resistances as a basis for disease control in agricultural crops.

Mr Ian Eustace from the Meat Research Laboratory in Brisbane has been granted a twelve month Australian Meat Research Council Overseas Study Award to study new and rapid methods for identifying and enumerating the microbiological contents of meat and meat products. He hopes to visit both the United States and United Kingdom.

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Ms Doris Leadbetter, well known Librarian and initiator of the extremely successful *Scanfile*, has retired. *Scanfile*, CSIRO's science policy abstract newsletter is used Australia-wide both outside and inside the Organization. Doris was also a familiar face at the organizing end of National Science Forum, and regularly addressed outside organizations. One of her more recent exploits was to organize, along with others, the widely reported Budget protest by scientists outside Parliament House. In retirement she intends to continue working on *Scanfile* and to perhaps initiate similar newsletters on high technology, or economics/politics.

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The Board of the Institution of Engineers, Australia, has awarded its 1984 Warren Medal for the best paper in civil engineering to several researchers from the Division of Water and Land Resources, namely **Mr Neil Body, Dr Peter Laut, Dr Mike Austin, Mr Jim Goodspeed** and **Dr Dan Faith**.

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The Chairman of the WA State Committee, **Dr John de Laeter**, has been made a Fellow of the Australian Academy of Technological Sciences. Dr de Laeter is associate director of the Western Australian Institute of Technology's engineering and science division and Chairman of the WA Science, Industry and Technology Council.

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The Manager of the Printing Unit, **Mr Paul Lynch**, has been admitted to the Institute of Printing (UK) as an Associate Member in recognition of his Collie Trust report on developments in short-run printing and his work in the printing industry in Australia.

Mr Harry Heath has retired from the Division of Chemical and Wood Technology after a career studying sawmills and researching particleboard and 'clean creosote'. He was the information officer for the Divisions of Forest Products, Building Research and Chemical and Wood Technology, and has been active in the Technical Association in Victoria.

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Dr John Taylor of the Division of Wildlife and Rangelands Research in Darwin was recently awarded the Howard Memorial Trust to attend the 15th International Grasslands Congress in Kyoto, Japan, in 1985.

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Dr John Tothill, Division of Tropical Crops and Pastures, is joining the International Livestock Centre for Africa in Ethiopia for two years. Other Divisional staff, **Dr Ray Jones, Dr John McIvor** and **Dr Bob Lawn** recently visited East Timor to consult on an Australian project which will use Australian expertise to develop appropriate technology for an integrated livestock/cropping system to replace the current shifting 'slash and burn' agriculture.

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Mr George Holan from the Division of Applied Organic Chemistry has been made a Fellow of the Australian Academy of Technological Sciences.

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Dr John Russell, Assistant Chief at the Division of Tropical Crops and Pastures, has been elected a Fellow of the Australian Academy of Technological Sciences.

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Professor David Craig, part-time member of the Executive, has retired from the Australian National University, where he was the foundation Professor of Physical and Theoretical Chemistry. Professor Craig played a major role in setting up the Research School of Chemistry at the ANU.

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Mr Frank Sillato of the Division of Applied Organic Chemistry is the 1984 recipient of the Royal Melbourne Institute of Technology (RMIT) Beazley Award for work in Sheet Metal.

Dyeing to be President

Division of Textile Industry Principal Research Scientist, Mr Ian Angliss, has been elected President of the 600 member Society of Dyers and Colourists of Australia and New Zealand (SDCANZ).

The SDCANZ is a professional body which advances the interests of its members in the dyestuff manufacturing industry, and the dyeing and finishing sectors of the textile industry.

Mr Angliss has had a long involvement with textile science. He joined the Division of Textile Industry in 1960 and has carried out research on wool in the areas of setting, shrinkproofing, wrinkle recovery, and continuous dyeing of loose stock, sliver, and fabric. He is currently the project leader of research into continuous high-speed dyeing of wool yarn.

Above right, Mr Angliss is congratulated on his election as SDCANZ President by the retiring President, Mr Fred Schafer.

One time O-i-C of the Wheat Research Unit, Dr David Simmonds, right, was presented with copies of his publications by Dr Colin Wrigley when he recently retired to rejoin industry.

New Chief is very impressed

The new Chief of Wildlife and Rangelands Research is an ecologist with wide experience in both aspects of the Division's research.

Professor Brian Walker, who takes up his appointment in July, has spent the past twenty years working on wildlife and rangelands research in southern Africa.

'That's why I like this Division,' he said on a preliminary visit to Canberra recently.

'It's the first occasion I know of in the world where these two disciplines have been brought together. Everywhere else ecologists and rangelands people have recognized this need of each other.

'It's a tremendous marriage as far as I'm concerned.'

Professor Walker, 44, holds the Chair of Botany at Witwatersrand in South Africa and is the Director for the Centre of Resource Ecology.

'My main interest is ecological — the dynamics and stability of rangelands. How much can they be used without fundamentally changing?' he said.

'Internationally it's a huge problem. The whole desert of the Sahel, China and everywhere else stems from a lack of understanding of the dynamics of rangelands under animal usage.'

Theories developed in the 1930s for temperate regions had not worked in tropical, sub-tropical and semi-arid regions such as Africa and Australia.

'Australia and South Africa have always had a great interest in each other's work because they have the same general kinds of problems.

'We can aid each other. By examining the differences we can try and understand how both of them work and that's partly why I'm keen to come and look at these rangelands and wildlife systems. Although the animals are different, the principles are the same.'

Professor Walker currently has four projects with Botswana and he sees Australia and CSIRO as being a great help to Botswana and other African countries through ACIAR, ADAB and other aid bodies.

'Funnily enough I'll almost have a better chance of doing things from Australia than I did in South Africa,' he said.

'One of the things this Division attempts to do is maintain links internationally with other wildlife and rangeland groups and I would like to see the link with southern Africa strengthened because of our close similarities.'

While in Australia Professor Walker visited many of the Division's locations.

He said he found it tremendously exciting at the moment as many groups were starting new programs.

For example, Helena Valley in Western Australia has just begun a program to understand how a system of small nature reserves conserves the flora and fauna.

In Darwin the Division is arranging with the National Parks and Wildlife Service to expand tropical research.

'The Australian tropics in the past haven't received their fair share of attention in terms of ecological research and have a lot to offer. We hope to encourage people from universities and other divisions and have a long term ecosystem study.'

At Deniliquin an ecological study, from the graziers' viewpoint, on the interactions of kangaroos, sheep and rabbits is just beginning.

'I've been really excited scientifically by my visit, but depressed by the budget cuts.

'There is always a bit of fat in any project that you can afford to cut off. It was cut off very early on and we are now hurting. We have had to tell staff to cut the number of trips in half, which means missing certain important things because we can't get to the areas.'

'We are asking much more sophisticated questions today than 20 years ago and those questions are only answerable using modern equipment. Without it, we have to actually slow down the pace of Australian science,' he added.

The Division receives little industry funding because, Professor Walker said, it is a national concern.

'That's the whole problem of long term ecological research. It's not to any one person's immediate interest and therefore they do not want to pay for it. It really has to be considered as a national problem and paid for from national sources.'

BOSS boss retiring

Mr Sam Lattimore, Director of the Bureau of Scientific Services, was farewelled at Headquarters' Christmas party.

Mr Lattimore spent fifteen years with CSIRO: more than twice as long than he had stayed in any other job. He said it demonstrated how much he had enjoyed working in the Organization.

Photograph By Ross Mackenzie

He joined the Industrial and Physical Science Branch of Head Office in 1970; in 1977 he became Secretary (Research), and Director BOSS in 1978. In these positions he got to know many people throughout CSIRO and acquired such a detailed knowledge of the research programs that he probably knows more about what research is going on in the Organization than anybody else.

Some would say that 'lateral thinking' should really be 'Lattimore thinking'. Many of his ideas have been far ahead of their time. An invention of his waiting in the wings is a set of traffic lights which, when changing from green to red, would first show red to the more distant vehicles, but the closer ones would continue to see green long enough for them to get through (at normal speed). More time and distance in which to pull up would reduce the frequency of people shooting red lights; and the advantage to all drivers would be that once in the 'green zone' they would know positively that the lights would not change against them — unless they were travelling at subnormal speeds.

Donations for a farewell gift came from all parts of CSIRO and amounted to the largest sum ever collected in the Organization — as a result Mr Lattimore now has airconditioning in his 'tank', as he calls his Toyota 4Runner. He plans to visit the more remote (and hotter) parts of Australia in his retirement.

Graham Warden

Obituary: John Downes

Mr John Godkin Downes, former Chief of the Division of Textile Physics, died suddenly at age 67 on 12 December while holidaying with his family.

He was windsurfing with his daughter Caroline when he died.

John Downes was Chief from 1969 and then served 1976-1979 as the first Counsellor (Scientific) ever appointed to the Australian Embassy, Moscow.

Few Australian scientists have had the opportunity and the ability to serve their country in such diverse ways and with such distinction.

He joined AWA in 1938 and worked as a development engineer on a communications receiver for the Army while also obtaining, by correspondence, a science degree from London University.

In 1945 he joined the CSIR Division of Radiophysics to work on the application of Wartime radar technology to Australian Civil Aviation. He played a conspicuous part in the successful introduction of Distance Measuring Equipment for aircraft in Australia, many years ahead of the rest of the world.

He then became interested in research, initiated by the Executive as a major activity, to support the wool growing industry in it's competition with synthetic fibres.

In 1951 he joined the Unit which became in 1959 the Division of Textile Physics.

As a research scientist and later as Chief, he helped develop the concepts and techniques of objective measurement of wool. His influence on this work both in the scientific research needed and in the introduction of new technologies was a major factor in the success of the program.

His judgement was trusted and respected by wool growers and wool brokers as well as by his scientific colleagues. The transformation in the packaging and marketing methods which followed are a tribute to his unique ability to work with people to achieve the successful application of the results of research.

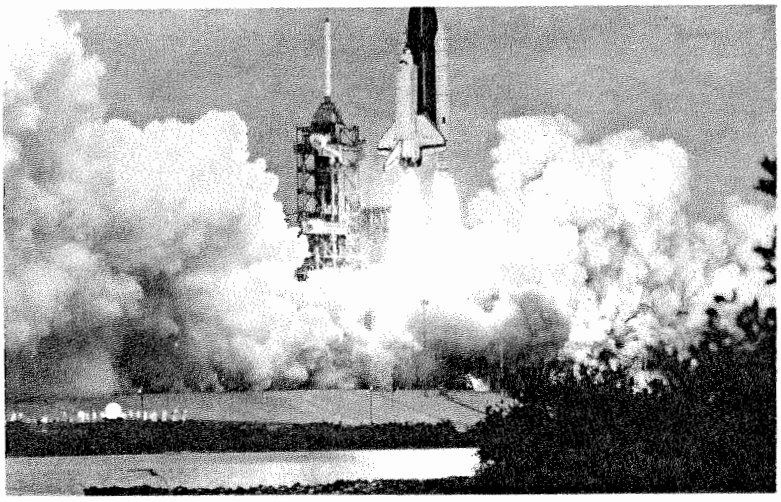
The final appointment in Mr Downes career showed the widespread esteem in which he was held. He accompanied CSIRO's Chairman on a visit to Russia in 1975 as scientific colleague and interpreter. It was recognized that he contributed to the success of the visit in many ways. This was followed by him serving for four years as Counsellor at the Embassy in Moscow where he did much by his friendly attitude to assist collaboration between scientists under the USSR-Australia Science Co-operation Agreement.

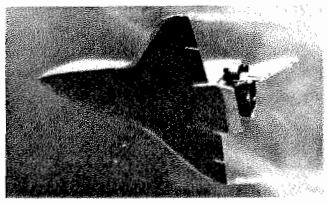
Following his retirement in 1979, Mr Downes spent much time sailing his catamaran in the Mediterranean area with his wife Dorothy. They have three children and seven grandchildren.

The elusive dream

In a brave attempt to weather the budget cuts and replenish the Divisional coffers, Sydney members of the Division of Mineralogy and Geochemistry plus friends and relations made a trip to the old mining areas of Majors Creek and Araluen for a spot of gold panning. There was much excitement as glittering specks appeared in gold pans, frying pans and even plastic plates. The photograph shows Dave Whitford and Graham Carr admiring the 'Carr Nugget' (fully 1 mm long!) while Ray Binns waits to attack the rich Majors Creek gravel.

However, 'all that glisters is not gold' and, although highly successful as a kindergarten show-and-tell, the yield for the weekend was calculated as 5 cents per man, woman and child hour.





The space shuttle Columbia *photographed from the chase plane as it decends, above, and leaving the launch pad, left.*

CSIRO and the space shuttle

The Space shuttle radar system could have picked up 'beautifully' the high seas that decimated this year's Sydney-Hobart fleet, according to Dr Carl Nilsson at the Division of Oceanography in Hobart.

Dr Nilsson is one of a number of CSIRO scientists working closely with the US Jet Propulsion Laboratory (JPL) on Shuttle Imaging Radar (SIR), a new way of looking at the Earth's surface from space that is turning out to be more useful than many people thought.

So far there have been two NASA flights carrying JPL's Shuttle Imaging Radar — SIR A and SIR B — and both have collected a rich harvest of data as they have passed over the Australian oceans and continent.

What is revealed by the radar is the 'roughness' of areas of land or ocean. With a resolution of 25 metres, it can pick out variations in the texture of forest canopies, or turbulence on the ocean surface caused by submerged submarines.

In the Sydney-Hobart yacht race, competitors faced high seas all the way — but the seas were highest when the current, flowing south past Sydney down as far as Montague Island, met with strong winds blowing north.

The current can often be shown by infrared weather satellites because it is warmer than surrounding waters, but this was not possible during the race because of cloud cover. Some of the yacht crews told Dr Nilsson that it was very clear whether they were in or out of the current, without taking temperature readings.

'They could tell just from the steepness of the wave pattern,' he said. 'That's precisely what the shuttle radar shows, and that's precisely why we're interested in it as a new scientific tool to tell us more about what's going on in the oceans.'

CSIRO scientists in the Divisions of Mineral Physics, Groundwater Research and Oceanography are foremost among those working on SIR.

When combined with other satellite information, such as visible and infrared, SIR forms a powerful tool, yielding information about soil types, erosion, vegetation, salinity, possible mineral environments, and ocean behaviour.

The different kinds of information can be matched by computer, and enhanced to bring out special features, which appear colour-coded on a video monitor.

The shuttle generates information by bouncing radar waves off Earth and measuring how the waves have changed during the fraction of a second it takes for them to return.

OCEANOGRAPHY

During last October's SIR B flight, the Division of Oceanography co-ordinated the total effort of the Australian marine science community, comprising projects costing about $300 000 and comparable with the ground-based effort.

In addition, the Division ran a cruise in the now-retired research vessel *Sprightly* in Bass Strait, and collected information from the NOAA satellite with the aim of providing a 'surface truth' for the radar.

'We are really just trying to see what the radar shows,' said Dr Nilsson.

'It gives information about the demarcation zones between different current systems, but it's still early days, and we're using known features of the ocean current structure to callibrate radar from space so that it will be of maximum use.

'One of the greatest virtues of SIR is its ability to see through cloud, which nothing else can match. Its ability to detect wind velocity and direction over the world's oceans will make it a prime tool for meteorology over the next decade.

'Certainly, meteorology is one of the major applications behind the European plans to put SIR into the ERS-1 satellite, due for launch in 1988. As yet, Australia has no capacity to receive data from this new generation of satellites, but it is important for us, at least, to have some expertise in handling the data.

'Navigation is another application that interests the Europeans, particularly the potential for fuel savings by routing ships around areas of high seas.

With the ability to pick up ships and their wakes, and even probably the surface manifestations of submarines, it also has defence applications.'

MINERAL PHYSICS

The largest 'remote sensing' group in CSIRO, and probably the largest in geology in Australia, consists of 14 scientists and engineers in the Division of Mineral Physics, based in Sydney.

The function of the Division is to identify and solve exploration problems in the mineral industry. Consequently, the remote sensing group is involved in a wide range of projects including aerial mineral exploration techniques, the fundamental physics of remote sensing, and the development of new instruments.

The co-leaders of the group are Dr Andy Green and Dr Jon Huntington. According to Dr Huntington, it will take up to three months to analyse the data acquired by the SIR B mission over their test site at Weipa in far north Queensland.

'Analysis of the radar data will be a follow-up of some exciting work we did a few years ago using data from the Landsat satellite, which looked at the visible and near infrared spectrum,' he said.

'With Landsat, we established a correlation between what the satellite 'saw' and the aluminium and silica content of the bauxite deposits at Weipa.

'This was exciting because most of the deposit at Weipa is forest-covered. As a result of the work we formed a theory that the vegetation type and condition, as revealed by Landsat, were related to the underlying bauxite soil.

'Comalco was sufficiently interested by this idea to make maps of the bauxite distribution available so that we could correlate the satellite and ground data. Now, with the radar data, we will look at a different phenomenon, the structure of the forest canopy, to see whether that too correlates with the underlying bauxite. In forested terrain, most of the radar energy is back-scattered by the vegetative canopy. No true penetration takes place.

'To help us relate the SIR B radar to our previous experience at Weipa we underflew the space shuttle with an aircraft thematic mapper scanner, studying the vegetation and soils in greater detail at visible and near-infrared wavelengths.

'In the long run, the work could have important implications for mineral exploration along Australia's eastern coast, where vegetation cover is dense.

'Remote sensing is as much about increasing the efficiency and cost-effectiveness of explorations as it is about actually locating an ore deposit site.

'In Australia, however, we can't just take this technology and apply it willy-nilly. We've had a lot of success with remote sensing from aircraft precisely because we've adapted the technology to Australian conditions, and we will have to do the same with shuttle data.'

GROUNDWATER RESEARCH

Scientists in the Division of Groundwater Research in Perth are similarly concerned with investigating the fundamental properties of radar imaging data.

Senior Technical Officer, Mr Ian Tapley, says that the major task is to evaluate this new sensor, to gain an insight into what its capabilities are.

'In the long term there will be permanently orbiting satellites with radar sensors on board. We need to know as much as we can about radar, relevant to the wide range of terrain types in Australia, so that we can take full advantage of such satellites when they come along. Indeed, Japan will be launching a satellite with radar in 1986, and there is a chance that Australia may be able to obtain imaging data from that.

'Our work in Groundwater Research covers the whole geologic and geomorphic content of the data, but we are particularly interested in evaluating radar for its ability to delineate agricultural land affected by secondary salinity.

'Saline soils are a big problem, especially in cleared areas. In our effort to work out what is happening to our soils, it is vitally important to categorize areas of salinity.'

The remote sensing group was selected by JPL to analyse SIR B data on the basis of a well accepted paper prepared by Mr Tapley after a six-month evaluation of SIR A data over a 50km-wide swathe from Onslow in the north-west of Western Australia to the Serpentine Lakes in the south-east of the State.

Their current work will cover the Pilbara and south-west regions of WA, the Eucla and Officer Basins in South Australia and the Northern Territory, and a line over Alice Springs, the Simpson Desert, and the Barkly Tablelands. An attempt will be made to correlate the SIR B data with features observed in data from the (high resolution) airborne multispectral scanner and the (low resolution) NOAA satellite.

THE FUTURE

Researchers in remote sensing are already attracting funds from the private sector, and predict a heavy commercial demand for their services in future.

However, they say, their ability to assist Australian industry will depend on more funds being made available now to develop the required expertise. They have expressed the hope that such funding can be made available through the recently endorsed CSIRO Office for Space Science and Applications (COSSA).

Blooding the shuttle

As this issue of *CoResearch* went to press, a CSIRO-developed instrument package was due to be carried into orbit aboard the space shuttle *Discovery*, making history as Australia's first scientific experiment in space.

The instrument package, developed by Mr Peter Osman of the Division of Applied Physics, is expected to answer some basic questions about the relation between human blood viscosity and disease, and could also shed new light on problems associated with weightlessness in space.

The project leader is Dr Leopold Dintenfass of Sydney Hospital, who has been working on aspects of blood viscosity in various diseases for the past twenty years.

Mr Osman travelled to Cape Canaveral as one of a six-member Australian team required to supervise last-minute preparations and assess the result.

The Chief of the Division, Dr John Lowke, describes the experiment as a landmark in Australia's development in the space age. He says there are likely to be many more opportunities for Australian involvement in space technology, such as the development and manufacture of space hardware and scientific instruments.

The instrument package in the *Challenger* was developed over five years by Mr Osman, an electrical engineer, in collaboration with Mr Brian Maguire, a private scientific instrument maker.

Situated on the shuttle's mid-deck, just underneath the astronauts, the package will analyse eight blood samples, two from healthy donors and six from donors with histories of disease including cancer, diabetes, hypertension and kidney diseases.

The aim will be to learn more about how red blood cells in diseased people clump together. Dr Dintenfass believes an understanding of the 'architecture' of the clumping process is extremely important. He and his team developed a special microscope for taking microphotographs of the clumps — but one of the problems of doing such experiments on Earth is that under the force of gravity, the red cells sink to the bottom of the sample. Under the weightless conditions of space this does not occur, and a much clearer picture of the clumping process can be gained.

Mr Osman started developing instruments for Dr Dintenfass as an MSc student in 1980. He was subsequently appointed co-investigator in charge of technical design and construction, and the team developed a parallel plate viscometer to measure the viscosity of the blood samples, an optical and photographic system to record the aggregation of red blood cells, and an electronic control and automation system to record the results.

The equipment underwent stringent flight qualification tests at the Marshall Space Centre in Alabama for vibration, acceleration and electromagnetic interference.

Despite its prestige value for Australian science, there have been many difficulties in obtaining support for the project. Dr Dintenfass has obtained support from many sources but the project couldn't have gone ahead without last minute support from a real estate group, Jones Lang Wootton. This company was approached by Mr Osman after advertising that it had put more people into space than the Americans and Russians combined'.

Looking for a saner world

More and more CSIRO scientists are getting involved with issues concerning Australian society, the President of SANA (Scientists Against Nuclear Armament), Dr Raymond Haynes, said recently.

'I see an increasing trend for members of CSIRO to be actively engaged in issues of concern to Australian society and not just on their own area of professional expertise,' he said.

'An increased level of concern by all scientists in issues such as the effects of technological change, 'high technology' and the international scientific pursuit for knowledge for peaceful means, are fundamental to our survival not only in Australia, but on this very fragile ecosystem we call Earth.'

SANA (Australia) began in 1982 as a group of scientists working for the dissemination of scientifically accurate information about the effects and capability of nuclear weapons, chemical and biological warfare, the socio-economical impact of such weapons, the ecological and biological effects which would result from their use and their fundamentally destabilizing effect on the world's economy.

It now has over 800 members across Australia working in all branches of the physical, natural and social sciences, with some 80 CSIRO researchers and 15 members of the Australian Academy of Sciences, including President Professor Arthur Birch.

Dr Haynes said that while the primary aim of SANA to halt and reverse the arms race may seem to some a utopian dream, its procedures were definite and practical.

ARMS RACE

'At present some 60% of the world's trained scientists are working either directly or indirectly to support the arms race.

'It is essential that scientists who condemn this stockpiling of the weapons of mass destruction should not appear to give tacit professional approval to the insane competition for nuclear superiority.

'SANA concentrates on specific areas where scientists as a collective voice can be most effective,' he said.

These areas include increasing public awareness about the real facts of the arms race, such as the probability of 'nuclear winter' or 'war by accident', and publicly denouncing non-scientific propaganda such as the contention that the majority of people would survive a nuclear war and resume a normal life.

Other aims are to advise politicians and policy making bodies and speak out on issues which immediately affect Australia's role in the nuclear arms race.

Dr Haynes said SANA wants further communication between scientists in all parts of the world to break down the hostile stereotype which even educated people hold of those who live under other political systems.

SANA has an extensive educational program to provide unbiased information to the general public, school and tertiary students and staff, the media, members of parliament and other decision makers.

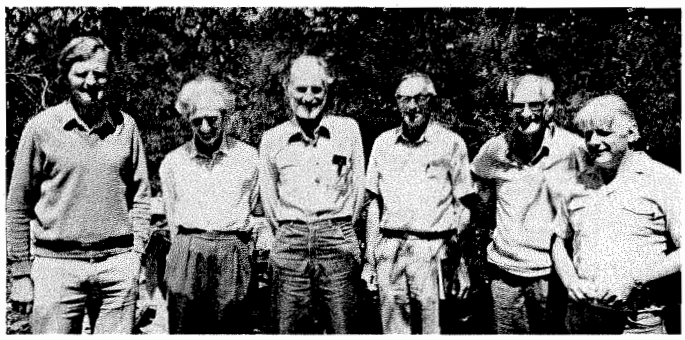
These include public lectures and films, participating in developing course outlines for Peace Studies curricula, developing an on-going series of educational radio programs and accumulating an extensive education resource centre and library.

Dr Haynes said various groups undertake detailed scientific projects on topics related to SANA's aims and to the study of conflict resolution both in our society and internationally. The results are to be published in scientific and popular journals and disseminated to the public.

A group of agricultural scientists is investigating the consequences for the Australian agricultural economy of a nuclear war in the northern hemisphere. This team has already advised the NSW State Minister for Agriculture on its findings.

The atmospheric and climatic effects of nuclear winter are being studied and an Australian scientific conference is being organized by the Victorian branch of SANA.

SANA submits in-depth scientific investigations for Government fact-finding enquiries such as the Slatyer Committee on 'Issues Relating to Australia's Role in the Nuclear Fuel Cycle' where they investigated the cycle's effects on Australian society and the environment and the possible links between Australian export of uranium and the escalation of the nuclear arms build up.



The foundation group of SANA were drawn from a wide scientific spectrum. From left, Raymond Haynes, astrophysicist, Russel Routh, psychologist, Ken Watson, engineer, Maston Beard, SANA founder, engineer and physicist, Robert Horn, physicist and Phillip Williams, agricultural scientist.

The Tasmanian branch is undertaking an analysis of conflict resolution at a number of levels, and they have submitted their findings to date to the Joint Parliamentary Committee on Foreign Affairs and Defence.

A study of the effects of the British nuclear tests in Australia, which also criticized previous reports on plutonium contamination, was submitted to the current Royal Commission into the Maralinga tests by the South Australian branch.

The ACT branch is currently organizing a scientific symposium on Australia's involvement in the Nuclear Non-Prolification Treaty (NPT) and is investigating the whole NPT issue beforehand. One member will be an accredited representative at the international conference on the NPT to be held this year.

Both Western Australia and NSW branches are researching a possible peace studies curriculum for their states, and SANA is already involved in the peace studies course introduced at Macquarie University this year.

SANA also publishes a newsletter, *Update*, and a series of information leaflets for the community on SANA interests.

Dr Haynes said scientists make many international contacts in both the Western Alliance and the Eastern Block.

'We believe that many scientists on both sides of the Iron Curtain do not wish to see the international use of nuclear and other weapons of mass destruction,' he said.

'Scientists' international contacts could help in finding solutions to this current global crisis that now faces mankind. If the scientific principle of the search for knowledge means anything then it means that every scientist has a responsibility to be involved in finding lasting solutions to this problem and we invite them to become part of that process within SANA.'

'SANA (Australia) was begun by Dr Maston Beard, who retired in 1978 from the Division of Computing Research. In Scotland on holiday, he read about SANA and on returning to Australia quickly enthused a group of other scientists who also believed that scientists have a responsibility, in the world crisis to which they or their colleagues have so substantially contributed, to do more than merely write papers and keep their eyes averted — left or right, as the case may be,' Dr Haynes added.

If you would like some more information about SANA, contact:
The Secretary, SANA
Box 370, Lane Cove, NSW, 2066

Maths in industry

The communication gap between mathematicians and industry closed a little with the recent inaugural Mathematics-in-Industry study group meeting.

SIROMATH and the Division of Mathematics and Statistics organized the meeting to show industry that SIROMATH could help solve their problems, which included: when the side of a quarry is blown up, where is the material thrown; how does painted metal corrode; or how do you predict what type of molten particles reach the ground if unshielded electric wires touch during a storm?

These and six other industrial problems were chosen and examined in as much detail as possible to find the best, or most economic, way of doing a particular industrial process.

Like statistics, it was largely a matter of using well established formulae.

Organizers of the meeting said progress had been made with most of the problems discussed by the 109 participants from CSIRO, tertiary institutions and industry, and that industry would benefit directly.

In particular, new rules of thumb were derived for the heat treatment of metals.

They said the mathematicians had gained new insight, motivation and experience with the nature of industrial mathematics and had developed mutual respect for and friendships with industry scientists.

SIROMATH, an offshoot of CSIRO, had developed new industrial contacts and gained more explicit commercial visibility.

In organizing the meeting, the most important thing had been to obtain genuine problems from industry and to ensure that sufficient background and expertise was available at the meeting to provide an effective examination of these problems.

Helping build industry

The Australian Building Systems Appraisal Council (ABSAC) last December celebrated its 50th Technical Opinion at the Division of Building Research.

ABSAC is in its seventh year of operation, and is a good example of successful co-operation between the building industry and CSIRO in assessing and promoting new building technologies.

The Council carries out appraisals of innovations of any kind related to building, and publishes findings in the form of Technical Opinions. These Opinions help ensure that new quality products and systems find their way into building practice without undue delay.

The 50th Technical Opinion is for a polyurethane-coated cork-tile lining system for installation in bathrooms, shower recesses, toilets and laundries. The cork-tile lining system was developed by House of Cork Pty Ltd, a small Australian company in Lismore, NSW.

Some other interesting building products issues with Technical Opinions include: plastic-coated steel-roofing tiles; plastic siding for re-cladding old timber houses; steel-fibre reinforcement concrete products; two complete housing systems; a system for reinforcing brickwork; and 70mm clay brick.

ABSAC, which was originally established in 1978 by CSIRO, the Australian Institute of Building Surveyors and the Master Builders' Federation of Australia, is a non-profit company limited by guarantee. The Housing Industry Association joined in 1979, and the Insurance Council of Australia in 1980.

A Technical Advisory Committee (TAC) has been set-up by ABSAC to arrange for the appraisals in detail and to write the Opinions.

The members of TAC come from CSIRO Division of Building Research, Experimental Building Station (Department of Housing and Construction), Standards Association of Australia, National Association of Testing Authorities, Australian Institute of Building Surveyors, and builders' organizations.

Submissions are examined by TAC to see whether they are really innovations or merely modifications of some existing product or service. Sponsor-applications are advised of the type of information and test results needed to allow a complete assessment of their innovations, having in mind the likely uses of the product or system. The sponsor-applications are also advised of appropriate laboratories to carry out the required tests.

Of the 50 Technical Opinions appraised so far, 38 have been drafted by researchers at the Division of Building Research, 11 by officers at the Experimental Building Station in Sydney, and one by the building industry.

space office

cont. from p.1

Dr Wild said Australian companies found themselves in a Catch 22 situation at present: 'A company can get a contract to build a part of a commercial satellite if it has built a part of a satellite before. No prior experience — no contract.

'By contracting Australian industry to build equipment for CSIRO space experiments, CSIRO will break this vicious circle,' he said.

'It is intended that 70 percent of the expenditure by CSIRO on space activities will be contracted out to Australian industry.

'If approved by Cabinet for this year's Budget, we envisage an expenditure of $7M in 1985-86, rising to $20M per annum at the end of the decade.'

Dr Wild said the space program would have a substantial spin off to Australian industries, in areas such as new materials, new electronics, and new project management skills.

The director of COSSA will be Dr Ken McCracken, at present Chief of Mineral Physics. Dr McCracken has been involved in space research and development since 1959.

The establishment of the office was the key recommendation of a space science and technology study group set up in March last year. The study group was chaired by Dr Wild and included CSIRO and other scientists and representatives of the Federal Government and Australian industry.

Button: Too much science for science' sake

There is perhaps still too much of an attitude of science for science' sake in Australian research institutions, including CSIRO, according to the Minister for Industry, Technology and Commerce, Senator Button.

Senator Button told the National Science Forum in December that Australia had a 'dreadful problem' in the gap that existed between talent and performance, between research and experimental development.

Part of the reason for this state of affairs lay in industry attitudes and practices, and government policies and incentives, he said.

'I believe also that there is room for improvement within research institutions, particularly in defining objectives, in organizing to meet those objectives and in critical evaluation of programs.

'Perhaps there is still too much of an attitude of 'science for science' sake' abroad, when the real objective seems to be to obtain prestige with one's peers in the field, whatever that may be.

'I sometimes wonder whether CSIRO, for instance, would not be better organized sometimes on a project basis rather than a Divisional basis. The very existence of Divisions implies a subject approach to a discipline; they do that because that is their subject area.

'It rather seems to me that a project basis in some areas at least, with defined objectives, with preset stages and 'go' or 'no go' decision points along the way, might be more efficient, but it would of course require greater participation by industry and would have meant a joint industry-science control of projects.

'One of the features of some areas of agricultural research in CSIRO is a large measure of industry influence which has been very significant.

'It is unfair in a sense to say these things as criticism; I don't offer them as criticism. I only offer them as thoughts because a number of things which CSIRO recently programmed for the future may well deal with some of these problems in another way,' he said.

Senator Button's remarks have fuelled rumours that the Government is considering major changes to the management structure of CSIRO.

However the Chairman, Dr Wild, said there had been no hint of any such changes during his meeting with Senator Button on the morning of the National Science Forum address. They had had a good, open discussion and Senator Button had been very positive, he said.

In his address, Senator Button noted the strong support for agricultural research in Australia, but added: 'I don't myself envisage significant changes in this area and I'm not even persuaded that they should happen.'

He also said the Government's decision to allow firms to deduct 150 percent of eligible research and development expenditure from their taxable income should benefit government and university researchers as well as industry.

'It is not only designed to reduce the costs of R&D to industry to a level comparable to other countries; it is designed in the longer term to free up the relationships between private industry and existing institutions,' Senator Button said.

'So it is hoped that it will lead to an increase in contracted research using some of the facilities of government institutions and universities,' he added.

Social clubs help needy

CSIRO may be helping science and industry every day, but the direct humanitarian aspect often seems to be missing.

However, several divisions go beyond research assistance and their staff support local or international charities and aid organizations.

Textile Industry's Sirovilla elderly people's housing complex at Geelong has featured in *CoResearch* before, but the five people it has employed under Government employment schemes are less well known.

The experience these people have gained from working at Sirovilla has enabled all of them to gain subsequent employment.

Applied Physics contributions to Community Aid Abroad (CAA) over the last 13 years has seen some 40 projects completed in ten countries with funds totalling $21 000.

Mr John Shaw at the Division said funds were raised by a number of methods, including subscriptions, a continuous bookstall, plant sales, Melbourne Cup sweepstakes, handicraft sales, Christmas tree sales, catering at Divisional sporting events and theatre parties.

'The CAA group invites visiting indigenous organizers from its project areas to give lunchtime talks. Appropriate films are screened to illustrate and explain CAA's experience in and approach to community development.

'CAA supporters from the Division have visited the countries and regions in which projects are operating to see at first hand how the local people have successfully implemented the CAA 'self-help' approach,' he said.

Members have studied Australian Government aid policy and lobbied local Members of Parliament on appropriate directions aid should take. They have also contributed to relevant Parliamentary Committees of Enquiry through CAA and are represented on the NSW Committee of CAA.

CAA has been supported by a group at the Divisions of Mineral Chemistry and Mineral Physics for more than 15 years.

The group supports one project to its finality, which may take a few years. Recent projects have been in India while in the past they have been in Indonesia.

The money is raised by fortnightly donations by staff, and the CAA group also participates in CAA's annual 'Walk Against Want'.

Following a request by a retiring staff member, Mr Teddy Trickett, that donations for his present be given to CAA, the Centre for Irrigation Research has also supported CAA.

Ms Donna Mulry presents a cheque representing five months of cake baking, selling and eating at Animal Production in Sydney to Ms Valerie Crampton of the Leo Leukaemia and Cancer Research Trust.

Secretary of the social committee, Mr Philip Orr, said their most recent contribution was $250 to a well drilling program in Tigray, Ethiopia.

'CAA requested this donation and a staff vote on the issue was almost unanimous. The staff Christmas party was not subsidized by the social club and was therefore effectively the fund raising function,' he said.

Perhaps the longest running staff charity function is at Chemical and Wood Technology, which since 1959 has raised the equivalent of about $800 each year for local charities.

'Fortnightly donations by staff and functions such as snowball drives and a hot cross bun drive mean about $100 can be donated to such charities as Melbourne City Mission, Claremont Home for the Aged, Association for the Blind, Children's Protection Society, Outreach and others.

Staff at Animal Production recently presented a cheque for $250 to the Leo Leukaemia and Cancer Research Trust after holding a weekly cake stall for five months.

The Executive Vice-Chairman of the Trust visited the Division to talk to staff about how the donations benefit cancer and leukaemia sufferers.

ANAHL and Textile Industry both support the Geelong United Way, an association which raises money for a wide range of community groups.

Staff have contributed financially to the Way and some have voluntarily worked in the community to promote its aims.

ANAHL's administrative and personnel officers have both worked as loan executives for the Way by visiting local industries and companies each year to speak about the Association and its beneficiaries and to encourage people and companies to make donations.

In 1984 the Way raised about $572 000, which has been divided amongst the beneficiaries, including family and child care groups, services for the elderly, health and rehabilitation centres and community group services.

Three children are being supported in developing countries through the Foster Plan by staff at Atmospheric Research.

One group began supporting a child in Indonesia 12 years ago and another has been assisting in the upbringing of two children, in South America and Africa, for ten years.

Ms Val Jemmeson of the Division said some 40 staff members make a small contribution each month which assists the families to rear the children.

'The children respond by communicating their progress through school and in their letters informing us about the families' lifestyle, customs etc,' she said.

Changes

cont. from p.1

The Committee said that during much of its life CSIRO, and CSIR before it, had been growing; planning had consisted largely of identifying major areas needing research on a national scale and creating new Divisions to conduct research in these areas.

The review system developed by CSIRO in the 1960s and 1970s appeared to cope reasonably well with modifications in the roles of Divisions and the development of responses to major new technological advances cutting across Divisional boundaries, the Committee said.

'However, it did not cope well with the need to examine the balance between major areas of CSIRO's research effort and the need to reduce work in some Divisions to provide resources for work in other existing Divisions or completely new ones.

'The latter problem was especially difficult where Divisions were well managed and highly productive in their allotted areas but the areas themselves have become of lower national importance than others needing additional resources.'

Foiling the supertrain

A light fruity (and slightly nutty) melodrama that had a cast of thousands in stitches and an enthusiastic audience cheering the hero and booing the villain was performed to a packed house at the Division of Building Research.

The fabulous melodrama formed part of the Division's Christmas celebration, and was produced by Joe Flood and directed by Karl Armstrong. In this scene, our hero Rip Cord [Paul Bowditch] overcomes the archvillain Bluetongue [John Watkins] as vague scientist Dr Preservative Treatment [Julie Penn] rescues the heroine Serenity Seventeenweeker [Madeline DeLacy] from the jaws of Paul Wild's Supertrain.

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CoResearch

CSIRO's staff newspaper February 1985 277

New research vessel:

Lady Stephen names Franklin

The naming of Australia's most advanced oceanographic research vessel, the *Franklin*, takes CSIRO into a new era of blue-water research.

Lady Stephen, the wife of the Governor-General, named *ORV Franklin* in Cairns on Saturday, January 12.

The 1100 tonne, 55-metre vessel will be operated by the Division of Oceanography in Hobart as a national facility to serve the long-neglected needs of Australia in physical, chemical and biological oceanography.

The naming ceremony capped 18 months of construction at North Queensland Engineers and Agents (NQEA) in Cairns, which had in turn followed years of lobbying for Australia's first civilian blue-water oceanography research vessel.

The *Franklin*, which was built at a cost of $12.2 million, is described as a 'state of the art' seaborne research vessel.

It has a satellite navigation system, a propulsion system designed to minimise noise and vibration, is stabilised and air conditioned and has computer-controlled transverse thrusters to enable it to remain stationary in heavy seas.

Plans and approval for a vessel were first announced in 1980, when the decision to move the Divisions of Oceanography and Fisheries Research to Hobart was also announced.

A $25 million Federal Government grant enabled the move to Hobart and an additional grant of $9 million opened the way for the nation's first civilian oceanographic research vessel.

Designed by Schiffko GmbH of Hamburg Germany, *Franklin* has a displacement of 1200 tonnes and can carry a complement of 25 scientists and crew.

It is designed as a versatile research platform with scientists working on a variety of research projects able to be accommodated at the same time, on the same cruise.

Off the slipway in October, it is undergoing extensive harbour and sea trials. It is now to be comprehensively fitted out with scientific instrumentation, including a computer system and satellite data link.

Its scientific work areas include a 'wet' laboratory for receiving samples direct from the sea, a chemistry laboratory, biology/general purpose laboratory, operations and computer rooms, electronics workshop, sonar well, darkroom, drawing office and library.

The new vessel will be a major boost to the diminutive fleet of vessels available in Australia for blue-water oceanographic research.

It is named the *Franklin* after Sir John Franklin, the fifth Governor of Tasmania (1837-1843).

Franklin served in his youth as a midshipman under Matthew Flinders, in the *Investigator*, and later became famous for his explorations in the Arctic, which yielded valuable scientific and geographical knowledge. He is recognised as the discoverer of the North-West Passage, the perilous sea route between Greenland and Alaska which claimed his life.

Although a well-intentioned and hard-working Governor of Tasmania, he was recalled to England after six years, a victim of local opposition to his efforts to enforce new regulations in the convict system.

He is commemorated by the Franklin River in Tasmania, and by a statue in Franklin Square, in the heart of Hobart.

As a national facility, *Franklin* will be available to oceanographers from other marine science institutions. Applications for ship time and cruise scheduling are handled by a steering committee headed by Professor David Green of the University of Tasmania.

The *Franklin* came off the slips on 21 October 1984, and following extensive sea trials was scheduled for handover to CSIRO during February. If plans proceed on schedule, the *Franklin* is expected to make its first voyage to Hobart in March.

After equipment installation at the Marine Laboratories, it will make several cruises out of Hobart.

It is scheduled to be the platform for several experiments in the Great Barrier Reef area, the Coral Sea and the Western Equatorial Pacific later this year.

Applications for ship time during 1986 are still being processed. Franklin's cruises next year are likely to be in eastern Australian waters with the Australian west coast the likely operational area in 1987.

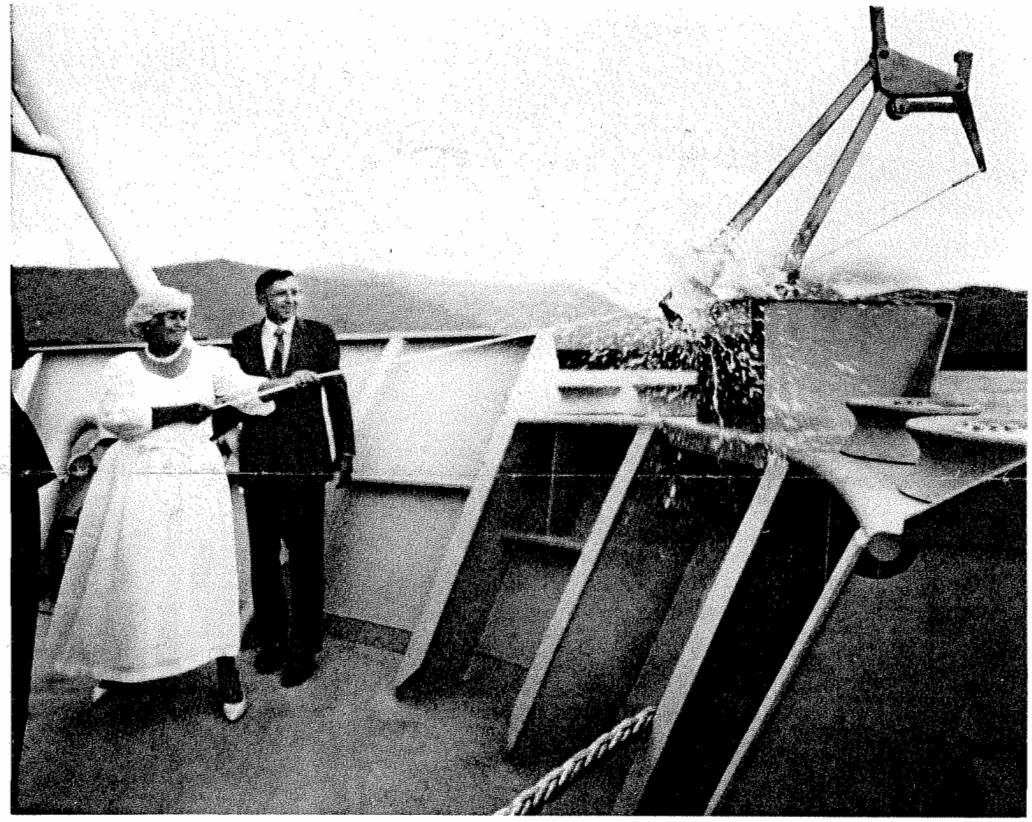
The naming ceremony included short addresses by Dr Angus McEwan, Chief of the CSIRO Division of Oceanography, Lady Stephen, Dr Wild and Mr Don Fry, the Managing Director of NQEA.

The *Franklin's* design complements rather than duplicates the function of other vessels used for fisheries research, geological exploration and Antarctic research.

Consequently, it is not equipped with heavy trawling winches, nor is it ice-strengthened.

However, the design embraces the needs of occasional and possibly inexperienced research teams working side-by-side on different projects.

The Senate Standing Committee on Science and the Environment recommended the Franklin's construction in 1980, as one of a proposed fleet of civilian oceangoing marine research vessels which it recommended should reach a total of at least six vessels by 1986.



The champagne bottle broke first go for Lady Stephen when she named CSIRO's new research vessel the ORV Franklin. *As the* Franklin *was already afloat, a special device for breaking the bottle on the prow was mounted. Lady Stephen pulled the cord with great delight and enthusiasm, watched by the Managing Director of NQEA, the shipbuilders, Mr Don Fry.*

HQ office changes

The Chairman, Dr Wild, has disbanded the Office of the Executive following a review committee recommendation.

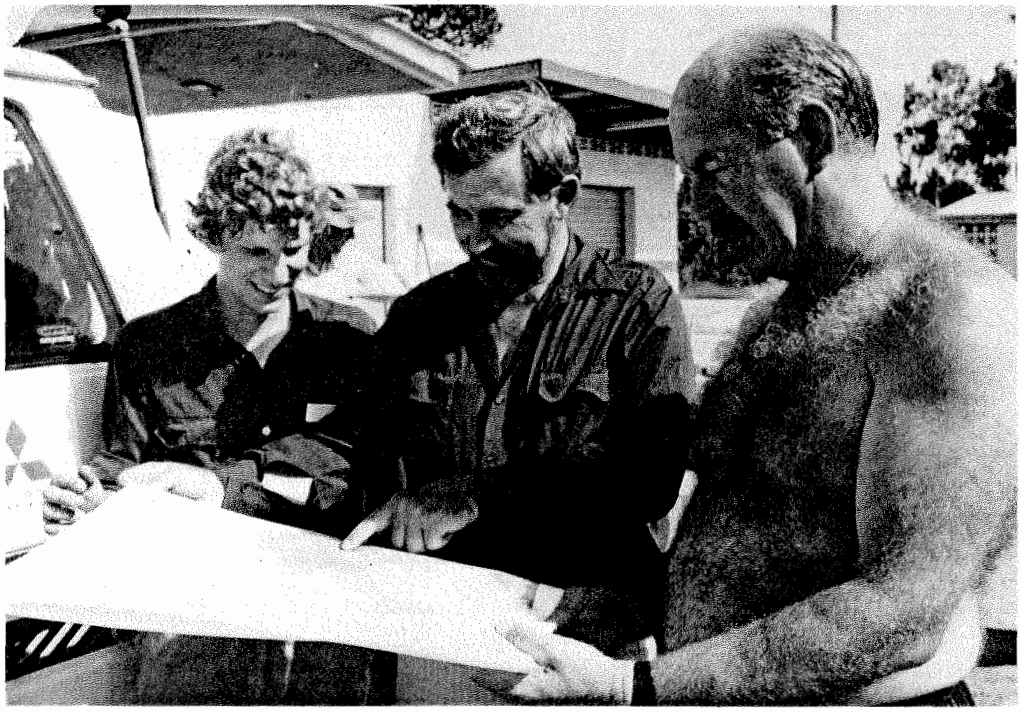
In a major reorganization, Dr Wild and the two full-time executive members now have their own staff and centralised scientific matters are handled by the Institutes. The five Institutes each receive one additional staff member, but there is no change in total staff numbers.

Dr Wild said the reorganization would formalise and strengthen the changed responsibilities of the full-time members who now acted in an executive rather than a board member role.

The Executive Secretary, Mr Gratton Wilson is the Assistant to the Chairman under the new arrangements, which came into effect on February 18.

Dr Wild said the staff of the Office of the Executive had worked with 'a high degree of competence and dedication'.

Volunteers for adventure



Dr Andy Gillison from the Division of Water and Land Resources, centre, discusses vegetation survey techniques, which he developed, with Mr Will Ashburner and Sir Guy Boileau of the ANZES expedition.

With other Divisional scientists Dr Henry Nix, Mr Brendon Mackey and Dr Mike Hutchinson, he set up a provisional sampling framework using computers and available environmental data for the ANZES expedition. Five representative transects were selected and sampled during December and January in an extremely rugged landscape with peaks up to 1140 metres.

Have you got a good idea for an outdoor project using lots of free lay labour?

The Australian and New Zealand Scientific Exploration Society (ANZES) is willing and able to help.

ANZES, which runs scientifically orientated expeditions for young people, is looking for more liaison with CSIRO scientists.

'There are probably officers dreaming of pet outdoor science projects which cannot be implemented because funds and other resources cannot be made available,' the Executive Officer of ANZES, Sir Guy Boileau, said.

'On the other hand, we at ANZES have each year to invent science programs for our 17 — 23 year old expeditioners to carry out in the field: I think we would do better to keep in touch with organizations like CSIRO so that, from time to time, we could put people and other resources into the field to conduct studies for CSIRO,' he said.

ANZES annually runs a five week long expedition to interesting wild places in Australia and New Zealand. In 1984/85 they went to Hinchinbrook Island, off the north Queensland coast, where CSIRO, the National Parks Service of Queensland, James Cook University, the Australian Institute of Marine Science and various Australian museums and herbariums tasked them to study the habitats, flora and fauna of what is described as the world's largest island wilderness.

They collected topographical, climatological, geological and biological information for the Australian Environmental Geographical Information System: a computer base being developed by the Division of Water and Land Resources for the Australian Heritage Commission which could be used to evaluate possible endangered environments, such as Daintree, or to indicate possible viable agrarian enterprises.

As well, the study will help the Division evaluate its developmental studies in Geographic Information Systems and rapid survey methodology.

ANZES will return to Hinchinbrook this December and is looking for experienced scientists who are willing to lead science-oriented young people in performing genuine science tasks on the island.

Scientific investigation played a major part in much of the early exploration of Australia, with explorers such as Giles collecting specimens under even the most difficult conditions.

Scientists such as Ferdinand von Mueller were primarily motivated in their exploration by their search for scientific understanding.

Sir Guy said that ANZES was all about inculcating a love for science in young people.

'Surely it is possible for field scientists from CSIRO to perform leadership roles in our expeditions, in their own interest and in ANZES' interest.

For further information, write to ANZES, PO Box 174, Albert Park, Victoria, 3206.

New Chiefs

Close liaison with the States is essential to the success of ANAHL, according to its new chief, Mr Bill Snowdon.

Mr Snowdon said the laboratories should provide resources to complement those available in the States and should forge close links with other disease control authorities.

'The success of the laboratory is very much dependent on its close relationship with disease control authorities particularly in the States,' he said.

'It is our policy to develop collaborative research programs with other organizations both within Australia and overseas.'

As Officer-in-Charge of the laboratories, Mr Snowdon was closely involved with the planning, design and construction of the most complex scientific facility ever built in Australia.

The facility near Geelong will be officially opened by the Governor-General, Sir Ninian Stephen, on April 1.

Mr Snowdon, 57, holds a degree in veterinary science from Sydney University and worked as a veterinary officer with the Victorian Department of Agriculture before joining the Division of Animal Health in 1959.

Mr Snowdon's appointment as chief of ANAHL is for three years and brings continuity of leadership to the laboratory in the important foundation period.

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A chemical engineer and expert in mathematical modelling has been appointed Chief of the Division of Mineral Engineering.

Dr Robin Batterham, 44, has an international reputation in mathematical modelling and especially its applications to the Australian iron ore and steel industries.

His other research interests are in heat and mass transfer in metallurgical systems, and process development.

He is widely recognised for his work in iron ore pelletising, the development of new steelmaking technology and the use of new technology in direct smelting of iron ores.

He said he is particularly keen to see the Division address the problem of further processing of Australian mineral resources.

'I am presently devoting considerable efforts into this area,' he said.

'I am also keen to see a more scientific and consistent approach to mineral beneficiation (extraction of mineral from ore) and control using such advanced technology as QEM*SEM.'

In his spare time, Dr Batterham gives concert organ recitals.

Letter to the Editor

The Editor

Congratulations on publishing Kevin Handreck's letter (CoResearch No. 276) — this is an issue that division's feel very strongly about.

It's also an example of how the Organization's funds are being wasted on a scale of many thousands.

I doubt that such a critical letter would have been published by CoResearch a few years ago — things are looking up.

Wendy Parsons
Forest Research

Australia losing young talent

Australia is heading towards membership of the technological third world, according to the chairman of the Australian Computer Research Board, Professor Hugo Messerle.

The Federal Government had only a few years to reverse the trend or face rebuilding Australia's high technology research from scratch.

In the board's annual report, Professor Messerle said Australia's technological self-sufficiency was now somewhere between the top industrial national of the world and the third world.

Young talented researchers were leaving to work overseas because of the 'inadequacies of industrial and academic research opportunities in Australia'.

Local consumers were paying for the expertise built into imported high technology computer-based products.

'The result is that the Australian community loses not only in respect of talent drain but also in respect of the high costs of these products,' Professor Messerle said.

'The inevitable result is that, unless this trend is halted, Australia will find itself among the third world countries — spending its available resources on sustaining the high standard of living in foreign countries while our own standard of living deteriorates.'

The board, which is funded by CSIRO, Telecom Australia, the Overseas Telecommunications Commission and the Department of Defence, has asked the Government for a $20 million funding increase. Professor Messerle said the Minister for Industry, Technology and Commerce, Senator Button, and the Minister for Science, Mr Jones, had 'accepted the seriousness of the situation'.

The request for an additional $20 million was 'optimistic', but it was also an 'absolute must and not excessive'.

Research and development could not be allowed to deteriorate further. The nation had already lost much of its expertise and initiative in advanced technology.

Professor Messerle said local computer manufacturers and software producers had responded positively to the board, but the large overseas-based companies had made no response.

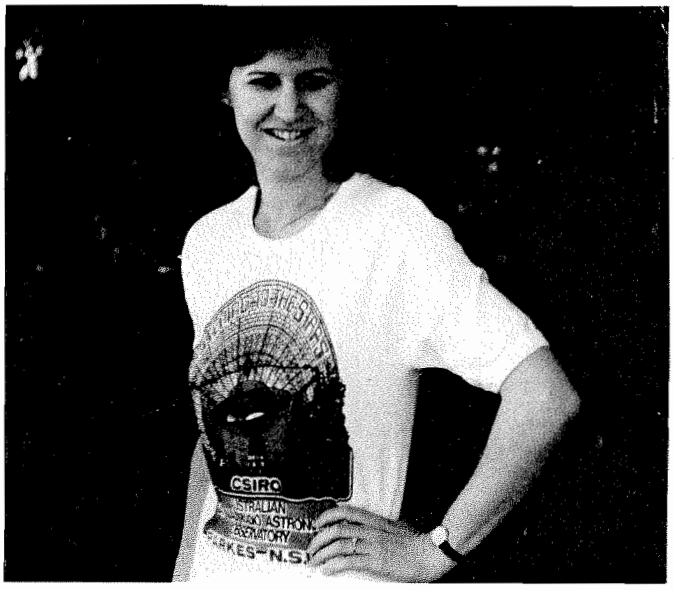
Since its establishment in 1981 the board had managed to make the Government aware of the problems facing computer research and development in Australia.

But, very substantial funding increases were needed if any 'significant impact' was to be made.

The board was set up to foster research and development in computer engineering and science, assist in improving the training of graduates, and to encourage interaction between universities, the Government and industry.

Professor Messerle said the board's long-term aim was to provide support for computing research carried out in universities, government agencies and industry.

However, funding levels had largely restricted grants to specific research projects in tertiary education institutions.



Ms Amanda McGuinness from the Sydney RAO recently visited the CSIRO Visitors' Centre at the Parkes Radiotelescope, which amongst its other attractions, sells T-shirts. Above, Ms McGuinness models the telescope T-shirt, which costs only $7 and comes in sizes 4–20.

The Centre is upgrading its tourist and education facilities, even to the extent of ordering new posters and putting enormous signs by the highway pointing to the telescope. The Centre has many fascinating objects for sale, including posters of various astronomical phenomena, images from the Voyager encounters and on Halley's Comet, along with recent history from the space shuttle. Postcard sets, slide sets, comical bumper stickers, information kits, Planispheres, and books are all readily available. For further details, contact Ben Longden on (068)633131.

Photograph by Ben Longden

Industry buys system

A new computer system developed by researchers at the Division of Textile Industry and an Australian company has been taken up by industry.

Industrial Computer Systems (ICS) and the Division developed a novel, cost-competitive micro-processor-based system for controlling textile dyeing machines and other process equipment.

It is the first Australian system developed for industrial dyehouses, but could be applied to many manufacturing process control systems, including batching and mixing, chemical processes, flow control and speed control.

Automated systems are an essential feature of modern dyehouses, offering improved production, reduced energy consumption, easier reproduction of colour shades and optimum use of dyes and chemicals.

A Melbourne dyehouse has bought the system and further sales are expected. An American-based supplier of hardware, Prolog Australia Pty Ltd, has also funded ICS to implement the software on its range of hardware.

The Division of Textile Industry decided to develop an Australian system rather than buy a packaged overseas development, which can have limitations in a research environment.

An innovative system for controlling textile dyeing machines and other process equipment has been installed at the Division of Textile Industry. Some of the staff involved in the project are, from left, Mr Frank Harrigan, Mr Rod Hayes and Mr Andrew Thomson.

From the Chairman –

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

The new year started for CSIRO with a happy and glittering event way up near the top of the map at Cairns.

On 12 January Her Excellency Lady Stephen named *O.R.V. Franklin*, the first oceanographic research vessel ever owned by CSIRO. And what a splendid vessel it is! Designed by Schiffko of Hamburg and constructed by the North Queensland Engineers and Agents of Cairns, it displays all the signs of a superbly conceived and built ship. It has many special features to make it a floating laboratory, including computer controlled transverse thrusters to enable it to manoeuvre and remain stationary in heavy seas.

Lady Stephen, who was accompanied by her husband, the Governor-General, took obviously sincere pride in launching her ship and I believe she will always take a special personal interest in the fortunes and achievements of the *Franklin*. She presented the vessel with a fine engraved portrait of the illustrious Sir John Franklin, the nineteenth century explorer and Governor of Tasmania. Nobody could have performed the whole task with more enthusiasm and graciousness than Her Excellency.

Next day we went to sea in the *Franklin*, which ploughed through the waters round the coral reef under a boisterous sky laden with tropical clouds. Most impressive was the almost total lack of vibration from the ship's engines. Angus McEwan and his colleagues of the Division of Oceanography are rightly very proud of their new acquisition; much credit goes to all those who have played a part in this venture. It has been a long time, going back to the 60's, since the first urgings took place.

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The new year has seen a significant step forward in the development of Interscan Australia Pty Ltd with their first contract to supply five microwave landing systems for overseas airfields — in Connecticut and Florida. The Australian company which operates in partnership with the US-based Northrop Corporation, is responsible for supplying the antennas and test instruments.

This order is important to the company partly because it provides cash-flow to help bridge the time gap between the present and the time several years hence when the main flood of demands will begin; and partly because it gives the company a visible presence and new credibility on the US scene. Great credit should go to their managing director, John Drennan, and his brilliant team of engineers for demonstrating that a small Australian company can make its mark on the high technology world market. It was 14 years ago when CSIRO and the Department of Civil Aviation started on this venture — once again a demonstration that Rome is not made in a day.

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During the last few years many people in CSIRO have worked ceaselessly to help close the gap between CSIRO and industry (especially manufacturing industry). The formation of SIROTECH is but the latest of a series of actions taken to strengthen our industry connection. Yet the myth persists 'out there' — among part of the business community, bureaucrats and politicans — that we are not interested in helping industry or that our work is irrelevant to its needs. I ask everyone in CSIRO in a position to do so to help inform the community of our dedicated efforts to help industry.

We are exploring yet another move to get closer to industry. The concept is to invite industry to join us in funding research programs which will result in more CSIRO work on problems of immediate concern to manufacturing industry. We are actively developing the concept at the moment.

The idea arose from discussions I had late last year with Tom Hayes, the Head of the Department of Industry, Technology and Commerce.

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Everyone who has responsibility for at least one or two persons is a manager; and the most important facets of management are care and consideration for those persons, encouragement and motivation.

CSIRO has traditionally allowed laissez-faire methods in the management of its people. Each division has gone its own way and developed its own style. Our senior people have been trained as scientists; management skills have often been left to chance. I personally am a great believer in individual style, especially when it works well. Yet I doubt, in the present environment, whether laissez-faire management style will be acceptable for very much longer. I am convinced we must move increasingly in the direction of the research divisions of large private companies and attach increasing importance to efficient management at all levels.

An Executive working party comprising Graham Spurling (Chairman), Michael Pitman and Kevin Thrift is currently examining this question and we may expect some radical developments.

Paul Wild

People... People
People... People

Dr Alan Newsome, Division of Wildlife and Rangelands Research, has been awarded a visiting professorship in the Department of Ecology and Evolutionary Biology at the University of California for six months.

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Mr Jim Sleeman of the Division of Soils retired recently after 38 years with the Organization. He made an outstanding contribution to both the work and life of the Canberra laboratories.

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Sir Ian Wark has been honoured again: papers presented at an international symposium honouring his contributions to the science and technology of froth flotation have been launched by the Australasian Institute of Mining and Metallurgy in a volume called *Principles of Mineral Flotation*. It was edited by **Mr Jim Woodcock** and **Mr Mike Jones**, both of the Division of Mineral Chemistry.

***

Mr Les Cowper from the workshop at the Cunningham Laboratory has retired after 20 years with the Division of Tropical Crops and Pastures.

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Mr John Brooks has retired from the Division of Animal Health after 21 years as part of the workshop team. He worked mainly on the manufacture and maintenance of electronic instruments and equipment.

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Dr Mike Manton, above, recently resigned from the Cloud Physics Laboratory of the Division of Atmospheric Research to become the Director of the newly formed Bureau of Meteorology Research Centre.

Dr Manton held two records at Cloud Physics: a publication record of 34 articles over eight years on a wide variety of topics, and a dress record of never having attended the Epping site without wearing a tie.

Such was the influence on the otherwise casual, slack?, sloppy?, dress habits of the Division, that on one occasion the entire staff felt compelled to wear ties in a somewhat innovative fashion as a welcome back to Dr Manton from an overseas trip.

At a farewell function at a local pool (to which, of course, he wore a tie!), Dr Manton was wished well by friends and colleagues who presented him with a trophy to be known as the Cloud Physics Cup.

This will form the focus of a sporting competition between the Bureau of Meteorology Research Centre and expatriate Cloud Physics Laboratory staff who make the move to the Melbourne site of the Division of Atmospheric Research at Aspendale.

Protect the plants too

Research on rare and endangered plant species is assisting the Government's conservation planning and being used to prepare environmental impact statements.

Botanist/ecologist Mr John Briggs, based at the Division of Plant Industry, has received funding from the Australian National Parks and Wildlife Service (ANPWS) to continue the register of rare and endangered Australian plants.

The first edition was published in 1981 by ANPWS and financed by the World Wildlife Fund Australia.

'We wanted to tell the public about the plight of plants. Animals have had a lot of attention in the past but plants have been ignored,' Mr Briggs said.

'We recently published *Extinct and Endangered Plants of Australia*, with that in mind.'

'We have so far identified 78 species which we believe have become extinct since Europeans came to Australia. Two hundred are under imminent threat and may become extinct in 10 to 20 years.'

There are 612 vulnerable species which although not presently endangered are at risk over a longer period through continued depletion.

A total of 2267 species are currently recognized as either rare or threatened — approximately 10% of the total known indigenous Australian flora.

A whole range of plants are endangered, from eucalypts to little annual herbs, grevilleas to ground orchids and daisies. Several poisonous plants are threatened by deliberate eradication in Western Australia.

'Agricultural development has been the major threat by far to our flora, and the areas most settled and developed were also the areas where there was the greatest diversity of species,' Mr Briggs said.

'Thus the major concentrations of our threatened flora are in the south-west of Western Australia and along the south and east coast of eastern Australia.

'This project is the only national co-ordination of this work, and it's enabled more effective state conservation programs to be implemented. Sometimes a state has made special efforts to survey or conserve a rare or endangered plant while it may be abundant in another state,' he said.

Mr John Briggs, right, and Dr John Leigh search a paddock in the Canberra suburb of Kambah for Swainsonia recta *plants which were last seen there in 1983. Another 110 of the endangered plants were found near Wellington NSW last year, but these are the only known sites.*

Swainsonia recta *is one of a number of species the Ecology Section at the Division of Plant Industry wish to study in order to assess the relative importance of various threats to plant species' survival. They think* Swainsonia recta *is threatened by not enough burning of its habitat, which has also been altered by grazing, competition from pasture and weeds and added fertilizers. The ACT area is also threatened by a proposed housing development.*

Information gained from these studies will enable the group to recommend appropriate management programs which assist the survival of the remaining populations of the threatened species.

The Australian Heritage Commission has financed Mr Briggs to survey several states and liaise with the relevant State Departments. He nominates areas containing endangered plants for the Register of the National Estate, Australian Heritage Commission.

For that project he has done surveys in the Northern Territory, Western and South Australia and the ACT.

'It is one thing to protect plants, however, and another to manage them properly,' Mr Briggs said.

'We know little about the ecology of many of these species. The World Wildlife Fund has approved a project, but as yet has no money, to do research into the processes which threaten species so we can elucidate management techniques.'

For instance, there was a species of rare orchid that grew only along a certain section of railway track in Victoria. A concerned society fenced part of it and asked VicRail to discontinue its habitual burn of the area. VicRail did so and 10 years later the native grasses had grown up and smothered the orchids: killed them with kindness.

CSIRO contributes the facilities for Mr Briggs' work, and he said he hoped the Division of Plant Industry's new cold storage facilities would enable long term seed storage while conservation and propagation strategies were worked out.

'However, conservation in the wild is the only satisfactory solution at this stage.'

'It is important to retain examples of species in their natural habitat because the plants are most likely to survive in the long term in their natural environment, and greater genetic diversity is also maintained.

'The Botanic Gardens can provide a good backup, but at this stage there are problems, such as limited space, unwanted hybridization and highly specific soil and other environmental requirements, in maintaining many species in cultivation,' he added.

New health adviser

A new awareness of occupational health and safety is the aim of CSIRO's recently appointed Occupational Health Adviser.

Dr John Graham said the major issue confronting the Occupational Health and Safety Unit was achieving a more general concern about health and safety at work.

There was also a need to improve standards of safe practice particularly in laboratories.

Dr Graham, who is now co-ordinating the health study at the Floreat Park laboratories in Perth, said 'fairly unsafe work practices' were common.

'In many areas, particularly in the laboratories, there have been fairly unsafe work practices and poor conditions, certainly lower than one would expect,' he said.

'I think one thing that has come to our notice is the inadequacy of ventilation in laboratories. Many fume cupboards are poorly designed and maintained.'

Dr Graham said his first priority was 'sorting out the situation' at Floreat Park.

Another priority would be 'establishing a rational system of health monitoring and surveillance of staff.'

The aim would be to set up a 'reasonably decentralised system of health and safety' with each site carrying out some surveillance.

Dr Graham is also drawing up policies on medical surveillance and on smoking in offices.

He graduated from Sydney University in medicine and has worked for various NSW hospitals, the RAAF and the South Australian Health Commission before joining CSIRO late last year.

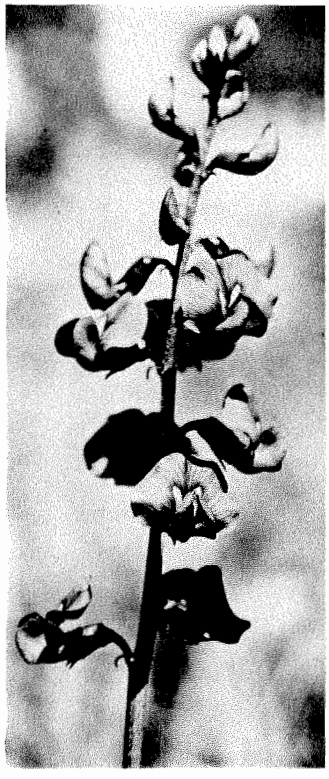
Dr Graham is now completing a Master of Public Health degree with the Commonwealth Institute of Health. He is an associate member of the Australian College of Occupational Medicine.

Group ends

The CSIRO Commercial Group formally ceased operation at the end of January.

After two months' secondment of staff to SIROTECH, all functions previously performed by the Commercial Group have been taken on by SIROTECH.

Staff have either joined the new non-profit company, which provides business, legal and informational support for the transfer of CSIRO technology to industry, or have moved into industry or other areas of CSIRO.



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CoResearch

CSIRO's staff newspaper *March'85* *278*

Minister launches SIROTECH

The Federal Minister for Industry, Technology and Commerce, Senator Button, this month launched CSIRO's new company, SIROTECH.

The marketing-oriented, technology transfer and commercial assessment company, which has been set up by CSIRO in conjunction with the Australian Industry Development Corporation (AIDC) and business leaders, will market CSIRO research and technology.

SIROTECH will act as CSIRO's business adviser, its principal patent agent and adviser and manager of the Organization's property portfolio.

It will also advise on the needs and requirements of Australian industry thereby playing an important part in the planning of research.

Senator Button said SIROTECH was a 'forward looking' initiative in assembling a team of professionals with proven commercial and business track records to tackle the problems of analysing, presenting and marketing new technology arising from research programs.

At the formal launch held at the Canberra International Motor Inn, Senator Button said SIROTECH was a natural development and co-ordination of earlier efforts in research application and commercial activity.

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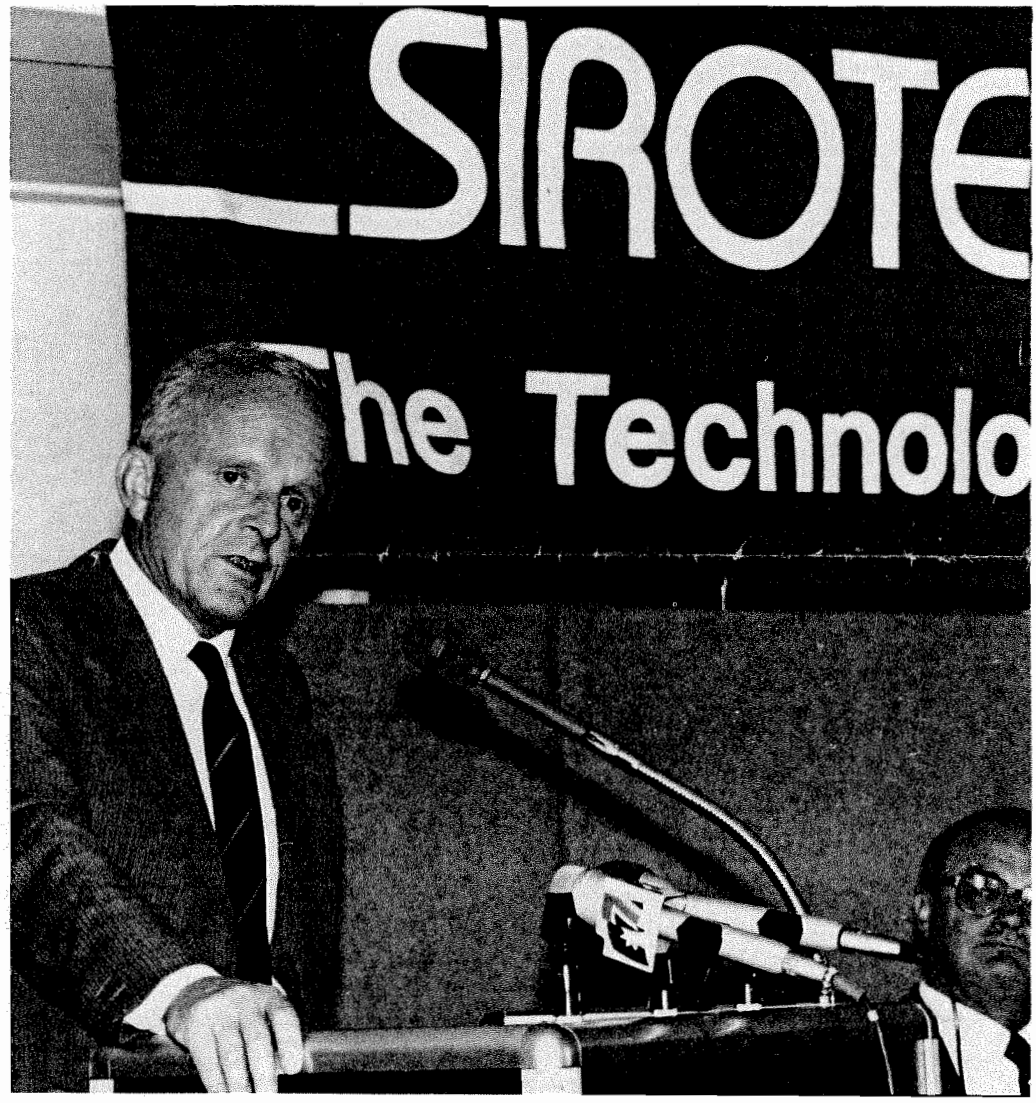


The Minister for Industry, Technology and Commerce, Senator Button, launches SIROTECH, as the new company's chairman, Mr Lindsay Cuming, looks on.

Staff fears over future of DBR.

CSIRO staff association representatives at the Division of Building Research have written to the Prime Minister, Mr Hawke, expressing concern over the possible separation of the Division from the Organisation.

The representatives said they understood federal Cabinet had asked for a submission canvassing the integration of the Department of Housing and Construction's Experimental Building Station with the Division.

'We are conscious of the need for economy in Government,' they said in a telex sent to Mr Hawke on February 19.

'We believe strongly that any integration of building research which would remove the DBR from CSIRO would be expensive to implement and more costly to maintain than the present arrangement.

'Overall we see that any such moves would seriously prejudice the future of research for the building and construction sector in Australia, which is well and efficiently served by our members in CSIRO.

'A move to transfer officers out of CSIRO would, in our view, lead to dissatisfaction and poor morale among our members, and reduce incentives.

'The quality of research is particularly sensitive to the environment in which it is conducted. In line with the principles of industrial democracy we urge that the perceptions of our members regarding the conduct of the research effort be given due regard.

'We were happy that the Minister for Science (Mr Jones) gave positive assurances to the CSIRO Officers' Association earlier this year that no parts of CSIRO, including DBR, would be transferred to other authorities. We trust that the Minister's assurances will be honoured.

'We therefore seek your further confirmation that the Division of Building Research will remain in CSIRO.'

No reply has been received to the telex which was signed by representatives of the CSIRO Officers' Association, the CSIRO Technical Officers' Association, the CSIRO Laboratory Craftsmen's Association, the Administrative and Clerical Officers' Association and the Australian Public Service Association.

CSIRO defended

The Chairman, Dr Wild, has launched a strong defence of CSIRO's research efforts and priorities and has called on industry to identify strategic national research needs.

Dr Wild said CSIRO's history appeared to have been rewritten to suit the government policies and attitudes of the day.

'Government, and public, concern about scientific and technological matters is now focussed on the need for more immediately useful or relevant research, particularly research that will benefit Australia's manufacturing industries,' he told the Australian Industrial Research Group Symposium in Canberra recently.

'From this perspective then, CSIRO's past is being reviewed, its history rewritten and it is being judged to have failed to contribute sufficiently to the national good, to have done work that has been largely irrelevant, to have done work that has concentrated too much on the agricultural industries.

'This view is simplistic and naive because it takes no account of the government policies, industry attitudes and market realities of the past.'

It had been only in the last few years that much political attention had been paid to science and technology and only in this time that government had become really concerned about the problems facing Australia's manufacturing industries.

cont. p. 7

Letters to the Editor

Dear Editor,
An article in CoResearch 276 headed 'Maths in Industry' included an extraordinary description of statistics and industrial mathematics as 'largely a matter of using well established formulae'. This description denigrates and distorts grossly the science and practice of statistics and mathematics, certainly as conducted in CSIRO's Division of Mathematics and Statistics and in SIROMATH Pty Ltd.

Far from being static disciplines relying entirely on established formulae, mathematics and statistics are evolving in response to the challenge of new problems and more complex data sets which arise continually in CSIRO's research. These often require for their solution the development of new mathematical and statistical theory and methods or the adaptation of existing ones.

Statistics concerns itself with variability. All scientific investigations are plagued by unwanted variability in the experimental data as nothing can be measured with perfect accuracy. In identifying the sources of variability and taking them properly into account in drawing conclusions based on the data, the statistician is at the heart of the scientific method.

There is an equally important role for statisticians in designing experiments to make the best possible use of ever dwindling resources and to ensure that the data obtained can be unambiguously interpreted by the scientists with whom they collaborate.

Applied mathematics is concerned first with the formulation of appropriate mathematical models to answer the questions raised by scientists about physical, chemical, biological or industrial processes; next with the solution of these models; and finally with the interpretation of the results. Even for simple problems, success with this process of formulate-solve-interpret often involves deep mathematical concepts and non-trivial mathematical manipulations. This happens because simple questions do not necessarily have equally simple answers.

In fact, because it is only through mathematics that the quantitative frameworks of science and technology can be formulated and manipulated, applied mathematics plays a fundamental role in all aspects of CSIRO research. However, the contributions of such work to the success of CSIRO research projects are often not fully appreciated, because they play a secondary, though crucial, role in the interpretation of the process under consideration.

The Division of Mathematics and Statistics is active in providing new methodology for CSIRO research programs through innovative research and in applying state of the art techniques, often involving sophisticated graphics and multi-variable methods, to the data obtained in CSIRO's research. The skills required by the Division's mathematicians and a keen understanding and investment of time and effort in the disciplines of the scientists in whose programs they participate as collaborators. The application of well established formulae is a small part of their work.

It is a pity that CoResearch allowed to go to press an article whose view of mathematics and statistics was based on complete ignorance.

T.P. Speed
Chief
Division of Mathematics and Statistics
Canberra

Dear Editor,
I refer to Mr K A Handreck's letter in the Dec'84/Jan'85 Edition of Coresearch.

It is true that there was no help by way of central funding for the first eight 'Discovering Soils' booklets. There were two reasons for this. The Executive at the time did not accord the matter sufficient priority to allocate funds for the activity and there were no procedures in existence at that time for either retention of revenue or to obtain an allocation for costs against future revenue. Subsequently procedures were introduced for reimbursing costs associated with all revenue earning activities.

Actually the annual survey of costs associated with earning revenue we now conduct, has resulted in a surprisingly low annual tally when compared with the public outcry continually heard over the need for help with revenue earning activities.

Mr Handreck does not refer in his letter to the fact that subsequent to the 8th Edition of 'Discovering Soils' funds have been provided for reprinting.

There seems to be a misunderstanding over the request for $2,500 for preproduction expenditure. The advice to the Division was that although the Executive had distributed the majority of funds at the time the request was made, the Division could proceed with the expenditure in the firm expectation that it would be covered without charge to the Division's estimates in the following year.

I found Mr Handreck's somewhat intemperate remarks about dedicated officers in the Headquarters Finance Section most unfortunate. I do not know how well he knows the people he has criticized. I can attest to the fact that they are hardworking people who leave no stone unturned to help CSIRO meet its objectives in a difficult economic and financial climate despite the many constraints of Government accounting.

H.C. Crozier
General Manager
(Finance and Administration)

Dear Editor,
The article 'looking for a Saner World' (CoResearch 276 Dec 84, Jan 85). No person (or at least no sane person) would want to be involved in a nuclear holocaust. Of course we may differ on how best to prevent this happening as we have no precedent to guide us.

A definition of a teacher is one who communicates a truth that has been well contemplated. I think the same should be true of a scientist.

I note that SANA scientists are working for the dissemination of scientifically accurate information about the effects and capability of nuclear weapons.

I therefore find it strange that they should propagate the story of the nuclear winter. This story first appeared in Parade (Oct 30th, 1983) in an article written by Carl Sagan. Later it was taken to a Washington PR agency, Porter and Norelli Associates, who for the consideration of $100,000 promoted this story in much the same way as Americans promote soap flakes or breakfast cereal.

However, it will be quickly pointed out that this type of promotion does not invalidate the facts.

What are the facts? Sagan tells us that a nuclear war, in which a mere 100 megatons would be exploded, would block out enough sunlight to drop summer temperatures to near freezing. Yet according to the Colorado University Seismology Department, the Mount St Helen eruption starting on the 18th May, 1980, was 24 times the Sagon threshold while the Krakatoa eruption of 1883 was about 240 times the Sagan threshold.

I think further contemplation on updated facts is needed.

P.R. Smith
Division of Mineral Chemistry

Seminars for R & D managers

A CSIRO-managed program designed to help the ASEAN countries upgrade their research and development management started this month.

CSIRO has agreed to assist the six countries of ASEAN by organizing seminars and workshops for top, middle and lower managers from designated national scientific institutions.

The project will be managed by CSIRO under the auspices of the ASEAN Australian Economic Co-operation Program.

The Australian Development Assistance Bureau will provide about $1.4 million for the three-year project.

In Australia, many groups and individuals throughout CSIRO will participate in the program together with scientists and administrators from other Australian research and development institutions in both the public and private sectors.

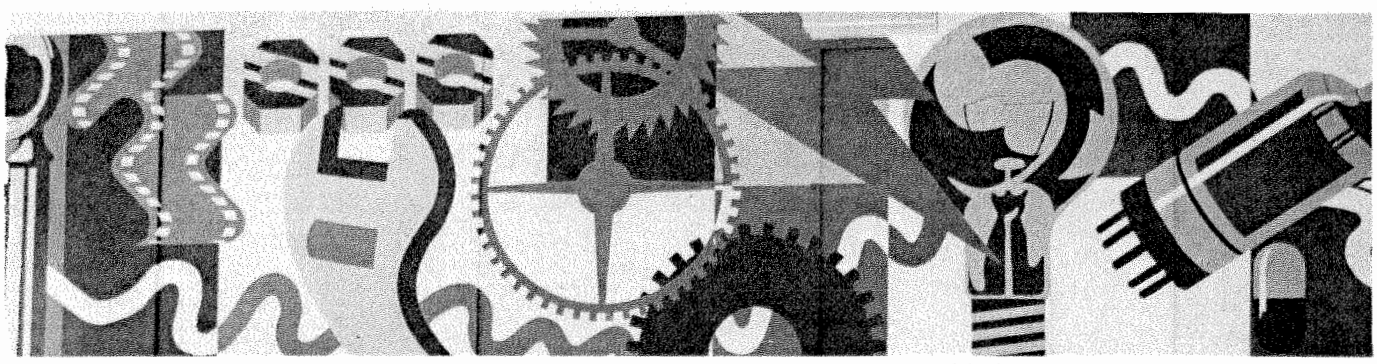
The aims of the program are to assist research managers at the middle level and to help ASEAN management trainers to upgrade their capabilities in research and development management training so they can carry on the program in their own countries.

Each group of middle-level managers and trainers will spend a total of three months in Australia and will attend three residential seminars. They will also study research management in CSIRO Divisions and Units and other Australian scientific and training institutions.

The first group arrived in March with other groups scheduled to arrive in September this year, September 1986 and September 1987.

The ASEAN institutions initially involved in the project are: the Ministry of Development in Brunei Darussalam; the Indonesian Institute of Sciences; the Standards and Industrial Research Institute of Malaysia, the Malaysian Agricultrual Research and Development Institute; the National Institute of Science and Technology in the Philippines; the Singapore Economic Institute of Scientific and Industrial Research; the National Research Council in Thailand and the Thailand Institute of Sciences and Technological Research.

Murals add to excitement of Education Centre



The second mural in the three part series at the Adelaide Science Education Centre.

School students will find more than a range of experiments at the new CSIRO Science Education Centre in Adelaide.

Graphic designers with the Science Communications Unit have overcome the traditional and somewhat sterile atmosphere of a laboratory with a series of dramatic murals.

The three murals, which were designed by the unit's chief graphic designer, Mr Brian Gosnell, depict science and technology: past, present and future.

The aim of the giant murals, which are about 1.4 metres high and six metres wide, is to make the laboratories visually exciting for the primary and secondary school students who will use the centre.

Four colours were used, light and dark blue, green and a deep tan.

The first mural depicts the technology of early man including fire, the wheel, wheat cultivation, an early telescope and the first flight.

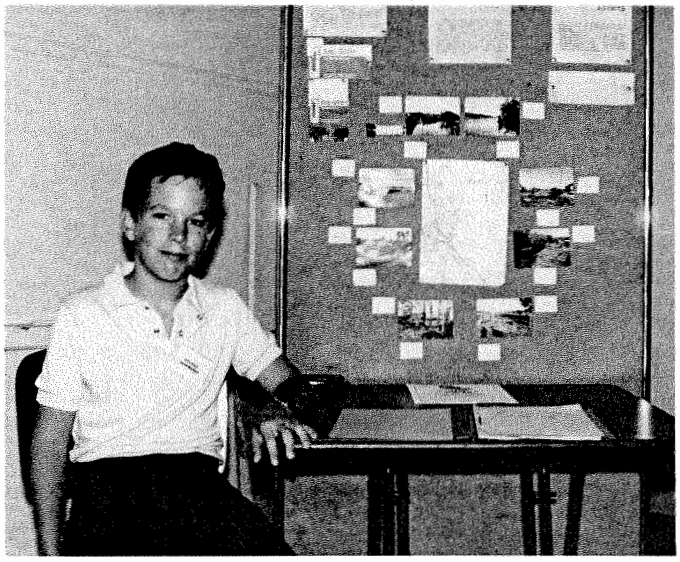
The second includes a telephone, film, mechanical tools, clock parts, electricity, a radio valve and a medicine capsule, while the third in the series depicts rocketry, molecular biology, a satellite, a silicon chip and robotics.

Mr Gosnell, and graphic designers, Ms Judith Nikoleski and Mr Ian Sharpe, devoted a week to painting the murals.

However, Adelaide's school students will have to wait to see the effect. The centre is expected to be opened in April and is a joint CSIRO and South Australian Education Department project.

It will offer students the opportunity to work on a wide range of experiments under the supervision of experienced science teachers.

Prize sets the trend



Stuart Harrison, the youngest state finalist to have been among the 23 who received Merit Certificates from the Chairman, Dr Paul Wild, is from Mt Gravatt, Queensland. Stuart is only 12-years-old.

CSIRO, with BHP, the Australian Science Teachers' Association and Westinghouse Electric Australia has been instrumental in setting the trend for a memorable International Year of Youth by once again organising the BHP Science Prize event this year.

Quite by accident, but appropriately enough, CSIRO and BHP set the ball rolling for a year that holds much promise for young achievers.

As Robert Sinclair, the 18-year-old first year physics student, from Mt Waverley, Victoria, who won the first prize said: 'This competition showed us the human side of science, where encouragement and enthusiasm stirs us on to achieve new goals. This has been my biggest dream.'

Robert won a gold medal and $5000 in the national Science competition with his entry 'Aluminium Electrodes'. Like so many scientists before him, the idea came upon him quite by accident while 'muching about in a friend's kitchen.'

Two aluminium foil sheets and a sink full of salt water seemed to produce some extremely unusual electrical characteristics of a cell. The project, an investigation into electrochemistry, earned Robert considerable admiration from the national judges.

A silver medal and $1000 went to Neil Ireland, from Wentworth for his project 'A Quantitative Study Into the Effect Of Seed Size in Wheat' Neil examined seed size and germination rate, seed size and growth rate, seed size and drought resistance, seed size and frost resistance, seed size and regrowth after grazing. Neil hopes to develop a system in the future where genetic size measurement could be done en masse.

Maryanne Large, from Pymble NSW won the bronze medal and $500 for her study of 'Acoustic Properties of Potential Violin-making Materials.' She was inspired by a paper in the Scientific American and being an avid violin player, was looking for the ideal material.

Professor Graeme Clarke, the creator of the bionic ear, and othorhinolaryngological specialist gave away the prizes. His contribution to the presentation with illustrations from his research work and video interviews with his patients was received with enthusiasm by all present.

Professor Clarke in the course of his speech encouraged young scientists to 'be pig headed at times' if they believed they had good reason.

He also commented on the imagination shown by many contestants in their projects.

Professor Clarke also presented three merit awards of bronze medals and copies of David Attenborough's 'The Living Planet' to three students in the under fifteen category.

Their projects ranged from the Effect of Carbon dioxide on Plant Growth to the Localisation of Sound and Deep Ripping Test, a study of soil erosion.

The Chairman, Dr Wild presented the 23 State Finalists with Certificates of Merit. In the course of his speech, he reminded the aspiring scientist that —

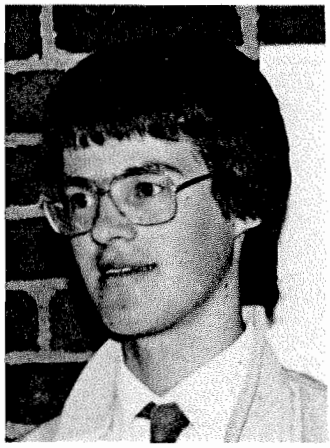
'On the one hand, the scientist is encouraged to identify problems of national significance which may benefit from scientific research.'

'On the other hand, the scientist has to work within boundaries set by governments, industry advisory committees, the community at large ... and the availability of funds.'

He emphasized the crucial need for individual qualities, intellect, persistence and courage which flourish against all odds.

The first and second prize winners also won a $15,000-plus trip to the US, sponsored by Westinghouse Electric Australia. The winners will compete in the 36th International Science and Engineering Fair and will tour Westinghouse's Pittsburgh headquarters.

In the words of the Chairman of BHP, Sir James Balderstone:
'It is indeed gratifying to say that the backers and sponsors of today's awards are themselves recognised as innovators and achievers on an international stage'.



Robert Michael Sinclair, whose entry 'Aluminium Electrodes' won the BHP Award of $5000 and a gold medal. Robert is from Mt Waverley, Victoria, and wants to be a theoretical physicist.

From the Chairman -

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

CSIRO is the principal government research organization of Australia and covers all sectors of research for industry and the community except clinical medicine, nuclear energy and defence research.

But within our broad mandate we are not the only government research agent, and we interface and sometimes overlap with other research bodies: with the Australian Institute of Marine Science, the Bureau of Mineral Resources, the Bureau of Meteorology, State Departments of Agriculture, and so on. It is particularly important that we maintain close and cordial relationships with these bodies so as to engender a spirit of collaboration and co-ordination rather than rivalry and territorialism. The former usually prevails but every now and then a border dispute arises and action needs to be taken to prevent an outbreak of hostilities or to meet the threat of a take-over bid.

Each case needs to be examined sensibly on its merits so as to arrive at a solution dictated by the national interest rather than the territorial ambitions of the parties concerned. Of course the most notorious take-over attempt was when Rex Connor tried to annex the minerals and energy activities of CSIRO. There have been several lesser disputes since then but usually they have resulted in agreements towards closer collaboration.

The latest example of this sort of thing is reflected in the telex, reproduced elsewhere in this issue, from Divisional staff association representatives to the Prime Minister about the staff's fears that the Division of Building Research may be separated from CSIRO. This affair started when the razor gang of the previous government decided to try to dispose of the Experimental Building Station at North Ryde to private enterprise. The attempt came to nothing but the whole exercise had a debilitating effect on the operation and staff of the EBS. Recently the Department responsible for it (Housing and Construction) — a Department with whome we have always had excellent relations — initiated steps to 'revitalize' the EBS through the injection of additional resources.

But lateral thinking seems to have entered the scene and somebody suggested perhaps our Division of Building Research should be combined with the EBS to form some sort of institute dedicated to the construction industry. If ever there were a case of the tail wagging the dog this was surely it. This initiative is still unresolved and needs to be carefully watched.

The staff of the Division of Building Research can be assured that the Executive's view is conditioned by its perception of the national interest and by the wishes of the staff. Both these point to the Division remaining within CSIRO and the Executive will fight any move to sever the Division.

★★★

A brilliant piece of scientific research whether it leads to greater understanding of nature or the introduciton of new technology to the market place brings its own reward to the person or persons responsible through the satisfaction of achievement. It usually also leads to promotion! Nevertheless it has been the custom of our society, the world over, to recognize outstanding achievement by special awards. These provide a permanent reminder of an achievement as the years and decades roll by.

At the suggestion of its part-time members, the Executive has decided to initiate the annual award of four 'CSIRO Medals' for outstanding achievement in research. Three of these will go to CSIRO staff and the fourth will be awarded for research in Australia outside CSIRO.

★★★

My family and I live on a 40-acre property outside Canberra where we graze fifty or so sheep. On Saturday 2 March we had the somewhat unnerving experience of witnessing a massive bushfire, whipped by strong winds, envelope our property. Outside the immediate area of the house every blade of grass was burned to the ground and the paddocks now are black. Fortunately we had kept the area around the house green through the drought by regular watering; thanks to this, to a swimming pool and high pressure pump, and to the dedication of two young fire-fighters from the Department of National Parks and Wildlife the house was saved. So too were the sheep which we mustered round the house. But it all left one feeling a bit flat.

After devouring our pasture the fire moved on to the next property — Greg Tegart's place — and that suffered the same fate.

It is as well that the Executive's decision to form a National Bushfire Research Unit had already been taken.

★★★

Paul Wild

New group meets

The new national network for women in science, WISENET, held its first public forum recently.

Resulting from ANZAAS, WISENET (Women in Science Enquiry Network) aims to increase women's participation in the sciences and to link people (both women and men) who are working towards a more participatory and socially useful science.

Dr Margarita Bowen, a founder of WISENET, addressed the forum and said link teams had formed in all but one State. WISENET would be based on State branches which acted autonomously, focussing activities at a local level but also joining with other groups for more general issues.

WISENET'S main objectives are: to increase women's participation in the sciences and to examine the education and employment structures which currently restrict their opportunities; to promote communication between scientists and the public on social and environmental issues; to work towards promoting research and technologies more appropriate to world needs; and to look at alternatives, such as more democratic and participatory systems, to the male dominated power structure in the sciences.

'We have a bad time ahead of us. This is the time to pull together and use our resources as best we can,' Dr Bowen said.

Expert to head Division

Dr Bruce Fraser (left) with Dr Colin Ward who was appointed Assistant Chief of the Division.

A biophysicist and expert on the structure of fibrous proteins has been appointed chief of the Division of Protein Chemistry.

Dr Bruce Fraser, 60, is widely recognised for his research work on the structure and properties of fibrous proteins including keratins in wool and hair and collagen in leather

Dr Fraser said he was particularly keen to 'improve and extend' collaborative work with other CSIRO divisions and with industry.

The Division's resources are used to aid a variety of industries including the wool textile industry, the hides, skin and leather industry and through collaboration with other Divisions to aid in the development of vaccines for animal diseases and the improvement of animal feedstuffs.

Dr Fraser said the Division was making a valuable contribution through work that was directly applicable to industry and also through strategic research which would pave the way for future developments.

'We are certainly conscious of the need to introduce biotechnology into all of these industries,' he said.

'For example there are problems in the wool textile and hide, skins and leather industries with effluent.'

Biotechnology could be used to reduce effluent problems leading to considerable savings to industry.

Dr Fraser, who joined CSIRO in 1952, has published 150 scientific papers and two books on fibrous proteins.

He was awarded the Royal Society of Victoria's Science Medal in 1981.

Earlier this year he was awarded the S.G. Smith Memorial Medal by the Textile Institute of the UK for his work on the structure of the wool fibre.

Dr Fraser obtained a first class honours degree in physics and mathematics from Kings College, Longon, and was later awarded Ph.D and D.Sc. degrees. He was elected to fellowship of the Australian Academy of Science in 1978.

Brisbane RAO retires

Mr David Thomas, who is now attached to the Advisory Council, will retire at the end of March after more than 40 years with CSIRO.

Mr Thomas, 56, has been the RAO in Brisbane since 1966 and spent two years in London as a scientific liaison officer.

The posting to London in 1969 was a 'highlight' of his career, Mr Thomas said.

While a liaison officer he was Australia's representative at International Scientific Film Association meetings held in the Soviet Union, West Germany and Belgium.

Mr Thomas joined the CSIRO in 1944 as a technical assistant in the Division of Entomology in Canberra.

Later he moved to the Regional Administrative Office in Canberra as personnel officer and in 1951 moved to Brisbane as a senior clerk with the plant and soils laboratory.

He has been secretary of the State Committee since 1973, but has spent the last year in Canberra attached to the Advisory Council.

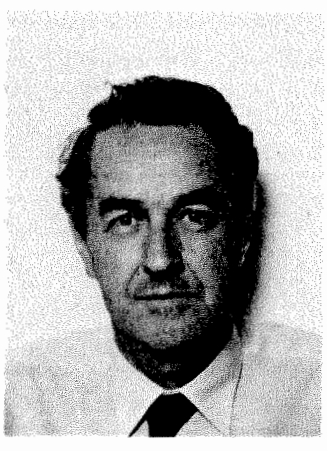
Mr Thomas said he found the CSIRO a great organization to work for.'

'I don't think I would have stayed for so long if I hadn't enjoyed it,' he said.

Mr Thomas said he was looking forward to working on his hobby farm near Toowoomba and doing some wood turning.

He was also planning to travel with a round Australia trip the first priority.

Mr Thomas and his wife, Claire, plan to retire in Toowoomba.



Dr Graeme Caughley, of the Division of Wildlife and Rangelands Research was in the US during February to count bears.

Dr Caughley was invited as a consultant to the US Fish and Wildlife Service to discuss the census of grizzly bear and the population dynamics of elk.

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Mr Tal Ghaly of the Division of Energy Technology is in Egypt for three weeks working for the United Nations under the TOKTEN (Transfer of Know-How Through Expatriate Nationals) project.

The aim of the visit is to study the methods of handling and storing rice in Egypt.

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A Melbourne University botanist, **Dr Rosalind Hoggart** has taken up a three year research scientist appointment under the Division of Plant Industry's Agrigenetics Grant.

Dr Hoggart will collaborate in a program aimed at optimising DNA uptake by plants.

***

Dr Keith Saxton, of the US Department of Agriculture's Agricultural Research Service, is visiting the Division of Water and Land Resources.

Dr Saxton, who is a research hydrologist, is collaborating on the Division's regional evapotranspiration project.

***

Dr Geoff Eagleson has been appointed as Assistant Chief of the Division of Mathematics and Statistics. Dr Eagleson will continue to act as Senior Regional Officer of the NSW Group.

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Professor Peter Sharpe from the Biosystems Division of Texas AM University is visiting the Division of Water and Land Resources this month to work on a collaborative program on desertification.

An atmospheric scientist from the University of Colorado, **Professor Julius London**, is visiting the Division of Atmospheric Research during March and April.

Professor London has been a leading light in studies of atmospheric ozone and radiation for the last 30 years. He has been president of the ozone commission and the radiation commission of the International Association for Meteorology and Atmospheric Physics.

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Dr Eliezer Lifschytz, of the Department of Biology at the Israel Institute of Technology is spending 12 months with the Division of Plant Industry. Dr Lifshytz will be collaborating in research associated with the molecular biology of plants.

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Dr Doug Wagner from the University of Washington's Biology Department has joined the genetics section of the Division of Plant Industry for two years.

Dr Wagner, who is a US National Science Foundation fellow will work on regulation of plant genes.

***

Dr Tony Fischer of the Division of Plant Industry has been appointed Research Co-ordinator of SIRAGCROP.

***

Mr Neil Carriage, who was a Field and Workshop Technician with the Division of Plant Industry, resigned recently after 15 years with CSIRO.

***

CoResearch has a new editor. **Ellen Peterson** has taken over from **Penny Gibson**, who has left CSIRO to live in Fiji.

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The Australian School of Nuclear Technology at Lucas Heights, NSW, will holds its 34th Radioisotope course for non-graduates from May 27 to June 21.

Fence under inspection

Wang Chaoyang, a visiting Chinese scientist, and Russell Lewis of the Division of Building Research examine a decaying concrete fence in a Melbourne bayside suburb. Ms Wang, a research engineer from the Jiangsu Research Institute of Building Construction, is at the Division for 6 months researching the durability of concrete. Her visit is being sponsored by the United Nations Industrial Development Organization.

OA: smokers call it quits

Cigarette smokers run a gamut of risks every day: apart from newspapers screaming daily about the hazards to health there are the physical dangers of setting themselves alight and the verbal abuse from non-smokers objecting to the polluted air and foul breath.

The Officer's Association has begun a campaign to restrict smoking in working areas.

Dr David Topping, the Officers' Association South Australian delegate, is a strong proponent of this campaign.

A scientist at the Division of Human Nutrition, he researches the effects of smoking on the body.

'Smoking is already prohibited in the vicinity of electronic equipment such as computers. It would seem reasonable to assume that people are equally sensitive,' he said.

'In fact, the Public Service Board has already moved to prohibit smoking in enclosed work places such as photocopying areas and libraries and in reception and other areas.

'A similar move would seem to be most desirable for CSIRO so as to protect the smoker from hazardous exposures at work and to minimize irritation to the non-smokers who are now in the majority.'

'Even though cigarette smoking is now widely recognized as a major risk factor in the development of chronic diseases such as cancer, it is not generally understood that cigarette smoking is also a major risk factor for circulatory diseases,' he said.

'For example, smokers show accelerated rates of coronary heart disease while a large proportion of men and women who were sudden death victims, were cigarette smokers.

Tobacco smoke contains 3–5% carbon monoxide (CO) — about as much as in car exhaust. CO is poisonous and works by combining with red blood cell haemoglobin to block the transport of oxygen.

Because cigarette smokers inhale, they build up quite high levels of carbonmonoxyhaemoglobin and in consequence suffer from chronic hypoxia which may explain their increased risk of heart disease.

They need to inhale, and thereby increase their risk of disease, which is far more than cigar or pipe smokers.

Dr Topping said research at the British Tobacco Research Council Laboratories in the early 1970s had shown that nicotine, the pharmacologically active agent in smoke, can only be absorbed into the circulation under alkaline conditions but that mass produced cigarettes are made from high-quality white paper which has been bleached and which on burning gives quite acid smoke.

In the acid smoke of cigarettes less than 5% of nicotine is available for absorption.

'In contrast, 85% of pipe and cigar smoke nicotine is absorbable and people using them can get enough nicotine into the bloodstream through the mouth. To get an effective dose of nicotine, cigarette smokers must inhale and this substantially explains why the two populations of smokers show different disease risks.

'The need for inhalation draws tar into the lungs and, as tar is a carcinogen, could contribute to the increase in lung cancer,' he said.

'However, as well as being an independent risk factor, cigarette smoking can interact with other lifestyle factors to increase disease risk.

'For example, asbestos workers are at risk from a particularly dangerous form of lung cancer called mesothelioma. For such workers who smoke cigarettes the risk is increased manifold and a similar multiplication seems to occur with people working with radioactive and other toxic agents.

'Clearly, it is in CSIRO's interest to reduce smoking in laboratories and other working areas where such hazards may be found both to minimize acute risks (such as fire) and for the long-term interests of the Organization's employees,' he said.

Dr Topping said that while cigarette smoking is a risk to the users, all forms of the habit were irritating to surrounding people and increasingly recognized as a factor in the development of bronchitis and other respiratory problems.

Communicators meet

Dr Gary Johnson of the Division of Chemical and Wood Technology demonstrates the different castes of termites to a group of science communicators from the Asian and Pacific regions. Dr Johnson described the Division's approach in determining the natural durability of different timbers to the twenty UNESCO visitors. They also visited the Division of Building Research's Technology Transfer Unit and the CSIRO Science Education Centre. The visitors were in Australia to participate in a UNESCO Workshop on Science Communication at the University of Melbourne.

A UNESCO regional workshop on science communication, held in Melbourne last month, agreed to ask UNESCO to set up regional networks of people who communicate science to the public.

The networks would promote the public communication of science in the Asia-Pacific regions by encouraging the development of national associations of science communicators and increasing training and exchange opportunities for those involved in science communication.

The workshop also recommended that governments in the regions should give a higher priority to science communication and that educational institutes should introduce courses in that field.

The workshop was attended by more than 30 journalists, scientists and government information officers from 16 countries.

Eight CSIRO staff took part in the workshop and participants visited the Film and Video Centre and the CSIRO Highett site in Melbourne, and the Science Communication Unit and the Divisions of Forest Research Plant Industry in the ACT.

Give kids a go

Scientists should consider briefly moving out of the laboratory and into the schools.

Mr Ross Kingsland, a science teacher now on secondment to the Science Communications Unit, believes scientists can make a valuable contribution to education and publicise CSIRO at the same time.

Mr Kingsland said he sympathised with scientists who simply wanted to get on with their research work. However, all scientists should consider getting involved with their local school.

For scientists who would like to give some of their time to a school, but are unsure about how to go about it, Mr Kingsland has prepared these pointers.

The most common way is a talk given at the school. These can be most successful if pitched at the appropriate level — often difficult to establish quickly. Try to obtain some of the written work the students are using or activities they are doing to gauge the depth of work they are undertaking.

It is very important to include one or more of the following: some charts, drawings, slides (not too many), photocopied sheets, an example of your work or even a film/video clip.

It's worth keeping in mind that you won't be speaking to a classful of budding scientists — you would be lucky to strike a couple.

In general, keep it simple, short and lighthearted — you personally will be remembered at least as much as what you are saying.

An example of your work for your child to take to school. Don't provide anything that is too fragile or valuable as it may be damaged or disappear. If there is some useful object which you wish to be cared for, give it to the teacher personally, point out its value and make firm arrangements for its return.

A visit by selected students (or if you're masochistic, a whole class) to your laboratory. You might find an interested student who you could make further contact with to help with science competitions and projects. The teacher will help identify such talent. Again, keep it simple, short and lighthearted — students can only take in an amount which will seem miniscule in its extent to you because of your familiarity with the field and the laboratory itself.

Simply experiencing your laboratory and talking to a real scientist can be an important event for those with an interest in science and will give a definite image of research which could well last a lifetime.

Assistance with experiments or experimental material. You may be able to assist with a simple experiment relevant to your area of study which you have thought about or there may be experiments already in the curriculum you could assist with.

On your marks

Angry natives rushing to attack a canoe? No, the start of the 1985 Canberra CSIRO mini triathlon, on the shores of Lake Burley Griffin. The canoe was there in case of any difficulties during the 400-metre swim, but fortunately wasn't needed. The swim was followed by a 13km bicycle ride and a 4km run. In the individual section, a clear first was Paul Quilty of Black Mountain Library, with a time of 46m 33s. Second was Emlyn Williams, Mathematics and Statistics (48.48) and third Neil Farmer, Water and Land Resources (49.09).

Radiophysics opens its doors

Telecommunications display

Developments in telecommunications technology, the design and construction of the Australia Telescope and research in astrophysics will feature at open days at CSIRO's Division of Radiophysics.

The Australia Telescope, which will provide astronomers with a national facility second to none in versatility and radio astronomy capability, is due for completion in 1988.

Although still in the early stages of development, elements of the construction process will be on display when the Division opens its doors to the public on Saturday 20 April and Sunday 21 April, 1985.

The telescope, which consists of a network of antennas at Culgoora, near Narrabri, at Siding Spring Mountain, Coonabarabran and at Parkes, is designed to maintain Australia's position as a leader in astronomical research.

The Division, which will be open between 10 am and 5 pm on the two open days, will be the host institution for this national facility. The division will also be open to year 11 and 12 high school groups of Thursday, 18 April.

This year's open day theme will be Astronomy and Technology and Meeting Research Challenges for the Future.

Although the telescope is still in the early stages of development, four phases of the construction process will be on view at the Open Days:

- the antennas — seven 22 metre diameter fully steerable telescopes — are being designed and built entirely with Australian expertise and materials. The production of the reflector panels for each telescope will be on display;
- new techniques needed to handle the astronomy signals in computing;
- the design of the radio receivers and methods for collecting the signals from the antennas are well under way and can be seen and discussed with Divisional engineers;
- design ideas for the electronic linking of the telescopes.

Another highlight of the open days will be a telephone connection between the Division and the Australian National Radio Astronomy Observatory at Parkes. Visitors will be able to ask for the telescope to observe particular objects in space.

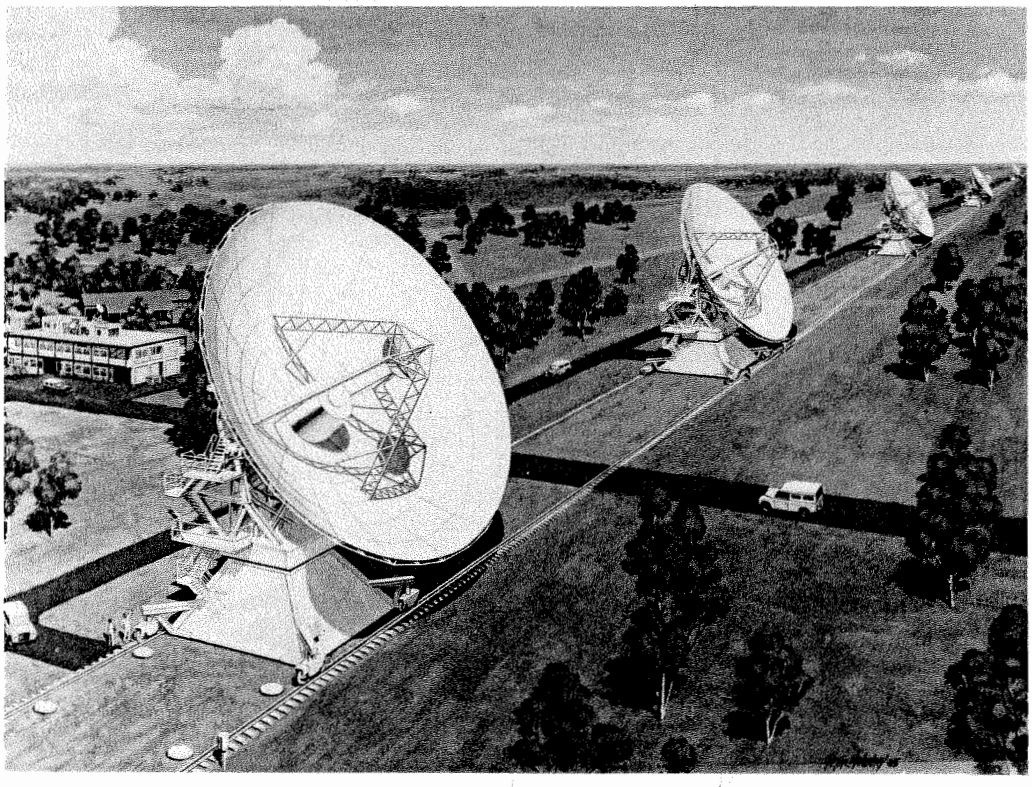
There will also be a display on astronomy from 'the Big Bang' to the death of stars.

For those interested in the practical aspects of electronics the Division's work on antenna design and microwave techniques will be on display.

For the first time this year scientists will present informal, illustrated talks about their work. The scientific service departments, workshops and laboratories will be open for inspection.

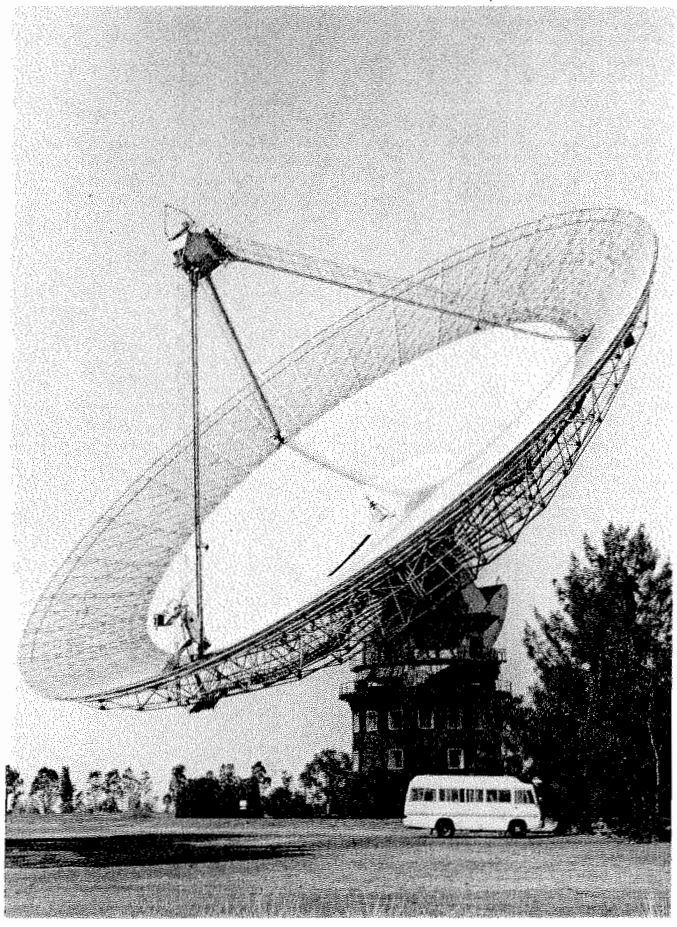
Although the Australia Telescope is absorbing a major part of the Division's research effort other pure and applied science and engineering fields are also being reasearched.

The Division's work on antenna design and microwave techniques will be apparent in the sections on the antenna range measuring system, on satellite-station feed horns, solid state electronics, cooled electronics and microwave systems.



An artist's impression of the compact array of the Australia Telescope at Culgoora.

The Parkes Radio Telescope.



SIROTECH

cont. from p.1

'CSIRO has a record of excellence in scientific research,' he said. 'But our contemporary and future needs lie not so much in demonstrating our excellence in research, but in adopting a national effort and co-operative approach between scientists and Australian industry.

'CSIRO has a huge contribution to make in this area. It has, in the past, made substantial contributions to the success of the agricultural and mining sectors, and will, I hope, continue to do so, but it is timely to see now a broader emphasis emerging.

'The men and women who will run SIROTECH have a great challenge and a great responsibility to work creatively in an area crucial to the revitalisation of Australia's industrial performance, an area in which we have lagged behind many other countries.'

The Chairman, Dr Wild, said SIROTECH, while initially a CSIRO funded and oriented resource, would contribute even more broadly to technological development in Australia generally.

The Federal Minister for Science, Mr Jones, the Chairman of SIROTECH, Mr Lindsay Cumming, and the Chairman and Executive Director of CRA Ltd, Sir Roderick Carnegie, attended the launch.

Dr Wild also announced the establishment of a major new initiative for encouraging industrial collaboration.

He said the CSIRO/Manufacturing Industry Collaborative Research program was designed to obtain a firm indication for the direction of future CSIRO research and at encouraging manufacturing industry to engage in research and development.

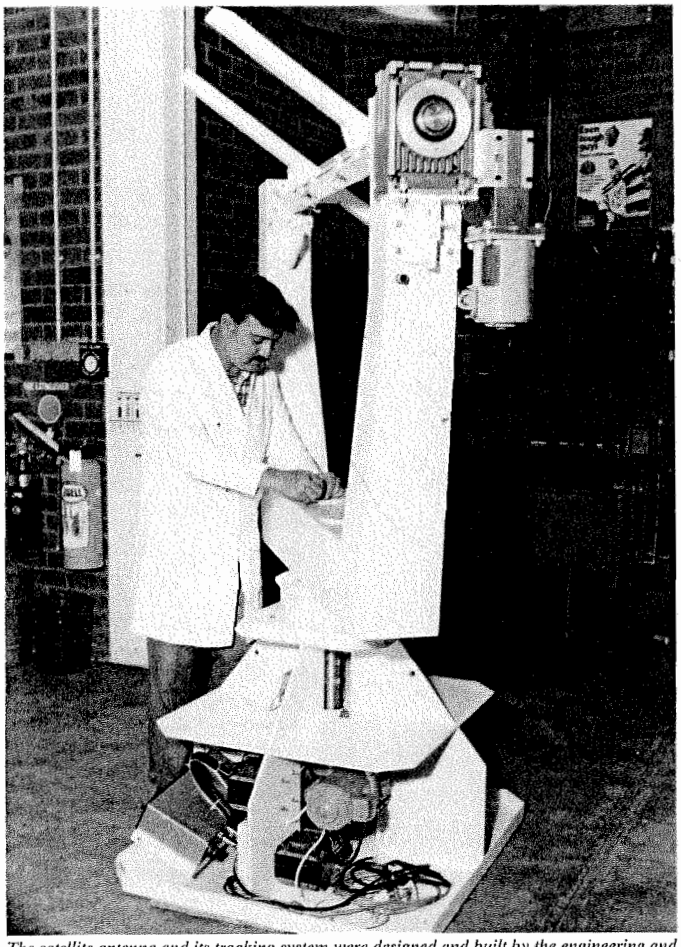
'We shall invite companies and industry groups to nominate new research programs directed to solving their major immediate technological problems,' Dr Wild said.

'Selected programs will be established in CSIRO Divisions using a special pool of funds set aside from existing CSIRO resources. Collaborative research agreements will then be negotiated with industry to use these resources.

'The program makes history, as this is the first time that part of our resources has been allocated by industry.'

Senator Button also launched SIROTECH's new technology transfer journal 'Techlink Australia' which is to be a catalyst for the establishment of a network of industrialist, business people and scientists throughout Australia who are involved in technology transfer activities.

First-class facility now on line



The satellite antenna and its tracking system were designed and built by the engineering and electronics staff of the Division of Atmospheric Research. Here Senior Laboratory Craftsman, Reg Henry, is shown working on the antenna support in the Division's workshop.

The Division of Atmospheric Research has completed the development phase of the state-of-the-art CSIRO System for Interactive Data Analysis (CSIDA) facility.

The successful completion of the project, which is a powerful research tool for atmospheric and oceanographic studies, is the culmination of one year of planning and two years of development work at the Division.

In this time a first class satellite reception facility has been built, right from the design, construction and installation of the satellite tracking system down to the extensive software development needed to bring the system into an operational state.

The system consists of receiving hardware which can obtain the highest resolution weather satellite data; of computing hardware of sufficient power to handle the data at the enormous rates required for real-time analysis, and of display hardware which enables an operator to visualize scenes and images of colour television monitors.

It also consists of very modern image handling and data anaysis software which places enormous power in the hands of the user for the extraction, analysis and disposal of data.

The applications of the system range from detailed recordings of sea surface temperatures, image analysis providing a vegetation index, to cloud analysis for radiation and climate research.

The sea surface temperature information is important for the Royal Australian Navy and fisheries, while the image analysis work can show country fire authorities the browning off of vegetation.

The Division has already received a large number of requests for access to the system and its various products. There have been so many requests that responding to them all would conflict with the research requirements of the Division.

SIROTECH has solved this problem by guaranteeing the salary of a techical officer who will be employed by the Division to sell CSIDA time and products to outside users.

This officer who is soon to be appointed, will work outside normal hours to keep the system free for Divisional research during the day.

The CSIDA facility has also opened the possibility of producing such satellite reception stations for other users of satellite data in Australia and overseas.

With the rapid advance of space technology, the Division expects the demand for such stations to be substantial.

With the aid of SIROTECH an agreement has been reached between the Division and a Melbourne-based electronics company, PCM Electronics, to produce and market the CSIDA antenna, tracking system and reception facilities.

Of equal concern.....

As the Equal Employment Opportunity (EEO) Officer one of my many tasks is to raise awareness throughout the Organization of EEO issues and concerns.

There are many myths and half-truths associated with EEO so perhaps it is as well to lay some of these to rest at the outset.

EEO does not mean giving preference to unqualified people. Any person who is offered employment or a promotion within the Organization will be expected to have the necessary qualifications and abilities.

Confusion often arises over the terms positive discrimination and affirmative action. In Australia the two terms mean quite different things.

An affirmative action program is a carefully planned program aimed at eradicating unjustifiable discriminatory practices from an Organization. Its end result should be equal employment opportunities for all staff.

Positive discrimination is when one group is given preference in employment because of large scale negative discrimination in the past because of the belief that without such measures they will never get to first base.

For example the Public Service has a policy of employing the same percentage of Aborigines as live in Australia (approximately 2%) and will positively discriminate to achieve this quota.

An enormous amount of work has already been carried out in CSIRO on discrimination, particularly with reference to women. Following the Report of the Subcommittee on the Employment of Women in CSIRO tabled in February 1984 the Executive committed itself to the eradication of discriminatory practices within the Organization.

There now exists some powerful legislation in this area and it is imperative if the Organization does not want to find itself fighting very costly cases before the Human Rights Commission, that all officers engaged in interviewing prospective staff, recommending promotions, organizing field trips etc, ensure that they are thoroughly familiar with legislative requirements.

I will be going through each piece of major legislation in more detail in later columns. The Organization is currently involved with three cases. Thus people are making themselves aware of their perceived rights and are beginning to use the legislation to achieve them.

By now there will be an EEO contact person in every major location. I will personally see all these people and am hopeful that EEO awareness committees will be formed to engender constructive discussion on often controversial issues.

Many of the topics are uncomfortable and annoying because they force us to think about issues we'd rather not think about or change views that we have felt so comfortable with for so long that we don't wish to cast them aside.

Personal views on whether married women should be working, whether unions are a good thing, etc are just that — personal — and should have no place when acting in professional capacities as officers of a publicly funded organization.

Please write to me or ring if you have any queries about EEO. (062–48 4328) Later I shall go into more detail on the Public Service Reform Act and The Sex Discrimination Act 1984.

Camel Macpherson

Trials underway

Researchers at the Division of Protein Chemistry have developed a process which may have major benefits for the tanning industry in Australia and overseas.

The Sirolime process is a method for removing intact the hair from hides. Apart from the potential value from the hair the tanning industry could substantially reduce its operating costs for sludge disposal.

The Division made contact with one of the world's largest suppliers of tanning machinery, the Vallero Company of Italy, at an international leather fair in late 1983.

A collaborative project was started with Vallero using a tanning drum developed by the company, and the trials have saved researchers about two years in the development of the project.

Several tanning companies in Italy are now running Sirolime trials and adapting the system for their needs.

One reason the industry is so keen on Sirolime is its environmental advantage — Italy has very strict effluent regulations and this poses a threat to its important tanning industry.

The Australian industry is very interested in the process and will benefit not only from the local work but also from the experiences of the Italian manufacturers.

CSIRO defended

cont. from p. 1

In the past Australia's economy was based on agriculture and this had shaped CSIRO's research priorities. The organization's had also reflected the concerns of various governments including environmental and consumer issues, energy issues during the energy crisis, and water and bushfire research during the drought.

Strategic research had been CSIRO's role.

'Now, I don't mind if the Australian community decides that this role should change, that we should do more research specifically for individual companies to improve their profitability,' Dr Wild said.

'But if this is the case, then this new role should be clearly enunciated by government, in recognition that it is a change in CSIRO's role, not because of some trumped up charge that CSIRO has failed to do in the past what it should have done.'

CSIRO found it harder to 'interface' with manufacturing industry than with primary industry.

Manufacturing industries were competing with each other in the domestic market in a way that agriculture and mining were not.

Dr Wild said CSIRO was doing all it could to 'get closer to industry', but questioned whether industry was making a comparable 'all-out' effort.

There was a pressing need for each sector of industry to get together to compete for world markets and identify the most relevant areas for investment in research and development.

'From our point of view, the ideal state of affairs, which applies to the agricultural and minerals industries, is for there to be a definition of strategic national needs,' he said.

'This sort of thing can only come about in the manufacturing area if the companies of a sector of industry are prepared to get together and think about collectively competing for the overseas market rather than competing with one another.'

Industry should also increase its research and development effort allowing CSIRO to concentrate on strategic research.

'Increased industry research and development would leave us to conduct our true role of strategic research to develop the base of future technologies,' he said.

'Contrary to the popular myth, that part of CSIRO concerned with manufacturing industry already works very closely with industry and where necessary becomes involved with the nitty gritty of tactical research.'

Dr Wild said the Federal Government should be congratulated for its awareness of the importance of science and technology and for its initiatives to boost industry research and development.

He hoped the new 150 per cent tax deduction for investment in research and development would 'work wonders' in the important aim of stimulating more research and development within industry.

'I hope — and believe — that the Government's new 150 per cent tax deductible incentive will be a tremendous stimulant to the level of research and development by industry, especially to established companies, including multinationals,' Dr Wild said.

However, the Government's level of support for government and university research had been 'miserable.'

Mansion's colourful past:

Ghost was an indiarubber tree

Ghosts, squatters and power brokers dot the history of Stowell, a mansion at the historic Battery Point in Tasmania and now home to the Regional laboratories.

Stowell was built of sandstone in 1831 by Captain John Montagu, a veteran of the Battle of Waterloo and, by all accounts, an overbearing, selfish, cunning and ruthless self seeker.

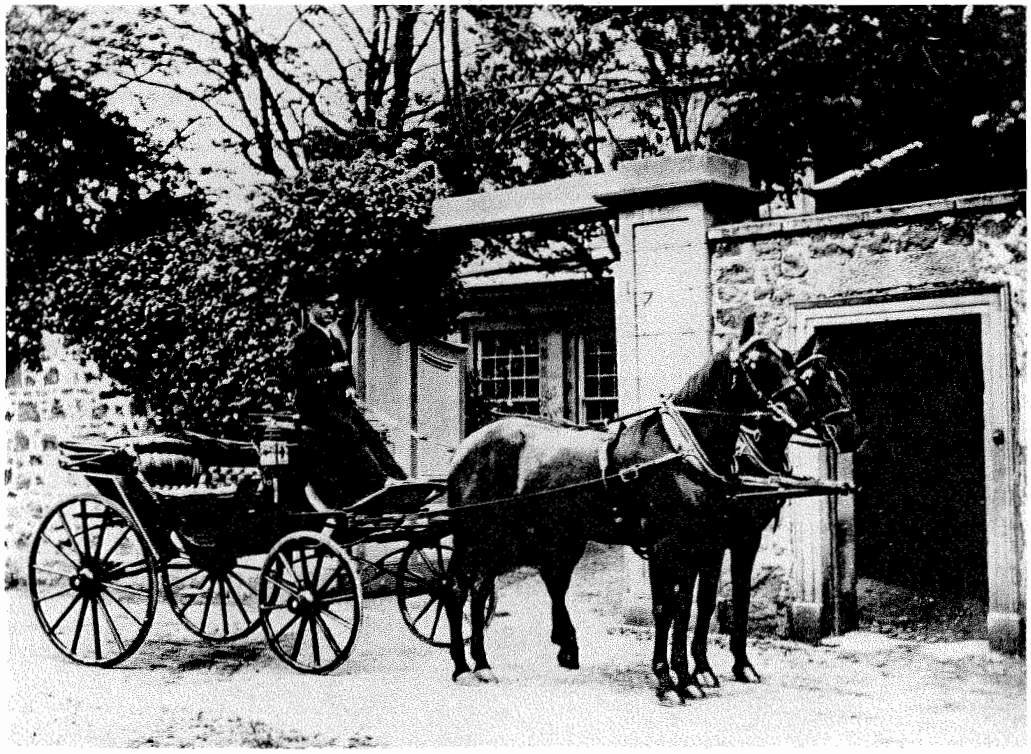
He was married to Governor George Arthur's niece and came to Van Dieman's Land as his private secretary in 1824. After working his way through the official ranks to become the first secretary to the colony, he continually tried to undermine Arthur's replacement, Sir John Franklin.

Montagu was finally recalled to England in 1839, where he continued to make trouble for Franklin. Stowell passed through one or two hands before being sold in 1840 to a wealthy landowner, Mr Gamaliel Butler, for £5000. The 'household paraphernalia' had sold for another £5000.

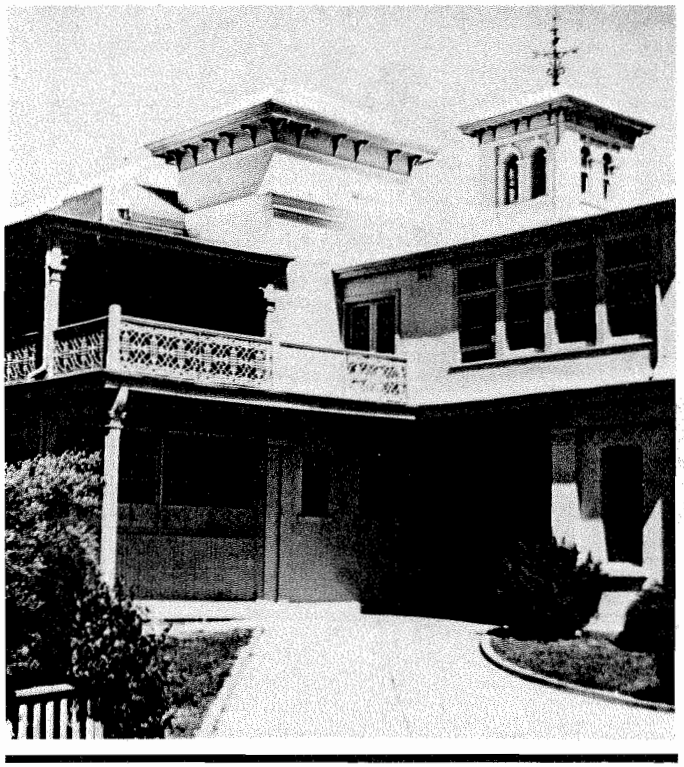
During the 46 year reign of the Butler family, Stowell's first ghost appeared — and disappeared.

To quote from the *Illustrated Tasmanian Mail* of June 4, 1924:

'The tale is centred in the 'Bachelor's Room'. So firmly was the legend believed that guests (even brave bachelors) dreaded being requested to sleep in the haunted chamber, and, of course, it was a subject of awesome dread in the servants' hall. Nothing was ever visible, but at night, especially when the wind blew, the door flew open and then sounds of rustling and swishing, as of silken garments, were plainly to be heard. The thing had become a nuisance, but alas! for romance, after the house had passed into the possession of Dr Henry Butler [in 1875], it was discovered during some repairs to the roof that a huge indiarubber tree had forced its roots under the foundations of this wing. The division walls of this were of brick instead of the massive stone of the rest of the building, and on windy nights the swaying of the heavy tree slightly moved the foundations, causing the door to open, while the brushing of the big branches against the wall explained the eerie sweepings of silken skirts which had proved so fearsome in the watchs of the night! And so appears a gardener with his axe, and with the disappearance of the old tree also exit the ghost forever!'



One of the earliest photographs taken of the historic and reputedly haunted mansion This photograph dates from around 1901–4, when Stowell was owned by the Gibsons (above). Below, a view of Stowell in the early CSIRO days. The tower poor 'Amy' leapt or was pushed from can be clearly seen on the roof top.



Alas for the inhabitants of Stowell, a new ghost took up residence, taking the form of a young lady who, as the story goes, fell to her death (or was she pushed?) from Stowell's tower.

The stepdaughter of an early ambitious settler, Amy was unfortunate enough to fall both in love with, and pregnant to, an assigned servant and ex-convict. In his play *The Tower*, based on the ghost, Hal Porter has the stepfather murdering her for the disgrace to the family.

Another tale holds that the servant, for reasons best known to himself, did the dirty deed.

Either way, Amy wreaks her vengeance dressed in grey crinoline with a hooped bottom and leg-of-mutton sleeves, her face filmy and misty. Although a regular visitor to the Matron of Stowell after it became a hospital in 1913, she only infrequently visits the Regional Officers, leaving doors open and turning on lights.

One wonders if she also visited squatters who lived for a year in Stowell before it was altered from hospital to CSIRO laboratories in 1947.

A SQUATTER'S TALE

Said squatters, at one stage numbering 38 and evicted from their homes by no doubt evil landlords, were helped into Stowell by two Members of the Tasmanian Legislative Council in 1946, creating all sorts of administrative and legal headaches for the Organization.

Perhaps it is the ghost of one of these squatters that is now said to wander through Stowell's corridors at night . . .

Stowell itself looks out over the Derwent River. It now has a National Trust listing.

A feasibility study done of Stowell by the Commonwealth Department of Housing and Construction in 1980 recommended all buildings except the mansion and glasshouses be demolished, and that extensive restorations be made, including repainting the original sandstone brick from a 'most inappropriate green' (fortunately completed).

Other recommendations to improve ventilations, flooring, wall plaster, ceilings, verandah decking and male toilet facilities have not been acted on.

The study suggested one of the gardens be preserved, though the extensive gardens laid by Montagu and added to by the Butlers have long since gone, as have the cobble stone yards around which were coach houses, stables, men servants' rooms and buildings for the prisoner tradesmen such as tailors and bootmakers.

During the Butler era there was a big underground cellar with solid stone shelves and an entrance wide enough to roll down casks of wine and liquors to be bottled.

To again quote the *Illustrated Tasmanian Mail*:

'(There) was the "Still Room", a name which has but little meaning in modern ears, but where in days of yore good housewives made essences, liquors, and such special delicacies as could only be carried out by their own fair hands.'

The Butlers sold Stowell to the Gibson family, who added a top verandah and enlarged the original stone building in brick. They added two towers at the beginning of the century.

When the mansion became a hospital in 1913, extensive additions were made, including a brick maternity ward, now the library, a large weatherboard solarium and numerous other wooden excrescences (to quote a CSIRO report).

Since 1948 Tasmanian branches of the Divisions of Fisheries, Food Preservation, Plant Industry, Soils, Wildlife, Radiophysics and Mathematical Statistics have operated from Stowell, and it now houses officers of the Divisions of Computing Research, Food Research, Entomology, Forest Research and Mathematics and Statistics.

CoResearch is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 5th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel 48 4640. Editor: Ellen Peterson.

Union Offset Co. Pty Ltd, Canberra

CoResearch

CSIRO's staff newspaper *April '85* *279*

Australia's most complex scientific building:

Animal health laboratory opened

The most complex scientific building ever to be built in Australia, the Australian National Animal Health Laboratory (ANAHL), was officially opened by the Governor General, Sir Ninian Stephen, on Monday April 1.

ANAHL, completed in seven years at a cost of $158 million, will play a key role in protecting Australia's livestock industries against the consequences of exotic animal disease outbreaks.

It will be operated by CSIRO, with the operating cost of $8 million a year to be shared by CSIRO and the Department of Primary Industry.

On April 1, the official party including Sir Ninian and Lady Stephen and the Minister for Science, Mr Barry Jones, were among 200 guests taken on guided tours of the installation. All visitors were required to wait inside air locks as air pressure was reduced before entering high-security areas.

The opening ceremony was the last opportunity for large groups to tour the laboratory in relative freedom. From now on security precautions such as three-minute showers upon entering and leaving laboratories will be required to guard against the possible escape of any micro-organism that could endanger Australia's livestock industries.

The building resembles an oil refinery in size and engineering complexity. Four of its five levels are dedicated to air filtration, sewage treatment and furnace equipment to ensure total safety of operation.

By virtue of technological advances over the past two decades, particularly in microprocessing, the Laboratory has a degree of microbiological security previously unheard of.

The Minister for Science, Mr Barry Jones, said in an address to the opening ceremony that ANAHL's security was such that any risk of virus escape appeared 'infinitesimally small, even allowing for human error.'

Mr Jones said the building had been universally praised by international visitors over the past two years, including a high-level team from the US National Research Council, who had described it as 'the world's most advanced facility of its kind, with features that will be used over the next 25 to 30 years as models for high-hazard biomedical and animal laboratories throughout the world.'

'The building is also being flattered in that most sincere of ways, by imitation,' said Mr Jones. 'The design of a high-security laboratory for Canada is being drawn up at this moment, incorporating many of the features of ANAHL. Preliminary enquiries have also been made by India, and France and Japan are interested too.'

The Chairman of CSIRO, Dr Wild, said the ANAHL project had been remarkable for its scale and complexity and for the dedication that had gone into its planning and construction.

It has also been remarkable,' he said, 'for the scale and complexity of the misapprehensions that have been spoken and written about it by sections of the community and media.

'These misapprehensions seem to persist even today in some quarters, so let me make a few points quite clear:

* The decision to build the Laboratory was made on the unanimous verdict of Federal and State Governments and on the advice of their agricultural departments;
* CSIRO's involvement in the project is as the agent of the Government, and the Government is responsible for all major decisions;
* The decision to build the Laboratory to extremely high standards was taken to safeguard against the time when specimens from suspected cases of exotic diseases would be examined. This choice was quite independent of any decision whether or not to import the foot-and-mouth virus in advance of any outbreak;
* The need for the Laboratory has not been diminished by recent advances in molecular biology. The Laboratory is not a white elephant, but rather an insurance policy of the highest order and the envy of livestock industries around the world.'

Dr Wild paid tribute to staff of the Department of Housing and Construction and of John Holland Construction Pty Ltd who worked hard to see the various phases of construction through.

He also praised the contributions of the Laboratory Chief, Dr Snowdon, and the laboratory staff, who, he said, had worked unstintingly through periods of intense debate and verbal bombardment from various less than well-informed pressure groups, yet had maintained 'sky-high' morale.

An animal holding bay pictured through the window of one of ANAHL's airtight doors. Photograph courtesy of the Melbourne Sun.

Letters to the Editor

Dear Editor,

Is it any wonder that K.A. Handreck (Soils, CoResearch 276, Dec 84/Jan 85) is critical of apical performance in CSIRO? Changes to CSIRO's research planning strategy (more cosmetic than real) outlined in the same issue give little hope of improvement.

The corporate system which is supposed to decentralize research planning, while recognizing that the Chiefs and their staff are best equipped to plan research, apparently requires that the plans be 'integrated' and 'injected' by a host of advisers and assistants. The abolition of the Office of the Executive (Info. Circ. 85/10) has simply meant that, now in remission about the throat of CSIRO, the malignancy has moved closer to the heart of the Organization with even greater risk of metastases.

Unlike other Divisions in CSIRO, the 'Division of Administration' seems to have suffered no reduction in staff numbers. The new plan actually formalizes a direct link between the Executive and the individual program which, to us, is the antithesis of decentralized planning.

Why do Executive members and Institute Directors need so many advisers and assistants when presumably some 46 Chiefs and O-I-C's stand ready to provide this service? Why can't the Executive members and the Institute Directors spend enough time listening to people outside the Organization, ascertain what the Government and the community wants and then relay this information back to the Chiefs?

The Chiefs and their staff could then get on with the job and be judged by their performance. There is no evidence that more planning and more control of research leads to greater output or better value for money (Thornley and Doyle, 1984).

Moreover, a centralized approach to research management is likely to negate accountability. Indeed, these authors argue that 'for individuals and groups to be accountable, they must have responsibility for deciding their own actions'.

Only 'by combining as much autonomy as possible with a system of monitoring research performance' is a more meaningful accountability likely to be achieved. It should be remembered that the good name of CSIRO in the community and among our peers is the result of individual effort and not of corporate structure.

W.H. Winter
A.L. Chapman
Tropical Crops & Pastures,
Darwin Laboratories

Dear Editor,

The last section of the Chairman's column in February *CoResearch* states a need for more management in CSIRO. There is another viewpoint, which has been put by Robert Reich in his book, *The Next American Frontier* (Times Books, New York and Penguin, 1983), that management has outlived its usefulness.

Reich describes management as a philosophy, a science, and a catch cry, which was outstandingly successful from 1920 to 1970, but which is now failing.

American industry has lost its lead in key industries to Japan and some European countries, because management cannot adapt to new technologies.

By management he means not any system of running an organization but the one now taught as a special profession.

It arose to meet the needs of industry for mass production by unskilled workers and was based on three principles: simplify each job, set rules to co-ordinate jobs, and monitor the results.

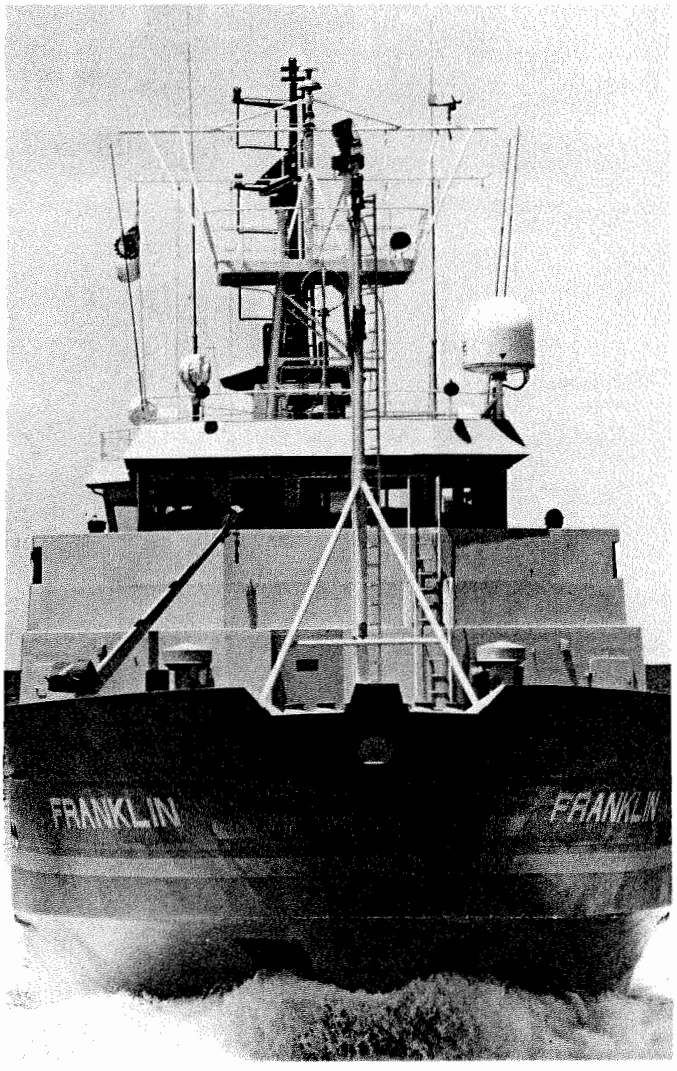
The countries that are succeeding in this period of instability and change have adopted the system that Reich calls 'flexible-system production'.

This is based on skilled workers working together as a team with little hierachical structure: leadership is acknowledged and shared rather than imposed.

Such a system should suit CSIRO. It would allow greater flexibility and should not be any less capable of planning research than is management.

W.H. Steel
Applied Physics

Franklin on trial



Australia's most advanced oceanographic research vessel, the Franklin, *pictured during its final sea trials off Cairns. The* Franklin *left for Hobart this month where the Division of Oceanography will carry out the installation of scientific equipment. This photograph was taken from a helicopter hovering in front of the vessel. At the time only the rotors of the helicopter were visible from the bridge.*

Obituary

The death of Alec George Little at the age of 60 prematurely ended a 45 year association with the Division of Radiophysics.

Alec began at age 15 as a messenger boy, at a salary of £65 a year. At his death he was senior consultant to the Australia Telescope on the overall system design, Associate Professor of Physics at the University of Sydney, Director of the Molonglo Observatory and President of the Astronomical Society of Australia.

During his meteoric career with CSIRO, Alec rose from messenger boy to research scientist.

He studied part time to gain a Higher Electrical Trades Certificate (1946), a Diploma in Applied Physics (1950), a B.Sc. from the University of NSW in 1954 and later spend 1958–61 as a Research Associate at Standford University where he gained an M.Sc. in Electrical Engineering.

When a technical officer, Alec developed the swept-lobe interferometer to study bursts of solar radiation (1951).

Later he built the prototype for the Mills Cross telescope (1953) and played a major part in the design and construction of the fully-fledged Cross at Fleurs (1955).

As a research scientist he worked with Richard Twiss (1957–58) on correlation between photons in coherent beams of light.

He joined the University of Sydney as a lecturer in physics in 1961 and was responsible for the construction of the One-Mile Cross at Molonglo (1967) and its later conversion to the Molonglo Observatory Synthesis Telescope (1980).

He had just left Molonglo on March 20 1985 to consult a doctor when he suffered a fatal cardiac arrest in his car.

When the design phase of the Australia Telescope began in 1983, Alec was appointed to be the representative of the University of Sydney on the AT Steering Committee, and in addition was seconded to CSIRO part-time to assist in the design of the system.

He also took overall responsibility for the optical fibre network to link the telecopes in the AT array.

Alec was generous and caring, highly proficient and humble, and throughout his life was on close terms with 'all sorts and conditions of men'.

He had the rare gift of being forthright in his comments without incurring any rancour. He is remembered as the most popular person to have worked in the Radiophysics Laboratory.

Research success

Australia's first scientific experiment on the space shuttle worked perfectly providing researchers with the best ever microphotographs taken in space.

The experiment has established that the shape of red blood cells will remain normal and will tend to clump forming a particular structure under zero gravity.

The experiment gave project leader, Dr Leopold Dintenfass, of Sydney Hospital the first microphotographs of blood taken in space.

The space shuttle, Discovery, carried a CSIRO-designed instrument package. Mr Peter Osman of the Division of Applied Physics, who developed the package, said the experiment had provided 'perfect microphotographs.'

The experiment is expected to answer some basic questions about the relation between human blood viscosity and disease, and could also shed new light on problems associated with weightlessness in space.

Dr Dintenfass is now assessing the data from the experiment and also looking for ways to organise a second experiment on the shuttle.

He is hoping to repeat the experiment on a space shuttle flight later this year.

The instrument package, which evolved from a laboratory instrument used at Sydney Hospital, is the result of five years work by Mr Osman in collaboration with Mr Brian Maguire, a private scientific instrument maker.

Mr Osman, who is an electrical engineer, said the design work had been difficult. It had involved producing instruments able to fit into a tube just 65 centimetres long and 43 centimetres in diameter.

This tube had carried the blood samples and the optical instruments while another small box carried the electronics.

The experiment was carried on the shuttle's mid-deck, just underneath the astronauts. The package analysed eight blood samples, two from healthy donors and six from donors with histories of disease including cancer, diabetes, hypertension and kidney diseases.

The aim of the experiment was to learn more about how the red blood cells in diseased people clump together. Testing this process under the weightless conditions of space was designed to give a clearer picture of the process.

Mr Osman said design work faced problems of vibration and temperature. These problems had made focussing for microphotographs difficult.

From the Chairman-

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

It is a well known fact of life for any research organization that it is much easier to start a new project or program of work than to close down an established one.

Yet in the current state of affairs when the resources available to us remain approximately constant — or shrink — in real terms from year to year it is essential that at all levels of the Organization — Divisions, Institutes and the Executive — we must be prepared to make tough decisions to terminate some established programs to allow new work to begin and selected areas to be expanded. Even in difficult budgetary times we must remain dynamic, avoid spreading our resources too thinly and concentrate effort on what is important and in the national interest.

We sometimes get criticized for not changing enough — for allowing our program structure to stagnate. Since the last budget the Advisory Council was unconvinced that we were dynamic enough and it was not prepared to support our protest at the severity of the last budget until it received evidence of more change. Both the Advisory Council and our Minister exhorted us to ensure redeployment of resources into selected priority programs at the rate of at least 5% per year.

At this juncture I wrote to Directors asking them as a matter of urgency to make personal contact with each Chief to produce the evidence for the change I knew was happening. Not only did the Chiefs succeed in demonstrating that the average rate of change far exceeded the 5% a year (some Divisions exceeded 20%), but they went much further and took action to ensure that their point struck home. They first arranged a meeting with our Minister to explain how dynamic the Organization was — this I believe went very well — and then became involved in a further meeting which I would like to tell you about now.

On March 27 we organized a meeting in Canberra between the full Executive, representatives of the Advisory Council, the Directors and other members of the Management Committee and six Chiefs (determined by the collegiate body of Chiefs). Also present was the President of the Officer's Association.

We met for the whole day. The first half of the morning was devoted to Chiefs demonstrating the sweeping changes that had actually taken place during the last ten years in the Organization's top priority areas. This session was remarkably well presented and made a real impact. Next came the Directors who had a special task to perform. In addition to the Executive's 'designated growth areas' — i.e.

- information technology;
- generic (broadly applicable) manufacturing technologies;
- water and soils;
- space science and technology;
- biotechnology;
- plant diseases;
- raw materials;
- human nutrition;

each Director is now to be given the opportunity of nominating a small number of additional priority areas appropriate to his Institute. 2½% of institute resources are to be redeployed into these areas (or the designated growth areas listed above) during the coming year. The Director's task on March 27 was to present their decisions as to what these priority areas should be and their reasons for their choice. I know they all had difficulty in honing down their ultimate short list. The final choices to be put to the Executive are as follows.

Institute of Industrial Technology: strategic technologies for selected manufacturing industry groups; the processing and fabrication of materials; development of urban infrastructure as a base for industry and community growth.

Institute of Physical Sciences: advanced materials; drought (prediction of short-term climate fluctuations).

Institute of Biological Resources: heavy clay soils; tropical rainforests; tropical grazing systems; control of heliothis.

Institute of Energy and Earth Resources: high intensity smelting; rare earth products; marine geo-engineering.

Institute of Animal and Food Sciences: mineral nutrition; nutritive value of pastures.

The afternoon session began with members of the Executive presenting progress reports of the five strategic working parties which cover the following topics:

- balance of research;
- concentration of research effort;
- most effective use of human resources;
- assessment of benefits from research;
- transfer of technology.

I do not have space to go into these challenging questions here but as I promised once before all staff will have an opportunity of seeing draft reports and making their inputs before decisions are taken on them.

Finally there was a free-for-all discussion period. It was the first time ever that such a meeting had been held, and all agreed it would be a good idea if similar meetings happened in the future.

***

Few parts of the Organization have borne more heavily on me — and many others too — in the last half-dozen years than the affairs surrounding the establishment of the ANAHL Laboratory at Geelong. It was therefore with feelings of relief and joy that I witnessed the Laboratory being opened by His Excellency the Governor General on April 1 — some sections of the media could not even resist a comment about the choice of date.

When the time came the facility was looking superb in all its great complexity and gleaming efficiency and the staff did not pretend to hide their enthusiasm and pride. His Excellency and Barry Jones were both in great form at a memorable ceremony, and many well-earned congratulations went to Bill Snowdon and his colleagues as well as to the Department of Housing and Construction and the builders, John Holland. All agreed it is unquestionably the best facility of its kind in the world and will be the international paradigm for decades to come. Best of all were the words of Michael Shanahan, Senior Vice-President of the National Farmer's Federation who said that Australian farmers gave the laboratory their unwavering support and that the NFF looked forward to playing its part in the future development of the Laboratory's full potential.

With the opening of the Laboratory and its imminent assumption of the status of 'full microbiological security' a chapter of our affairs spanning 21 years comes to a close. As I said in my introductory remarks they have been years of dedication, toil, frustration, excitement, anxiety, despair and finally complete success.

Paul Wild

Bushfire unit set up

CSIRO is to set up a National Bushfire Unit to study the economic effects of bushfires, fire behaviour, and bushfire management systems.

The Unit, with a staff of 12, will be set up within the Division of Forest Research, but will be concerned with all rural fires.

The Chief of the Division, Dr Joe Landsberg, said CSIRO aimed to spend about $500,000 a year on the Unit, but was looking for an additional $300,000 a year in operating costs from outside sources.

'The funding needed is miniscule by comparison with the human and financial losses and environmental damage caused by Australia's bushfires, while the savings generated by this kind of research investment should be enormous,' he said.

The Unit will also study the physiology of fire fighters, and will develop and manage a central data bank of information on bushfires.

It will undertake contract research and will provide a source of expertise and advice to organisations across Australia. The Unit will be available for both on site advice and post fire investigations at major bushfires throughout Australia.

Dr Landsberg said two organizations had already indicated that they may provide financial support — Elders/IXL Pastoral Group and the Country Fire Services of South Australia.

'CSIRO is also in touch with other bodies, such as State forest services, who may provide support,' he said.

However, Dr Landsberg warned that if outside funding did not reach the level required the unit's charter could include a 'sunset clause.'

If after three years, CSIRO could not attract the necessary funding then it was likely that the Unit would have to be wound down.

Elders/IXL had indicated support of $50,000 and the Country Fire Services of South Australia have indicated support of $20,000 a year. However, agreements with these organizations have yet to be finalized.

The Unit's research will be guided by a Research Planning Committee which will include representatives of the funding bodies.

The Project Aquarius Program ends on June 30 this year. It has raised new questions about forest fire behaviour.

The new Unit, which will be officially established on July 1, should provide the opportunity to address these questions.

Jamie Hoare, of the Division of Forest Research in Canberra, records data on an experimental summer bushfire.

People... People

The Division of Animal Health has farewelled, **Mr Kevin Hodges**, who retired last month after almost 39 years with CSIRO. **Mr Hodges** has spent the last 15 years with the Division at Parkville, Victoria, as Divisional Secretary.

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An entomologist with the US Department of Agriculture in Florida, **Dr Joe Balcinus**, is visiting the Division of Tropical Crops and Pastures' Davies Laboratory in Townsville. **Dr Balcinus** is seeking agents for the biological control of Hydilla. This native water plant has become a weed in US waterways and **Dr Balcinus** has already found a weevil which attacks the plant.

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Dr Caird Ramsay of the Division of Building Research is visiting Singapore, Malaysia, West Germany, Britain and the US this month. **Dr Ramsay** will visit institutions concerned with fire research in each country.

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Dr Ian Colditz of the Division of Animal Production has been awarded an Australian Queen Elizabeth II Post-doctoral Fellowship. Only 10 of the fellowships were awarded in Australia this year and it will allow **Dr Colditz** to continue his research on inflammation for the next two years.

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Dr Apichart Suksamrarn, who is a reseacher with the Department of Chemistry at Ramkhamhaeng University in Thailand, is visiting the Division of Applied Organic Chemistry. He will study insect hormones, particularly those involved in moulting. While with the Division, he will work in collaboration with **Dr Denis Horn**, a post-retirement fellow.

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Mr Jim Goodspeed of the Division of Water and Land Resources has left for six weeks in the US where he will be based at Boulder, Colarado. He will participate in the spring experiments conducted by the National Centre for Atmospheric Research. These experiments involve using a laser atmospheric sounding probe.

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Medal winners

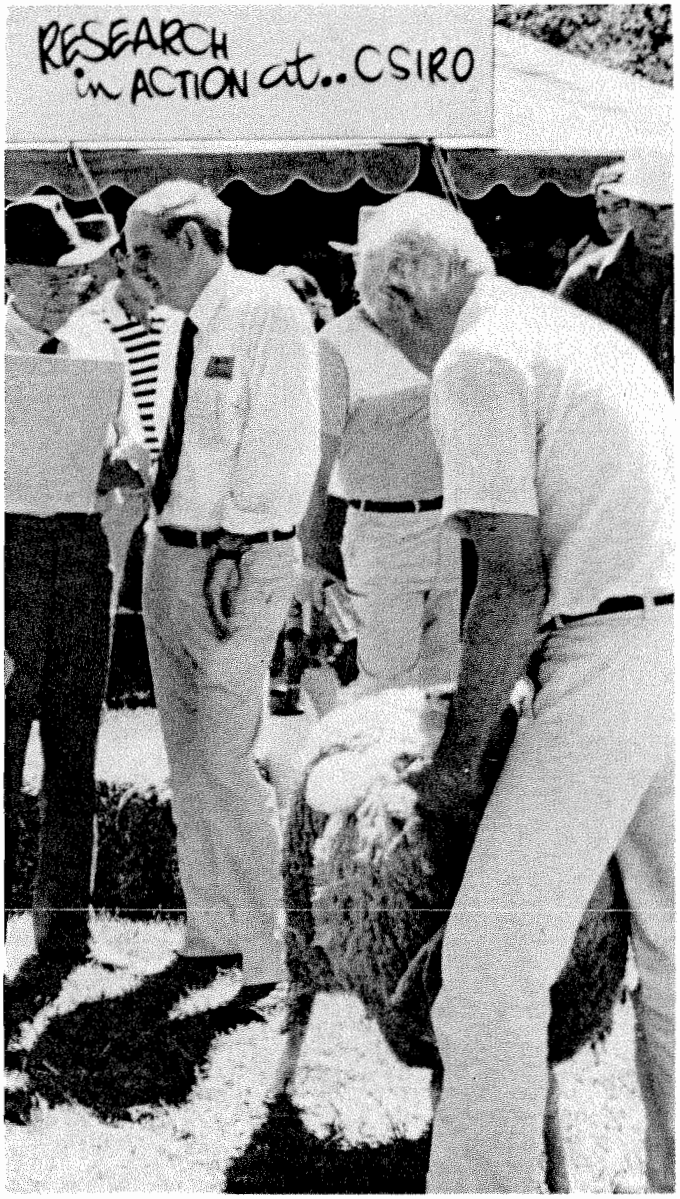
The Division of Molecular Biology has taken out the Boehringer-Mannheim Medal for the second consecutive year.

A Principal Research Scientist with the Division, Dr Gerry Both, has been awarded this year's medal while another Principal Research Scientist with the Division, Dr Merilyn Sleigh, took out the 1984 award.

The medal, which is awarded for published work by a biochemist aged under 36 years, was established by the Australian Biochemical Society in 1976.

Dr Sleigh and Dr Both have published extensively on the molecular basis for antigenic variation in strains of influenza virus.

Jumbuck plucked



The Division of Animal Production displayed its biological wool harvesting research at the Riverina Merino Field day held at the Boonoke Stud near Deniliquin, NSW, recently. An Experimental Officer with the Division, Mr John Bennett, is shown holding a sheep that had been treated with epidermal growth factor several weeks earlier. The treatment causes a weakness in the fleece and the wool can be removed when plucked by hand. On the left of the photograph the Chief of the Division, Dr Trevor Scott, is speaking with a longtime supporter of CSIRO, Mr Fred Pye, a retired grazier.

Grey adventure

The Australian and New Zealand Scientific Exploration Society (ANZSES) is opening its doors to older expeditioners.

ANZSES runs scientifically orientated expeditions for young people aged between 17 and 23, but now wants to attract a small number of older people for its next expedition.

Since the expeditions started six years ago, more than 200 young men and about 75 young women have taken part in ANZSES expeditions to remote parts of Australia and New Zealand.

ANZSES aims to develop personal qualities, an appreciation of the environment, competence in scientific field work and the ability to live and work harmoniously with others.

Each year ANZSES runs a five week expedition to remote areas. In 1984/85 they went to Hinchinbrook Island, off the north Queensland coast, where CSIRO, the National Parks Service of Queensland, James Cook University, the Australian Institute of Marine Science and various Australian museums and herbariums tasked them to study the habitats, flora and fauna of the island.

ANZSES will return to Hinchinbrook this December and is looking for experienced scientists who are willing to lead young people in field work.

For further information, write to ANZSES, PO Box 174, Albert Park, Victoria, 3206.

CoResearch is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 5th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel 48 4640. Editor: Ellen Peterson.

Health matters

The Management Committee has considered a proposal from the CSIRO Occupational Health and Safety (OHS) Committee for a policy on smoking in the workplace.

The policy is expected to be released soon and will be aimed at eventually achieving a smoke free work environment for staff.

A feature will be the requirement to ban smoking in public areas and designated laboratory and work areas.

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When is a sneeze not a sneeze? When it is occupational asthma or an allergy.

Because so many CSIRO staff are involved in handling animals, insects and plant material there is a significant risk of staff developing allergies and occupational asthma.

The symptoms may not be all that different from bronchitis or a heavy chest cold. These symptioms may or may not be accompanied by skim rashes or other body changes.

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The OHS Unit has conducted a successful two day training session for safety officers and chairmen of local OHS Committees in the Canberra region.

Issues covered included the role of the new National Occupational Health and Safety Commission, revised CSIRO occupational health and safety policies, effective functioning of the Occupational Health and Safety Committees and a range of technical issues.

The Unit will be taking this training session on the road and sessions are planned for Perth, Adelaide, Brisbane, Melbourne and Sydney in the coming months.

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The CSIRO OHS Committee met at the new Marine Laboratories in Hobart on February 28.

As well as endorsing the proposed policy on smoking, the committee made progress on several other important issues.

These included:

- the draft Occupational Health and Safety agreement between CSIRO and the unions;
- a policy and guidelines on prevention of repetition strain injury;
- programs for occupational health surveillance;
- first aid arrangements;
- accident reporting.

Gary Knobel
Manager
Occupational Health and Safety Unit

Officer retires

A Senior Technical Officer with the Division of Applied Physics, Mr Peter Smart, will retire later this year after 17 years with CSIRO.

Mr Smart, who is on long service leave before officially retiring, was with the Division's temperature group.

He played an important role in the temperature standards and research effort of the laboratory, particularly in the area of cryogenic thermometry.

The cryostats that he constructed were probably the best of their type in the world.

Mr Smart is retiring to the Camden area.

CoResearch

CSIRO's staff newspaper *May '85* *280*

Chairman welcomes inquiry

PM announces major ASTEC review

The Federal Government has commissioned a major review of Government-funded reseach and development in Australia, initially focusing on CSIRO.

The review, which has been welcomed by the Chairman, Dr Wild, will be carried out by the Australian Science and Technology Council (ASTEC) under the direction of its chairman, Professor Ralph Slatyer.

The Prime Minister, Mr Hawke, who released details of the review this month, said it would examine the rationale and appropriate objectives for government research and development and the implications of these for government policies and CSIRO.

Mr Hawke said the Organization had an 'impressive international reputation.'

'Its staff have made major contributions to industry, particularly the agricultural and mining industries, and to the Australian community in such areas as environmental protection and public health,' he said.

The Organization had also made 'substantial changes' to its structure and policies to give greater emphasis to manufacturing industry.

However, Mr Hawke said that despite the changes there had been growing questioning of CSIRO's role 'in relation to the needs of the Australian community and industries, particularly the manufacturing sector.'

'It is now eight years since the Birch Inquiry into CSIRO, and I believe it is now appropriate to look again at the Organization's structure and role, to ensure its continued contribution to the affairs of this country,' he said.

'However, I would stress the review is not intended to diminish the momentum of the current initiatives of its Executive, including the overhaul of its corporate strategy and planning, its research, commercial, communication and administrative activities.'

Dr Wild said his message to staff was 'business as usual' during the review.

ASTEC aims to complete the part of the review concerned with CSIRO by September when Dr Wild intends to retire as Chairman after completing a seven-year term.

The ASTEC review committee is likely to visit most CSIRO divisions soon.

The review will seek to answer a series of questions about the future directions of CSIRO including:

. the future balance between basic and tactical research and between long-term and short-term work;

. the extent of the Organization's involvement in commercial development of products and processes;

. whether the range of the Organization's activities should be increased or reduced;

. a possible role for CSIRO in the development of a national science and technology policy;

. what advisory mechanisms should guide the Organization in the development of its activities;

. the future funding of CSIRO.

The review will also look at administration, management structure, staff training and incentives and employment conditions.

Dr Wild said he was pleased with the high level of consultation which had preceded the setting up of the review.

'. . . I have every confidence that the Organization and its staff will be seen to have maintained a high level of excellence and relevance in their work,' he said.

Dr Wild said he particularly welcomed Mr Hawke's comment that the purpose of the review was to ensure the continuance of 'CSIRO's outstanding contribution to the affairs of this country and that the review should not diminish the momentum of our current initiatives.'

'In view of the present Government's concern to encourage a much higher level of research and development by the private sector, it is most appropriate that the role of Government in research and development be closely examined.

'Australia's poor level of research and development in the private sector has led to a lot of inaccurate statements being made about Government-funded contributions.

'The review will serve to clarify the roles of Government-funded research organisations and to make community debate in this area better informed.'

Professor Slatyer has indicated that he sees the review as an open and interactive review.

Dr Wild said the eight years since the Birch Inquiry had been the most rapidly changing period in the Organization's history.

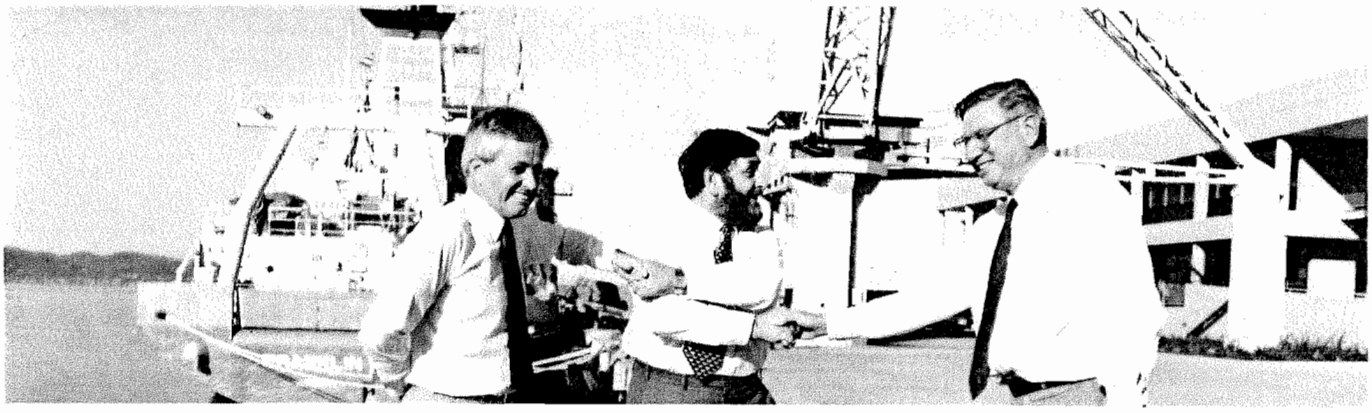
The Organization could not have changed any faster given the guidelines laid down by the Birch Inquiry and by successive Governments.

Federal Government expenditure on research and development in 1984–85 will be about $1400 million, about a quarter of which will go to CSIRO.

The other major Commonwealth research institutions involved in the review are the Defence Science and Technology Organization, the Australian Atomic Energy Commission, the Antarctic Division and the Bureau of Mineral Resources.

Full-time Executive member, Dr Keith Boardman, assisted by Dr Peter Donaldson, will co-ordinate CSIRO's interaction with ASTEC. Dr Boardman has already met with Directors, Chiefs, the Consultative Council and staff associations to discuss the possible implications of the review.

Handshakes all round at Hobart Labs



The new $13 million CSIRO Marine Laboratories on a prime waterfront site in Hobart were officially opened by the Minister for Science, Mr Jones, on Wednesday May 1.

About 160 scientific and support staff from the CSIRO Divisions of Fisheries Research and Oceanography are accommodated in the five-building complex, which covers a three-hectare site on Sullivan's Cove, close to the Hobart business district. The Divisions of Oceanography and Fisheries Research were formerly housed on a site partly leased from the NSW Government in the Sydney suburb of Conulla. The old site was not suited to expansion because it was small,. lacked a deep water berth for large research vessels, and the renewal of the lease was uncertain.

The decision to move the headquarters of both Divisions was announced by the former Prime Minister, Mr Malcolm Fraser, in April 1980, at the same time as the decision to build the new Oceanographic Research Vessel, *Franklin*, was announced.

In his speech before opening the laboratories, Mr Jones said the significance of the buildings was not just that they provided a new location for the Divisions, but that they were part of a much-needed boost in an area of research in which Australia was very seriously lacking in the 1970s.

'The impetus for a "new deal" for marine science came from the declaration, in November 1979, of the 200 nautical mile Australian Fishing Zone,' Mr Jones said.

cont. p. 7

In a light moment at the opening of the CSIRO Marine Labs in Hobart, Mr Jones congratulates both the Chairman, Dr Wild (right) and the Chief of the Division of Oceanography, Dr Angus McEwan. Pictured in the background are the administration building, the Oceanographic Reseach Vessel Franklin, *and a 22-tonne crane for loading and unloading mobile laboratory units from the ship. The* Franklin *is being fitted with instrumentation before its first scientific voyage starting June 8.*

Letters to the Editor

Dear Editor,

P.R. Smith (*Coresearch*, 278, March 85) is quite right to point out that Carl Sagan's use of a public relations firm to alert the world to the importance Sagan attaches to the nuclear winter theory does not invalidate the theory.

Smith is wrong, however, in claiming that the work was first reported in Sagan's popular article in *Parade* magazine (October 1983). It was reported at several scientific meetings before then, and a summary appears in print in *EOS, the Transactions of the American Geophysical Union*, Vol. 63, p. 1018, published in 1982.

The work derives from a seminal paper by Crutzen and Birks, which appeared in *AMBIO*, Vol. 11, pp. 114–125, early in 1982.

Be that as it may, the real point of Smith's letter is to make quite false comparisons between the effects of major volcanic eruptions and the possible effects of smoke and dust from a nuclear war.

Smith's criticism would appear to derive from the quite fallacious arguments of one John Grover, which appears in *News Weekly*, January 16, 1985. From that source it appears that Smith's comparison is based on the comparitive energy released in nuclear explosions and in volcanic eruptions.

Grover also makes a comparison with the energy due to sunlight reaching the earth, which is the equivalent of a one megatonne bomb every 1/30 th of a second.

The point is that the climatic effects of a nuclear war have very little to do with the energy released by the explosions, but a lot to do with the solar energy intercepted by smoke and dust lofted into the atmosphere by the explosions and subsequent mass fires.

The energy from the bombs and fires is only relevant as a means of lofting smoke and dust into the atmosphere, and is far smaller than the energy from the sun which can be absorbed or reflected back into space by the resulting absorbing and reflecting screen.

It is like comparing the energy needed to draw a sunblind across a window with the solar energy the blind may keep out of a room during the whole length of a hot summer's day.

The only validity in comparing volcanic eruptions with the effects of nuclear weapons is in comparing like with like, namely the screening effect of volcanic dust with that of an equivalent amount of smoke and dust from nuclear war.

But here it must be noted that volcanic dust consists either of silica particles or of sulphuric acid droplets, neither of which are strong absorbers of visible light. On the other hand, the climatically important component of nuclear war debris will be the soot contained in the smoke, which is a very efficient absorber of sunlight.

When proper allowance is made for the relevant optical properties, size distributions and amounts of the particles involved a valid comparison can be made between volcanic eruptions and nuclear war.

When this is done, the same models which correctly predict the order of magnitude of volcanic effects on climate predict much larger effects due to the smaller quantities of soot likely to be lofted into the atmosphere by multiple nuclear explosions over cities and the resultant mass fires.

There are of course still large uncertainties in quantifying the nuclear winter effect, but it has to be taken seriously, as it has by the US National Academy of Science in its 1985 report, and by the Pentagon in a recent report to the US Congress. Such bodies are not easily sucked in by PR hype.

There is a serious problem and it deserves serious scientific study. May I suggest to P.R. Smith that he ignores Sagan's PR firm and reads the scientific literature. My recent review in *Search* (Vol.15, pp.332–339) might be a good place to start.

Further research on possible nuclear winter efffects is being conducted in many centres around the world, including CSIRO's Division of Atmospheric Research. I would be happy to supply any interested people with relevant references and reports.

A. Barrie Pittock
Division of Atmospheric Research

Dear Editor,

I must reply to P R Smith's casual dismissal of the nuclear winter theory in his letter to *Coresearch 278*.

This theory is not the result of popular fiction and the growing interest in it not the result of a slick public relations exercise, as Mr Smith seems to imply.

If he would care to read a bit more widely than *Parade* magazine he would find that the theory was fully described in an article called '*Nuclear Winter: Global Consequences of Multiple Nuclear Explosions*' written by Carl Sagan and others in *Science*, 23 December 1983, Vol 222, pp 1283-1292.

Since then, the US National Academy of Sciences, the Societ Academy of Sciences and many other scientific meetings and research groups have examined the theory and arrived at similar predictions. The implications of the theory are that regardless of who starts a nuclear war, there will be no winners.

We will all suffer the disastrous environmental consequences of such a war. No wonder the theory has provoked so much interest.

It may be surprising that the nuclear winter effect was only discovered two years ago when nuclear weapons have been around for 40 years. However, it is not surprising when you consider that compared to the hundreds of thousands of scientists employed to design new nuclear weapon systems there would only be a handful of scientists assessing the environemntal effects of the use of such weapons.

Maybe if more scientists, especially defence scientists, considered the social and political implications of their work, as SANA appears to be doing, we would now have an even greater understanding of the dire consequences of a nuclear war.

As for the comparison between a nuclear explosion and a volcanic eruption it should be pointed out that the critical difference is that the intense heat of a nuclear explosion combined with its detonation over city areas would start massive fire storms such as occured in Dresden in the second world war.

The combination of fine dust exploded into the air and the smoke and soot from the fires would create thick clouds that would block out the sunlight and thus reduce the temperature.

But even if the nuclear winter theory was completely wrong, in a nuclear war we would still have such slight problems as millions of people killed instantly, or dying later of burns or radiation sickness, and the complete breakdown of medical services to deal with such a calamity.

But of course, throwing terrifying facts at the problem isn't going to make it go away. Only disarmament of the weapons will do that.

The contribution of SANA to the growing debate about the dubious worth of nuclear weapons and the growing popular movement for their elimination is therefore most welcome.

Gordon McAllister
Personnel Branch

Dear Editor,

Thank you for your efforts in publicising the open days held at the Division of Radiophysics in Epping.

As a consequence of the publicity, we had about 1600 years 11 and 12 students here on Thursday, 18th April, and on the weekend of 20th and 21st April approximately 7000 people went through this Division of CSIRO.

We found the public not only extremely interested in the displays but also well informed and able to discuss in detail many of the ideas and displays presented by members of the Division.

On behalf of the Division, I would like to thank you for your help in publicising the open days.

Raymond F. Haynes
Convenor, 1985 Open Days

An Indonesian delegation of high-ranking government and industry officials, including Mr Cosmas Batubara, the State Minister of People's Housing (centre), recently inspected the research facilities at the Division of Building Reseach in Melbourne, and held talks with the Division's Chief, Dr Lex Blakey (right).

Button admits cuts

The Federal Minister for Industry, Technology and Commerce, Senator Button, has acknowledged publicly CSIRO's budget cuts.

Senator Button said that in constant dollars it was true that CSIRO had experienced 'small reductions', but funding to the industry-oriented research areas had been increased.

He told the National Meeting of Concern on Science and Technology in Canberra last month that it was 'perhaps inevitable that such a giant as CSIRO should tend to lose funds.'

'It is very difficult when accommodating new programs and fitting inside budget requirements, to find the absolute amounts of money required from the small items,' he said.

CSIRO suffered an effective cut of about three per cent in salary and operating funds in what the Chairman, Dr Wild, described as one of the worst budgets in the CSIRO's history.

Senator Button's comments follow the tabling in Federal Parliament of the CSIRO-Department of Finance Joint Working Party's report. In its summary the working party said CSIRO's budget allocation provided no additional funds to meet increased operating costs in the 1983–84 and 1984–85 financial years.

The budget had also provided 'insufficient funds' to cover the full cost of the 'Government directed Repairs and Maintenance and Occupational Health and Safety Program in 1984–85, thereby requiring the CSIRO Executive to cut programs,' the report said.

However, Senator Button said he rejected any claim that the Government was cutting back on research and development funding. It was doing the opposite, but was directing funds to the areas of 'greatest need', particularly manufacturing industry.

In his address to the unprecedented meeting, he predicted a 33 per cent increase in science and technology funding in this year's budget.

Including revenue lost due to the new 150 per cent tax concession for industrial research and development, funding was likely to rise to about $535 million this year compared with about $400 million in 1984–85.

Senator Button also rejected any claims that adjustments to funding were due to 'anti-intellectualism'.

'I belong to a Government which I regard as 80 per cent philistine, but that is 20 per cent better than you will get from any other political party,' he said.

The Government was trying to get Australian industry into a position where it was 'outward looking.'

'Thus, advance in industry restructuring must go hand in hand with development of a research and development policy and practice which is appropriate to feed into a restructuring industry,' he said.

'That research and development policy will be one which throws a bigger responsiblity on industry itself. It will cost money — public money — but it is seen as a better public investment than open ended protection.

'And in a tight budget situation it will have implications for existing research bodies. It throws upon them the onus for getting better value for money from their budgets, and for critical and continuous evaluation of programs.

'And it creates a need for manpower and money flexibility which is more critical than ever before.'

From the Chairman -

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

When a Chief of Division is about to retire or come to the end of his term of appointment it is the Executive's practice to set up a review to examine, among other things, the future role and direction of the Division.

The same principle is applied to Institutes when a Director retires. It seems perfectly reasonable therefore that when the Chairman of the Organization is about to retire the same principle should apply — that the future role and direction of the Organization should be reviewed. Past Government examinations of the Organization's role took place in 1949 and 1977, which coincided with the retirement of David Rivett and Jerry Price. I am due to retire in September 1985, so the recently-announced review of CSIRO by ASTEC is logical and timely. The review differs from its predecessors because its terms of reference are very broad: they embrace the whole subject of the role of Government in funding R & D and will eventually extend to other institutions and tertiary education centres. But the urgent task is to focus on CSIRO so as to complete the task as soon as possible and cause the minimum of hiatus within the Organization.

I know only too well that many staff of the Organization are sick and tired of reviews; that reviews can require a lot of work which is a distraction from more creative endeavours; that reviews create tensions and uncertainties and affect morale. We need to do everything possible to minimize these negative effects for all reviews. In the case of the ASTEC review it is important to ensure that the drive and momentum of the scientific work of the Organization contine unretarded. Nevertheless I encourage those that become involved to be totally cooperative. Although sometimes the national interest can be endangered by such a review I believe there is a high probability that the Organization will emerge stronger from this review. At the very least the level of debate about CSIRO by the public, industry and Parliament should be better informed as a result of it.

What are the main issues of the review likely to be? I can only give a personal opinion. Out of an analysis of the role of Government in R & D funding and, within that context, of CSIRO's role, I believe that questions will be asked about the balance of our effort across the spectrum that begins with fundamental research, passes through strategic to tactical and development work; should there be a different funding structure, with greater involvement of private funds? Should the present sectoral balance of effort be maintained? Do we have the optimum structure to carry out our role? And of course there is that most alarming, if perennial, question — should CSIRO be dismembered and carved up? On the last question I am sure that no person, especially politician, in his right mind would contemplate an affirmative answer because it would be the end of one of Australia's most treasured possessions. In this connection I should quote Australia's correspondent of *Nature*, Jeff Sellar who told us recently of a remark made to him by a senior Japanese official 'Without CSIRO Australia becomes a Third World country'.

At a time like this I believe the whole of CSIRO would wish to put aside minor grievances and focus on the common cause. It is therefore a period when communication is more important than ever. For this reason Keith Boardman, Geoff Taylor and I are in the process of meeting with all Directors and Chiefs in groups in capital cities to discuss issues and get our act together. We are encouraging Chiefs to do the same with staff in their Divisions. Considerable organization is required to gather all the information required. I have asked Keith Boardman to take over-all charge of this operation and Geoff Taylor to assist by looking after administrative, financial and personnel affairs.

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I would like to comment on three recent events that I attended:

The first was at my old Division, Radiophysics, who opened their period of Open Days with a fine range of displays, exhibits and experiments. Some 8,000 of the public passed through in three days. Among the package of handouts we were given I especially appreciated an excellent booklet entitled 'A pictorial history of Radiophysics'. Many pages told of history in which I lived. Perhaps other Divisions might be interested in following suit when the occasion arises.

The second was the opening of the Science Education Centre at Adelaide, complementing one already established in Melbourne. Through our Division of Manufacturing Technology branch at Woodville, CSIRO played a leading role in establishing this enterprising venture which provides for a glittering variety of hands-on experiments for school children — to heighten their awareness and stimulate their interest. They were set off to a good start by Barry Jones who used a laser gun to activate a device that cut the tape that opened the centre.

The third was the opening of the Marine Laboratories at Hobart — a magnificent building on a magnificent site with the magnificent *Franklin* tied up alongside (and one mustn't forget the tried and trusted *Soela* tied up astern of the *Franklin*, and basking in the glory of a newly discovered sea mount and accompanying fishery). The whole concept of our new marine facilities has not come into being without considerable dedication and sacrifice by staff, and the move from Cronulla has not been made without a degree of trauma. But these problems now mostly belong to the past, and I believe the staff are very happy about their new-found facilities and the future opportunities they provide. Good luck to them!

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Paul Wild

Communications changes

The Management Committee has brought in changes to internal communications following an audit finding that the present system was 'relatively ineffective.'

And more changes are likely following the Executive's consideration of the OCD Audit of Internal Communication in CSIRO Report.

Changes already in place will require Chiefs to hold regular meetings open to all staff, the production of briefing material from Headquarters to assist Chiefs at these meetings, and all Divisions to produce a newsletter at least monthly.

In bringing in immediate changes, the Management Committee was not seeking to pre-empt the Executive's consideration of the audit. The Consultative Committee is expected to propose implementation strategies when it reports to the Executive's June meeting.

The audit, which was carried out by the Canberra College of Advanced Education for the Consultative Council, found that while job satisfaction was generally high, internal communications appeared 'relatively unsatisfactory' when compared with norms derived from European organizations.

It found improvement in communications was necessary between management and staff, within Divisions and between Divisions.

The major recommendations of the report, which was based on questionaires answered by 797 staff, are:

- Managers should receive training in communication skills and concepts and communication managers should be appointed at Headquarters, Divisional and Institute levels;
- Managers should strive to improve their understanding of staff through more group meetings, more openness, more concern for work and personal problems;
- The job-performance appraisal system should be modified and expanded to reflect communication skills;
- A control system should be implemented to check on the dissemination of messages and information should be disseminated more promptly;
- Responsibility for internal and external communication should not be separated;
- Access for staff to Chiefs should be improved and staff meetings should be improved;
- Information on the use of CSIRO research results should be 'considerably improved' for non-professional staff.

The principal investigator, Dr John Penhallurick, said in the report that the audit gave a 'reliable and generally accurate picture of CSIRO's internal communication in late 1984.'

He said that because of its diversity of operations and wide geographic spread, CSIRO should aim for a very high standard of internal communication.

However, Dr Penhallurick warned against opening the 'floodgates' and swamping staff with information. Information overload, he said was a problem 'at least as bad as too little information.'

The audit found that the major communication problem in the Organization was communication between management and staff, particularly from management to staff.

Management was widely seen as remote, unfeeling, uncaring and secretive.

'One cannot escape the conclusion that the basic cause of the unsatisfactory nature of communication from management to personnel is a general lack of communication skills and knowledge among management,' Dr Penhallurick said in the report.

Training in communication for managers was an 'essential step' if the Organization was serious about improving internal communications.

The audit recommended that Institutes should play a greater role in co-ordinating communication between Divisions. The Institutes had a particular role in communicating organizational changes and changes in research priorities.

Workshops involving all levels of management and staff were held in Brisbane, Sydney, Melbourne and Canberra during May. The participants will be drawn from all locations.

The typical *CoResearch* reader is probably male, professional and aged over 35.

The OCD Audit of Internal Communication in CSIRO Report also found that the use of *CoResearch* increased with length of employment with staff employed for less than one year using it far less than other staff.

The report shows that females read *CoResearch* less than males and that females get more of their information about CSIRO from the mass media.

Staff aged under 35 use *CoResearch* less than older staff, and Professional staff use *CoResearch* most.

The report found that generally the mass media is not a significant source of information about CSIRO for staff. Support staff get the most information from this source with librarians predictably above other support staff.

Although *CoResearch* is quite widely read, staff said they did not get enough information about their work and CSIRO from it.

Versatile antenna design

Grant Griffiths explains aspects of the Division's new microwave solid state devices program to OTC's Assistant General Manager, Engineering, Peter Meulman (left) and the General Manager of Aussat, Graham Gosewinckel, at the open days.

Aussat and CSIRO's Division of Radiophysics will collaborate on the development of earth station antennas designed to enable multiple satellite access.

The General Manager and Chief Executive of Aussat, Mr Graham Gosewinckel, announced the collaborative project at last month's launching of the Sydney-based Division's open days.

Mr Gosewinckel said the project was important as it would allow access to two or 'perhaps all three' Aussat satellites. This would enable fast switching between satellites as well as possible simultaneous operation and could lead to the establishment of new export markets.

cont. p. 8

Ms Jean Conochie of CILES has been awarded the H.C.L. Anderson Award for 1985. The award is given by the Library Association of Australia for outstanding personal service to the profession, to the association and to the theory and practice of librarianship.

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Dr Grantley Chaplin of the Division of Food Research is visiting Thailand, Malaysia and India. Dr Chaplin will attend an international symposium in India and visit Thailand and Malaysia for collaborative research.

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Mr Bob Kirchner, a Senior Technical Officer with the Division of Plant Industry, has retired after more than 34 years with the Division.

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Tan Yunhu, a graduate from the Soil and Agrochemistry Department of the Agricultural College of Central China, has started experimental work at the Division of Soils' Canberra laboratories. He is also undertaking a M.Sc. degree at the Australian University and his particular interest is in the dynamics of soil water.

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Mr Chen Yuan-chang, who heads the Length Laboratory at the National Institute of Metrology in Beijing, is visiting the Division of Applied Physics. Mr Chen is working in the Length Group for three months. He is particularly interested in the application of laser interferometry to long distance measurements, refractometry and screw-calibration.

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Mr Achim Leistner, of the Division of Applied Physics, is spending six months in the US and Europe to visit optical science establishments. Mr Leistner will spend three months with the Optical Science Centre in Tucson, Arizona, where he will study advanced methods in optical fabrication and testing.

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Mrs Yi Yi Win and **Mrs Win Mar** from the Pulp and Paper Research Department of the Central Research Organization, Burma, are visiting the Division of Chemical and Wood Technology for three months. They will be working on tropical pulping.

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Dr Tony Pettit for the Department of Mathematics, University of Technology, Loughborough, Leicestershire, is visiting the Division of Mathematics and Statistics for nine months.

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New group

The Women in Science Enquiry Network (WISENET) has formed a health group to look at issues critical to women and the health sciences.

The health group, which held its first meeting this month, will initially focus on male domination of health research and development, the sex-based division of labour in the health system, and male intervention in health issues of particular concern to women.

WISENET was formed to promote the role of women in all of the sciences.

US fellows at PI

The Division of Plant Industry in Canberra is now host to five US National Science Foundation Fellows. From left to right they are Tom Peterson, Ry Wagner, Layne Huiet, Brian Taylor and Liz Howard. They are pictured in one of the Division's glasshouses.

Home security

Enjoy your holiday this year knowing that your home is as secure as you can make it.

If your home's security is not as good as you would like, here are some suggestions which will help not only while you are away on holidays, but also when your home is empty for short periods.

A three-pronged attack is the best form of defence: make it difficult for anyone to get in and out; leave the house looking lived in; and monitor security.

Have good solid doors, fit them with double cylinder deadlocks and put locks on the windows. Check the door surrounds for strength against a forcible attack. Always use the locks, even if you are popping next door for a cuppa or something stronger.

While you are away, give your home a lived-in look to deter potential burglars. Don't close all your blinds and drapes — leave some in the position they normally are when you are at home.

If you have a second car, park it in the driveway or ask your neighbour to park theirs in it.

Put some clean rubbish in your garbage bins and put them out of sight. Empty bins = empty house.

Ask someone to collect the papers and mail daily, and arrange to have your lawns mowed and the garden watered.

Using automatic timers to switch a radio and lights on and off at appropriate times also helps the place look lived-in.

Ask your neighbours to be nosey at all times and watch your home while you are away.

Before you leave, put any valuables in the bank or another secure place, lock the garage and other outbuildings, switch off and disconnect any regular appliances other than the automatic timers and lock all doors and windows.

Do this, and you can have a happy holiday with the assurance that you have dramatically increased your chances of a happy return.

Harry Kwong

Prize winner

A Principal Research Scientist with the Division of Plant Industry, Dr Rudi Appels, has been awarded the Academy of Science's 1985 Gottschalk Medal.

Dr Appels, who was pesented with the medal this month, is involved in analysing cereal chromosome structure.

The medal is awarded to scientists aged under 36 years for contributions to biological or medical science.

Dr Appels said the DNA sequences which he had been involved in isolating had been useful to 'in effect fingerprint' plant chromosomes.

This was useful to plant breeders who were 'often struggling to follow chromosomes in their breeding programs.'

Dr Appels is also involved with analysing the chromosome segments which are known to carry disease resistance.

Chief wins award

The Royal Australian Chemical Institute (RACI) has awarded its 1985 Leighton Medal to Dr David Solomon, Chief of the Division of Applied Organic Chemistry.

The Institute awarded Dr Solomon the medal in recognition of 'his long and meritorious service to chemistry in Australia.'

Dr Solomon has held a number of posts in the RACI including National President (1979-80), President and Vice-President of the Victorian Branch, and Chairman and foundation member of the Polymer Division.

In 1967 he was awarded the NSW Branch's Archibald Olley Prize for his book, *The Chemistry of Organic Film Formers*.

Dr Solomon shared the H.G. Smith medal in 1971, received the Polymer Medal in 1977 and the RACI's inaugural Applied Research Medal in 1981.

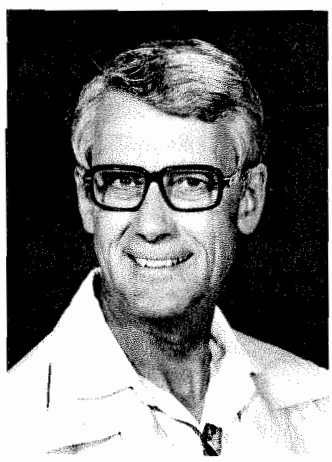
In the field of polymer science the Division has programs to design and synthesize polymers with special structures for specific uses in industry and commerce.

Optics medal

Dr Beattie Steel, of the Division of Applied Physics, has won the prestigious Mees Medal for his work in optics.

Dr Steel, a Chief Research Scientist in the Division, was awarded the medal for his contributions to many international organizations and his technical achievements in image diffraction theory, interferometry and optical design.

The medal is awarded by the Optical Society of America to a person 'who exemplefies the thought that optics transcends all boundaries — interdisciplinary and international alike.'



Dr Steel has collaborated closely with the International Commission for Optics, the organization which unites research scientists in optics from different countries.

He was a member of the Bureau of the Commission for nine years, and was elected President in 1972. He is also a Fellow of the Optical Society of America.

Dr Steel played a prominent role in the establishment of the Australian Optical Society in 1983 and was appointed its first chairman.

In the Division, Dr Steel has worked chiefly on new methods of designing, making and testing optical components.

Jones: CSIRO 'powerful tool'

This is an edited text of a speech given by the Minister for Science, Mr Jones, in Federal Parliament this month when CSIRO's 1983–84 annual report was tabled.

I have pleasure in tabling the 1983-84 annual report of CSIRO. This is an attractive publication, highlighting the Organization's research achievements and setting out its policies in some detail.

CSIRO has been of invaluable service to the nation in the past in making a major contribution to the success of our primary industries, which are the very foundation of our economy. It now offers a powerful tool for the task of restructuring and revitalising our manufacturing industries, which are essential to our future prosperity.

We now need to identify and break down the inhibiting factors which so far have held the manufacturing and service sectors back from taking advantage of the high levels of expertise available in CSIRO.

The annual report shows that in the four years from 1979 to 1983, the number of scientific staff within CSIRO engaged in research for manufacturing industry rose from 630 to 710, an increase of 12.5 per cent.

This growth was achieved because of CSIRO's own realisation of the importance of the manufacturing sector, even before the change of Government, and indicates a willingness to co-operate fully with this Government's program of revitalising industry.

It is not widely appreciated that CSIRO has also already given substantial assistance to secondary industries. Without CSIRO's contributions over the past few years, the prospects for increasing our competitiveness on the international market would be much bleaker than they now are because of the low level of private investment in R&D in this country.

In this context I could quote a comment of a recent Japanese visitor, an official from the Tsukuba Expo '85, who said that: 'Without CSIRO Australia would be a Third World country.'

One example of CSIRO's role in boosting our technological capacity is the formation of the company AUSTEK Microsystems arising from the CSIRO Very Large Scale Integration program in Adelaide. Four years ago, we had no indigenous capability in integrated circuit design.

Within two years over two hundred application-specific chips had been designed by Australians through CSIRO adopting a central co-ordinating role for newly trained designers.

Having established the mechanism to ensure Australian capability in integrated chip design by early 1983, the VLSI program went on to concentrate on the design and construction of a 100K chip.

The new developments were incorporated into CSIRO training courses, ensuring that Australian designs will continue to be competitive with the best available from Silicon Valley or anywhere else in the world.

According to plan, the researchers then left CSIRO to set up their own company, AUSTEK, to exploit the capability commercially and we are now seeing the beginning of a flourishing new industry in Australia. None of it could have happened without the CSIRO environment.

It needs to be emphasised, over and over again, that in many Divisions of CSIRO there have been dramatic changes in emphasis in the past five years.

The world of research is changing with unprecedented speed and CSIRO is changing with it. Biotechnology is a notable example — in 1980 CSIRO had 57 professionals in this area, in 1985 there are more than 200.

Fifty-one per cent of these additional positions were found from redeployment of resources, 30 per cent from priority funding — areas designated by the Executive in consultation with me, and 19 per cent from external funding.

In the Division of Plant Industry, as much as 65 per cent of additional positions have come from external funding. The numbers of professionals in (the Division of) Molecular Biology has doubled in five years.

CSIRO is carrying out pioneering work on the chemical interaction between metals and ceramics, a field of increasing international interest and in close collaboration with industry. The work on PSZ is now being developed in the private sector and has created a high degree of interest in the US and Japan.

Pressure is frequently brought to bear on the CSIRO Executive for the Organization's scientists to concentrate on the problems of the moment. Their response, quite rightly, is that CSIRO should be doing part of its work on short-term tactical problems so that it can get to know industry and its needs, but that the majority of such problems should be tackled by industry itself.

It is often insisted that CSIRO's research must be 'relevant' but relevance has a disconcerting habit of changing from year to year. The priorities of 1980 may look absurd by 1985. The proposition that in 1985 we can only carry out research which can be applied to 1985's industries is a guarantee of failure.

When do we begin thinking about 1990? Must we wait for another five years? If we do then we will be doomed. There was a telling illustration of this point on March 6, 1985 when Rod Carnegie assisted John Button to launch SIROTECH, CSIRO's new technology transfer company. Rod Carnegie said that we must put more emphasis on relevant research — and the illustration he gave was biotechnology.

But when did biotechnology jump the hurdle to become 'relevant'? Very recently: even two or three years ago biotechnology would have been regarded as a classic example of pure research, on the frontiers of knowledge.

It is essential that industry lift its currently deplorable performance and make a serious effort in applied research.

At the recent Venice Conference on Technological Innovation and Job Creation, President Reagan's science adviser, Dr Jaye Keyworth, said that between 1981 and 1985 administration expenditure on basic research had increased by 60 per cent.

The Republicans reversed the Carter administration's policy of increasing funding of applied research as a means of bailing out companies and now put the entire responsibility for this on industry.

The percentage of expenditure by CSIRO on basic or fundamental research is difficult to estimate precisely: there is a considerable degree of overlap in many areas between 'fundamental' and 'applied.' I would define 'basic research' as an inquiry into the way in which the universe and its systems work — without a product or practical application in mind.

Strategic or mission oriented research, such as the work on PSZ, involves fundamental research into physical properties but with an end product — a new industrial material — in view.

The best estimate is that 10 to 15 per cent of CSIRO's research expenditure is 'basic' or 'fundamental.'

CSIRO's main role is strategic: to lay the foundations for technologies and industries for the future. This kind of research is not aimed at solving the immediate problems of any one company. Instead its aim is to come up with research results that will be profitable to a large number of Australian companies.

Strategic research is appropriate for Government-funded institutions because it is usually beyond the scope of any single company to perform: it is the sort of work Government should be involved in and it is the sort of work CSIRO has been doing superbly. To be successful, it must be accompanied by a certain amount of fundamental research, which has no apparent application to any existing industrial product or process.

CSIRO research should continue to cover the whole spectrum from the most fundamental to the most immediately technical, with the middle ground of strategic research being its speciality.

MacKellar: CSIRO not the problem

This is an edited text of the speech in reply given by the Federal Opposition spokesman on science, Mr MacKellar, after the tabling of CSIRO's annual report.

Mr Deputy Speaker, this Labor Government has earned a great deal of controversial publicity for its handling of science and technology matters.

The statement by the Minister fuels the controversy, because I believe his is a brave statement and I believe also it's a correct one. But let's have a look at the record in summary: from the Government's point of view it took a very vigorous public relations position to say that it would promote scientific endeavour in this country. The CSIRO report demonstrates the ongoing strength and significance of the CSIRO.

The Labor Government started its term in office with an integrated portfolio of science and technology, including the CSIRO. They appointed one of the most eloquent members to be Minister for Science and Technology; eloquent but unfortunately lacking political clout in the Cabinet. Science seemed under this Government to have a rational policy future.

The Minister has taken a great interest in CSIRO and that's manifest in his statement today. But, the fact is that the statement is a statement in defence of CSIRO as much as it is an advocacy. It is not a defence against statements on this side of the House, it is a defence against attacks on CSIRO made by the Government leadership, particularly by the Prime Minister and by Senator Button.

It is a defence which can only stand to the Minister's permanent credit, because the issues raised cut right across factional lines.

Support for basic research funded by Government and support for strategic research funded by Government are fundamental to our economic future and I feel sure that support for the Minister's statement today and its implied rebuke of the Government, will commend itself to the great majority of members of this House and the scientific community.

The budget decisions of last year were plainly vindictive; vindictive against CSIRO; vindictive against the Minister as punishment for some of his more frank admissions and some exaggerations which are the characteristics of his eloquence.

The CSIRO budget was sliced by $9 million and then, when the Government was returned last year, we found the Senate leader, Senator Button, was given technology as part of the dismemberment process of the scientific area of Government.

No one denies the Minister responsible for industry has some very pressing problems which do need technological support for their solution. But Senator Button unfortunately sees technology as an instant product to be laid on. He doesn't see it as the end product of a process which will draw on the reservoir of intellectual strength a nation builds around basic research and the strength of well chosen project research strategically related to our long-term industrial future (for example, new welding technology).

What is Senator Button's input into the current dispute now developing over the review of CSIRO? The basic issue is the effort of the Government to shift research effort from fundamental areas to problem solving for industry. The Government needs to encourage industry to do more; that is the matter which should be on the Government's mind when they consider taxation reform.

The Minister rightly calls for industry to lift its game, but the administration of the industry portfolio should give firm commitments now to the creation of a broad system of incentives, including tax relief promised by the Prime Minister prior to the last election.

Despite criticism, CSIRO has continued to get on with the job, including the vital job of servicing the needs of our manufacturing industry. So, I don't think that the headlines in *The Age* of May 7 are far off the mark: 'Review Threat to CSIRO' said the headlines; 'Hawke and Jones Clash over Probe on Government-funded Studies.'

Well I think there is proof enough in the Minister's statement today. He thinks that this review is mistaken, if he doesn't, he certainly should.

Of course, we're not really talking about studies, we're talking about a vital ingredient of Australia's economic future. That's what we're dealing with here.

We don't think that the pressure of the Government's concern is well placed. The problem isn't CSIRO, but a Government which cannot get its policy-making house in order. That is the point of real concern, that is why the scientists, so difficult to stir as the Minister has found, came to Canberra a few weeks ago to warn Australia what was going wrong in this area. An unprecedented gathering of scientists saying: 'It's not good enough.'

So the Government wants its mistaken attitudes to find the favour of a dim public memory. An inquiry is to proceed in its horse-drawn way, so that the Government's blunders can be buried in yet another report.

The real inquiry required is an inquiry into the reasons why research and development has declined in the private sector. An inquiry into CSIRO is irrelevant to the national requirement at this stage.

It's clear that Senator Button seeks to brutalize CSIRO's established priorities which placed emphasis on strategic research, that is the creation of basic technologies to give Australia a sound technological leadership.

What they're doing is to divert the energies of the leadership of CSIRO in a contest only made equal by the fortunate fact that there will be a considerable lapse of time which will allow the Government time to rethink its basic hostility to science.

But if the portents are right, and this is the most hopeful thing, a coalition government will be given the task of sifting through the debris from the inquiry and a coalition government will give proper support for the CSIRO and science.

Jones aims at community

The Federal Minister for Science, Mr Jones, fires a laser gun at a target to open of the Adelaide Science Education Centre.

The Federal Minister for Science, Mr Jones, last month opened the CSIRO's Adelaide Science Education Centre — the second in a possible nationwide network of CSIRO-sponsored centres.

Mr Jones said the $60,000 centre was an important step towards increasing community understanding of science and technology.

At the high-tech opening ceremony, Mr Jones aimed a laser gun at a target triggering a device which broke a ribbon stretched across the entrance to the centre.

Mr Jones said the Adelaide centre could play an important part in educating Australians to take a positive role in the future

'The students of today must be able to understand the changes that technology will continue to make and must be placed to influence the development of a strategy for the future,' he said.

'Scientists have often failed to communicate with the public about their research work and its benefits and costs. Through this centre and the first Science Education Centre in Melbourne, CSIRO is fulfilling its responsibility to communicate with the public.'

The Victorian centre was opened in 1982 and is operating at a full capacity of nearly 5000 students and teachers a year. The Adelaide Centre, which uses the theme of 'science and technology,' is already booked to full capacity in the second school term.

Negotiations are now underway for centres in Hobart and Brisbane.

The Adelaide centre is a joint CSIRO and Education Department of South Australia project. The Division of Manufacturing Technology has provided expert advice and workshop and administrative support.

CSIRO, the South Australian Government, industry and professional groups have contributed to the establishment costs of the centre and CSIRO will provide an operating budget of $10,000 a year.

The State Education Department has seconded the Teacher-in-Charge, Mr Phil Allan, to the centre.

The Chairman, Dr Wild, said at the opening ceremony that the future well-being of Australia depended on education and a community with a high degree of scientific literacy.

'It would indeed be catastrophic for this country if its young people left school without an appreciation of what science has done, can do and cannot do,' he said.

'Politicians (present company excepted) tend to treat science as the soft underbelly of the community — to be cut away whenever the economic going gets tough.

'People involved in scientific and technological research must do all in their power to establish closer links with their customers — not only industry but also the community at large, especially the younger age group.'

Dr Wild and Mr Jones paid tribute to the work of the Division and Mr Allan and his advisory committee

The South Australian Minister for Education and Technology, Mr Lynn Arnold, and the Chief of the Division of Manufacturing Technology, Dr Bob Brown, also spoke at the opening.

China exchange hits a Great Wall

Severe funding restrictions have forced the Australian Academy of Science to cut back on scientific exchanges with China.

In its report on exchanges since 1980, the Academy said Australian participants had to accept conditions which would not be tolerated by delegates of comparable levels in Federal Government departments.

The number and duration of exchanges had been reduced and the Academy could not afford to provide Chinese visitors with interpreters.

The Academy said the Commonwealth grant-in-aid had provided adequate funding in the early years of the exchange program, but was now inadequate.

'The exchange program has reached its financial limits at a time when real benefits are increasing at a rapid rate,' it said in the report.

'Related to the problems of funding is that of the ratification of the exchange agreement.

'The agreement has not yet been signed — a feature which the Academy regards most seriously — because no commitment has been made by the Australian government of future funding.'

The Academy said the grant for the 1984–85 financial year would have to be more than doubled if all obligations were to be fulfilled in 1985–86.

In 1978–79, 23 Australian scientists had visited China for a total of 68 weeks, but in the last financial year just 11 scientists had visited China and they stayed for a total of 42 weeks.

'The annual quota of visits under the agreements with Academia Sinica is 60 weeks in both countries for short-term study and lecture tours, seminars, symposia and other scientific meetings and 24 months for long-term to medium-term reserach work,' the academy said.

'It is an embarrassment for the academy and bad for Australian science that this quota is unfilled because of a shortage of funds in Australia.

China and Australia were developing 'mutually significant economic and political ties' and the exchange program had contributed to the development of these relations.

Scientific exchanges worked to the benefit of both countries and were 'particularly effective in assisting to create a foundation of scientific knowledge essential for Australia's future,' the Academy said.

AWA takes on chip project

AWA Microelectronics has taken over CSIRO's highly successful Australian Multi-Project Silicon Chip system (AUSMPC).

The Director of CSIRO's Institute of Physical Sciences, Dr Neville Fletcher, and the General Manager of AWA Microelectronics Division, Dr Lou Davies, said the transfer ensured continued supplies for prototype purposes of high quality, special purpose chips at a fraction of the normal production cost.

The AUSMPC system, which began with the establishment of CSIRO's Adelaide-based VSLI (Very Large Scale Integration) program in 1980, is designed to make high technology chips accessible to Australian industry and research institutions.

Under the three year agreement, CSIRO will give AWA all its rights, title and interest in the system and its current mailing list.

In return AWA has agreed to maintain the high technical standards and exacting schedules that characterised the CSIRO system. Initially AWA will offer the service at a reduced cost of $175 a square millimetre.

AWA has for 17 years been the only company in Australia to operate a fully integrated design and manufacture facility for integrated circuits.

'I am delighted that AWA will take over this important project which has made high technology silicon chips easily available to research and educational institutions and small companies,' Dr Fletcher said.

'AUSMPC has been a great success in introducing this kind of electronics design to the Australian community.

'CSIRO is extremely proud of its pioneering work in this respect.'

With the establishment of the AUSMPC project, Australia became the first country outside of the United States to develop the capability to make multi-project wafers.

This system allows individuals to design their own silicon chips and then share the cost of fabrication with other designers.

Several production runs were carried out each year until October 1984 when the personnel of the VLSI Group transferred to industry.

Electronic mail on CSIRONET

An electronic mail system has been introduced on CSIRONET.

This new system can be used to quickly and easily keep in contact with local, interstate or even overseas colleagues.

It can be used by anyone with access to the CSIRONET system and there is no direct charge for using the electronic mail system.

The system is already being used by many Divisions, and Peter Milne of CSIRONET believes electronic mail could greatly facilitate collaboration between CSIRO scientists.

For more information contact: Peter Milne, CSIRONET, GPO Box 1800, Canberra, ACT 2601. Telephone: (062) 43 3330.

China agreement

The Chairman, Dr Wild, and Pofessor Yan Dongsheng sign the scientific co-operation agreement as Executive member. Dr Keith Boardman, looks on.

The first major scientific co-operation agreement between CSIRO and China's largest scientific research organisation, Academia Sinica, was signed in Canberra last month.

The agreement, which came into effect immediately, covers the exchange of personnel and information and the establishment of co-operative programs.

The Chairman of CSIRO, Dr Wild, and the Vice-President of Academia Sinica, Professor Yan Dongsheng, signed the for mal agreement at a ceremony at the Organization's headquarters in Canberra.

Under the agreement up to 10 Australian scientists will visit China each year and the same number of Chinese scientists will visit Australia.

This agreement is wider in scope than any previously signed by CSIRO with China and has taken almost five years to finalise.

It is designed to enhance the Agreement on Co-operation in Science and Technology signed by the Federal Government and the Government of the People's Republic of China in 1980.

At the signing ceremony Dr Wild said he believed the agreement would encourage further links and scientific exchanges between CSIRO and Academia Sinica.

Dr Wild said there were 'very great similarities' between the Organization and Academia Sinica.

'Our aspirations are very similar and many of our problems are very similar,' he said.

Professor Yan Dongsheng said the Chinese Government attached great importance to scientific research.

'We are facing more problems than you are here because China is a young country with a much bigger population,' he said.

'Science and technology have been given a high priority in our country. We look forward to a new face of collaboration after the signing of this agreement.'

A full-time member of the Executive, Dr Keith Boardman, who was heavily involved in negotiating the agreement, said he believed it would enhance scientific exchanges between Australia and China.

The agreement provides for co-operative projects involving Chinese visits to Australia to be for long-term periods of one to three years, or short-term periods of up to three months.

Australian visits to China will usually be for short-term periods, although long-term visits are not excluded.

Professor Yan Dongsheng was accompanied by the Director of the Institute of Ceramics, Academia Sinica, Associate Professor Guo Jing-Kun, and a representative of the Chinese Embassy in Australia.

Professor Yan Dongsheng and Associate Professor Guo Jing-Kun were in Australia to attend a symposium on industrial ceramics.

Marine Laboratories
cont. from p.1

'Until recently, Australian efforts to know and understand the oceans have been very low by international standards. It may even be the case that the Japanese or the Russians have done more scientific work in our own waters than we have.'

Mr Jones announced the recent discovery by the research vessel *Soela* of a new sea mount in the Tasman Sea, in a poorly charted area known as Cascade Plateau, about 250 kilometres south-east of Hobart.

The sea mount has been identified as a volcano, and rises some 2,000 metres from the sea floor. In the 600 metres above it is a resource of the fish species Trevalla.

Mr Jones said there were no doubt many other prominent features of the ocean floor around Australia of which we were still 'blissfully ignorant', and cited the discovery as a 'good example of the value that fundamental studies of the physical and biological character of our oceans can have'.

'CSIRO does not lay claim to having discoveed the Trevalla resource, but has confirmed that there is a fishery there and has shown that the charts were wrong before in showing the area as a plateau,' he said.

'The Trevalla resource is only a minor one, but if you put twenty such discoveries together you have a resource of significant and lasting economic importance to Australia'.

'The new laboratories provide Australian scientists with the opportunity to keep step with the latest technological advances and to make a substantial contribuion to Australia's economic well-being.'

Of equal concern.....

Sexual harrassment covers a range of unsolicited behaviour which consitutes a verbal or physical affront of a sexual nature against another person.

Such behaviour may range from unwelcome comments, gestures or actions of a sexual nature, to unwanted and deliberate physical contact, to subtle or explicit demands for or offers of, sexual favours.

Sexual banter in the office or laboratory can mean surprisingly different things to different people.

It is probably true that in some situations it is enjoyed as lighthearted humour that amuses everyone. More frequently, however, it becomes personal and can be seen differently by those who are the butt of the joke.

For instance, while one woman may enjoy verbal sparring in which she could even emerge the victor, another will be embarrassed and put down by suggestions and imputations which she finds offensive but which she is in no position to avoid — short of unpleasant confrontation or changing her job.

Furthermore, if she decides on confrontation she can run the risk of emerging the loser by being made an object of ridicule with such labels as prude, hung-up, hypersensitive, out of touch or naive.

In these circumstances where a man, particularly if he is in a senior position, persists even though he knows that the target of his sexual innuendo is offended or embarrassed by his advances — or even afraid of them — the situation is likely to contain the ingredients of sexual harassment.

He may well rationalise his continued attentions with the thought that it is harmless and that she should be more tolerant or in touch with the realities of life. He may even argue that if she dresses in the way she does or moves so provocatively, she cannot expect anything else.

Whatever way he justifies it, however, he is using the power of his position to force acceptance of his behaviour and it is likely furthermore, that his enjoyment of this sense of power will become part of the situation.

Of all forms of sexual discrimination, this is probably the most difficult to identify and deal with because it depends so much on how it is seen.

Irrespective of their sex, some people are embarrassed by situations that are tolerated relatively easily by others. Alas, some people find it easier than others to handle a problem of this sort by a straight-forward confrontation that puts an end to it.

Unfortunately, it is the person who is most affected by sexual suggestions and imputations and embarrassed by explicit sexual humour who usually seems to be least able to put a stop to it. Ignoring it, pretending not to hear it and hoping it will not happen again are the most common reactions.

At times, a threatened person may even laugh and hide distaste or distress in order not to be identified as a misfit.

In these situations mild sexual harassment may continue over a long period causing chronic tension and reduced work efficiency.

Because a complaint of sexual harassment, irrespective of its outcome, tends to be remembered in connection with a person, it is important that codes of behaviour within the workplace are adopted that help avoid this risk.

This does not mean the elimination of friendly repartee and lighthearted exchanges between people. These codes are aimed at eliminating the possibility of either direct or indirect verbal attack of a sexual nature that may disgust or hurt people who are helpless to prevent or avoid them without some risk to their work situation.

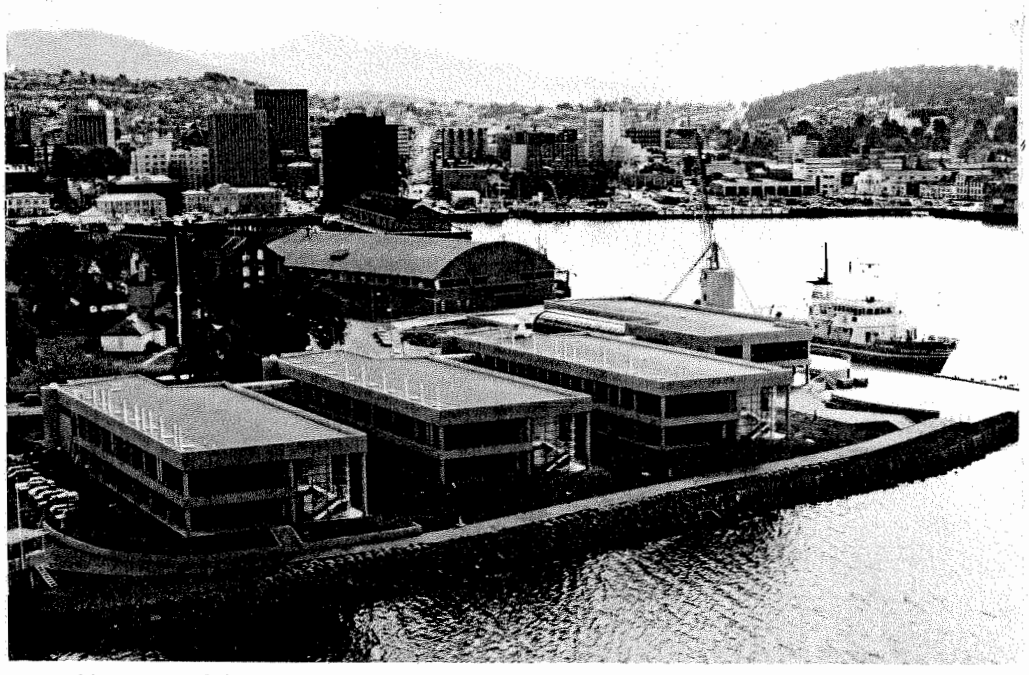
Finally, what of the circumstances where men may be embarrassed or harassed by women?

It is equally open for men to complain about sexual approaches from women employers as the other way around. The fact that this is less likely to occur in our present social system, where women are more fequently in subordinate employment roles, does not affect the principle of the matter.

Policy Circular No. 83/21 provides guidelines for resolving cases of sexual harassment. The guidelines include a definition of the types of behaviour that constitute sexual harassment and provide guidance to supervisors on dealing with incidences.

There are a number of possible courses of action to staff subject to sexual harassment. For confidential advice and assistance regarding these matters feel free to contact your EEO contact officer, personal counsellor or CSIRO's EEO officer, Carmel MacPherson

Anne Morant
Equal Employment Opportunities Unit



A view of the new Marine Laboratories in Hobart.

CSIRO's heritage

A plant specimen dating from 1777 and the early days of CSIRO featured at a Heritage Week exhibition in Canberra last month.

CSIRO Archives and the Division of Plant Industry prepared displays for the exhibition which attracted about 5000 people over four days.

The archives display, which was organised by CSIRO Archivist, Mr Colin Smith, featured photographs of CSIRO in the early days of Canberra. The display was titled: CSIR/O at work in Canberra 1928 to 1985.

The Division of Plant Industry's display included information on rare and endangered plants and early plant specimens from the Australian National Herbarium at the Division.

These plant specimens include a grass collected by Joseph Banks on Captain Cook's voyage to Australia in 1777, and two specimens collected by Robert Brown on Flinders' voyage in 1803.

Also on display was a specimen of Rutidosus Leptorrhynchoides, a rare plant now restricted to three small populations, two near Canberra. This specimen was collected in the centre of Canberra in 1933.

The then Prime Minister, Mr Joseph Scullin, speaks at the opening of CSIR's first Canberra building — the entomology laboratory at Black Mountain. This photograph was taken on March 12, 1930, and formed part of the CSIRO Archives' display.

Tending a crop of opium poppies at Dickson, ACT, grown in trials to assist medical drug-production. This photograph, which was on display during Heritage Week, dates from the early 1940s.

Open days

cont. from p.3

Australia was witnessing a 'plethora of inquiries' by government. '...reports recommending change and the establishment of new high technology research organizations, new commissions to look at future development in high technology industry — the list seems endless,' he said.

However, it needs to be recognised that we already have a well established centre of excellence — the CSIRO.

'Through its various Divisions there is a sound track record of success.'

Mr Gosewinckel said he was delighted to see CSIRO take the initiative and establish the CSIRO Office of Space Science Applications (COSSA).

'Already Aussat is working directly with COSSA examining the possible inclusion of space experiments and trials on AUSSAT's second generation satellite system,' he said. 'We look forward to a growing relationship between the two organizations.'

Aussat will launch its first two satellites this year and Mr Gosewinckel said this would be the 'most significant development in Australian telecommunications history since the advent of radio'.

Between 6000 and 6500 people visited the Division over the open weekend and 1700 students from 50 schools attended the high school open day. The Division was also open on Friday when about 100 people attended a VIP day.

The Chief of the Division, Dr Bob Frater, said at the official opening that a recent newspaper report on communications had highlighted a problem in Australia — that the official attitude was that 'Australians are second rate technologists.'

'I want to put it to you very strongly that this is entirely incorrect,' he said.

Dr Frater said the Division wanted its work 'with the technologies of the future' to proceed in close collaboration with industry and universities.

Industrial developments came at the end of a long cycle and the Division needed to pursue a 'certain amount of underlying basic research.'

Study awards

Applications are invited for the 1985 CSIRO Study Awards which provide opportunities for staff to gain training and experience related to their careers.

Since the inception of the study awards in 1977 a number of staff have benefitted from the opportunity to study overseas.

The awards are open to the broad staff categories: trades, technical, professional (non-reseach) and clerical/administative.

Application forms and information sheets for the 1985 awards are now available and have been distributed to Divisions, Units and Regional Administrative Offices.

Applications must reach Headquarters on or before June 28, 1985.

For further information contact Ms Lyn Wojtaszak on (062) 48 4221.

Sir Ian Wark dies

One of Australia's most prominent scientists, Sir Ian Wark, died in Melbourne last month after a short illness.

Sir Ian's research work was of crucial value to the establishment of the Australian mining industry and continues to inspire new approaches to the exploitation of Australia's vast deposits of minerals.

Born in Melbourne in 1899 he was educated first at Scotch College and then Melbourne University.

After gaining his PhD at University College, London, he went to Berkeley, University of California, for Post-Doctoral studies. In 1925 he returned to Australia as a lecturer in Chemistry at the University of Sydney.

From 1926 to 1939 he was Research Chemist of the Electrolytic Zinc Company of Australasia Limited and in his capacity as Chief Metallurgist with this company he published several papers.

His investigations of the principles underlying the electrolysis of zinc sulphate solutions helped the consolidation in Australia of the zinc mining industry by using electricity to win zinc from Australian ores.

His studies of surface chemistry and the allied fields of colloidal and physical chemistry led to his remarkable contribution toward the development and understanding of the flotation process, which is now a major technique in the extraction of many Australian minerals.

In 1939 Sir Ian joined CSIR as Chief of the Division of Industrial Chemistry; this Division developed into a group of Divisions at the Chemical Research Laboratories with Sir Ian as Director. Subsequenty he was a Member of the Executive of CSIRO and Chairman of the Commonwealth Advisory Committee on Advanced Education and later, Honorary Consultant to CSIRO Minerals Research Laboratories/ Institute of Energy and Earth Resources.

He was made a Fellow, Australian Academy of Science at its formation in 1954 and was Treasurer of the Academy for 5 years. He was also a Foundation Fellow of the Australian Academy of Technological Sciences, and a Fellow, Royal Australian Chemical Institute and was General President of that Institute in 1958.

He was made a Knight Bachelor in 1969.

Late last year the CSIRO complex at Clayton in Melbourne, which houses the Division of Chemical and Wood Technology and which will include the Division of Applied Organic Chemistry, was officially named the Ian Wark Laboratories by the Minister for Science, Mr Barry Jones.

Sir Ian leaves a wife and one daughter.

FASTS on the way

Australian scientific and technological societies will move towards setting up a new national body designed to improve communication with governments, industry and the public.

The National Meeting of Concern of Science and Technology last month established an interim committee, chaired by Professor Fred Smith of Monash University, to develop the proposal.

The new body — the Federation of Australian Scientific and Technological Societies — will also facilitate discussions within the scientific community on issues of common interest.

The interim committee will investigate the procedures and costs involved in setting up the federation and will seek funds to finance its activities.

While the committee has been charged with establishing the federation within six months the meeting recognised that the achievement of its broad goals would take some years.

Joint prize winners

A French professor and a Soviet scientist are the joint winners of the prestigious Kalinga Prize.

Professor Yves Coppens of France is the director of the Musee de l'Homme in Paris and was awarded the UNESCO prize for his promotion of understanding of the evolution of man and his natural and cultural surroundings.

Igor Petryanov-Sokolov, who is a professor at the Moscow Institute of Chemistry and Technology, has collaborated with several popular science magazines and took part in the production of the scientific section of the Soviet Children's encyclopedia.

The two winners were selected by UNESCO on the advice of a four-member international jury.

Australia nominated the Executive Producer of the ABC's Science Show, Mr Robyn Williams, for the prize.

CoResearch is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 5th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel 48 4640. Editor: Ellen Peterson.

CoResearch

CSIRO's staff newspaper June'85 281

Interim appointment

Boardman to head CSIRO

The Federal Minister for Science, Mr Jones, this month announced the appointment of Dr Keith Boardman as the next Chairman of CSIRO.

Dr Boardman, who has been a full-time member of the Executive for eight years, will take up his appointment in September when Dr Wild retires as Chairman.

Mr Jones also announced the re-appointment of Mr Graham Spurling as a part-time member of the Executive, and the appointment of two new part-time members of the Executive, Dr Adrienne Clarke and Dr Kevin Foley.

'The new part-time appointments follow the retirement of Mr Baillieu Myer and Emeritus Professor David Craig from the Executive,' Mr Jones said.

In view of the current ASTEC review of Government-funded research, all appointments will be for nine months, starting in September for Dr Boardman and Mr Spurling, and in June for Drs Clarke and Foley.

Until 30 June, 1986, the Director of the Institute of Biological Resources, Dr Michael Pitman, will be appointed an associate member of the Executive to carry out the duties formerly performed by Dr Boardman.

Mr Jones said Dr Wild had one of the most distinguished records in Australian science.

'He is a former medal winner of the Royal Society and he has a deserved and international reputation,' Mr Jones said.

'His work on Interscan, accepted as the new international system for landing aircraft, is a permanent monument to him.

'And he hasn't finished yet. Now he is working creatively and imaginatively on a new fast rail link between Sydney, Canberra and Melbourne.

'During his term of office, CSIRO has taken major steps to improve the commercialization of its research findings and has instituted new procedures and processes for research planning and staff management.

DIFFICULT TASK

'His task has been difficult; research organizations all over the world have in recent years come under strong scrutiny and reappraisal, and CSIRO has been no exception.

'Dr Wild has met this challenge with great success and distinction. He has also been a spirited advocate of the importance of science to this country's future.

'For all this the nation is indebted to him.'

Dr Boardman, 58, was a chief research scientist in the Division of Plant Industry before his appointment to the Executive.

Mr Jones said Dr Boardman had played a key role in the stimulation and expansion of biotechnology in Australia.

As a biochemist he was distinguished for his studies of energy conversion reactions in photosynthesis, and of the structure of the photosynthetic apparatus in green plants.

Dr Boardman is a Fellow of the Royal Society and of the Australian Academy of Science. He was a member of the Australian Research Grants Committee from 1971 to 1978, President of the Australian Biochemical Society from 1976 to 1978, and Treasurer of the Council of the Australian Academy of Science from 1978 to 1981.

He is currently a member of the Council of ANU, the CRA scientific advisory board, the board of management of the Australian Centre for International Agricultural Research and the National Biotechnology Program.

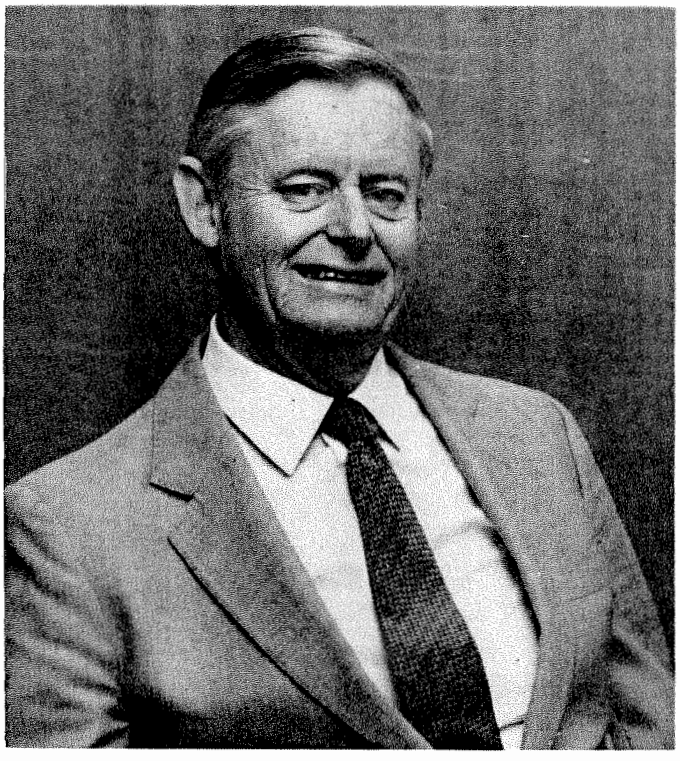
Dr Boardman graduated with a BSc and MSc from the University of Melbourne with a major in Chemistry and obtained a PhD in biochemistry from the University of Cambridge.

He was a research scientist with the CSIRO Wool Research Section from 1949 to 1951, and joined the Division of Plant Industry in 1956. Dr Boardman is married with two sons and five daughters and his interests include fishing and music.

Mr Spurling, 47, is Managing Director of Mitsubishi Motors Australia Ltd and played a key role in a major program undertaken by the company to improve industrial relations, productivity and product quality. He has been a part-time member of the Executive since 1982.

Dr Clarke, 47, is Reader in Botany at the University of Melbourne. She is a member of the National Biotechnology Program Research Grants Advisory Committee.

Dr Foley, 46, is Chairman of the Australian Industrial Research and Development Incentives Board, a member of the Council of La Trobe University, Melbourne, and is the author of numerous publications on economic and management topics.



The next CSIRO Chairman, Dr Keith Boardman.

New building body possible

Federal Cabinet has decided in principle to set up a single building research organization which would include the Division of Building Research and the Experimental Building Station

The Minister for Housing and Construction, Mr West, who announced the decision last month, said the new body would undertake strategic, tactical and socio-economic research and disseminate research results throughout Australia.

A Building Research Review Committee is being established to draw up detailed proposals for the new body.

Full-time Executive Member, Dr Geoff Taylor, will represent the Organization on the review committee, which is expected to report in June next year.

The Committee is expected to report on whether the new body should become part of CSIRO, an independent organization, or part of the Department of Housing and Construction.

In a letter to the Chief of the Division, Dr Lex Blakey, the Chairman, Dr Wild, said CSIRO would fight to retain the Division within the Organization.

'We obviously are not in a position to predict the final outcome but we, like you, believe that there is a very strong case for keeping the combined body within CSIRO and will fight for this end,' he said.

'I would like you to reassure staff in the Division of the Executive's view, as stated in my recent letter to Senator Button (the Minister for Industry, Technology and Commerce) that if there is to be any absorbing undertaken, it should not involve the Division leaving CSIRO.'

Dr Blakey said any move to remove the Division from CSIRO was likely to attract '100 per cent opposition' from research staff.

Staff representatives at the Division of Building Research wrote to the Prime Minister, Mr Hawke, in February expressing concern over the possible separation of the Division from the Organization.

Cabinet also decided to rename the Experimental Building Station as the National Building Technology Centre and to give it a new 'comprehensive charter to develop as a national centre of research excellence.'

The review committee will consider possible structures, including reporting and advisory arrangements, for the new body.

A CSIRO position paper supporting the establishment of the new body within the Organization will be prepared for the review committee.

The major points likely to be included in the position paper are:

- that CSIRO's philosophy, administration and structure created the most appropriate environment for the conduct of strategic and tactical research;
- the proposed new body would be a research organization and therefore appropriately located within CSIRO;
- that government departments do not provide the right environment for first-class research work;
- the Division of Building Research has close links with a number of other Divisions and shares equipment and services which enhance its capabilities;

In their telex to Mr Hawke, staff association representatives said they believed any integration of building research which would remove the Division from CSIRO would be expensive to implement and costly to maintain.

'Overall we see that any such moves would seriously prejudice the future of research for the building and construction sector in Australia, which is well and efficiently served by our members in CSIRO,' they said.

Letters to the Editor

In a letter to the Chairman, Dr Wild, late last year the Chairman of the Advisory Council, Sir Peter Derham, said CSIRO was not re-assigning enough vacant positions into growth areas. A copy of the letter was sent to chiefs and senior staff. Earlier this year Dr Wild received this reply from researchers in the Division of Fossil Fuels.

Dear Dr Wild,

We refer to Sir Peter Derham's letter of 14 November, 1984, directed to you as Chairman of CSIRO on the matter of Corporate Planning and Growth Areas, a copy of which was circulated to Divisional Chiefs and senior staff for their information.

In particular, we were interested in his point that CSIRO was not re-assigning enough of the annual number of vacant positions into growth areas and therefore would never have the flexibility to respond to new demands with a worthwhile commitment of resources.

We strongly suggest that the redeployment of existing staff is at least as important as new appointments. Indeed, it is usually impracticable to establish new research areas without the direct or indirect involvement of such staff, especially senior researchers.

Our own experience is a case in point. We redeployed from wool and textile research into minerals and energy research in 1976. Our group of some 20 people was subsequently incorporated into the then Institute of Earth Resources, as the Physical Technology Unit, under the leadership of Dr E.G. Bendit.

Despite the initial handicaps of all the staff being unknown in the minerals and energy field and the lack of industrial contacts and credibility, even with the other CSIRO Divisions within the Institute, the PTU was remarkably successful. In 1983 the PTU was amalgamated with the Division of Fossil Fuels under Dr Bendit as Chief.

Our experience is not unique in the recent history of reorganisations within CSIRO, although it may be a more extreme case. We believe that if the Organization is to meet future challenges it is of crucial importance that staff be encouraged to be flexible and adventurous.

We point out, however, that the professional problems involved in redeployment are difficult — a matter that we hope to take up in another forum — and it is essential that a climate be developed where research staff will look at redeployment willingly and creatively.

L.J. Lynch
B.M. Chapman
P. Nordon
N.C. Lockhart
A.N. Buckley

Dear Editor,

Your article 'AO: smokers call it quits' was definitely one-sided. The story was almost entirely concerned for the smoker's health with just a small mention of irritation, 'bronchitis and other problems' to the non-smoker.

In reality, the non-smoker who breathes the exhaust of a smoker is receiving much greater amounts of carbon monoxide than the smoker, depending of course on proximity, wind currents, etc, etc.

And if the non-smoker (passively smoking) is a child, then the sidestream smoke is extremely noxious.

Smoking can be most distressing to a non-smoker, especially in confined spaces and I find it particularly so during plane travel as it only takes one smoker to foul the 'airspace' of an entire plane.

Surely a 10% surcharge could be added to their fare or better still allow smoking only if the smoker agrees to wear a plastic bag firmly secured over his head.

Janet Hammil
CSIRO Screw-Worm Fly Unit

Estimate cuts

The Federal Government cut $24.9 million from CSIRO's forward estimates for the next financial year in last month's mini-Budget.

In his statement the Treasurer, Mr Keating, said CSIRO would have about the same real level of resources as last year 'for ongoing activities'.

The forward estimates were cut by almost eight per cent to $336.9 million in the 1985–86 financial year. This compares with funding of $322.5 million in the 1984/85 Budget.

The cuts were widely reported as another financial blow to the Organization, but the Chairman, Dr Wild, said the mini-Budget allocation would allow activities to be maintained at present levels.

'The allocation of $336.9 million represents an increase of about five per cent on the 1984-85 Budget allocation, using a formula for comparison agreed with the Department of Finance,' he said.

'While the allocation will mean we have to be very frugal, it allows for the effect on inflation on salary and operating funds.

'This has been our main concern as a research establishment and this is the allowance we did not get in last year's Budget.'

Dr Wild said the Organization would continue to expand its efforts in priority areas by redeploying resources from other research areas.

These priority areas are information technology, manufacturing technologies, water and soils, space science and technology, biotechnology, plant diseases, raw materials processing and human nutrition.

'Of course, we would prefer to have got all we asked for, and we will continue to press for real increases in our funding to restore past cuts and to allow us to expand more quickly new research programs,' he said.

'I emphasise again that research funding is an essential investment for the future of this country.'

Dr Wild said the Minister for Trade, Mr Dawkins, had warned recently that Australian living standards would almost certainly fall without a substantial improvement in export performance.

'To win exports, industry has to be competitive,' he said. 'To be competitive it has to be innovative. We are in the business of helping industry to be innovative.

'Our research is also central to other non-industrial issues, for example the conservation of our unique environment and the management of our natural resources such as soils and water.

'It is almost impossible to overestimate the importance of these issues.'

Research prize

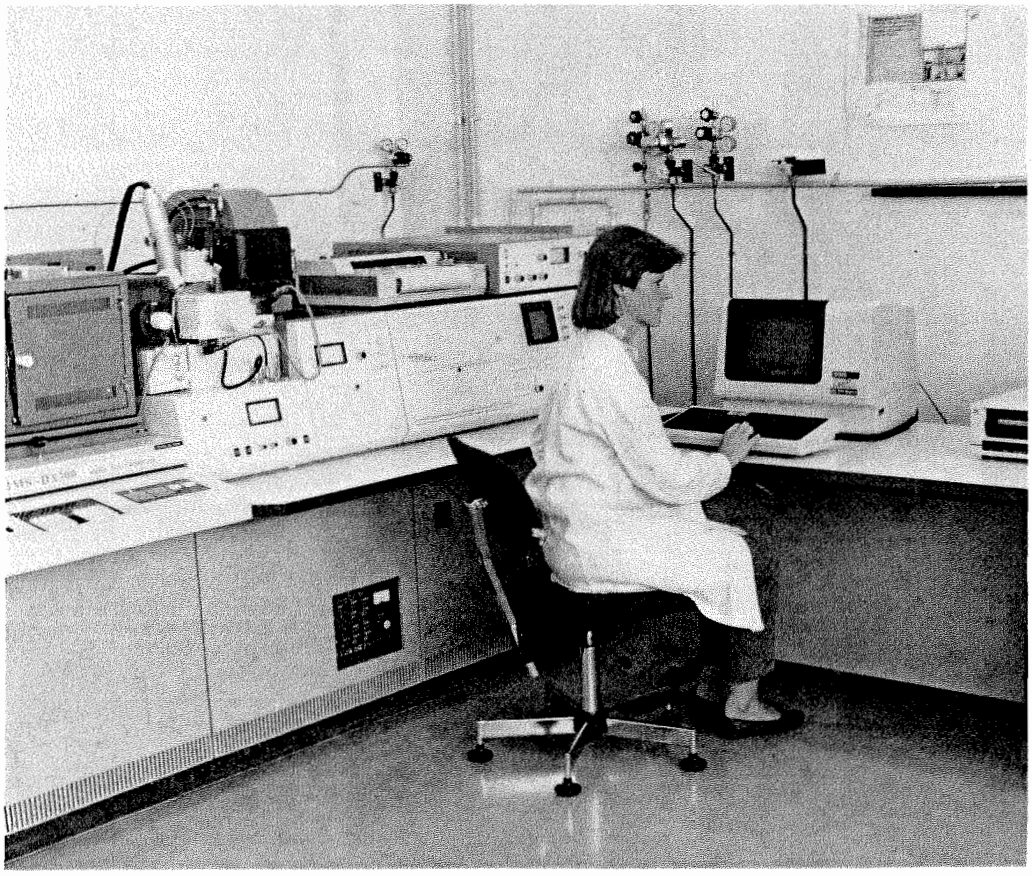
The Scientific and Industrial Division of Philips Industries Holdings has created a research prize in the names of Professor John Cowley and Dr Alex Moodie.

Alex Moodie, currently a Chief Research Scientist at CSIRO's Division of Chemical Physics in Melbourne, and John Cowley, previously of the same Division, but now Professor of Physics in Arizona, worked for many years on a new formulation of electron scattering by crystals.

The Chief of the Division, Professor Lewis Chadderton, said: 'Australia should be extremely proud of the Cowley-Moodie theory, which was in very many respects far more elegant and fundamental than another developed in Cambridge, England.'

The annual award will be made to a young scientist who showed promise in research involving electron microscopy as a major technique.

Equipment boosts research capability



New Division of Energy Chemistry spectrometer equipment at the Lucas Heights Research Laboratories has significantly increased CSIRO's research capabilities.

CSIRO Executive Member, Dr Geoff Taylor, officially opened the Gas Chromatograph-Mass Spectrometer (GC-MS) and the Nuclear Magnetic Resonance Spectrometer (NMR) laboratory recently.

The two new instruments, which cost more than $500 000, will boost the Organization's research into synthetic liquid fuels.

The GC-MS will be used to separate very complex organic mixtures, such as petrol and diesel fuels, into individual chemical compounds and to analyse their molecular structures.

The NMR can determine the composition of complex mixtures and assist in identification of the molecular structure of compounds.

The new equipment will play an important role in the study of Australian oil shales.

At the same time as CSIRO was opening the spectrometer laboratory, the Australian Atomic Energy Commission also launched important new equipment at the Lucas Heights Research Laboratories.

The new high-power JEM 2000FX transmission electron microscope will assist in the development of the SYNROC nuclear waste immobilization project.

AAEC chairman, Professor Max Brennan, officially launched the equipment, which is capable of magnifying one million times.

Experimental scientist Ms Ann Atkins with GC-MS.

From the Chairman -

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

One of the happier associations I have had during my term of office was with John Farrands, Secretary of the Department of Science & Technology until 1982.

I find John, a man of many talents, invariably to be constructive, and knowledgeable; he is always a fount of knowledge on what is going on, the latest gossip and all those underworld schemings of the Canberra bureaucracy. But the quality that endears him most is his humour.

The recent death of our much respected and loved colleague, Sir Ian Wark, bought back the memory of a Farrands story which personified Ian:-

I.W.W. (to research scientist):	'What have you done this morning?'
Research scientist:	Well, as a matter of fact I've cracked the problem of the unified field theory'.
I.W.W.:	'Good. Well done. And what are you going to do this afternoon?'

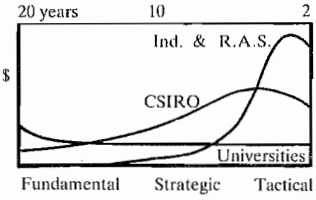
John showed a deep and studied interest in CSIRO, sometimes offering helpful comments but never interfering. He regarded CSIRO as unique in the way it would handle a crisis. He used an allegory to compare our behaviour with that of other groups. Instead of putting his picture in words I have asked our artist Ian Sharpe to illustrate it.

I think its theme is timely.

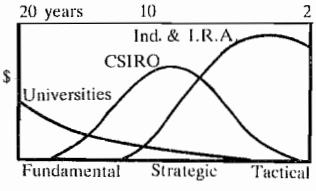
Amid the increasing pressures on the Organization to do more work of immediate relevance and less strategic research looking ten or more years ahead, come occasional voices of dissent. One such voice is our own Minister who comprehends so well that today's strategic research is tomorrow's new technology; another comes from industry, Dr R.G. Ward, General Manager, Research and New Technology, BHP. He has recently stated 'strategic research must be free from interference by operations and marketing and to a lesser extent by corporate planning, and in most cases is best done in laboratories remote from money-making activities. This is the correct role of CSIRO.' His assessment of the present distribution of research (a) is compared with his assessment of what it ought to change to in future (b).

Personally I would like to see the skirts of the dumb-bell in figure (b) rather wider. Nevertheless, I find figure (a) is a refreshingly different assessment of the kind of work we do compared with the popular myth.

(a) Time to Application



(b) Time to Application



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There is a long-standing tradition in CSIRO that staff are free to write to the Chairman seeking resolution of any grievance they may have about their employment. I have treated this responsibility most seriously during my years as Chairman.

In 1981, we set up a grievance process by the introduction of a staff mediator, a role which has been admirably performed by Mr A.F. Gurnett-Smith. In the last seven years — latterly with the great help of Smithy — I have had to resolve numerous grievances.

In some cases the problem could clearly have been managed at Divisional level.

In others, I have been able to advocate moderation to avoid harsh or inflexible treatment of individuals.

In consultation with the CSIRO Consultative Council, a review of grievance machinery has recently been completed and it has been decided that in future (from August 1985) grievances will be heard by an advisory panel comprising an independent Chairman and two others, one representing the relevant staff association, the other management.

Another area of appeals relates to promotion. These are heard by a committee of three consisting of a regular Chairman, a senior officer and an officer of similar category to the appellant. The first regular Chairman was Roy Muncey (1980) ex-Chief of Building Research. Subsequently there have been two: Alan Pierce (ex-Executive) and Michael Tracey (ex-Director). In my opinion all have done a splendidly fair and conscientious job. I believe there is a wide acceptances of the fairness of the present promotion procedures (although everyone would naturally like a leg up the ladder) and it is to be expected that only a minority of appeals succeed. In fact since 1980 28% of completed appeals (13 out of 46) have been upheld.

Soon there will be changes to these appeals also. Following talks with the O.A. (other associations have yet to be consulted), there will be a fourth committee member to be nominated by the relevant staff associations. Also the hearing will be much more open and the apellant will be present during all the hearing stages and have automatic access to the final report. Vive la republique!

Paul Wild

Comment guidelines

The Chairman, Dr Wild, has urged CSIRO scientists to get more involved in public discussions about science and technology.

Dr Wild, who issued new guidelines on public comment to staff this month, said it was crucial to Australia's future that the public become more aware of the importance of scientific research.

'Research is central to many of the most important issues we face in Australia: public health and safety, the competitiveness of our industries, the quality of our environment, the management of our soils and water,' he said.

'Clearly, scientists have a major role to play in increasing public awareness of these issues and the contributions research makes.'

Dr Wild said better communication with the public would also 'help us to become more aware of, and responsive to, other people's concerns and priorities.'

The new public comment guidelines were issued following a series of staff seminars on public communication which showed that many staff believed there were institutional constraints on public comment.

Dr Wild said some people outside of the Organization saw CSIRO as rather secretive and were surprised that staff did not have to get Executive approval before talking to a journalist or at a public meeting.

'The guidelines are intended to dispel these beliefs,' he said. 'They make it quite clear that the Executive of CSIRO believes that staff should talk about their work and contribute to public discussion on issues within their expertise. In fact, we consider it is part of their job.'

Dr Wild said the guidelines were not the result of last year's budget. However, the budget cuts had brought home the need to put more effort into discussing CSIRO's work and why it was important.

Further steps to improve communication with the public would be taken after the Executive's consideration of the report on the Organization's external communication activities.

Dr Wild also welcomed the moves towards the formation of a Federation of Scientific and Technological Societies and said CSIRO strongly supported the proposal.

Dr Wild has written to media executives to inform them of the new guidelines and urging them to consider increasing their coverage of science and technology.

Copies of the new guidelines have been sent to all Divisions.

New Chief named

A leading information technologist from Britain is to be the Foundation Chief of CSIRO's Division of Information Technology.

He's Dr G E (Tommy) Thomas, who is now director of the Edinburgh Regional Computing Centre at the University of Edinburgh.

Dr Thomas, who has extensive academic and industry experience, is an expert in telecommunications, local area networks, computer hardware and software, electronics and technology management.

He received his BSc Physics, MSc Electrical Engineering and PhD Electrical Engineering from the University of Manchester.

Apart from several lecturing positons, he also set up and directed a new research group at ICI in England before taking up the directorship of the Edinburgh Regional Computer Centre in 1966.

Dr Thomas was involved in establishing and developing the Centre, and he also contributed significantly to the growth of related departments of computer science, artificial intelligence and microelectronics.

He will take up his appointment as Chief of the Division of Information Technology in August.

The decision to establish the new Division followed recommendations made by an expert group which carried out a study of CSIRO's information technology activities.

'My first task will be to assemble a comprehensive catalogue of work in progress within the field of Information Technology throughout Australia,' Dr Thomas said.

'I then hope to develop, in consultation with a small advisory panel, a programme of work for the Division which will correlate with the perceived needs of the Australian information technology industry and help mobilize the skills of the respective research agencies to meet medium and long-term economic goals.'

Plans are now underway for Division laboratories in Sydney and Melbourne, and the requirements of other growing communities such as Perth and Adelaide will be examined after Dr Thomas becomes Chief.

Honour for Chadderton

The Chief of the Division of Chemical Physics, Professor Lew Chadderton, has been admitted as a Fellow to the Konigliche Bohmische Physikalische Gesellschaft (Bohmische Physical Society) in Germany.

His citation acknowledges his contribution to the fields of atomic collisions and particle — solid interactions.

Professor Chadderton will formally enter the Society at a ceremony in Berlin on 7 July this year.

He will then remain in Germany to participate in the 7th International Conference of Ion Beam Analysis.

Auto-teller

The CSIRO Co-operative Credit Society's In-Lobby Automatic Teller Machine is now in operation at the Division of Chemical and Wood Technology in Melbourne.

Teller machines already installed in Hobart and Perth will be operational before the end of this month.

Dr Nichi D'Amico from Sicily is visiting the Division of Radiophysics to continue his study of test pulsars with **Dr Dick Manchester**. He will be with the division for eight months.

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Mr Kien Thanh Hua from Vietnam, is spending three years with the Division of Radiophysics. He worked as a computer programmer with Computer Interface Aust. Pty Ltd before coming to the Division.

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Two scientists have recently joined the Soil Physics Program at the Division of Environmental Mechanics. **Dr Chi-Hua Huang** had come from the University of Arizona, where he had been a postdoctoral research associate since 1982. At Environmental Mechanics Dr Huang is undertaking a theoretical and experimental investigation of the mechanisms involved in the movement of soil particles by wind and water.

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Dr Yves Brunet of the Institute National de la Recherche Agronomique in Avignon, France, is visiting the Division of Environmental Mechanics for nine months. During that time Dr Brunet is undertaking a collaborative research program with scientists in the Division's Micrometeorology Program on the modelling of heat and mass transfer in vegetation canopies.

***

Mr Kialou Matthew Angat, a standards measurements officer with the Department of Industrial Development in Port Moresby, will be working with the Division of Applied Physics for the next three months. Mr Angat is working with the Mass Group and is currently writing up his MSc thesis on the measurement of solar irradiance.

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Dr Ian Sare has been appointed Officer-in-Charge of the Division of Manufacturing Technology's Adelaide Laboratory. He replaces **Dr Colin Perott**, who has resigned to take up an appointment with industry.

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Mr Wang Jinjing from the Chinese/Australian Yunnan Livestock and Pasture Development Project in China is visiting the Division of Tropical Crops and Pastures' Cunningham Laboratory. He is looking at nutrient deficiencies limiting pasture growth.

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Dr Marchan Suzuki of the Division of Radiophysics has retired after 24 years with the Division. Before coming to Australia, Dr Suzuki worked on the development of solar radio telescopes and was well-known for his studies of the polarization of solar radio bursts. While with Radiophysics, he contributed to the design and construction of the spectropolarimeter.

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Also retired from the Division of Radiophysics is **Ms Joyce McIntosh**, who started work in the general office 15 years ago, and became a telephonist in 1978.

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Dr Hovav Talpaz, a systems analyst from the Volcani Centre, Israel, is spending six weeks with the Division of Plant Industry's Cotton Research Unit. Dr Talpaz is working on the economic optimisation in decision making in SIRATAC Mark II.

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Dr Perry Gustafson of the Cereal Genetics Research Unit, University of Missouri, is spending six months with the Division of Plant Industry.

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Graham White from the Division of Radiophysics has been awarded a National Research Fellowship. During the three-year award term, he will continue his work on quasar identifications and astrometry.

***

Mr Steve Zegelin of the Division of Environmental Mechanics will spend the next six months in Canada and the US working in soil physics laboratories in Ottawa and California.

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Ms Dorothy Conolly retired from the Division of Wildlife and Rangelands Research in April after 26 years with CSIRO. She joined CSIRO in 1959 to work on myxomatosis. Ms Conolly was an experimental officer with the Division.

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Dr Nick Stokes of the Division of Mathematics and Statistics is spending six months at Swansea University in Wales tackling a problem for Rolls Royce. His work is with mathematical modelling of acoustic resonances.

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Sunflower expert retires

CSIRO's Centre for Irrigation Research at Griffith will farewell Principal Research Scientist Mr Alistair Low this month.

Mr Low is retiring after 20 years with the Organization, during which he contributed significantly to cotton and sunflower research.

He initially concentrated on cotton breeding for fibre, however in 1973, with the advent of a new research project into oilseeds, he switched his attention to sunflowers.

His aim was to breed the highest-yielding oilseeds to produce polyunsaturated lipids.

In order to speed up achieving genetic variability in sunflowers, Mr Low devised the idea of importing genes via pollen, rather than through the traditional method of bringing seeds into the country.

The sunflower industry has taken up the seed lines which he developed and he believes they are now being used in commercial production.

Mr Low also sent many of his lines to a number of overseas countries which sought CSIRO's co-operation to improve their sunflower crops.

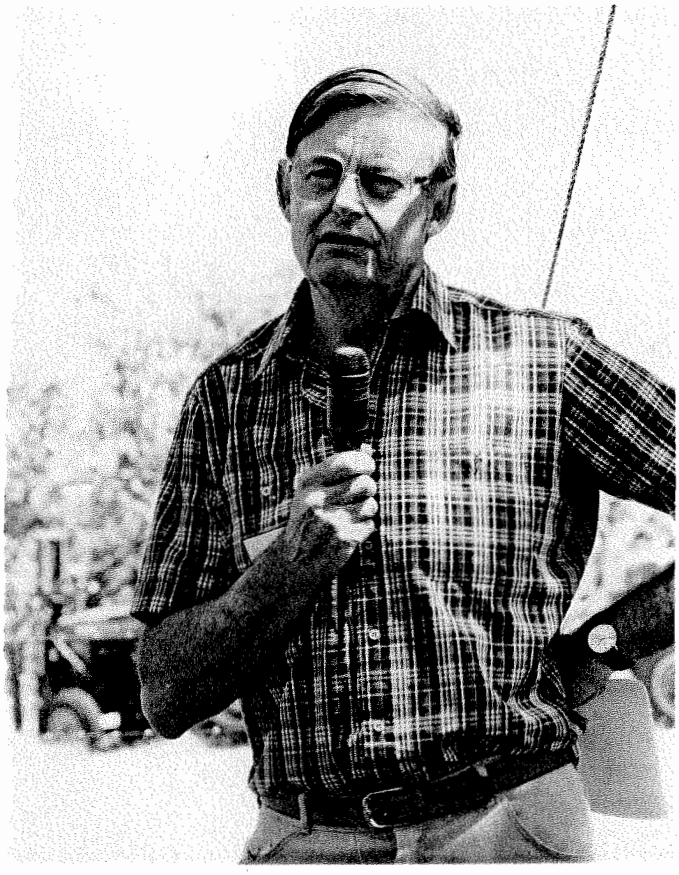
In recognition of his contribution to sunflower breeding, Mr Low was made a life member of the Australian Sunflower Association in May last year.

He said it was the first time the Association had granted a life membership, and it was an indication of the link between the work of CSIRO and the industries it serves.

After 20 years with CSIRO, Mr Low said 'it was a pleasure being a member of one of the world's top scientific organizations.'

And what does retirement have in store for Mr Low? He and his wife will travel overseas on an extended holiday — first to Japan, where he hopes to fulfill his life-long ambition of having a geisha girl walk on his back.

Pasture Research



Executive Member Dr Keith Boardman opens a field day organized by the Division of Tropical Crops and Pastures at Manbulloo Station.

More than 100 people saw the latest in improved pasture and mineral supplement research at the Division of Tropical Crops and Pastures' experimental site on Manbulloo Station last month.

Graziers from South Australia and the Kimberley region of Western Australia travelled to the experimental area south west of Katherine for the field day.

The Executive Director of the Northern Territory Cattlemen's Association and Chairman of a new advisory committee to CSIRO, Mr Cliff Emerson, praised the work on a South American legume, verano stylo, being carried out at Manbulloo.

'The CSIRO scientists have shown how verano stylo can be managed with minimal rates of superphosphate, and cattle fully supplemented with minerals and salt to lift weight gains of steers five-fold to 125 kg per head,' he said.

'In addition stocking rates were increased ten-fold to one beast per hectare and maintained year-round.

'Supplements fed to cattle grazing native pasture only, produced live weight gains of 130 kg per head at one beast per 10 hectares.

'Whether or not the native grasses can survive the increased grazing pressure from supplemented cattle is something the scientists still have to find out.'

The Division, which conducts research at Manbulloo and the Katherine Research Station, has formed several advisory committees chaired by industry representatives to assist in extending the research findings to industry.

The new North-West Advisory Committee will examine the relevance of the Division's research in the Northern Territory and assist the Division in setting reseach priorities.

The field day was opened by Executive Member, Dr Keith Boardman.

Scientist honoured

A CSIRO scientist was honoured at the 11th International Geochemical Exploration Symposium in Toronto, Canada, last month.

Dr Ray Smith, a Senior Principal Research Scientist with the Division of Mineralogy and Geochemistry, was awarded the Billiton Prize for the best paper at the symposium.

The paper, titled 'Some conceptual models for geochemistry in areas of pre-glacial weathering', was based on research initiated while Dr Smith was a visiting scientist at the US Geological Survey in the Branch of Exploration Research at Denver, Colorado.

Dr Smith spent seven months with the Survey during 1980-81.

His paper proposed parallels between weathering situations in Australia and the US, and suggested methodology for locating mineral deposits in some regions, particularly Minnesota.

Help for road victims

A CSIRO scientist who six years ago suffered severe head injuries in a car accident, is now using his skills to help other victims.

Dr David Charles-Edwards of the Division of Tropical Crops and Pastures said he and two other staff at the Division have provided voluntary advice and assistance in establishing a data base for a group called Headway (Queensland).

Dr Charles-Edwards said the group was formed last October to provide support, contact and information to victims of road accidents suffering traumatic head injury. That help is also available to their families.

'To optimize the effectiveness of the services Headway could provide, it was decided to establish a microcomputer data base holding information about the victims with whom the association was concerned — such as the extent of their physical, intellectual and social disabilities,' said Dr Charles-Edwards.

He said after six months with CSIRO staff helping in their spare time, the data base now contains information on almost 500 victims, and that figure is expected to double in the next six months.

The data base allows time-consuming tasks, such as preparing address labels for the Headway Newsletter, to be done in a few minutes.

'But primarily the group now has a tool which enables it to fulfill its prime role — to provide rapid and effective support, contact and information services to the victims of traumatic head injury, and their families,' said Dr Charles-Edwards.

He said the cost to the Australian community of the 9000 head injuries from car accidents each year is conservatively estimated at around $250 million.

Dr Charles-Edwards established Headway's data base network with the assistance of a computer consultant and a local computer shop.

Apart from Dr Charles-Edwards, the other CSIRO staff involved were former trainee technicians, Mrs Diane Prestwidge (now a computer consultant for the Division) and Mr Ray Stuart (who recently left to go to Griffith University).

Dr Charles-Edwards said they had learnt skills while assisting with the data base which enhanced their abilities at work.

Fun Run

CSIRO's annual 'Black Mountain Cup' fun run in Canberra will be held on Friday, 12 July.

The usual 5.6 km course on the slopes of Black Mountain will again tremble as runners, joggers, walkers and others attempt to uphold the honour of their Divisions in this important event.

Last year, the Cup was won by the team from the Division of Water and Land Resources, a mere 28 seconds ahead of the N.M.L./Applied Physics team from Sydney, with Plant Industry a creditable third.

It's being tipped that this year, several Sydney- or Melbourne-based Divisions could give the Canberrans a shake-up.

The event starts at the Pye Laboratory (Black Mountain) at lunchtime. For information and entries, call Gregory Heath (062) 46-5692 or Colin Hazelton (062) 46-5891.

Dr Roger Bartell

The death last month of Dr Roger Bartell, aged 44, was a great blow to the Division of Entomology, where he had worked since 1966.

Dr Bartell gained an international reputation for his study into insect behaviour and this reflected positively on the Division and CSIRO as a whole.

He began his scientific career in England, studying for both his BSc and his PhD at the University of London, and it was here that his lasting interest in the behaviour of insects first emerged.

After completing his studies, travelling to Australia and joining CSIRO in 1966, he started a program on 'pheromones', or chemical communicators, in insects.

The depth, quality and originality of his research rapidly made him known internationally.

He pioneered studies which paved the way for much of the work in this area which is now being done both in Australia and overseas.

Of particular significance were his many contributions to explaining how the chemicals the insects use for communication mediate their behaviour.

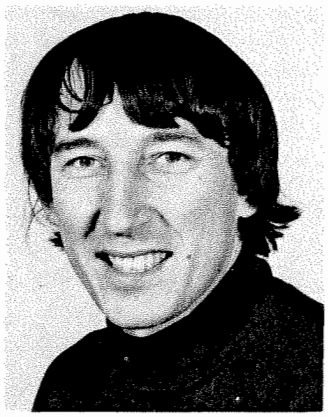
His work on the effects of pre-exposure to synthetic pheromones on the behaviour of insects were classical studies which have underpinned the use of this approach for pest control throughout the world.

Another major contribution was his role in introducing quantitative thinking into behavioural research.

He also was involved in many collaborative projects with colleagues in Australia and overseas, including research into the behaviour of ants and sheep blowflies.

All these contributions were recognised by the fact that Dr Bartell was invited to present keynote papers at virtually all international conferences on insect behaviour during the past 15 years.

Dr Bartell's expertise as a scientist extended well beyond his own area of research.



He played a crucial role in the introduction of computer technology into the Division's research programs, and even built complex hardware systems — a formidable task for anyone, but the sort of challenge he enjoyed.

He was a fine artist, and examples of his illustrations can be seen in the book on the reptiles of this region, of which he was a joint author.

Dr Bartell enjoyed collaborative work, and the people who worked with him found his incisive mind and ability to rapidly get to the centre of a problem very stimulating .

Equally important was his wit which kept his colleagues entertained — particularly those who took their research a little too seriously.

He played a major role in public debates on conservation and other environmental issues, and was also a founding member of the Society for Social Responsibility in Science.

In the last few years, Dr Bartell continued with great courage to work as enthusiastically as ever, despite suffering from cancer.

He leaves a wife and three children.

George Rothschild

Dr Carl Lam dies

Friends and colleagues in the Division of Applied Physics were saddened by the death of Carl Lam in Westmead Hospital on 16 April after a long fight against cancer.

Carl was born in Kwan-Tung, China, in 1937. He came to Australia from Hong Kong as a student in 1958. After gaining a BEE degree from the University of NSW in 1966, Carl began a varied and interesting career as a computer programmer and systems analyst.

He commenced his professional work as a Programmer Trainee with BHP in 1966. In 1967/68 he was employed by Automatic Totalisators Ltd. to design and implement software for real-time systems to control betting operations on race tracks.

The following year he was transferred by his company to the USA, where he modified his totalisator package for installation on US race tracks. The success of this work on the tote was, I understand, the source of very great professional pride to Carl.

In his ten years with the Division Carl became one of its most highly respected professionals for his programming skill, the quality of his work, his reliability and integrity, and his unfailing generosity with his time and his ideas.

In addition to his consultancy work for the research groups in the Division, Carl was Chairman of a committee that in 1981 surveyed the state of computing and computer-assisted experimentation within the Division.

Carl was a gentleman. He was quiet and self-effacing, very modest about his achievements and exceptional ability, considerate of others, possessed of a good sense of humour, and sociable.

We shall miss Carl greatly as a friend, and the Division has lost one of its most valuable and valued officers. We all extend our very sincere symptahy to his wife, Vivienne, to his children, Margaret and David, and to other members of his family.

John Collins

Obituary Dr Allan Antcliff

Dr Allan James Antcliff, died recently in Mildura. He had retired from the Division of Horticultural Reseach's Merbein Laboratory as Senior Principal Research Scientist in 1984 and had planned to continue his research on grapevines as a Post-retirement Fellow but his plans had been thwarted by illness.

Born in Brisbane, Allan Antcliff joined the CSIRO Merbein Station in 1947, shortly after completing studies at the University of Queensland for an honours degree in science that had been interrupted by wartime service in the RAAF.

He spent all his working life in research for the benefit of the viticultural industries, and made important contributions in a number of areas.

There would be few viticulturists in Australia who are not aware in some way of the work that has been undertaken by Dr Antcliff over the past thirty years. He is well known for his involvement in the development of improved clones of sultana, his basic knowledge of vine physiology and vineyard production and his initiation of the CSIRO program to breed grapevines better adapted to the Australian environment than the traditionally used European varieties.

He is probably best known, both nationally and internationally, for his considerable contribution to vine improvement, by breeding and selection, and grapevine variety identification and variety nomenclature in Australia. A number of grape varieties bred at Merbein are now finding a place in commercial plantings.

In recent years, his expertise in variety identification had been utilised in the clarification of cultivar nomenclature used in Australia and also in the production of three descriptive booklets on wine grape varieties to be found in Australia.

These have been well received by consumers and industry alike, and he was recognised, nationally and internationally, as the Australian authority in this area.

Dr Antcliff's award in 1980 of a Doctorate in Agricultural Science for his research findings and his conferral in 1983 as a Member of the Order of Australia for his contributions to the Australian viticulture industry well serve to illustrate his high standing amongst fellow researchers and members of the Australian grape industry.

Dr Antcliff's involvement in community affairs included a strong commitment to St Margaret's Church, where he often served as an organist. He was a keen supporter of the Mildura Historical Society and the National Trust.

He served on the Council and the Agriculture Committee of the Sunraysia College of TAFE and was a foundation member of the Steering Committee for the Oasis Botanical Gadens. Next to his family, however, his greatest love was electric traction.

A dedicated supporter of the Victorian Tram Museum, Allan, with the assistance of his family, personally restored in immaculate detail one of the old Ballarat trams.

He is survived by his wife Freda, four daughters and one son and will be greatly missed by many.

Max Sauer
and
Anne Frodsham

HEALTH MATTERS

By the time this copy of *CoResearch* reaches you, all staff should have received their personal copy of the booklet setting out the new CSIRO Occupational Health and Safety Policy.

The policy has been issued as policy circular 85/12. All staff should take the time to carefully study the booklet which has a distinctive green and white cover.

It contains major changes in relation to:

- individual and supervisor responsibilities for health and safety;
- provision of health and safe places of work, including assessment of new work, materials and facilities;
- role of safety officers and health and safety committees.

Queries regarding interpretation and implementation of the policy should be raised with supervisors, local safety officers or the Occupational Health and Safety (OHS) Unit at Headquarters.

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The OHS Unit has purchased specialised monitoring equipment for the measurement and analysis of noise levels in the work place.

The equipment can be used to record the daily noise dose received by individual staff and to analyse this to determine the risk of hearing damage.

If you feel noise is a problem in your work area ask your safety officer to have the situation monitored.

The OHS Unit can arrange to either take measurements or lend out equipment.

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Record the facts. It is important that all staff fill out a 'Notification of Injury or Disease' form if they suffer injury or work related illness which has resulted or is likely to result in time off work or a compensation claim.

Unless details are fully recorded at the time it is often difficult to substantiate the facts at a later date.

Equally, unless the facts are accurately reported it is very difficult for health and safety staff to recommend preventive action.

Gary Knobel
Manager
Health and Safety Unit

Shrub research

The latest research into control of shrub encroachment with fire was presented to a recent open day organized by the Division of Wildlife and Rangelands Research in western New South Wales.

Dr Ken Hodgkinson from the Division presented the results to a group of pastoralists and representatives of the Department of Agriculture and Soil Conservatioon Service at 'Tundulya', a property which has been used for shrub control research since 1967.

The research has confirmed observations that fire kills shrubs but doesn't cause undue harm to the underlying herbage.

The Division has found that the optimum number of controlled fires to help retard shrub encroachment is two — preferably in Autumn.

This policy is now being adopted by the New South Wales Department of Agriculture and is extending into the pastoral community, the National Parks and Wildlife Service and the Soils Conservation Service.

ANIC gets major collection
Love's labours not lost

The Jack Macqueen Collection arrives at the Division of Entomology. Dr Ebbe Nielsen, left, Mr Ted Edwards and Ms Vanna Rangsi, sort some of the 200 store boxes.

Several gaps in CSIRO's Australian National Insect Collection will now be filled, following the acquisition of the lifework of a dedicated butterfly and moth enthusiast.

Mr Jack Macqueen, an 84-year-old retired farmer from the Darling Downs area, amassed a huge lepidopterous collection dating back to the 1920s, and has now handed it over to CSIRO.

'Mr Macqueen's meticulousness has resulted in an unparalleled record of the butterflies and moths of the Toowoomba/Millmerran region,' said Dr Ebbe Nielsen of the Division of Entomology in Canberra.

The Jack Macqueen collection contains 25 000 moths and butterflies, 6 000 beetles and a few hundred specimens of other insect orders.

Mr Macqueen's son, Rockhampton-based CSIRO entomologist Dr Angus Macqueen, said his father's collection was 'a labour of love' on which he spent many evenings after a hard day of farm work.

Between the early 1920s and 1960, Mr Macqueen collected the insects primarily around his farm near Millmerran — the property which he established with his brother, the artist Mr Ken Macqueen.

After 1960, he moved to the Toowoomba district and collected more specimens there, as well as making several trips around Queensland pursuing his hobby.

Dr Nielsen said CSIRO receives a lot of insect specimens from private collectors, but the McQueen collection is of great importance because it has been culled from areas where very little lepidopterous work has been done.

He said this collection — an extraordinarily large piece of work — contains some specimens which CSIRO scientists and the public in general, have not had access to previously.

Perhaps of even wider significance is that the samples have been taken from areas which in the past have contained large tracts of brigalow — or softwood — scrub.

Extensive clearing of the scrub to make way for farming has changed the environment, and the Macqueen collection may interest conservationists wishing to track changes to insect populations with the encroachment of man.

The collection will be incorporated into the existing Australian National Insect Collection (or ANIC) – a very big undertaking because of its sheer size.

Each specimen — already carefully labelled — will have to be filed according to its species.

This can be difficult work, said Dr Nielsen, because without major research some species are difficult or impossible to distinguish from others.

'The main strength of the Macqueen collection is in its extensive coverage of the blue Lycaenidae butterfly — in fact it's the most comprehensive of its kind for that particular area,' said Dr Nielsen.

Drawers and boxes containing row upon row of carefully pinned butterflies and moths are now at the Division of Entomology awaiting integration with the ANIC.

'It's an extremely well-maintained collection, despite the age of some sections,' Dr Nielsen said.

'This is Mr Macqueen's life work. It's an immaculate collection.'

The high standard of Mr Macqueen's curatorship undoubtedly dates back to his close association in the 1920s with G.A (Gustavus) Waterhouse, who, with George Lyell, compiled the first comprehensive study of Australian butterflies.

Mr Macqueen regularly visited Mr Waterhouse in Sydney, where he acquired insights into lepidopterous technique.

He was assisted in his collection of moths by Mr Lyell, who received Mr Macqueen's specimens in Melbourne and helped identify them.

Because of the work involved in maintaining such an extensive collection, Mr Macqueen has at last felt it necessary to hand the responsibility over to CSIRO.

His son, Dr Macqueen, said his father is now living in a nursing home and is relieved that his work is in safe hands.

The decision to donate the collection to CSIRO was made about ten years ago.

After incorporation into ANIC, the specimens will be included in an index of Australian lepidoptera species which is being prepared by the Entomology Division.

The first edition of that index is expected to be completed in 1987.

Efforts for industry rewarded

An award which will recognize outstanding contributions by CSIRO scientists to Australian industry has been established by the CSIRO Advisory Council.

The annual Sir Ian McLennan Achievement for Industry Award will seek to encourage projects of practical worth by staff working individually, or as a member of a team, in any area of CSIRO endeavour.

The major criterion for judging will be benefit to Australian industry.

Ideally, the recipient's project will already have shown economic return for its target industry, however scientists who are in close collaboration with industry on projects which show the likelihood of substantial rewards will also be considered.

The award is named after Sir Ian McLennan, who has himself contributed significantly to the application of science and technology in Australia's industrial development.

Sir Ian, who retired as chairman of BHP towards the end of 1977, and as chairman of the ANZ Banking Group in early 1982, is now chairman of Elders IXL.

He is due to retire from that position in November this year.

The Sir Ian McLennan award will offer an overseas study visit and a specially-designed medal.

A plaque inscribed with the names of all project members is also envisaged.

Fund-raising for the award is now well-advanced and the Trustees of the Advisory Council will call for nominations soon.

The inaugural presentation will be held later this year.

Slatyer interview

Review aims for stronger CSIRO

The Federal Government has commissioned a major review of Government-funded research and development in Australia, initially focusing on CSIRO. The review will be carried out by the Australian Science and Technology Council (ASTEC) under the direction of its chairman, Professor Ralph Slatyer. Professor Slatyer, spoke to CoResearch this month.

CoR: It's been said that CSIRO is probably the most reviewed research organization in the world. Why is ASTEC reviewing CSIRO as part of this broader review into government funded R&D in Australia?

RS: The main reason is we've been asked by the Government to do it, but behind that reason I think senior ministers are concerned with the role of government in R&D in Australia. Whether government should be in every area of R&D? How government should act in health research as distinct from how it might act in environmental research? Whether the proper role of the Government is to perform research or to fund research through various granting schemes, or to assist industry to do research by tax incentives or by other measures? All of those matters are clearly in the minds of ministers, and I think the Prime Minister (Mr Hawke) hopes that we at ASTEC would be able to provide a broad framework for government involvement in R&D in Australia against which the role of the various institutions and publicly-funded research organizations can be seen.

So it's against that background that CSIRO as the major publicly-funded research organization in the country is obviously a very central element in any consideration of publicly funded R&D. In the process of looking at the broad role of government R&D it is then very logical to take the next step and look at CSIRO's role and direction against that background.

CoR: The opposition spokesman on Science, Mr MacKellar has said that the inquiry should be into reasons why R&D in the private sector has been declining. Isn't he right?

RS: Well he's certainly right to say that. It is a matter of major concern in Australia, but might I say that that is the main matter to which ASTEC has been giving consideration since I became Chairman. We've produced several reports on exactly that subject and it's a continuing major thrust of ASTEC's work.

CoR: So this current review then is broadening that investigation into the government sector and that obviously relates to what happens in the private sector.

RS: Put it a different way and say given that ASTEC is already devoting maybe 50 to 60 per cent of its time to stimulating R&D in the private sector. You could almost say we've neglected the public sector to some degree. Could I just add the government has now given us a fourth term of reference which is specifically related to the low level of private sector R&D. So in fact we've been given a broad commission first to ask the question, what is the role of government in R&D in Australia? Secondly, against that background, what is CSIRO's role? Associated with that, are any changes in the existing arrangement for CSIRO appropriate?

The third term of reference is to look at other major publicly-funded institutions. In the papers associated with the Cabinet decision the higher education sector, for example, was specifically mentioned, as were the Defence Science and Technology Organization and one or two other major government organizations. Once we've looked at CSIRO against that broad framework of the role of government in R&D in Australia, we would then plan to look at these other organizations.

With respect to the fourth term of reference, we have a study in progress now on what might be called the environment for innovation: what is it in Australia that is needed to encourage businesses to become more innovation-oriented, thereby permitting them to compete much more effectively on export markets as well as on domestic ones?

CoR: Some reports in the newspapers have suggested that the Minister for Science, Mr Jones, was concerned about the review because of hostility within ASTEC towards CSIRO. It was also suggested that the review could lead to the splitting up of CSIRO. Is ASTEC hostile towards CSIRO? And is the dismemberment of the Organization one option that the review committee is looking at.

RS: I've never detected any opposition to CSIRO in ASTEC. I think most members of ASTEC recognize that CSIRO is an extremely valuable national resource and any report that we produce on CSIRO would, as a consequence be consistent with seeing CSIRO in the future emerge stronger and better equipped to deal with the future perhaps than it has been in the past.

CoR: So there is no suggestion of splitting up the Organization?

RS: There's been no suggestion of that, that I'm aware of, other than that it is a matter that has been in the air for the last two or three years. In fact, I think it has been in the air for probably a decade or two. It seems to me that it is a question in our review we can't dodge. In other words, it's a matter that, if one looks at any organization, one has to look at its future directions and how it might best be constituted, but it is certainly not a matter that has been a likely direction for the review to take.

CoR: So obviously you can't give a categorical denial that that might be an outcome of the report. You're saying it's unlikely and it doesn't appear at the moment to be a major issue of deliberation?

RS: It seems to me that one cannot undertake a review of CSIRO without at least the prospect of CSIRO either becoming bigger as a result by other organizations perhaps becoming part of CSIRO or smaller perhaps as a result of parts of CSIRO going elsewhere. It seems to me that to circumscribe an activity by saying there is a magic formula to do with the size of CSIRO and we have that formula therefore nothing can change, is not a good basis to review any organization. But I think that you could just assume that the object of the exercise is to make sure that the CSIRO of the future is, if anything, better equipped to deal with the problems that are going to be encountered than it has been in the past.

CoR: You've been asked to complete the part of the review dealing with CSIRO by September. It doesn't give you a lot of time and you're focusing on CSIRO before you examine the broad question of government funded R&D in Australia. Does that concern you at all?

RS: We're doing them in parallel. We had begun a review of public sector R&D last December, and the relationships between publicly funded and private sector R&D, so in fact when we were finally given this particularly commission three weeks ago we had already developed a good deal of background information about the broad role of government in R&D. That activity has continued as we've built up momentum on this present study. We see the first main report as a result of this first commission dealing with both the broad question of the role of government in R&D in Australia and the question of CSIRO's role and activities.

CoR: This is the report that will be done by September?

RS: September, of course, is an extremely tight timetable. The Prime Minister has asked us to try to report to him by September with respect to CSIRO. But we feel that we must get this broad question on government involvement in R&D answered first of all. We couldn't really see CSIRO's role clearly until we do understand that broader picture, so in fact we are doing both jobs in parallel.

CoR: What are some of the specific questions that you think that the review of CSIRO will be looking at most closely?

RS: Well I suppose the first question is what kinds of activities should the Organization undertake: for example in what areas of S&T and R&D should the Organization be involved? Questions like the balance between what's often called basic and tactical research. The role of strategic research, which of course Professor Birch and his colleagues gave a central role to as far as the Organization is concerned.

CoR: There does seem in the political arena to be more pressure for government funded research to get into the more immediately relevant or applied area. Do you see that as a likely outcome?

RS: I think again because it's a question that is being asked — it's often asked in the context that the tax payer puts so many million dollars into CSIRO every year, what dividend does he get out of that — it seems to me that given that that question is asked it does require a well justified response. I would think that in our review one of the important responsibilities we've got is to provide a convincing argument to government that long-term research is an important call, as it were, on the public purse. When one talks about the tactical research one is often talking about research where there is a particular benefit seen to some or other user of that research and that that user should therefore have a vested interest in either doing it himself or paying for it. I think in general one can see that there is a proper role for government in research which is really research done to save the community money, and health research and environmental research might be very good examples of that type of activity. If government doesn't do that sort of research it's not going to be done.

At the other end of that spectrum of relative benefit, there'll be research done that has a very direct benefit to some institution or individual in the private sector. Maybe there's a good argument in that area that the private sector itself should be doing the lion's share of that research. Government's role if it has a role, might be much more to do with encouraging the private sector to do that sort of work. Between those two extremes there are a whole range of activities where one can see different degrees of government and/or private involvement. I think that it is important for us in ASTEC to try and get that straight in a

cont. on p. 8

A Past Remembered

With CSIRO's future now under the ASTEC microscope, we can expect much to be said and written about what lies ahead.

But the occasion of former Chairman, Sir Frederick White's 80th birthday seems like the ideal opportunity for a look at the past.

In his birthday wishes, the current Chairman Dr Wild, referred to Sir Frederick's able leadership during CSIRO's formative years.

Indeed, Sir Frederick arrived almost at the start of a period of phenomenal expansion.

CSIR had existed since 1926, but it wasn't until the war years that development accelerated, spurred on by the need for scientific help to fight the enemy.

Nearly all its programs of civil research, involving primary and secondary industry, were abandoned to concentrate on defence-related research.

Sir Frederick (then Professor White) arrived from New Zealand in 1941.

At 36, he was already a Professor of Physics at Canterbury University in Christchurch, and was invited to Australia by the Menzies Government for about three months to assist with the frantic push to come up with sophisticated radar systems.

The Division of Radiophysics had been established in 1939, but wasn't officially proclaimed until the end of the war — and there was a veil of secrecy over the activities at its laboratory on the Sydney University campus.

Sir Frederick was asked to take over from Professor Madsen as the chairman of the Radiophysics Advisory Board, while the latter was overseas.

The Board was responsible for policy decisions concerning the Division of Radiophysics.

TIME OF CRISIS

Sir Frederick's stay was extended, and in October 1942 he became Chief of the Division — a position he would hold until January, 1945. Through most of this time war was raging in the Pacific.

'Radiophysics did a first class job during that time of crisis,' said Sir Frederick.

'Of the radar equipment devised by the Division, the most famous was the lightweight type which could be taken into the jungles of New Guinea.'

This design was used extensively after General Douglas MacArthur started the campaign to advance up the Pacific.

'As far as the Pacific war was concerned, it was an important piece of assistance which we gave to the services of both Australia and America,' said Sir Frederick.

CSIR's important role in wartime research is reflected in its growth during that time.

When Sir Frederick joined the Organization its professional staff numbered only 180. By war's end, their ranks had swelled to about 600.

The end of the war in 1945 meant that the radar research program was no longer necessary.

By that time, Sir Frederick had been appointed Assistant Executive Officer, having handed the Division of Radiophysics over to Dr John Briton, and was playing an active role in CSIR decisions.

(In 1946, Dr E.G. Bowen became Chief of Radiophysics, and continued in that position until 1971.)

Sir Frederick remembers with particular fondness his early Executive meetings, held in a small office at 314 Alfred Street, Melbourne.

The Chief Executive Officer, Sir David Rivett, would sit at the only desk, with the part-time Chairman (until the end of 1945) Sir George Julius, and the Deputy Chief Executive Dr A.E.V. Richardson, on either side.

Being the 'new boy', Sir Frederick was somewhere towards the back.

'Julius talked at great length and very effectively,' said Sir Frederick.

'It was amusing, thinking back, that whatever was happening, Julius was always talking about it and Rivett was somewhat silent, although he always had an important contribution to make.

'Every now and then, Rivett would turn to Dr Richardson and ask for his contribution as Deputy — a comment which was always very sound,' he said.

'Looking back, it was like a performance — they each had their characteristic attitudes.'

When Sir George retired at the end of 1945, Sir David became Chairman and it was decided to alter the CSIR Act to allow the appointment of two additional members to the Executive — Sir Ian Clunies Ross and Sir Frederick.

GREATEST CHANGE

But the greatest change came in 1945 with the adoption of the CSIRO Act.

In the late '40s, questions surrounding security, and allegations of communists being appointed to CSIR, had been raised in Federal Parliament.

Attacks on the Chifley Government's policy regarding CSIR activities reached a crescendo at the end of 1948.

Sir Frederick said the Government was forced to do something, and as a result the CSIRO Act was drafted and adopted in 1949.

'It was the best thing that ever happened to the Organization,' he said.

When the new Act was passed, Sir Ian Clunies Ross became Chairman and Sir Frederick Deputy Chairman.

Sir Frederick held that position until 1 July 1959, when he was appointed Chairman. He was head of CSIRO until his retirement in May 1970.

He received his knighthood in 1962.

Between the war years and 1970, Sir Frederick said there were four events involving research which stood out as particularly momentous.

Among the most spectacular was the almost 'meteoric' rise of Australia as a world leader in radio astronomy — a 'remarkable development,' Sir Frederick recalled.

Starting with the equipment made redundant by the termination of the radar research program, Dr Pawsey at the Division of Radiophysics started to investigate noises which were known to be coming from space.

He also started to measure the temperature of the sun by radio wavelengths.

'Over five years, project members had established themselves as world leaders in the new field of radio astronomy,' said Sir Frederick.

'It put CSIRO, and Australia, at the forefront of the science of radio astronomy.'

Equally spectacular, if not as successful, was the controversial cloud physics project.

'I remember distinctly how two members of the staff of Radiophysics — Drs Krause and Squires — came back from America having seen the experiments done by members of General Electric's staff,' said Sir Frederick.

'Of course, the idea of creating rain in Australia was enormously attractive.'

He said the early experiments which involved dropping dry ice into clouds, were the most spectacular.

'It was fantastic — suddenly the cloud would burst out like an atomic bomb,' he said.

Wool textile research also came to the forefront during Sir Frederick's time with CSIRO, and was to have important consequences for Australia's wool industry.

Ultimately, the project resulted in a revolution in the marketing of Australian wool in overseas markets.

The industry needed 'ammunition' to fight what it saw as a major threat from synthetic fibres which were starting to boom at the end of the war.

Coal research was another area which stood out.

Sir Frederick: 'I remember that the coal industry in Australia was in an absolutely deplorable state.'

CSIRO stepped in at that point and with co-operation from BHP and other industry bodies, 'a revolution took place'.

'As a result of that work, the industry is now much more mechanised, and more is understood about the properties of coal,' he said.

What about CSIRO's future?

'That's up to Ralph Slatyer, not me.'

Sir Frederick said when he retired from CSIRO he made a resolution not to compete with future Chairmen in making public statements.

When the ASTEC inquiry was announced, a member of the Federal Opposition commented that the Government would be better advised to seek an inquiry into the status of science in industrial firms.

Sir Frederick said he agreed with this, but it was as far as he was prepared to go in commenting on current issues.

'There has always been a problem with CSIRO's science not being made use of by industry. CSIRO can't solve that problem — only industry can.'

Slatyer Interview

cont. from p. 7

way that is convincing. If we are successful I think we'll actually have played quite an important role in justifying a very proper role for government in the R&D in the country.

CoR: What involvement are you seeking from CSIRO staff? Will you be visiting all Divisions?

RS: No. We don't see this review as a detailed and exhaustive review in the way that the Birch enquiry was, so we're much more concerned with broad directions for the Organization and appropriate management structures and so on. So we think it is not appropriate for us to go and look at each Division in detail. In fact we think that could almost confuse the issue since we are trying to deal with broad issues. What we're doing is two main things. Firstly we're working very much from submissions and — you will have seen the set of questions that we think we need to address, among other things, in producing the report — we do encourage individuals and groups within CSIRO to respond to us by way of submissions. It could be just a single page letter that says, 'I think such and such a thing,' or it could be a very considered review that might deal with ten of those questions we've posed or maybe some others. We would hope very much that people respond to us by way of those submissions. Following receipt of those submissions, and after we've distilled down the information in them, we would want to talk to a number of people or groups that have made the submissions.

Secondly, during the next few weeks we are going to be visiting every capital city and meeting groups of Chiefs in the different capital cities, also State committees and appropriate members of various staff associations in CSIRO. In fact that process has already started.

The members of the ASTEC working party are:

Professor Ralph Slatyer (Chairman), Director, Research School of Biological Sciences, ANU, and Chairman, ASTEC; Dr Don Watts, Director, Western Australian Institute of Technology; Professor Brian Anderson, Professor, Electrical Engineering, Research School of Physical Sciences, ANU; Mr Michael Davidson, Chairman, Dalgety Farmers Ltd; Mr Norton Jackson, Director, Poseidon Ltd, former Managing Director, Amdel; Mr Paul Trainor, Chairman, Nucleus Ltd.

Dr Watts, Mr Davidson and Mr Trainor are members of ASTEC and Professor Anderson is a former member.

Members of the working party have already visited CSIRO sites in Hobart, Melbourne, Townsville, Darwin, Perth, Adelaide, Geelong and Brisbane.

CoResearch is produced by the Science Communication Unit for CSIRO staff. It is also circulated to some people outside the Organization who have a professional interest in CSIRO activities. Members are invited to contribute or send suggestions for articles. The deadline for material is normally the 5th day of the month of publication. Material and queries should be sent to the Editor, Box 225, Dickson, ACT 2602. Tel 48 4640. Editor: Liz Burden.

CoResearch

CSIRO's staff newspaper *July '85* *282*

Farewell to Gratton Wilson

By the Chairman, Dr Wild

Mr L G Wilson AO, Gratton to his many friends and colleagues, retired from the Organization on 5 July 1985 after nearly 30 years with CSIRO.

Gratton has had an enormous and beneficial influence on CSIRO, guiding many raw Executive members and ensuring a high degree of consistency and constancy through periods of uncertainty.

That his influence has been major has been due to the value of the services he has provided (at 241 Executive meetings, to some 39 Executive members!).

As my personal adviser I have found him most valuable. His support and loyalty to myself, to previous Chairmen and to the Organization have been of the very highest order.

More than any other person in CSIRO, Gratton has a total perspective of CSIRO and its place in the political, bureaucratic and social environments. His skills and knowledge have saved many proposals and Executive decisions from foundering in Canberra's sometimes treacherous political and bureaucratic quagmires.

Born in Perth, WA in 1929, Gratton was educated there and graduated in Science from the University of Western Australia in 1949.

What may be news to many is that he gained his MSc in 1956, with his thesis entitled 'A Precision X-Ray Study in Thermal Expansion', and that in addition to numerous publications of an administrative nature, he has a scientific publication to his credit: 'The Thermal Expansion of a Grassularite Garnet' (Aust J Physics, V9 : 403-405).

CSIRO took him away from what may have been a flourishing career as physicist and pyrometry officer with the State Government Chemical Laboratories of WA in 1956, when he commenced as a Technical Administrative Officer with Head Office in Melbourne.

Gratton's Divisional experience, essential for all top administrators, commenced in May 1957 when he joined the Division of Plant Industry in Canberra as Assistant Technical Secretary.

The pull of Head Office must have been great, however, as two years later he moved back there as Scientific Administrator.

Involvement with the Executive and Advisory Council commenced in 1961 and has continued since then, with changes in responsibilities and title from Assistant Secretary (1961-1964) to First Assistant Secretary (1964-1966) to Secretary (Administration) (1966-1976) to Secretary (1977-1979) to Executive Secretary (1979-1984) and finally to Corporate Secretary this year.

In addition to his service with the Organization, Gratton has had a long association with UNESCO, commencing in 1967,

Cont. on p. 6

Strategy paper released

Major changes proposed

Major changes to personnel policies, a more concentrated research effort and rigorous evaluation of research benefits are proposed in a draft CSIRO strategy for the next five years.

The draft strategy which was distributed to the Advisory Council and staff for comment this month, arose from the recommendations of five Executive working parties set up last year.

In the strategy paper the Executive calls for the development, and more systematic and rigorous application, of procedures to:

- concentrate research effort into fewer research programs focused on fewer national objectives;
- evaluate more thoroughly the benefits of the Organization's research;
- improve industry and government use of CSIRO research;
- increase staff mobility and flexibility.

In implementing these procedures there will be greater consultation with users of CSIRO research and potential customers.

The Executive said the success of the strategy would depend on the ability of management and government to introduce innovative managements procedures concerned with incentives, staff mobility, industrial democracy, retraining and retirement.

The strategy proposes changes to the merit promotion system to introduce procedures for motivating staff whose performance declined to an unacceptable level.

BONUS SCHEME

These changes include the introduction of fixed-term promotions for senior classifications, adjusting the classifications of these staff on the basis of annual performance appraisals and a bonus scheme.

The Executive says in the strategy paper that CSIRO policy would emphasise training and development to improve management at all levels.

'We must also be able to provide staff who are nearing the end of their careers, and who cannot be retrained, with the opportunity to leave,' the Executive said.

'We are therefore proposing to introduce, for a limited period, an early separation incentive scheme which would include a lump sum payment.'

Changes to the superannuation scheme to make it more 'portable' are also suggested. These include special arrangements for fixed-term staff, a reduction in the period of employment required for a deferred benefit, and an option to buy a higher government-financed pension. These changes will not be made before extensive talks with unions and the Government.

The Executive said much of the recent debate about CSIRO had focused on the distribution of research effort between the various industry and community sectors.

However, quite large changes in programs might not cause appreciable changes in the sectoral balance.

'The sectoral balance, and changes to it, are the outcome of strategies directed at program level, in particular the movement of resources into areas of research designated for growth,' the Executive said.

'We will continue this approach, but will introduce more rigorous and systematic procedures to identify growth areas and to concentrate our resources, both new and from redeployment, into them,' the Executive said.

The strategy proposes that the selection of designated growth areas should involve the use of two sets of criteria.

GROWTH AREAS

The first set of criteria will be used to select growth areas and to specify target rates of increase or decrease for all areas of research.

These criteria would include:

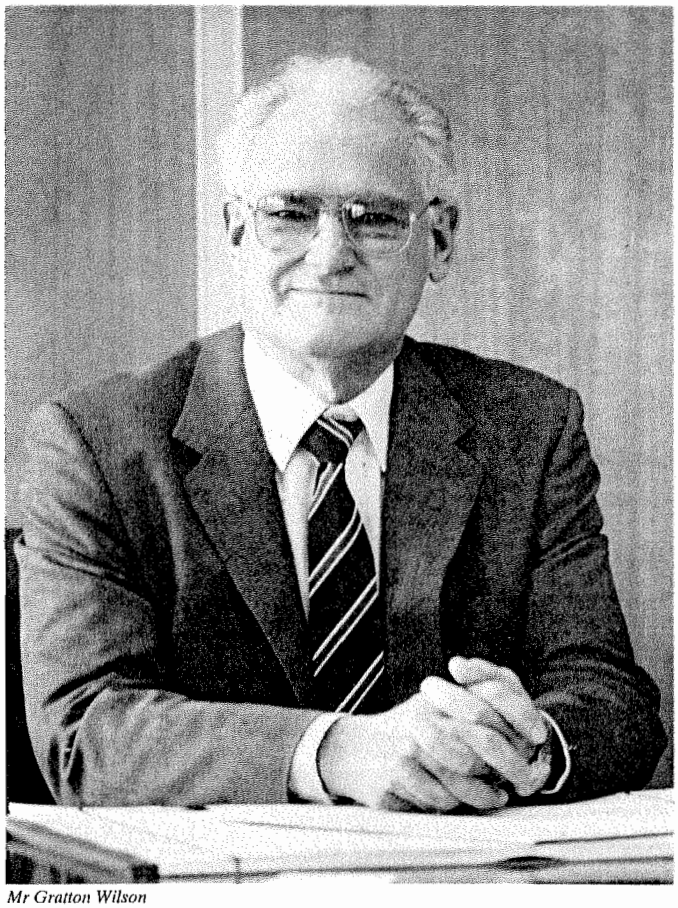
- the potential of the industry to generate wealth and employment;
- the promise in that area of major scientific advances and the likelihood that they will be taken up;
- the availability of resources and skills.

A second set of related criteria would be applied when decisions were being made within the Institutes and Divisions on starting or stopping particular research programs.

The strategy paper also proposes the introduction of more rigorous and comprehensive evaluations of research programs.

The benefits of a program should be assessed when the decision to go ahead is first made, at regular intervals throughout the course of the project and following completion of the research. Procedures for evaluating longer-term strategic research would be developed.

In the introduction to the strategy proposals the Executive said: 'We are confident the strategy will make CSIRO more dynamic, flexible and effective during a period of rapidly changing national priorities, increasing demands and static funding.'



Mr Gratton Wilson

Management program
Energy cost cuts=more research funds

The famous face on the energy management posters is likely to be a familiar sight around CSIRO Divisions soon.

The message is clear — use energy wisely and there will be more money to spend on research.

This statement underpins work being done by the newly-formed Energy Management Unit which has the daunting task of finding additional ways to cut CSIRO's energy costs — currently $12 million every year.

The unit was set up in December 1984 as a result of a CSIRO Management Committee decision to implement an energy management program for the whole Organization.

Home base for the unit, which consists of the officer-in-charge Mr John Buhot, Mr John Anderson and Mr Warren Larnach, is the Meat Research Laboratory at Cannon Hill in Brisbane, although the Unit will be operating Australia-wide.

One of the challenges facing the Unit, said Mr Buhot, is to foster motivation for good energy management practices among employees throughout CSIRO.

He freely admits that no energy management scheme can work without the active support of all employees. Getting people involved is the key.

'The incentive is there, however,' he said.

'The Executive has agreed to allow the annual savings made by a particular site, Division or laboratory to be used as additional research funds.

'Individuals can then be rewarded for their efforts, particularly with the scarcity of funds for research.

'The unit will be able to quantify the savings made by Energy Management and will be keeping staff fully informed on how energy savings are directly benefiting them and how they can contribute to the program,' said Mr Buhot.

The first step in setting up an Energy Management program for a site is an energy audit. This will involve installing equipment at the site which records the amount of energy use (consumption) and the rate of use (demand) of energy.

This will vary throughout the day, and will be different for working and non-working days and various seasons of the year.

An energy management plan is then prepared for the site including a list of rectification works for energy systems.

A number of audits have been carried out at major laboratory sites throughout Australia.

At present, Cannon Hill, Long Pocket, Cleveland, Rockhampton and Townsville are being audited and audits will begin soon at North Ryde, Yarralumla and Belmont sites.

Eventually all Divisions will undergo an energy audit and follow-up audits will be required to evaluate the changes implemented as part of site energy management plans.

Mr Buhot said so far results have been encouraging.

At Cannon Hill an education campaign which explained the pitfalls to be avoided in using electricity billed using a 'maximum demand' tariff has resulted in a substantial reduction in energy costs.

These savings have been directed towards the laboratory library to enable services threatened with the chop to be maintained.

A 15 percent reduction in annual energy costs should be achieved at Cannon Hill without spending a cent.

It is good energy management to buy energy at the right price. A change in the type of electrical tariff being used (a choice of tariff is offered by electrical authorities) can reduce the energy bill at Long Pocket by $27,000. Townsville will be $11,000 ahead.

'You may have to spend a lot to save a lot,' said Mr Buhot. At Black Mountain $125,000 has been spent on improving the 'power factor' (a complicated concept involving electrical power) which should save nearly $120,000 per year.

'The power factor correction at the site has also avoided capital expenditure of $50,000 in replacement costs of two transformers and switchboards which had become overloaded,' said Mr Buhot.

The unit has the endorsement of the Executive and senior management, and a totally separate budget of $270,000 per annum for the first two years of operation has been allocated.

What this means is that the cost of energy audits and rectification work required to bring energy costs down won't come from Divisional budgets, but from the Unit budget.

Priority is allocated using the 'payback' on investment criteria.

'There is a lot of work to be done before attaining the projected annual energy saving of more than $1 million,' said Mr Buhot. 'But it is in reach and should be achieved in three to five years.'

'We will need everyone's co-operation, for instance where sites are being charged for energy using 'demand' tariffs it is vital that scientific experiments be co-ordinated to keep the peak demand down.

'The installation of automatic load-shedding equipment can help here also.'

Giving someone from each site or Division the role of energy manager is an essential element in the program.

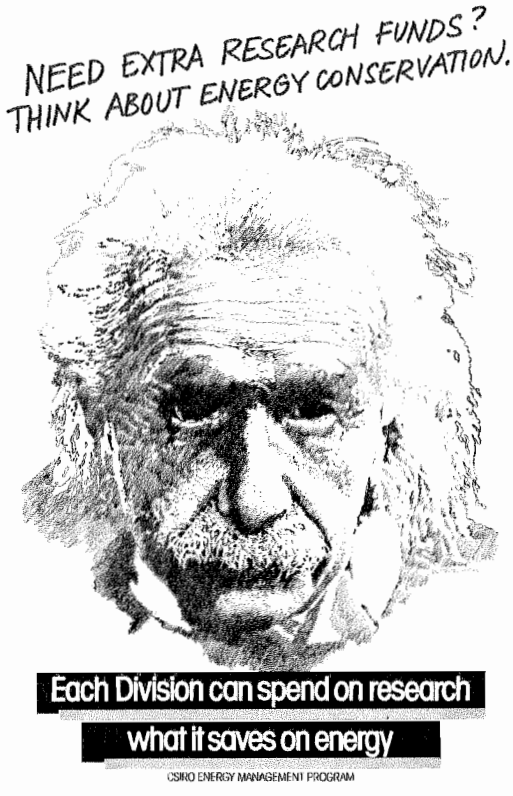
The unit, in conjunction with Ms Susan Moore at Headquarters, is planning a series of seminars outlining energy management work being undertaken by the Unit and benefits of energy management.

The Commonwealth Energy Management Program (CEMP) — the Public Service energy management scheme conducted by the Department of Resources and Energy — is providing financial assistance to CSIRO's unit for the production of posters and publications and some costs associated with future seminars.

In return, the Unit will report energy management progress within CSIRO to CEMP.

Mr Buhot said the unit has the ability to help boost funds for research in Divisions by advising on ways of reducing energy costs.

'The strong commitment from management is the starting point,' he said. It's up to all staff to make energy management a profitable undertaking.'



Quarantine made easy

Why would any CSIRO officer bother trying to 'sneak' items subject to quarantine past Customs officials, when getting them through the proper way is so easy.

So says CSIRO Quarantine Officer, Mr Roy Pullen, who runs an efficient little unit within the Division of Plant Industry in Canberra which exists solely to assist scientists to import their overseas material with as little fuss as possible.

Quarantine procedures can lead to attempted evasion because of the perception of the 'red tape' involved, although this needn't be the case.

Mr Pullen said evading customs procedures is foolish in two major ways.

Firstly, a person 'caught in the act' could destroy the credibility built up over years which CSIRO now enjoys with both Customs and the Plant Quarantine Service within the Department of Primary Industry.

Secondly, that person could be responsible for introducing a biological menace such as foot-and-mouth disease, rabies, oriental fruitfly or screw-worm, and a wide spectrum of plant diseases not present in Australia.

'Although there have been some recent scares, the Australian quarantine system works well and is the envy of most countries,' said Mr Pullen. 'For this reason, Australia is often used as a training ground for quarantine officers in developing countries.'

He said all CSIRO officers wanting to import biological materials from overseas should speak to him about quarantine procedures.

'Unless you have a special arrangement with the Chief Quarantine Officer (Plants) or the Chief Quarantine Officer (Animals) in your State, you run the risk of breaking quarantine laws,' he said.

'Two procedures will ensure that the materials arrive at your laboratory without having to go on a State queue and with most of the paperwork done at your own CSIRO quarantine office.

'Parcels from overseas containing material subject to quarantine regulations must be directed through the Quarantine Unit,' he said.

'If you are arriving from overseas with quarantine items, declare them openly and ask the quarantine officer at the barrier to forward them to us for processing on your behalf,' said Mr Pullen.

They should be addressed to:
Plant Introduction/Quarantine Officer,
CSIRO Division of Plant Industry,
GPO Box 1600,
CANBERRA ACT 2601
(PH: 062-46 5483)

Mr Pullen likes a challenge, and is able to organize quarantine procedures for almost anything which might be needed for CSIRO research.

Among the few exceptions are some bacterial cultures and the occasional prohibited seeds.

However, these seeds and cultures are sometimes allowed to be used under stringent conditions and destroyed when they are no longer needed.

At present, imports are mainly for three Divisions — Plant Industry, Tropical Crops and Pastures and Horticultural Research.

Other Divisions such as Food Research, Forest Research, Chemical and Wood Technology, Animal Production and Wildlife and Rangelands Research also use the service.

Mr Pullen said it's available to any CSIRO officer who needs to import biological matter for experiments.

The Quarantine Unit consists of four people — Mr Pullen, Mr Ru Baye, Mrs Sue Tibbitts and Mrs Lorly Allen.

Let's hear it for Quantum

The ABC's Science and Technology Advisory Committee would like feedback on the new science magazine program, Quantum.

The half hour television program premiered this month and is shown on Tuesday nights at 8pm.

The committee would like comments about the program from CSIRO staff. It is particularly interested in comments on the balance of Australian and overseas material, subject treatment, the length of individual items, the balance of the varying lengths and the work of the presenters.

To give your comments please write, telex or telephone: Wendy Parsons, ABC Science and Technology Advisory Committee, Division of Forest Research, PO Box 4008, Queen Victoria Terrace, ACT 2600. Telex: 62751. Telephone: (062) 81 8306. Facs: (062) 81 8312.

New Chief for Human Nutrition

An internationally renowned researcher on the role of diet in cardiovascular disease has been appointed Chief of the Division of Human Nutrition.

He is Dr Paul Nestel, 55, at present Deputy Director of the Baker Medical Research Institute in Melbourne.

Dr Nestel has written or collaborated on more than 200 scientific papers and has earned a reputation as a world authority on cholesterol metabolism.

Prior to joining the Baker Institute, he was a Professorial Fellow in the John Curtin School of Medical Research at the Australian National University.

He is also Chairman of the Australian Academy of Science National Nutrition Committee, founding member (and chairman for 15 years) of the Diet and Heart Disease Committee of the National Heart Foundation and former head of the Victorian Division of the Australian Nutrition Foundation.

He is on the editorial boards of three scientific publications and during the last five years has been invited to lecture at 14 major international conferences dealing mainly with nutrition and degenerative diseases.

Dr Nestel will take over from Dr Basil Hetzel, who has headed the Division of Human Nutrition since 1975 when it was formed out of the Division of Nutritional Biochemistry which dealt with animal nutrition.

Dr Hetzel has been appointed Executive Director of the new International Council for the Control of Iodine-Deficiency Disorders.

The Council has a secretariat in the Division, and is supported by the Australian Development Assistance Bureau and UNICEF (New York).

Dr Nestel will start work as Chief of the Division on 1 January 1986, for a seven-year term.

From the Chairman -

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

In the corridors of power of CSIRO the present time is one of intense valedictory activity.

Two part-time members of the Executive, Professor David Craig, after over five years, and Mr Baillieu Myer, after three and a half years, have recently attended their final meeting.

Both have served us wonderfully well at a time when on the one hand CSIRO has been under unusual pressure and on the other the part-time Executive has elevated itself more than ever before to be a strong influential force in the government of the Organization.

Each has made many contributions both inside and outside Executive meetings. We remember especially David Craig's chairmanship of the incisive review of occupational health and safety and now, just being circulated, there is the equally incisive review of CSIRO's communication activities chaired by Bails Myer.

I believe both will bring about extensive improvements of the Organization's practices and attitudes.

Another key figure leaving today (as I write) is Gratton Wilson; elsewhere in this issue I have spoken at length about his great contribution.

Then in September it will be my turn to bow out.

When I was appointed to this position I said to Malcolm Fraser 'Sir, you have just sentenced me to seven years' hard labour'.

'Yes,' he replied reflectively, 'I am sure they will be hard.' (After all, life wasn't meant to be....).

I will have completed that term on 24 September when I will be 62½ years old.

This is the arithmetic mean of the two retirement ages that different people advocate and so perhaps the perfect retirement age.

Last February I wrote to our Minister saying that I would not be offering for an extension of my term, and so I was much relieved when, after a period of uncertainty the Government last month announced the new members of the Executive.

Although these were given as interim appointments in view of the ASTEC review I have a hunch they are likely to be normal appointments and I encourage everyone to regard them as such.

I was truly delighted that my colleague Keith Boardman was announced as the next Chairman and Chief Executive.

Keith has battled through this seven-year stretch with me and has at all times been a tower of strength.

He has had a great deal to do with the many changes that have taken place and his appointment will ensure a spirit of continuity on the management of the Organization.

He has my complete confidence and best wishes for the future.

I was also most pleased that the very high standard of appointments of part-time Executive members has been maintained and I warmly welcome Dr Adrienne Clarke and Dr Kevin Foley to the fold.

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Elsewhere in this issue there is a description of a seminar on energy management, much of which I attended.

It was an eye-opener to me that so much could be done to reduce electricity bills without using any less electrical energy.

Of several ways described, one was getting more kW (useful power) for given kVA (which you pay for).

This is done (and was done at Black Mountain) by increasing the power factor by installing a bank of large capacitors.

In 1984/85 the capital cost of the total Commonwealth energy saving programs was one and a half million dollars; these returned savings of $1M. per year.

It is estimated that CSIRO's savings could be in the millions.

All such savings will be retained by Divisions and reallocated for research.

I strongly recommend your attendance at this seminar as it goes the rounds of the Divisions.

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I recently received a phone call from Craig Mudge, managing director of Austek and until recently leader of our microchip unit.

He had just pulled off his first U.S. order placed by a U.S. computer company and worth $700 000.

It is that first order which is the hardest, and may it be the tip of a huge iceberg!

***

The ASTEC review moves ahead at full speed and from time to time one receives various bits of feedback.

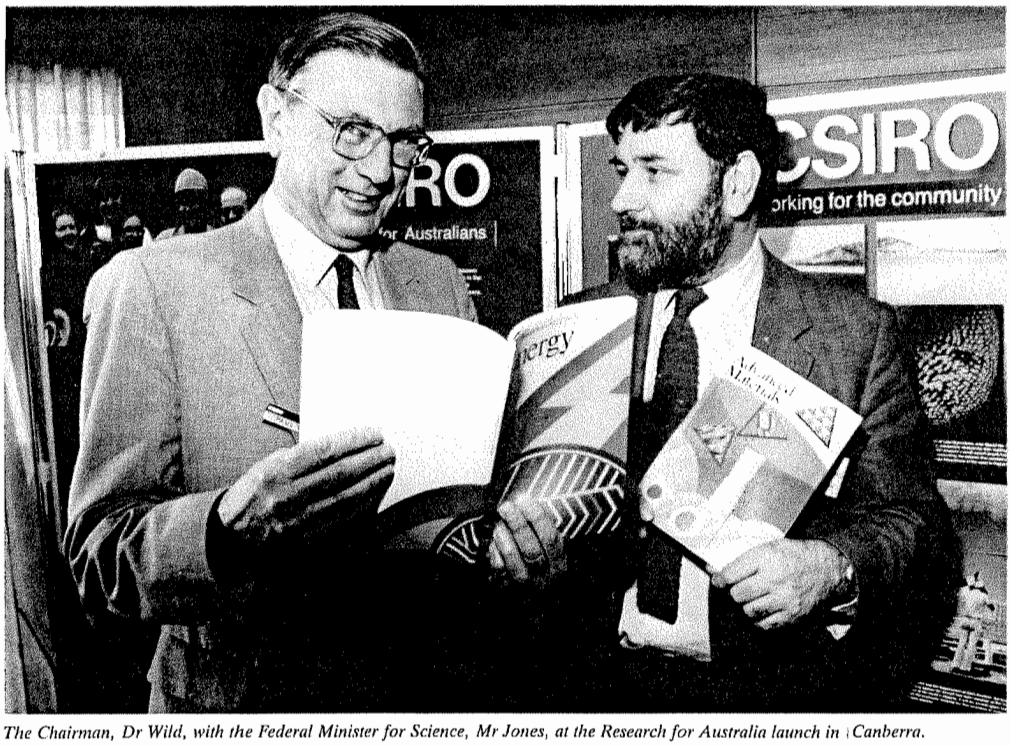
One I liked came from a phone call from Ralph Slatyer.

He said his committee had talked to many staff all over the place; and despite the diversity of activity one thing came through loud and clear — there was an extraordinary cohesiveness and integrity that held the Organization together.

Perhaps the cartoon on my last month's column was not far wrong.

Paul Wild

Research for Australia launch



The Chairman, Dr Wild, with the Federal Minister for Science, Mr Jones, at the Research for Australia launch in Canberra.

The Federal Minister for Science, Mr Jones, launched the first two booklets in CSIRO's Research for Australia series in Canberra last month.

Mr Jones said the booklets provided a simple, comprehensive guide to CSIRO research that emphasized the accessibility of the Organization.

The first booklets in the series of 21 deal with 'Advanced Materials' and 'Energy'.

'These readable, comprehensive and well illustrated guides to CSIRO research show how the Organization's activities mesh with the total national effort,' Mr Jones said.

'They give details of its major collaborative work with other researchers and provide CSIRO contact points, laboratories and Divisions that can given more information.'

The other titles in the series are: Agriculture; Biotechnology; Building and Construction; Conservation and the Environment; Eating, Working, Living and Health; Fisheries; Food; Forests and Their Products; Information Technology; International Activities; Land Management; Manufacturing Industry; The Minerals Industry; Radio Astronomy; Oceanography; Water; Weather and Climate; Weeds and Pests; and Wool Textile Research.

These booklets will be released at intervals over the next 12 months. CSIRO staff can obtain copies of the published booklets at a discounted price by sending a cheque for $6 each to: CSIRO Research for Australia booklets, CILES, PO Box 89, East Melbourne, VIC. 3002.

WA visit successful

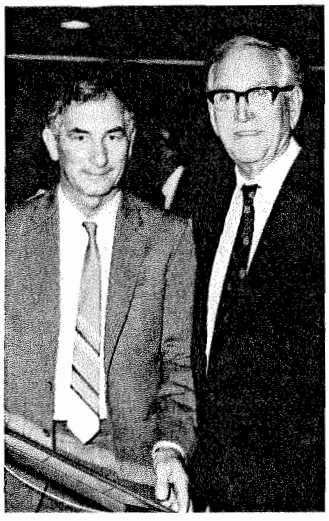
The Director and all nine Chiefs from the Institute of Energy and Earth Resources went west in March, for what has been described as an extremely successful week of formal and not so formal events in Western Australia.

The focus for the visit was the inaugural Brodie-Hall Address, given by the Director, Dr Alan Reid, to community leaders in Perth on 26 March.

CSIRO's Western Australian State Committee established this annual address in honour of Sir Laurence Brodie-Hall, past Chairman of the Committee (who held the office between 1971 and 1981) and an influential mining industry executive.

The State Committee also played an active role in encouraging the Institute to come to Western Australia in force, and stay to talk to potential beneficiaries of its research.

During the week of the visit, the IEER leaders had discussions with various industry and State Government bodies about ways of improving the Institute's links with Western Australia.



Dr Alan Reid, left, who delivered the inaugural Brodie-Hall address, pictured with Sir Laurence Brodie-Hall.

IEER had already expanded its presence in the State last year, with the opening of the Division of Mineral Chemistry's new laboratory at the Western Australian Institute of Technology, to add to the headquarters of Groundwater Research and Mineralogy and Geochemistry at Floreat Park.

The eastern-based Minerals Divisions conduct a lot of collaborative research with mining companies in Western Australia, especially with those connected with iron ore, nickel and gold.

The week ended with visits to aluminium, tin and coal mines south of Perth, where the rare opportunity of talking to scientists and engineers working on-site was seized.

Mr John Brophy, the WA Regional Administrative Officer and Secretary to the State Committee, and Mr Ray Perry, Chief of Groundwater Research, spent six months planning the visit, to ensure it would all go smoothly.

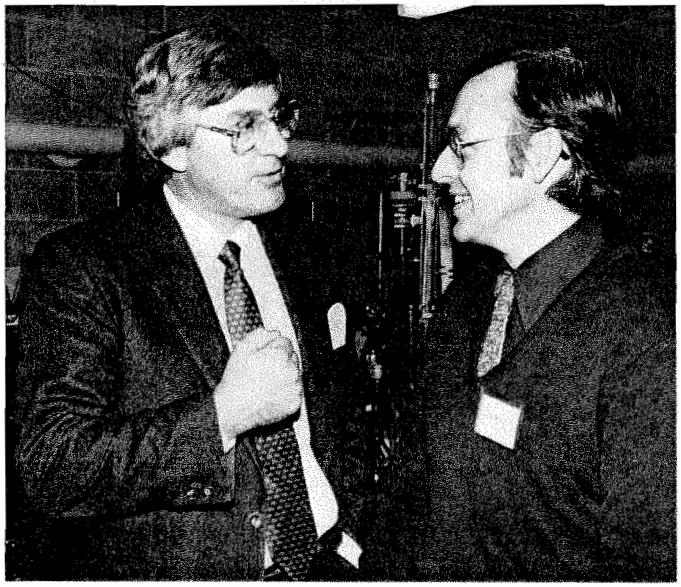
About the only thing they weren't able to fix was the weather. That was the week Perth returned to heatwave conditions and the group had to endure temperatures above 36 degrees Celcius every day.

Following the success of the Western Australian trip, Dr Reid is now considering similar visits to other States.

Lab coat to battledress

CSIRO laboratory craftsman, Mr John Funnell from the Division of Textile Physics, traded his service tools for a radio set and 7.62mm self-loading rifle during a recent Army Reserve training weekend at Holsworthy. The exercise was designed to brush up on infantry tactics of the Leichhardt-based 103rd Electrical and Mechanical Engineers Platoon, and the soldiers were required to defend an air strip against mock enemy attack.

Politicians see soil research first-hand



Mr Michael MacKellar, left, the Federal Opposition Spokesman on Science, and Dr Ian White, acting Chief of the Division of Environmental Mechanics, discuss aspects of CSIRO's soil-water research. Mr MacKellar was part of a Parliamentary delegation which visited three Divisions at Black Mountain to learn about work on understanding and reversing land degradation procvesses. The visit was sponsored by the ACT Branch of the CSIRO Officers Association.

Of equal concern

What is EEO? — Again!

In my travels around the various Divisons, I am constantly coming up against quite false notions of what Equal Employment Opportunity actually means. Some people think it should only be of interest to women. Some think it is only to do with discrimination.

EEO is an Organization policy stating that all personnel activities be conducted to ensure that people with equal probability of job success have equal probability of being hired or promoted. In other words, a person's race, sex, marital status, disability or membership of an ethnic or migrant group should not reduce her or his chances of employment or promotion. The only exception to this rule occurs when any of these characteristics is relevant for a position. This exception is rare.

Selection

Recruitment and selection are two priority areas for EEO. The Organization has had a number of cases alleging discrimination in this area. While not all cases have been sustainable, some certainly have. Of those cases which were not proved to involve discrimination, some still exhibited improper administrative procedures which fostered the environment for a claim of discrimination.

Common denominators

Common threads run through all the cases of alleged discrimination which come to my attention. In the worst cases it has been impossible to demonstrate that justice has been done to all applicants or that the successful applicant was actually appointed on merit. This is as embarrassing to the successful applicant as it is infuriating to the unsuccessful applicants.

Administrative Law

Under the Administrative Decisions (Judicial Review) Act (ADJR) and Freedom of Information, employees of the Organization have certain rights. Among these is the opportunity to look at most, perhaps all, relevant documentation. Aggrieved applicants may appeal to the Federal Court to have a decision overturned if they can prove adequate grounds. Obviously we would prefer a system that left no overly aggrieved parties; certainly not so aggrieved that they felt they could only resort to the law.

Problem Areas

The major omissions in the documentation are:

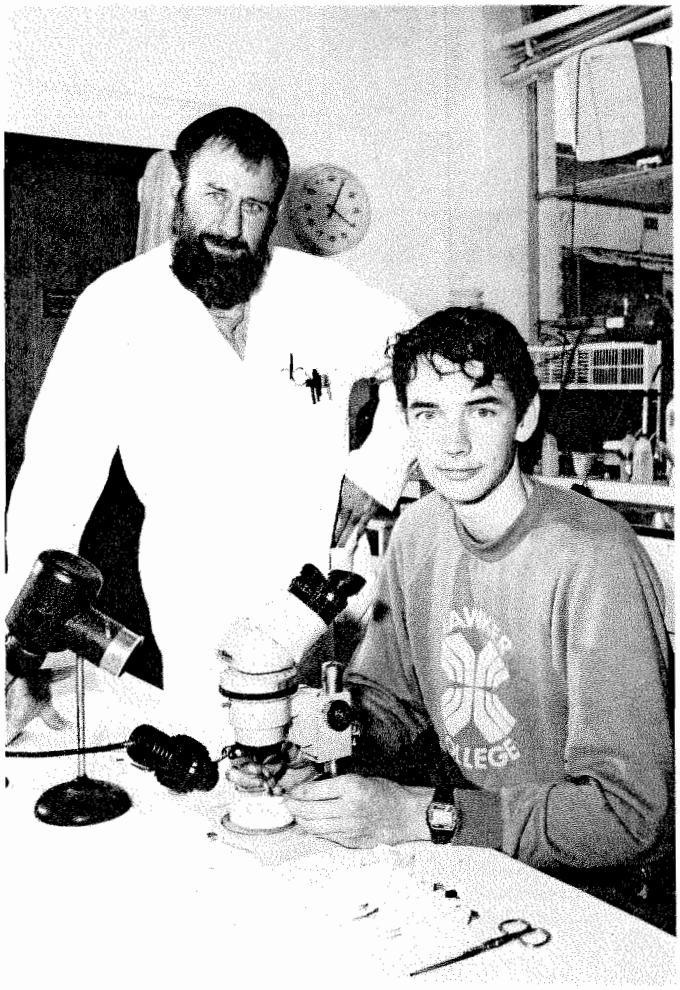
- no properly constituted selection panel;
- no selection criteria against which the panel objectively ranks candidates;
- referees not being sent the duty statement and selection criteria;
- non-nominated referees' negative views being accorded weight without the applicant being told;
- applicants not being confronted with damaging viewpoints and thus not being given an opportunity to put an alternative case;
- insufficient attention being paid to the interview structure in terms of planning a question framework which corresponds to the selection criteria; and
- applicants not being given copies of the selection criteria.

Court Rulings

There is no doubt that the courts are sympathetic to an interpretation of natural justice which holds that any person has the right to know the case against themselves and to answer that case. All interviews and promotion decisions should be conducted in a way which ensures that any individual can walk away feeling they have had a fair go — even if the decision goes against them.

Carmel Macpherson
EEO Officer

Blowie brainstorm



Dr Michael Owen with promising student Ian Wood.

The successful measurement of the weight of sheep blowflies' brains has earned a 18-year old Canberra college student a mention in an entomological research program now underway.

Ian Wood from Hawker College has been participating in CSIRO's peer teaching scheme, and the work he has done will be included in a paper being prepared by a visiting Canadian associate professor of zoology.

The scheme, which only operates in Canberra, enables senior school students to gain practical experience in scientific procedures and research by being assigned to a CSIRO scientist and spending a minimum of 20 hours actively involved in the work assigned.

Ian has been working with Dr Michael Owen from the University of Western Ontario in London, Canada, who is now completing a year's sabbatical leave — all spent at CSIRO.

Dr Owen has been measuring nerve transmitter compounds in sheep blowfly brains, trying to determine what it is that controls day/night activity.

'Ian has contributed significantly by helping to establish reference points needed when comparing amounts of nerve transmitter compounds in various insects, such as the sheep blowfly and the fruit fly,' said Dr Owen.

Ian's project was in two parts: to measure brain weight and to determine the amount of protein in the brains — which also enables precise comparisons between insects.

Ian removed the brains of 15 flies and got accurate weights using Electronic Micro-Balance equipment.

It sounds reasonably straightforward, but Ian said he encountered a number of problems, and these will be set out in a report he is preparing.

Difficulties arose with evaporation of the saline solution used during the process, and also with the removal of superficial water from the brains to enable accurate measurements.

After several days of experimenting with the procedures, the problems were solved.

Dr Owen said he was very impressed with Ian's ability to overcome difficulties and come up with usable data.

'I'm very enthusiastic about Ian's work, and I think it says something about the students, that they can come into a research laboratory and within a few days make a contribution which can appear in a published piece of work,' said Dr Owen.

He said it was important for the student involved in peer teaching scheme to be allowed to use initiative, and not just work as a technician.

Ian will not be marked on the work he has done for Dr Owen, but it will appear on his Year 12 Certificate as a registered unit.

After completing Year 12 at the end of this year, Ian said he will either take a year off to travel, or will go to university to study for an honours degree in mathematics, majoring in computing.

This year's peer teaching scheme involves 27 students from a number of secondary colleges in the ACT.

Long-time CSIRO employee, Senior Technical Officer Mr Clarrie Brown, has retired from the McMaster Laboratory.

Mr Brown joined the CSIR Division of Fisheries on 11 June 1945 and was based at the Marine Laboratories, Cronulla, until the relocation to Hobart early this year.

He originally joined the Organization for six months, but ended up staying for 40 years.

His longest association was 19 years' liaison with the commercial tuna fishery when he was involved with field data and fishermen's log books.

In 1968 he survived an aircraft crash in Bass Strait while calibrating an infra-red radiation thermometer used to map temperature fronts associated with tuna schools.

Already well-known to fishing industry operatives in New South Wales ports and Port Lincoln, his experience in liaison brought him into contact with the prawn fleets north of Capricorn, when in 1970 he started the log book facet of the Northern Prawn Project.

Later he became involved in operational logistics and management of divisional and charter vessels.

His last involvement with the Marine Laboratories was as liaison officer between CSIRO and the NSW Department of Agriculture, the new occupants of the Cronulla site.

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The editor of CSIRO's annual report, **Miss Heulwen (Heili) Ridgway**, has retired after ten years service due to ill health. In 1976, Heili took over the annual report when it was only a record of research achievements, and since then has seen it through to be a major policy document. She also supervised the production of the first issues of the Directory of CSIRO Research Programs.

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After 38 years with CSIRO, Senior Technical Officer at the Division of Tropical Crops and Pastures, **Mr Tom Elich**, will retire on 2 August.

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Mr Rudolf Fridemanis, an Experimental Scientist with the Division of Tropical Animal Science, has retired after 21 years with CSIRO.

Mr Fridemanis migrated to Australia from Europe in 1949. He joined the Division of Animal Health at the old Veterinary Parasitology Laboratory in 1964, and moved to the Long Pocket Laboratories in 1968.

His main area of work has involved the study of parasites in cattle.

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'James Pond' retires

Dr Michael Jermyn marked his retirement from the Division of Protein Chemistry with a final instalment in his 'James Pond' cartoon series.

The series has been a feature of the OA Bulletin for many years.

The Division recently held a social evening for farewell Dr Jermyn, who joined the Organization in 1949 as a CSIRO scholar at Cambridge.

On returning to Australia in 1950, his initial project was to investiage fundamental aspects of the action of fungi on textiles.

Over the next 20 years he carried out an extensive investigation on the degradation of cellulose, and more recently his research has centred on lectins in plants.

Colleagues say his dry wit and philosophical sense of humour, which have been a feature of lunch-time repartee in the Division's canteen, will be missed by all.

Dr Peter Manins, a Principal Research Scientist with the Division of Atmospheric Research, has been seconded for three years as Project Director of the Latrobe Valley Airshed Study. The study is concerned with the meteorology and air quality of the Latrobe Valley east of Melbourne.

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Dr Peter Howells has returned to the Division of Atmospheric Research after spending a year as a CSIRO Postdoctoral Fellow at the National Centre for Atmospheric Research in Boulder, Colorado. **Dr Howells** will be working on mesoscale modelling of summertime cold fronts in the Small-Scale Dynamics Groups.

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Dr Mike Sully has joined the Division of Environmental Mechanics from the University of California-Davis, where he recently completed his PhD studies. **Dr Sully** is working on the variability of physical properties of field soils and preferential flow in porous materials.

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The Central Information, Library and Editorial Section has farewelled Mr Len Chard, who retired recently after 34 years' service.

In 1971, Mr Chard became Printing Liaison Officer and was in constant contact with many divisional staff and trade representatives.

He was put in charge of production in 1977, after being made Assistant Manager.

Mr Chard was involved in many of the technical changes in the Printing Unit over the years.

Colleagues said Mr Chard not only was a source of information on all aspects of printing, but his courteousness, dedication and enthusiasm endeared him to all staff.

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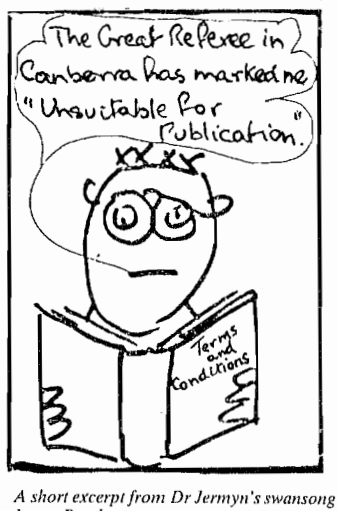
The Division of Mineral Chemistry has named its library in honour of a former Chief of the Division, Mr Ivan Newnham.

Mr Newnham was Chief of the Division from 1961 to 1970, Director of the Minerals Research Laboratories from 1970 to 1978, and Director of the Institute of Energy and Earth Resources from 1978 until his retirement in 1984.

At a ceremony held at the Division in Port Melbourne recently, a former Chairman of Mount Isa Mines, Sir James Foots, unveiled a portrait of Mr Newnham.

The library will now be known as the Ivan Newnham Library.



A short excerpt from Dr Jermyn's swansong James Pond cartoon.

SIROWET tests the water

Strenuous efforts are being made to prevent leaks at the new Parliament House in Canberra.

No, not information leaks — as long as there are politicians and journalists that practice will continue — but a kind just as uncomfortable and sometimes damaging.

Water.

The impressive and modernistic building now taking shape on Capital Hill is undergoing rigorous weather simulation supervised by Mr Noel Brown from the Division of Building Research.

With the help of technical assistant Mr Derek Dubout, Mr Brown is using the innovative SIROWET process to ensure Canberra's weather doesn't intrude on the corridors of power.

CSIRO pioneered the mobile waterproofing evaluation system called SIROWET in Australia.

The SIROWET rig, consisting of fibreglass modules forming a large open-faced box equipped with blower water sprays and instrumentation, has been attached to a specially-built structure which matches the various facades of Parliament House.

It has been applied in turn to several facades of the prototype building, to test the waterproofing of joints associated with windows and concrete cladding.

The SIROWET rig can also be attached to the actual building, and this has been done at two other sites.

SIROWET was for first mooted at a series of wind and rain seminars organised by the head of the Building Division's technology transfer unit, Mr Bob Couper, back in 1972.

Having learnt so much from SIROWET in the meantime, more seminars are now being planned.

There is only one SIROWET rig in operation, and it's been moved around the country to test the waterproofing of various buildings.

Apart from Parliament House, it's tested the Broadbeach Casino in Queensland and buildings in Sydney and Melbourne.

Commercial organizations have now realized that new window-facade systems need to be carefully investigated before design and manufacture are finalized.

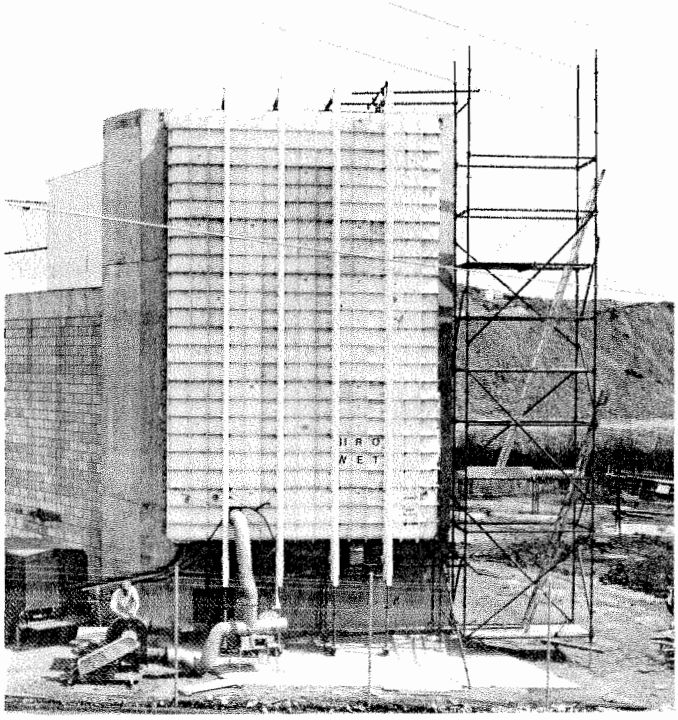
This can save many thousands of dollars for building owners, who are often faced with the costly problems dampness in a building can bring.

Most large buildings have in the past, and still are, constructed with no 'watertight' guarantees.

'Quite frankly, most high-rise buildings leak,' said Mr Brown.

The CSIRO technology is in the process of being transferred to consultants who have realized its value.

SIROWET, and the few similar outfits which have followed it, are the only means to really test a building facade.



The SIROWET rig

Mr Brown is a strong advocate of the 'drained joint' system as the most effective method of water-proofing building facades.

'We take the view that no single seal will ever stay watertight,' said Mr Brown.

'The water gets through the seal, and usually has no way of getting out again, so you end up with a wet carpet or soggy papers on your desk,'

'However, if you use the outside area purely as a rainscreen and any water which goes in can drain out, you then have to establish a wind barrier further in the joint.

'This will create a space between the rainscreen and the air seal which has the same air pressure as the outside, and the water will obey gravity and drain off through special ducts to the outside,' he said.

The system has the advantage of not requiring total water-proofing of the outside surface.

The drained joint principle is being employed at New Parliament House, and SIROWET has been brought in to ensure the principle works on the windows and other joints involved.

Tests at Parliament House haven't been without their problems.

There have been difficulties associated with getting things done at what is a huge and complicated building site.

For instance, it's not always possible to get a crane — necessary for shifting the SIROWET box to another part of the prototype building — when it's needed.

SIROWET work at Parliament House started in 1983 and is expected to finish soon.

Meteorological records dating back 100 years have been used as a basis to determine winds pressures to be applied to the facades.

Records of rain frequency have also been helpful in determining the volume of water being applied.

New Parliament House is designed to withstand windspeeds of up to 160 kilometres an hour and rain being forced through the joints at windspeeds of up to 110 kilometres an hour.

The building is perched on a hill and is fairly exposed, so winds could be quite strong. The building is effectively a high-rise, because it's on a hill with virtually open country all around.

The prototype building being used for the SIROWET tests will eventually be put to use as a a viewing platform for visitors to the Parliament House site.

CSIRONET franchise agreement

CSIRONET has signed a commercial franchise agreement for a three-year pilot study designed to lead to improved Australia-wide computer services.

The Chairman of CSIRONET's Board of Management, Mr Denys McCullough, said the agreement with Intran Australia Pty Ltd would allow closer contact and greater assistance to be given to Adelaide and Perth users of the CSIRO system.

'This pilot study is a first step towards better services for all regional users of CSIRONET,' Mr McCullough said.

'Users as far afield as Rockhampton, Newcastle, Mount Gambier, Launceston and Perth have access to CSIRONET but staffing restrictions have meant that close user contact in these areas has been difficult to achieve.'

'The franchising agreement will allow for a much higher level of user service and CSIRONET aims to expand this level of service to regional centres throughout Australia.'

Under the agreement, which takes effect from 1 June 1985, Intran Australia will take over the management and marketing of CSIRONET services in Perth and Adelaide.

A South Australian-based company, Information Delivery Pty Ltd and the Western Australian non-profit company, Systems Research Institute of Australia, have formed Intran Australia to promote CSIRONET services and to provide close user liaison.

CSIRONET became an autonomous agency of CSIRO in January this year.

Intran Australia will have a non-exclusive right to market CSIRONET's services to current and potential users and will commit its specialist resources to marketing.

Gross income from South Australia and Western Australia, where limited marketing is currently undertaken, is expected to rise by about 250 per cent over three years.

Mr McCullough said Intran Australia was ideally placed to make a success of the initiative. Those involved with the new company had an intimate knowledge of the CSIRONET system and the computing needs of industry and government.

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Gratton Wilson

Cont. from p. 1

including a term as Chairman of the Australian National Commission for UNESCO from 1978-1979.

He is still an Executive Member of the Commission.

He has also been a member of the Council of the International Federation for Documentation and held the position of President of its Commission for Asia and Oceania from 1972-1975 and has been a delegate to the Commonwealth Scientific Council.

Largely as a result of these appointments, Gratton has had a number of overseas trips (to the delight of some of his female colleagues who received perfumes following his latest trip).

Gratton has a number of interests, including his property at Numeralla, NSW, fly fishing, growing Australian plants and lapidary.

Though regretting his retirement from CSIRO's viewpoint, I am happy to extend to Gratton all the best wishes for a long, successful and happy new life away from the competing pressures of science and the bureaucracy.

Bags of success

A water-filled plastic bag is proving to be a commercial success with fruit tree growers faced with the loss of young trees because of frost.

The plastic bags, which are specially designed to protect young trees from frost, were developed by Mr Don Alexander, a Senior Principal Research Scientist with the Division of Horticultural Research.

A Melbourne-based company has produced about 12 000 frost protection bags and an international patent for the design is being sought.

For fruit tree growers even a light frost can damage young trees and destroy crops. In parts of Queensland where fruit trees do not go into deep dormancy in winter a frost can be particularly devastating and the cost of replacements can be considerable. Mr Alexander said growers may pay between $7 and $15 a tree.

The frost protection bags consist of a plastic bag heat sealed into tubes which are filled with water containing silver iodide crystals. The silver iodide is an ice nucleation chemical which ensures that the water freezes at zero degrees celsius.

When the air temperature falls below zero degrees the water in the bag starts to freeze and maintains the temperature of the stem at zero degrees for up to 12 hours. Mr Alexander said cold room tests had shown that the stem temperature remained at zero degrees celsius until the water in the bag had completely frozen.

Although frost will still kill shoots and leaves, the bag, which is tied around the tree stem, would save the valuable root stock and graft, he said.

'Under other wraps the temperature of the stem in the cold room experiments cycled in phase with the air temperature and fell the within about two degrees celsius of the cold room temperature,' Mr Alexander said.

Mr Alexander said the idea has followed the loss of plants propagated by the Division. 'We propagated a large number of experimental trees here for distribution to sites scattered around the country,' he said.

'But we were continually losing plants to frost and it was very frustrating to spend so much time and effort propagating trees only to see them killed during their early years of establishment.'

The frost protection bags, which sell for about $1.00 each, have proven cheap, effective and versatile and seem destined to find a ready market.

External communication
Report urges changes

Radical changes to the way CSIRO communicates its research activities to the outside world are expected to flow from the independent review of external communication just released.

The report will be considered at the August Executive meeting, when its major recommendations are likely to be accepted.

The report, prepared by an independent committee chaired by Mr Baillieu Myer, Chairman of the Myer Emporium and until recently a part-time member of the CSIRO Executive, made some stinging criticisms of the Organization's communication, which it said 'lags far behind its effectiveness in research'.

CSIRO Chairman, Dr Wild, said the report's findings came as no surprise. 'We have been aware of these problems for some years,' he said.

'If I have a complaint about the report, it is that it does not adequately acknowledge the initiatives that have already been taken to improve our performance in this area, or how hard it has been to interest industry, politicians and the media in science and technology.'

In this issue of *CoResearch*, we look at some of the findings and recommendations of the review committee, and the associated survey of opinion leaders and community groups.

That survey was undertaken by PA Management Consultants and involved interviews with 96 opinion leaders in industry, politics and government, representative organizations, media and scientific, academic and research institutions. A mail questionnaire survey was also conducted with three groups in the community: chief executives of manufacturing enterprises that employ between 50 and 500 people; secondary school teachers in government and non-government schools; and primary producers.

Next month, we will be canvassing responses to the two-volume external communication report from within CSIRO.

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'...CSIRO needs to recognize the new political processes associated with lobbying and establish effective communication links with politically influential groups and individuals in the community...'

The committee suggested that CSIRO consider almost doubling funds for information and communication activities with industry and community groups, from the present estimated 5.5 percent ($12 million in 1983-84) of its total expenditure to closer to ten percent.

It emphasized the need for Divisions, and especially research staff, to become more involved in these activities.

In all, there are 38 recommendations in the report, covering all aspects of external communication. These include:

- establishing active and visible advisory committees within Divisions, with representatives of industry, government, universities and other relevant bodies;
- creating a special fund of $500 000 in the first year, rising to $1.5 million in the third year, to subsidize Divisions for films, publications, displays, open days, promotional campaigns or community projects; and
- exploring the possibility of setting up capital city information and sale centres, possibly with other bodies, and being generally more aggressive and entrepreneurial in marketing information.

'...communication is an integral part of CSIRO's research process, both in determining research objectives and in advising the results of research...'

Opinion Leaders' answers to key questions

Answers are expressed in % of respondents	YES	NO	DON'T KNOW or no answer
Do you agree that CSIRO's budget cuts were justified?	42	32	26
Are you satisfied with communications from CSIRO?	33	60	7
Do you find CSIRO publications useful?	63	37	
Should there be more promotion of the benefits of CSIRO to non-technical people?	62	30	7

	MORE	SAME	DON'T KNOW or no answer
What is the appropriate level of spending on science in Australia?	65	7	28
Should there be more private funding of science?	80	7	13
What level of funding for CSIRO should come from private industry?	58	25	17

	MORE APPLIED	MORE BASIC	SAME	DON'T KNOW or no answer
What emphasis should CSIRO give to research?	55	6	3	36

Community groups

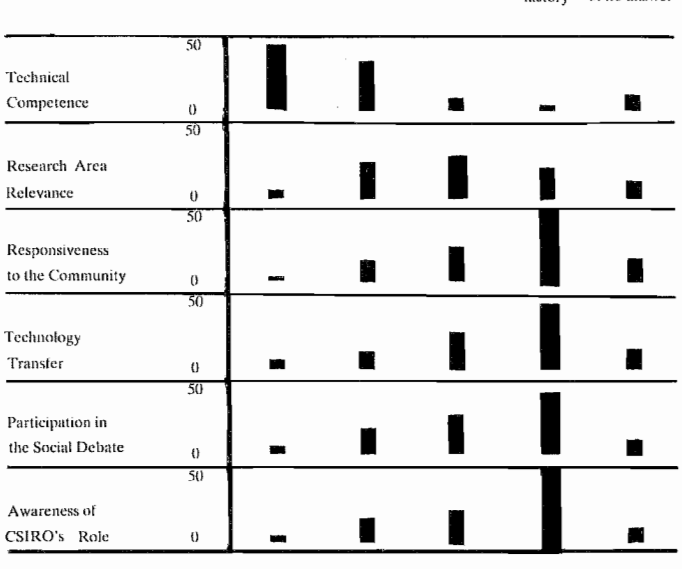
DOES CSIRO HAVE RESEARCH CAPABILITIES USEFUL TO YOU

	Manufacturers	Primary Producers	Teachers
Yes	36	89	41
No	8	1	9
Don't Know	52	9	50

SATISFACTION WITH COMMUNICATIONS FROM CSIRO

	Manufacturers	Primary Producers	School Teachers
Yes	34	41	34
No	44	52	39
Not Particularly Interested	23	6	26

Overall performance ratings



The committee found that the increasing demand on CSIRO to develop and assist industry apply new technologies is probably the most difficult and subtle change now taking place. It said it's not good enough to leave this to Sirotech, because the implications go beyond Sirotech's mandate and will require a changed approach at all levels in the Organization. It concluded that the publication of research results does not constitute communication to industry, and this is well-understood in some Divisions but underestimated in others.

The review committee said part of its role was to provide the basis of a master communication plan which should be further developed within CSIRO. PA suggested that the plan should be developed as part of a broader, corporate strategy. The committee also accepted the advice of the consultants that the principles and practices of strategic planning must be applied to communication in the same way as they are applied to research. In addition, strategic planning and priority-setting for research and communication must be integrated so the results of research can be communicated effectively to the right audiences.

'...CSIRO was seen by many in the political and scientific communities to be defensive against any suggestion or criticism...'

1. Opinion Leaders

many respondents, especially at senior levels in industry, claim to know little about CSIRO — although questions elicited spirited conversation about the role the Organization could play in helping industry and Australia develop a technological edge over other countries.

PA said the most favourable reactions to the CSIRO came from senior executives in large companies or unions who had had little contact with CSIRO but nevertheless generally had a 'warm feeling' towards it. A small minority across all the communities interviewed were very critical of CSIRO. These respondents tended to have had in-depth dealings wth CSIRO Headquarters and/or Divisions in the past. Of all groups, the political community tended to be more critical.

Most people questioned — particularly those in industry — said they believed CSIRO should be involved in more applied scientific endeavour and focus more on the needs of the industry users.

Over 85 percent of opinon leader respondents replied that the technical competence of CSIRO's people was either good or excellent, however they were generally not so enthusiastic about the areas researched by the Organization.

'...if internal communications were more rapid, more open and more complete, the Organization would be more united...'

The majority of opinion leaders were in favour of greater spending on scienee in general, and on CSIRO in particular, although most thought private industry, rather than Government, should contribute more.

2. Community Groups

The survey found that the attitudes of the three groups — manufacturers, secondary school teachers and primary producers — varied considerably. However, in each group surveyed, more respondents were not satisfied with communications from CSIRO than were satisfied.

Perhaps the most dramatic results from this section of the survey came from questions about preferences for Government spending. All respondents put science research funding at the top of the list — well above the other 'discretionary' portfolios of arts and culture, defence, sport and recreation and Aboriginal and ethnic affairs.

Eighty-six percent believed that science spending should be increased, 12 pecent said its share should stay the same, and only one percent preferred a decrease.

Also, two out of three respondents disagreed with the statement that 'the CSIRO budget cut was well justified'.

CSIRO history lives in Downer

A little bit of CSIRO history largely unnoticed by people within and outside Canberra now has a champion in chemist shop owner Mr Kevin O'Brien.

Canberra residents would be well aware of the northern suburb of Downer, named after the South Australian lawyer and politician, Sir John Downer.

What they may not know is that the land on which the suburb was built played an important role in CSIR/O history in the 1940s and 50s, and evidence of the Organization's presence abounds.

Mr O'Brien has owned the Downer pharmacy since 1980, after retiring as assistant secretary of the National Health and Medical Research Council.

His new work sparked an interest in the suburb of Downer and he soon started research into the area. He has now completed a study called 'Portrait of a Suburb — Downer 25 Years On'.

Mr O'Brien is concerned that the CSIR/O history in the suburb will be all but forgotten within 20 years.

But his primary concern is that Downer has already been forgotten by Canberra's planning authorities, and he is attempting to mobilize local residents to ensure the suburb doesn't become a backwater.

As part of his campaign he recently addressed a meeting of SIRET, the club of retired CSIRO employees, who took a great interest in his display of photos as well as photos gathered by CSIRO's archivist Mr Colin Smith.

Mr O'Brien said Downer is such a pleasant, tree-lined suburb mainly because of the long CSIRO presence.

The Organization's Dickson Research Station occupied the land on which Downer and parts of the surrounding suburbs now lie.

The then-head of the Division of Plant Industry, Dr B.T.Dickson, established the site in the early 1940s and it remained there for about 24 years.

The buildings which are now the Downer shops and community centre were once the machine shed and workshops for the site.

A variety of research was carried out at the site, including the cultivation of opium poppies as part of investigations into drug plants. After the war, drug research programs were discontinued and efforts were stepped up to find ways to increase Australia's agricultural wealth.

The beautiful pine trees around the shops, primary school and sports oval - which Mr O'Neill calls 'the pride of Downer' — were planted on Dr Dickson's instructions.

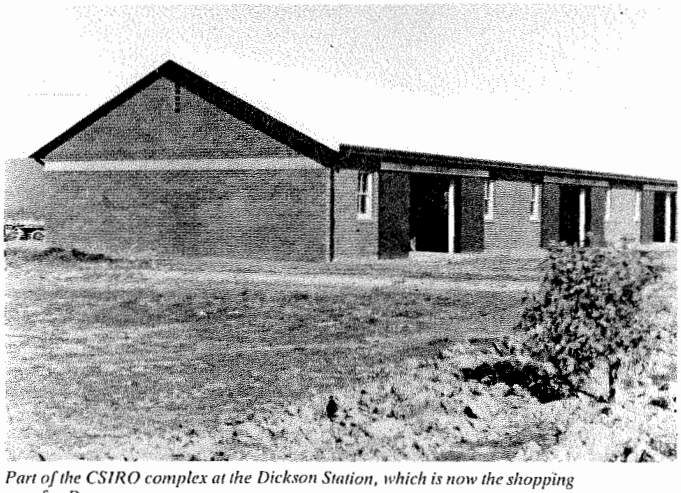
Also, he ordered the main entry road to the Experiment Station — now suburban Swinden Street — to be lined with eucalypts.

One of the original two CSIR houses is still standing, in Melba Street, surrounded by pines.

'Dr Dickson was told by the Canberra nursery not to plant the trees because they wouldn't grow,' said Mr O'Brien. 'He proved them wrong.'

Mr O'Brien said past and present CSIRO staff have assisted with his studies of the area.

He said he hoped the work he has done will help ensure Downer has a bright future, combining the past with new amenities to reinforce the 'village' feeling in the suburb.



Part of the CSIRO complex at the Dickson Station, which is now the shopping area for Downer.

Scrimber to go into production

Scrimber, a timber product made from pine thinnings and small trees which matches the qualities of the best natural wood, will be launched onto the Australian market soon.

The Minister for Science, Mr Jones, has announced that scrimber, invented by CSIRO and developed in collaboration with Repco Research, will be manufactured by the South Australian Timber Corporation (SATCO), the production and marketing arm of the Department of Woods and Forests in South Australia.

'The commercial agreement with SATCO is an early major success for CSIRO's new marketing company, Sirotech,' said Mr Jones at a press conference in Melbourne to announce the agreement.

Sirotech will also negotiate licences overseas, where the scrimber process is already attracting interest.

Manufacture of scrimber comes after eight years of research and development by the Division of Chemical and Wood Technology and Repco Research Pty Ltd, which established a pilot plant at Dandenong near Melbourne.

Mr Jones said SATCO had been selected to manufacture the high-quality reconstituted wood at the new plant to be built at Mount Gambier in the State's south-east.

'SATCO, which estimated the first production plant will involve an investment of $12 million, plans to commence construction during next year,' said Mr Jones.

'Current sawmilling techniques only use about 40 percent of the log, however scrimber is able to use more than 85 percent, making the whole process more efficient.'

The product has a wide range of building applications and can be used for structural work in the same way as top-quality wood.

'In fact scrimber could provide an alternative to natural large beams, which must now be sawn from increasingly-scarce older trees,' said Mr Jones.

He applauded SATCO's foresight in taking on manufacture of scrimber, saying it was a decision which would undoubtedly boost the timber industry in South Australia.

'Also, Sirotech's success in negotiating the commercial contract with SATCO augers well for its future.'

Scrimber was invented 10 years ago by Mr John Coleman, a Principal Research Scientist at the Division of Chemical and Wood Technology (or Chemical Technology as it was then). Mr Coleman has been closely associated with subsequent development.

He conceived the idea of 'scrimming', which maintains the alignment of the fibres and has allowed the development of a product with the strength of clear timber beams.

Scrimber has full structural properties and can be used in the same way as ordinary structural timber for building, exposed beams, etc.

By converting small-diameter logs into high-grade building material, the scrimber process can make good use of fast yielding forest plantations.

Because the natural orientation of the wood fibres is maintained, scrimber has the strength lacking in reconstituted wood products such as particleboard and hardboard.

SATCO's scrimber plant will be built in the centre of South Australia's timber industry, next to the company's timber mill, and will use equipment designed by the CSIRO-Repco project.

CSIRO and Repco will assist in the design of the prototype plant and CSIRO will also be concerned with developing new products based on the scrimber concept.

The eight-year project has been largely funded by Repco, with considerable backing from the Australian Industrial Research and Development Incentives Board (AIRDIB), whose total investment by December this year will be nearly $2 million.

Scrimber being planed.

Chinese poultry

CSIRO has been heavily involved in an assistance scheme to enable a national specific pathogen free (SPF) poultry facility to be built in China.

In response to a request from the Chinese Government, a feasibility study on the establishment of the facility was conducted in 1982 under the auspices of the Australian Development Assistance Bureau (ADAB).

The study team was led by Dr Trevor Bagust, now Officer-in-Charge of the Animal Health Research Laboratory at Parkville.

As part of the detailed planning for the project, ADAB sent a Chinese SPF poultry Design Team to Melbourne, Sydney and Canberra recently.

The team was led by Mr Ma Siqi, Director of the leading veterinary research institution in the People's Republic of China — the Harbin Institute of Veterinary Research.

In Melbourne, the team visited CSIRO's SPF Poultry Unit, which is to be used as the prototype for the national SPF poultry facility in China. Several commercial production sites were also visited.

Designs for the facility have been prepared by CSIRO and sent to the Chinese Government.

The project is likely to start during 1985-86 and take five years to complete.

During this time it's recommended that four English-speaking Chinese professional staff be sent to Australia to learn management of the SPF poultry facility and advanced training in poultry virology.

CoResearch **is produced by the Science Communication Unit for CSIRO staff. It is also circulated to a number of people outside the Organization who have a professional interest in CSIRO activities. Readers are invited to contribute or send suggestions for articles. The deadline is normally the 5th day of the month of publication. Material and enquiries should be sent to the Editor, PO Box 225, Dickson, ACT 2602. PH: 48 4479. Editor: Liz Burden.**

CoResearch

CSIRO's staff newspaper *August'85* *283*

ASTEC submission

Don't carve up CSIRO

The role of CSIRO is primarily in strategic research, for which it is ideally suited. However, it should continue to do some fundamental research and increase its tactical research effort.

That's one of the major points put forward in CSIRO's submission to the ASTEC Inquiry into government-funded research and development in Australia.

ASTEC is expected to report to the Prime Minister, Mr Hawke, on the CSIRO aspect of the inquiry by the end of the year.

The CSIRO submission argues that generally, strategic research with economic objectives is appropriately conducted by government research organizations, because it requires a significant scientific infrastructure, expensive facilities and the development and long-term maintenance of high-quality core research teams.

The private sector is rarely able to provide these in Australia.

Flowing from this is the argument that CSIRO should not be 'carved up', but maintained as a large, national statutory authority, with freedom from day-to-day political pressures and competing operational priorities while retaining accountability to the Minister for Science and Parliament.

The Organization is large enough to be well known throughout the country — 'and this, together with its prestige as a national institution, means it can readily involve business and community leaders in consultation about priorities for research,' the submission says.

'It is large enough in world terms to be well recognized and this, coupled with its reputation for scientific excellence, facilitates international co-operation and attracts top-quality recruits to the Organization.'

Greater investment

The submission also calls for greater investment — from government and the private sector — in scientific research.

It says CSIRO considers an overall increase in research is essential to the realization of a more innovative, export-oriented industry.

'There is also a need to increase the benefits from the research dollar by improving the quality, relevance and application of this research.'

'Ultimately, a healthy, growing and innovative industry will create its own demand for research, and this will lead to greater private sector investment in research.'

'The Government has a role in providing an environment in which industry can achieve levels of profitability that will enable it to support a significant research effort.'

The major points in the submission are:

- Australia must take advantage of opportunities presented by new technologies. Research and development have major roles to play in this process.
- Australian governments should continue to fund and perform research and development to improve economic performance, to ensure community benefit from science and technology and for reasons of national prestige.
- Australia needs to increase its level of research and development particularly by the private sector. Government has a role in stimulating this increase.
- *Strategic* research is an essential part of the innovation process. It should mainly be funded and performed by government as it is usually beyond the role and capacity of the private sector.
- *Tactical* research should be funded by the main beneficiary, but who does the research depends upon several factors including the research capability of the user.
- *Fundamental* research should be funded by government and should be performed by tertiary education institutions and, where appropriate, by CSIRO.
- There are compelling reasons for carrying out the bulk of national strategic research in CSIRO. The Organization provides the best environment for the conduct of effective and innovative research.
- CSIRO's primary role should remain the conduct of strategic research for Australian industry or the Australian community.
- CSIRO should further increase its tactical research where experience and facilities built up in strategic and fundamental programs can be utilized to national advantage. This should be done particularly through contracting-in and collaborative research to improve contact and collaboration with industry or other users. Maintenance of 'core research' programs funded by appropriation is essential to these activities.
- CSIRO should continue to conduct some fundamental research to fulfil major national and international responsibilities and to provide a basis for strategic and tactical research.
- Technology transfer is being further improved as an integral part of CSIRO's research activities.
- CSIRO is strongly committed to contracting-out the further development of its research.
- CSIRO needs more flexible personnel arrangements. Separation of CSIRO from its present statutory relationship with the Public Service Board is advocated as a means of enhancing flexibility.
- CSIRO should play a greater role in advising government.
- CSIRO's research training potential should be more widely recognized and used.
- The Executive should include a Deputy Chief Executive with business management skills.
- CSIRO supports the continuation of Institutes and Divisions as the main structure of CSIRO. The composition of Institutes is currently being considered.
- CSIRO must have effective advisory and consultative mechanisms at different levels of the Organization. This will be considered further in a later submission.
- CSIRO has been developing a broad strategy for the next five years. The strategy outlines improved procedures to:
  - assess the overall balance of CSIRO's research;
  - concentrate CSIRO's research effort;
  - evaluate more thoroughly the benefits of CSIRO's research;
  - improve the use made of CSIRO's research by industry, government and others; and
  - increase staff mobility and flexibility.
- In implementing these procedures there will be greater consultation with users of the Organization's research and potential customers.
- CSIRO is introducing a new corporate planning system to provide a clear framework within which planning will be conducted.

Grazier's gift aids fight against blowfly

Photograph courtesy of *The Age*

CSIRO has launched a new assault on the sheep blowfly following a grazier's gift of $100,000 a year for research into control methods.

The Acting Chairman, Dr Keith Boardman, said scientists with the Division of Tropical Animal Science in Brisbane were aiming to develop a vaccine against blowfly strike.

Sheep blowfly maggots infest the skin and fleece of living sheep, causing pain and even death. Control measures and the loss of sheep, wool and meat production are estimated to cost Australian graziers more than $150 million a year.

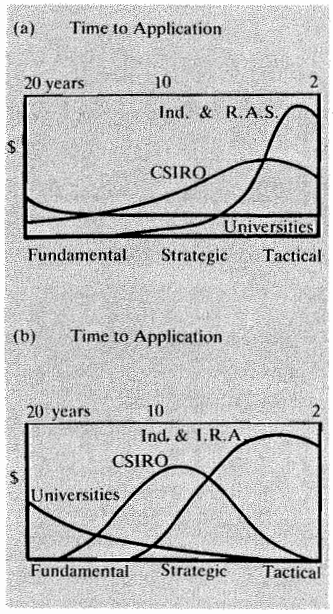
'The new project will be carried out by the research team that achieved the world's first successful experimental vaccination of cattle against ticks,' Dr Boardman said. 'This project against blowfly strike will use the same techniques.

'The aim is to develop a vaccine that will allow the sheep's immune system to react and kill the blowfly larvae as they invade the animal's skin.

Cont. on p.6

Letters to the Editor

The Chairman's column in the June edition of* CoResearch, *prompted Dr David Batten from the Division of Building Research to write to BHP's General Manager Research and Technology, Dr R G Ward. Dr Ward's views were illustrated in the column. Dr Batten refers to two graphs (here reproduced) which reflect Dr Ward's assessment of the present distribution of research in Australia (a) compared with what he believes it should be in the future (b).



Dear Dr Ward,

It was exceedingly refreshing to read your views concerning strategic research (and its pertinence to CSIRO) in the June issue of the Organization's staff newspaper, *CoResearch*. Perhaps the dumb-bell could be a little wider as Dr Wild suggests — or at least non-zero on the left hand side.

Being in the quaint position of having studied both engineering (my very first CSIRO project was sponsored by BHP) and economics (in Sweden), my own feeling is that although public research might best be done in an environment which is remote from money-making activities, the direct and indirect links between science and better economic performance still appear to be under-estimated in Australia. For example, various analyses of successful export industries in Sweden and other OECD nations confirm that a substantial and ongoing commitment to R & D is of fundamental importance. Yet, perhaps because we Australians have been endowed with an apparent abundance of natural resources, we allow ourselves the dangerous privilege of distorting the R & D link. I have tried to summarize these perspectives in the appendix to my recent submission to the ASTEC Review of Public Investment in Australian R & D, a copy of which is enclosed.

I sometimes wonder how I might convince my fellow Australians that nations like Sweden and Switzerland are not merely to be admired, but much more preferably to be understood.

Thank you again for your refreshing comments.

Dr David F Batten
Project Leader
Industrial and Resource Development, Division of Building Research

Dear Editor,

In the debate on Nuclear Winter, Barrie Pittock (*CoResearch* May '85, 280) writes '...the real point of Smith's letter is to make quite false comparisons between the effects of major volcanic eruptions and the possible effects of smoke and dust from nuclear war'.

Therefore before dismissing volcanoes completely from the debate it should be recalled that there is geological evidence that volcanic eruptions have occured in the past in coalfields. Despite this fact life on earth has continued. This scenario has been used by some to explain the disappearance of dinosaurs in the Cretaceous period.

However, as has been stated, we should be concerned with the 'possible' effects of smoke and dust from a nuclear war. This is slightly more difficult as such a nuclear experiment has, fortunately, not been carried out. The Sagan calculation of what this event might be like has caused John Maddox (*Nature* Vol. 308 p.11) to write '...the pardonable simplicity of the calculation of climatic effects, innocent as it is of the feedback mechanisms likely to occur in the real atmosphere is likely to exaggerate the severity of what is called the nuclear winter'.

Since that was written many scientists have pointed out the inadequacies of the Nuclear Winter Model due to uncertainties in important inputs and uncertainties in the physical processes involved. It is not suggested that the choice of inputs has been biased by political rather than scientific convictions.

Some of the uncertainties are:

(i) the amount of smoke generated (this involves the amount of material that would burn);
(ii) where the smoke goes (there are very great uncertainties as to the amount of smoke particles emitted into the atmosphere). This involves questions of dispersion;
(iii) the weather. If a large volume of water vapour is blasted up with the bomb clouds this would increase the chances of washing the atmosphere clean;
(iv) where the bomb goes off.

If the amount of smoke generated is considered in isolation estimates range from 20 million to 650 million tonnes of smoke. If no other factors were to operate to in any way influence or modify this bomb cloud, bomb clouds of below 40 million tonnes would rapidly lose any effectiveness.

When one considers this I feel that there is still further need for contemplation of the so-called 'facts' of nuclear war.

P.R. Smith
Division of Mineral Chemistry

Dear Editor,

I write regarding an article in the May issue *CoResearch* regarding 'China agreement'. The particular aspect of this article that was disappointing was the last sentence which referred to the fact that Professor Yen (not Yan Dongsheng) and Professor Guo were in Australia to attend a symposium on industrial ceramics.

Professors Yen and Guo were in Australia to attend a workshop on transformation toughening of zirconia or PSZ ceramics, organised by the Advanced Materials Laboratory of CSIRO Division of Materials Science.

The workshop was held at Lorne from 14-19th April and was attended by 45 internationally acknowledged experts in the fields of Materials Science from eight countries.

The workshop marked a decade since the initial publication on the mechanism of transformation toughening (Ceramic Steel, *Nature* 258, 703, 1975) by three workers from the Division of Materials Science. Since that time tremendous advances in this field have been achieved both scientifically and technically.

Michael Swain
Division of Materials Science

Dear Editor,

The Chairman's Column (June'85 No. 281) re-tells the story of Ian Wark's request of a researcher to work harder in the afternoon.

This anecdote certainly reflects his high expectations of his workers (and incidentally himself) but I would like to balance it with one of his farsightedness.

About six years ago, when I was in charge of our Social Club's wine-buying group, he came to me and asked 'Any chance of getting Penfold's Grange Hermitage cheap, Mike?' (To the non-wine drinkers amongst us, Grange is a wine for cellaring for at least ten years!)

For a man in his late seventies to be concerned about the quality of his life in his eighties was indeed an inspiration and a lesson to us all.

Michael H Jones
Division of Mineral Chemistry

HEALTH MATTERS

Unit minus one

Gil Barnes retired from CSIRO's OHS Unit on 31 July after several years' involvement with occupational health and safety. Gil's expertise in safety engineering and ergonomics will be sadly missed and the OHS is now looking for a suitable replacement.

Is there agreement?

The CSIRO Health and Safety Committee held a special meeting on July 30 to redraft the OHS agreement between the Organization and staff associations/unions. This will be presented to the Executive and individual unions for consideration. It's hoped an approved OHS agreement can be in place by the end of this year to provide a means of adequately meeting CSIRO's legal and policy obligations.

In the pipeline

The OHS Unit has been working on developing policy and procedures in the areas of first aid, asbestos, smoking in the workplace, accident reporting and prevention of RSI. In developing policy in these areas a number of sources are tapped: state and federal legislation, overseas procedures, local standards and codes as well as Public Service Board and other directives. Through a process of distillation and consultation, the aim is always to provide the most up-to-date standards and procedures, tailored to fit the unique CSIRO working environment.

Around CSIRO in two days

A two-day seminar for safety officers and safety committee members was held in Brisbane in early July. This series of seminars, which cover a wide range of policy and technical subjects, has been judged by those attending to be of great benefit. Repeats are planned for Adelaide in late August and Sydney, Melbourne and Townsville later in the year.

RSI — a repetitious message

Repetition Strain Injury remains an area of great concern. While the incidence of new cases in the admin/keyboard area has remained static, there has been a dramatic increase in cases among technical and scientific keyboard users. Other work groups such as microscopists are also reporting RSI. One-day seminars run in conjunction with the CSIRO personal counsellors have been held in a number of divisions and others have been, or can be, arranged on request. As the number of VDUs increases in each location, so does the size of the 'at risk' group. Factors such as hardware and software selection, ergonomics of the workplace, training, job design and stress are all implicated. Although a policy circular addressing these issues and others is being prepared, all staff are urged to seek advice and assistance from the OHS Unit. Prevention is certainly better (and cheaper) than cure.

Gary Knobel
Manager OHS Unit

OF EQUAL CONCERN

Role and Function of EEO Contact Officers

There are now some 55 EEO contact/liaison officers in the Organization. With few exceptions all major locations have a person on-site who can give advice on EEO issues and who has undertaken to begin a modest education program on EEO principles.

All of them have taken on these extra duties for no financial gain and little recognition, so I would like to take this opportunity to publicly thank them for their enthusiasm and commitment. For those interested in the gender of the appointees, one third are male! This in itself demonstrates the falsity of the view that EEO only is about 'women's issues'.

The EEO contact officers are concerned about discrimination in any of its forms, regardless of who is affected. Some areas in which they have had to advise have involved discrimination on the grounds of age, trade union activity, gender, marital status, race, colour and physical disability.

The officers strive to have a healthy working relationship with the administration in their locations (indeed, many are members of it). This has not been difficult in most cases because the administrators themselves have realized EEO principles aid effective and humane management of staff. Eradicating hidden filters that sift people out of careers or block their progression for non-job related reasons is a joint administrative/EEO contact officer activity which can only benefit all concerned — even if it is a little disruptive in the short term.

Officers cover all classification levels: clerical assistants, librarians, research scientists, scientific officers etc. If your location has not appointed a contact officer then get in touch with the officer at a nearby location or a member of the EEO sub-committee of the Consultative Council.

Another main area of activity for the officers has been to advise people on selection panels on avoiding making unjustified assumptions about applicants. How do you draw up selection criteria which are specifically related to the job to be performed? Are you in a position where you could face an applicant (for a merit promotion or an advertised position) and explain why she or he wasn't successful? Did you treat that person in a way you would be happy with if the same method was applied to you?

I won't begin to pretend these questions have easy answers. We have all been raised with particular viewpoints and most of us would, quite rightly, be upset at any allegatioon of deliberately impeding a person's career for non-job related reasons. This is why the EEO contact officers' task can be so delicate, because their presence should challenge us all to answer the too-often asked questions:

- why didn't we interview *any* male applicants for the typist/CA position?
- why didn't we allow the young females to go on the field trip and what professional experience was denied them as a result?
- what *could* we reasonably do to the buildings to accommodate disabled people?

Of course, the questions go on and on....and while they do the EEO contact officers are fulfilling a necessary role — not as spies but as the focus for thought and hopefully action, initiated and implemented at the local level.

All EEO contact officers have an EEO information folder which you are welcome to consult. Very soon all Divisional secretaries and libraries will also have these folders. If you have any questions about any of these issues please do not hesitate to contact any of these people or me.

Carmel Macpherson
EEO Officer
(062-48 4328)

DIAL-A-COMET

A CSIRO/Telecom phone-in service starts up in three cities on 1 September to keep comet-watchers and the public at large informed about Halley's Comet.

Dr Andrew Pik· at the Division of Radiophysics said there has been considerable interest in the comet, which is now approaching.

The response of the Division was to start negotiations with Telecom to offer a two-and-a-half minute message which people can call in the same way as dial-the-weather and dial-a-prayer.

A new message will be recorded each week by the Division's comet specialist Dr Ray Norris.

He will produce about 24 items on the comet and related phenomena, such as meteor showers and various space missions including the European Space Agency Giotto project.

Giotto will fly into the comet's tail and send photographic signals back to earth via the Parkes Observatory.

The best time for viewing the comet from Australia is likely to be March and April next year.

The cities to get the phone-in service from 1 September are: are Sydney and Brisbane (both 11622) and Melbourne (11613).

Callers from outside these cities should dial the STD area code first.

It's likely Hobart, Adelaide and Perth will have the service later in the year.

***

This month's issue of* CoResearch *contains a readers' questionnaire. We would like to hear your views about your newspaper, so please send the completed form back by 10 September. Thank you.

$15M CSIRO contracts

Australia's space industry on the move

Australian companies have won key space technology contracts including a $15 million CSIRO contract for the construction of antennas for the Australia Telescope.

The Minister for Industry, Technology and Commerce, Senator Button, and the Minister for Science, Mr Jones, in Canberra last month welcomed the letting of the contracts as a major step in the development of an Australian space industry.

The other important space technology contracts, announced by the Overseas Telecommunications Commission, are for the contruction and design of three OTC earth station antennas and for the development of an Intelsat roof-top earth station prototype, specially designed for Australian conditions.

Senator Button and Mr Jones said the contracts would provide Australian companies with vital experience in space technologies and were the result of extremely close co-operation between government bodies, universities and industry.

'By the end of this year, Australia will have spent about $500 million on operational space systems such as Intelsat and Aussat, but relatively little of the equipment associated with these systems has been manufactured in Australia,' Senator Button said.

'These new contracts will go a long way towards changing this situation.'

Senator Button and Mr Jones also announced that CSIRO and an Australian company, Macdonald Wagner, were moving towards the formation of a joint venture company to market Australian antenna designs on the international market, particularly in the Asian and Pacific regions. The company is expected to be set up before the end of the year.

The announcement of the space technology contracts follows the release in June of the Madigan report on A Space Policy for Australia. The report urged the development of a space industry and identified small and medium-sized ground receiving stations as providing the best opportunities for Australian industry.

CSIRO has awarded the Australia Telescope antenna contract to the Brisbane-based company, Evans Deakin Industries Ltd. The contract is for the construction of seven 22-metre diameter antennas.

Senator Button said Evans Deakin was normally involved in shipbuilding and this contract represented an important re-orientation of Australian industry.

The Australia Telescope, which is due to be completed for the Bicentennial in 1988, will be an array of antennas in NSW — six at Culgoora, one at Siding Spring and the Organization's existing radiotelescope at Parkes.

'When operating as one they simulate a giant telescope 300 km in diameter - capable of probing the far reaches of our universe in fine detail or mapping broad fields of view,' Mr Jones said. 'It is like having a lens with a zoom ratio of 10 000 to 1.'

The 18-metre diameter OTC antennas will be designed by Macdonald Wagner, in consultation with the Division of Radiophysics and will be built by Johns Perry Ltd of South Australia. The earth station antennas, which are worth about $3 million, will be used to transmit international television coverage of the America's Cup defence.

The $2.5 million OTC contract to develop roof-top earth stations for the Intelsat Business Services network has been awarded to a consortium, headed by Codan Pty Ltd of Adelaide and comprising the Division of Radiophysics, the University of Sydney, the South Australian Institute of Technology and MITEC Pty Ltd (University of Queensland).

Senator Button said Australia could be paying up to $500 million a year for space technology by 1995. The development of expertise in space technology could also open up 'immense export possibilities.'

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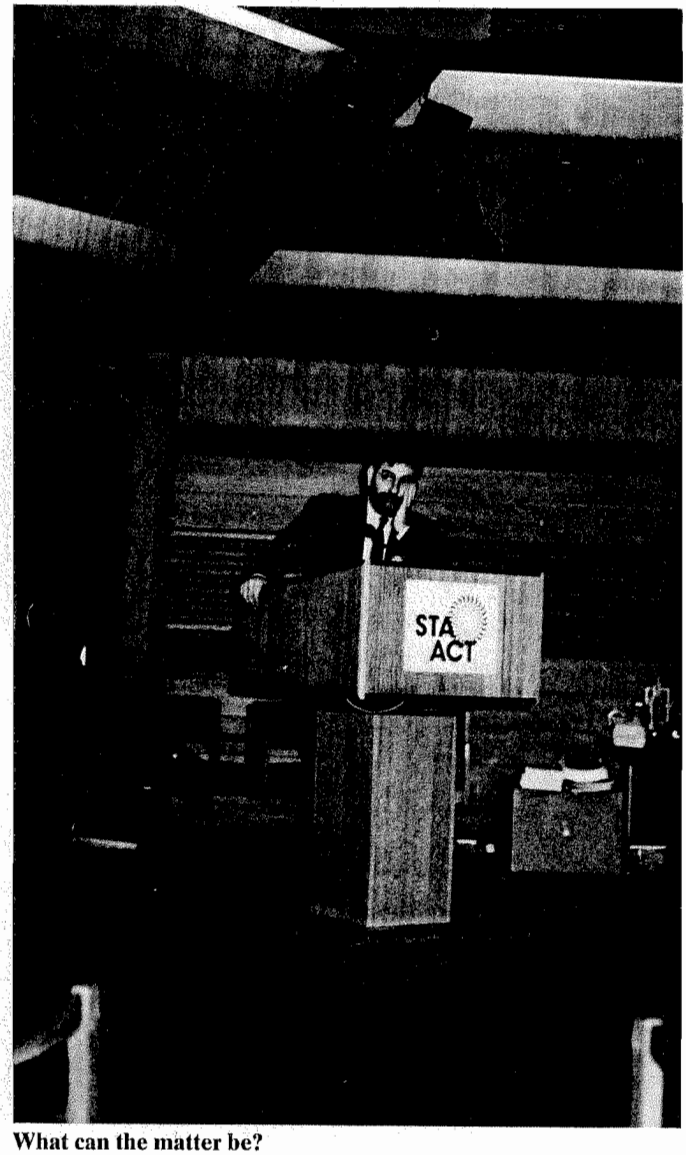
There is no Chairman's column this month, because of Dr Wild's overseas trip.



What can the matter be?

Turn to p. 8 for the answer.

Briefly...

Electronics whiz from the Division of Soils, Mr Cliff Gurr, is hard at work on his innovative 'pee meter' and hopes to have completed the final design in a couple of months. The catchily-namely pee meter will automatically measure the amount of liquid flowing into a catching vessel. The impetus for inventing the device came from the requirements of renal patients, but the Division sees a number of non-medical applications. *CoResearch* will have a full report on pee meter developments in the near future.

***

Dr David Batten from the Division of Building Research has been invited to lecture on his research at six universities and research institutes in the United States and New Zealand during his current trip. He will also lead a workshop in Wellington on the computer modelling of world and Pacific trade in forest products. In addition Dr Batten is a member of the organizing committees for the 5th International Conference on Mathematical Modelling and the 9th Pacific Regional Science Conference, and will chair sessions and present invited papers at each.

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CSIRO's Australian National Animal Health Laboratory (ANAHL) project has received the Institute of Engineers (Victorian Chapter) Award for Engineering Excellence. The Laboratory also received the Concrete Institute's Award for Excellence.

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A representative from the Division of Plant Industry was victorious in this year's CSIRO Fun Run at Black Mountain. Twenty-one year old Peter Berney knocked a full one and a half minutes off the record, with a winning time of 18 mins 8.7 secs. Second was a non-CSIRO entrant, Ian Prosser, at 20 mins 6.8 secs, third was Allen Miller, also from Plant Industry, with a time of 21 mins 26.2 secs, while Mike Sully from the Division of Environmental Mechanics came in fourth.

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Churchill fellow returns from study tour

Dr Keith Garzoli, Greenhouse Technology Project Leader at the Centre for Irrigation Research at Griffith, recently returned from a three month study tour of Europe and North America.

The tour was the result of his being awarded a Winston Churchill Fellowship to study recent developments in greenhouse technology and the use of solar energy for grain and fruit drying.

Dr Grazoli attended the symposium of Greenhouse Climate and its Control in the Netherlands and the International Solar Energy Society Conference 'Intersol 85' in Canada. He also visited centres of research in seven other European countries and the USA.

In the field of greenhouse technology he found the emphasis has shifted from the recent concentration on methods of reducing energy requirements for greenhouse climate control following the steep increase in oil prices that took place during the 1970's.

With the development of a number of energy conservation techniques, most current research is aimed at evaluating effects on plant growth, and their suitability in different climates.

Dr Garzoli also found that there has been a striking increase in the use of computers for greenhouse climate control, with about 5000 commercial nurseries, representing About 50 per cent of the total now using this technology in the Netherlands alone.

Most of the research into solar grain drying that has been carried out in Northern Europe and Canada has been found to be not cost effective at current energy prices in their local climates, but it appears very promising when applied in Africa and Latin America. Work in the US is preceding in a similar direction to that being pursued here; in both cases the prospects for economic viability are excellent, with the application of the technology to domestic and commercial space heating close to realization, provided that funds for the necessary research and development are maintained.

While in Montreal, Dr Garzoli learned he had been awarded a PhD for his thesis 'Solar Greenhouse Design and Performance'.

Women in Science series

Dr Sarah Ryan, left, and Ms Maria Jeppesen, conduct a Women in Science Seminar at Campbell High School.

Increased participation by girls in science and mathematics at school and greater consideration of careers in these fields later are the aims of CSIRO's Women in Science Project which is being co-ordinated in Canberra by Mr Ross Kingsland.

Mr Kingsland, a science teacher at Stirling College in Canberra, is on a year's secondment to CSIRO to organize a number of projects involving science and education.

More than 35 CSIRO women scientists and technical assistants have volunteered to go into schools to speak to girls in Years 9 and 10 (aged 14-16).

The girls are told how to work towards a scientific career, what it might entail and the rewards to be gained.

Students are free to comment and ask questions.

At the second seminar, at Campbell High School in Canberra, Dr Sarah Ryan and Ms Maria Jeppesen from the Division of Plant Industry, got the girls talking about their future plans, and almost without exception they said they were keen to go on to further education — and a substantial proportion said they would opt for science-oriented courses.

A number of schools in Canberra are participating in the scheme.

Mr Kingsland said the project is being 'road tested' in Canberra and will be introduced into other states in the future.

Chem Physics farewells Sandy Mathieson

Dr Sandy Mathieson and his wife Lois at the Divisional function to mark his retirement.

Dr A McL (Sandy) Mathieson, leader of the X-ray Diffraction Section of the Division of Chemical Physics, retired on 16 July.

Dr Mathieson graduated at the University of Aberdeen in 1942, and while working for his PhD in Professor Moneath Robertson's laboratory in Glasgow, carried through one of the first three-dimensional analyses of structure in an organic crystal.

He joined the Chemical Physics Section of the CSIR Division of Industrial Chemistry in 1947 and started on a distinguished career in structural chemistry.

His interests have been very wide, but his work on plant alkaloids is particularly well known to chemists. To physicists he is best known for his contributions to the techniques of single-crystal X-ray structure analysis, and for the design of diffraction instruments.

Dr Mathieson is a gifted teacher and has trained the leaders of nearly all of the structure analytical laboratories in Australia.

He is a Fellow of the Australian Academy of Science and has held several important offices in the International Union of Crystallography, including membership of the Executive.

In 1978-80 he was Acting Chief of the Division of Chemical Physics in the 20-month interregnum between the retirement of Dr Lloyd Rees and the appointment of the present Chief, Dr Lew Chadderton.

At a retirement function in the Division Dr Mathieson was presented with a memento of his earliest days in CSIR - the rotating anode from a high-intensity X-ray generator which was constructed for him in the Chemical Physics workshop not long after his arrival, and which remained in service for the next 25 years.

A special function also took place on 30 July, attempted by more than 100 of his colleagues and friends.

A special issue of *The Australian Journal of Physics* was presented to him, containing articles on crystallography which had been contributed by colleagues, both local and overseas.

Dr Mathieson is currently starting a new line of research in X-ray crystallography in the Department of Physical Chemistry, La Trobe University.

Ron Hinde bows out

A well-known and well-loved servant of CSIRO, Mr Ron Hinde, retired from his job as Site Technical Secretary and IEER North Ryde on Thursday 11 July.

Mr Hinde spent 16 years in the chemical industry ending up as research manager for Monsanto Chemicals before joining CSIRO in 1967. His first job was as Assistant Secretary (Industrial and Physical Sciences) at Headquarters which was then still in Melbourne.

When HQ moved to Canberra in 1970, Mr Hinde transferred to the Division of Applied Chemistry as Assistant to the Chief, Dr Sefton Homann.

Three years later, he took a similar position in the newly formed Division of Chemical Technology. This was followed in 1979 by a move to the Institute of Energy and Earth Resources at North Ryde, Sydney, where he was initially Site Secretary and then Site Technical Secretary.

In that capacity, he was Secretary of the Site Management Committee until 1982, after which he remained on the Committee as advisor in matters concerning the scientific and technical organization of the Site. He was also keenly interested in safety and served as Chairman of the Site Safety Committee, and represented CSIRO on the Chemical Standards Board.

An active member of the CSIRO Officers' Association, he has been editor of the OA Bulletin for the last couple of years.

Colleagues say he was also well-known for his social activities, particularly the songs he wrote and performed for the Christmas review when he was with Chemical Technology, and his membership of the Division's golf team and part in the APPITA Golf Days.

In his retirement, Mr Hinde hopes to get in more golf and to indulge his other great interest, as a member of a couple of theatre organ societies. He says his ambition is to play the organ at the Marrickville Town Hall.

CoResearch has been leaked this photograph taken at a secret CSIRO training camp in bushland outside Canberra. The photograph shows former Corporate Secretary, Gratton Wilson, left, with an identified female. According to sources close to the Executive and contrary to official statements, Mr Wilson has not retired but is on a special mission to devise radical new means of increasing CSIRO's funding.

Ms Anne Frodsham is the new Scientific Liaison Officer for the Division of Entomology. She has come from the Division of Horticultural Research where she was Information Officer and, most recently, Scientific Assistant to the Chief.

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OTC engineer **Mr Garry Hausfeld** has been stationed at the Division of Radiophysics for one year to work with both organizations on feed-system development and overall antenna testing for three OTC earth station antennas.

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Mr Gerry Holt has retired from the Division of Chemical and Wood Technology after 35 years with the Organization. Mr Holt was a Senior Technical Officer.

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Mr Kien Thanh Hua has joined the Division of Radiophysics as an Experimental Officer. His appointment is for three years and he will be involved with signal and data processing.

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Dr Penny Edwards has joined the Division of Entomology's Canberra laboratories after five years working on the dung beetle project at Pretoria in South Africa.

Mr Brian Bartlett is the first of three Experimental Scientists to join the Division of Manufacturing Technology over the next few months. He has transferred from the Division of Atmospheric Research to work with Dr Ken Crane on the research and development of automated manufacturing systems and industrial lasers.

***

Mr Wolfgang Korth has joined the Division of Irrigation Research as an Experimental Officer. He has taken over from **Mr Leith Higgins** in the Chemical Laboratory.

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Beattie Steel leaves Applied Physics

More than 40 years after starting work with the Division of Applied Physics, Dr W H (Beattie) Steel has retired.

Dr Steel graduated from the University of Melbourne with honours in mathematics and natural philosophy in 1941 and, after two years with AWA, joined the Physics section of what was then the National Standards Laboratory.

In 1950, he went to Paris on a CSIRO studentship, and worked at the Institut d'Optique.

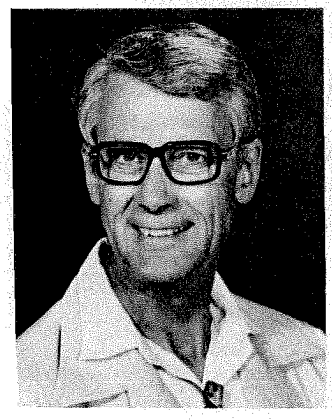
His work on the application of Fourier transform methods to the diffraction theorgy of optical images gained immediate recognition in the United States.

He was awarded the Doctorate d'Etat with 'mention tres honorable' from the University of Paris in just over two years.

After returning from Paris, Dr Steel continued his work on the Fourier image theory and at the same time set up the major optical testing facilities at the Division of Applied Physics.

He also spent a year as a visiting scientist at the Air Force Cambridge Research Laboratories, where he made major contributions to the theory of Fourier spectroscopy.

During this period, he made one of his most important contributions — a general theory of interference — first outlined in his article in 'Progress in Optics' and then discussed in more detail in his monograph 'Interferometry', published by the Cambridge University Press.



This book, which is regarded as a classic, has just been reissued in a revised edition.

Dr Steel was one of the first to realise the potential of the laser as a source of coherent light.

He was also responsible for starting work in two new areas: optical image processing and holography.

As part of his work on industrial problems, he was a member of four committees of the International Commission for Uniform Methods of Sugar Analysis.

He also tackled the problem of measurement of the shape of soft contact lenses, for which he developed a microscope featuring an optical system with near-zero scattered light.

He was Chairman of the Australian National Committee for Optics from 1958 to 1972 and again from 1976 to 1978, and was primarily responsible for the formation of the Australian Optical Society in 1983. He was elected foundation president of this organization.

In addition, he has had a long association with the International Commission for Optics, dating back to 1956, and has served on its Bureau for nine years, as Vice-President from 1969 to 1972 and as President from 1972 to 1975.

Dr Steel's contributions to optics were recognized at the international level as far back as 1964 by the Optical Society of America, to which he was elected a fellow.

He was also awarded the Mees medal, which is given by the Society every two years to a person 'who exemplifies the thought that optics transcends all boundaries — interdisciplinary and international'.

His work has contributed to the standing the Division of Applied Physics now enjoys as one of the leading centres of optics in the world.

Dr P. Hariharan

Mr Gerry Lawson from the Division of Animal Health is retiring from the Experiment Station at Maribyrnong.

Mr Lawson started work at Parkville in 1961 on the large pleuropneumonia experiments.

In 1963, the Maribyrnong site was purchased and when the first live cattle sheds were built, Mr Lawson became Manager.

He continued in this role until Mr Alex Cameron was appointed and Mr Lawson became Deputy Manager.

Colleagues say his ability with livestock, his perception of the needs of the animals and the experimenters and his unfailing good nature have been greatly appreciated during his time with the Division.

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Mr John Adeney from the Division of Groundwater Research has become the first Australian to be awarded the Wedgwood International Seminar Scholarship grant.

The Scholarship will enable Mr Adeney to attend a ceramics conference at the University of Keele late this month and to carry out research at the Wedgwood Museum, Barlastn, and the City Museum and Art Gallery in Staffordshire.

He began collecting Wedgwood while attending a Residue Chemists Conference in Adelaide in 1974, and since then he has collected mainly basaltes made by the company and other contemporary English and European potters.

Basaltes are dark-coloured stonewares, coloured by the presence of manganese dioxide and feric oxide in the clay body.

In 1982, in conjunction with Mr Alan Landis of Sydney, Mr Adeney presented a paper at the Wedgwood International Seminar on 'Wedgwood made for Australia'.

The paper was subsequently presented to the members of the Wedgwood Society of Australia in Melbourne and Sydney.

Mr Adeney is continuing research in this area, particularly in identifying botanical specimens which are sometimes incorrectly painted on certain dishes.

The Scholarship will enable inspection of pottery items in museums and private collections which are not on general display.

He is particularly interested in the 1760s version of technology transfer - how the rose and crown ornamental lathe came to be used in the Wedgwood factory and the different designs produced by the lathe.

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Dr Peter Self has taken up a three-year appointment with the Division of Soils as an electron microscopist in mineralogy.

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Dr Tom Spurling returns to the Division of Applied Organic Chemistry this month, after completing his six month secondment As senior private secretary to the Minister for Resources and Energy, **Senator Gareth Evans**.

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Mr Stuart McClure has joined the Division of Soils as a Technical Officer.

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Ms Karen Wood has been appointed information/communications officer for the Centre for Irrigation Research.

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Dr Tjeerd Talsma of the Division of Forest Research will now spend much of his time at the Division of Soils, where he plans to develop co-operative work with other soil physicists in the area of soil-water relations.

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Mr Ross Robson has joined **Dr Ian Willett** in the soil chemistry section at the Division of Soils. He comes from the Centre for Irrigation Research at Griffith where he was involved in laboratory analysis of soil, water and plants, and also assisted in field work.

ANAHL answers critics

Role in halting Victorian fowl plague crucial

In the 3 July* Countrywide *program on the ABC, Dr Graeme Laver from the Australian National University's John Curtin School of Medical Research strongly criticised CSIRO's Australian National Animal Health Laboratory following the fowl plague scare. ANAHL's Scientific Services Officer, Ms Kath Perry, replies:

Despite rumours to the contrary from one of ANAHL's oldest critics (we would have missed him if he hadn't had a go), the Lab was deeply involved in the diagnosis and control of the recent fowl plague outbreak near Bendigo in Victoria.

This was the first exotic disease outbreak that ANAHL had been called on to help fight, and was certainly a very serious matter. A similar outbreak in the United States had recently resulted in the slaughter of 17 million birds and had cost the Government $60 million in compensation payments alone.

ANAHL's main function is to provide secure facilities and expertise to the disease control authorities in the states to help them in the diagnosis and control of exotic, or foreign, diseases of livestock.

Accordingly, the Victorian Department of Agriculture called on ANAHL's assistance on 31 May, when it realized it was probably dealing with an exotic poultry disease at Bendigo.

ANAHL was asked to:

a. confirm the Department's tentative diagnosis of fowl plague;
b. determine whether the avian influenza virus isolated was pathogenic enough to cause the deaths observed (if it was a low-virulence strain, it would be necessary to look further for the cause of death);
c. produce large quantities of safe diagnostic reagents for use in checking for further signs of the disease at laboratories throughout the country;
d. provide diagnostic assistance, where required, in monitoring the spread of the disease and the effectiveness of control measures.

ANAHL's secure facilities are needed for this work to ensure it can be done safely, without risking the further spread of the disease.

The Laboratory received a sample of virus on 31 May and testing began immediately, which enabled us to confirm, on 3 June, the Department's diagnosis of fowl plague.

As requested, the pathogenicity of the virus also was tested and was found to be very pathogenic for chickens and turkeys, but non-pathogenic in ducks.

Diagnostic reagents were prepared from the outbreak strain, inactivated and tested to ensure no viable virus remained in them. This work was completed on 15 June, and reagents were sent out to the five states which had requested them.

Meanwhile, diagnostic work was carried out at ANAHL on further samples from the Bendigo area and on samples from suspected outbreaks in South Australia and Queensland. These fortunately turned out to be 'false alarms'.

Other areas of involvement of the Laboratory included advice to the Department on the decontamination of the Bendigo Laboratory and continuing experimental work on the mechanism of transmission of the virus. Results of the latter obtained so far suggest that close physical contact between birds may be required for transmission to occur.

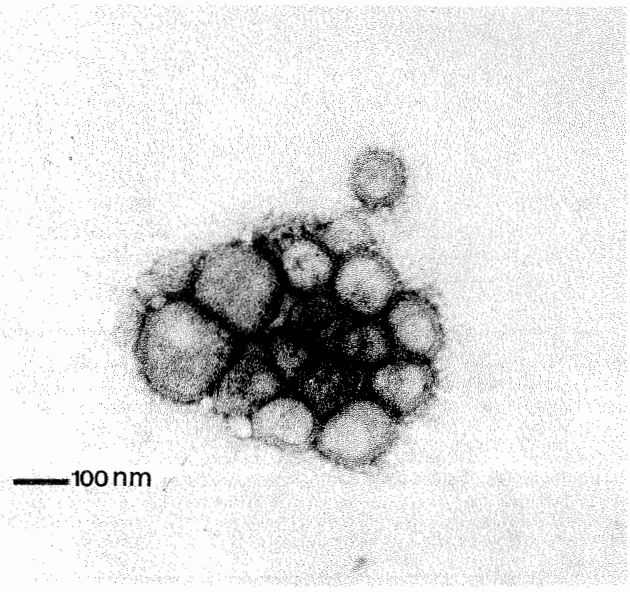
The one thing we were not confident of being able to do was subtype the virus, as we don't have access to the full range of diagnostic reagents. So we sent virus samples overseas for subtyping and at the same time obtained a limited range of reagents from the Commonwealth Serum Laboratories (CSL) in Melbourne, which is the Australian World Health Organization reference centre for human influenza.

As it happened, there were no complicating factors and, perhaps fortuitously, our scientists were able to subtype the virus using these reagents, obtaining an accurate result on 8 June, ahead of the results from overseas which arrived on the 9th and 10th.

While the subtype of influenza virus involved is irrelevant to the control and eradication of the fowl plague outbreak, subtyping may help in determining the source of the outbreak. However, in view of overseas experience with this disease, it seems unlikely that the source will ever be positively identified.

ANAHL's involvement will continue thoughout the Department's surveillance operation, carried out to demonstrate complete freedom from the disease, and expected to last several more weeks.

Further safe, diagnostic reagents are also being prepared and will be despatched to state laboratories for use in any future suspected outbreak.



Fowl plague viruses involved in the recent outbreak. Immune electron microscopy using a Hitachi H600 scanning/transmission EM formed part of the diagnostic work carried out on the virus at ANAHL.

BLOWFLY BATTLE

Cont. from p.1

'As a blowfly maggot eats into the skin of a vaccinated sheep it will take in lethal amounts of antibodies. These antibodies should attack the intestine of the maggot.

'The experimental tick vaccine for cattle works in this way and I hope the techniques developed in that program will lead to the development of a successful vaccine for sheep against the blowfly.'

The new program was set up following a gift from Mr Les Bett, a retired grazier living in Victoria.

In his letter offering to support research into blowfly control, Mr Bett said he would give $100 000 a year 'until the fly has been conquered'.

'I have a half share in Portland Downs, an 80 000 hectare merino stud at Isisford in central Queensland, and this property is immediately available for field studies,' Mr Bett said.

'I have always been anxious to do whatever I could for the sheep industry and I sincerely hope that our combined efforts against the blowfly will eventually be rewarded.'

'This project would not be possible without Mr Bett's great generosity,' Dr Boardman said.

'The research team have considerable expertise in this area and the prospects of success are high.

'We believe it could take from three to five years to show whether a vaccine is feasible and to isolate the antigens needed to stimulate the sheep's immune system.'

The Division of Animal Health is researching the vaccination of sheep against a bacteria found on the skin that makes the animal susceptible to blowfly strike. Dr Boardman said the work in the two divisions was complementary.

The Division of Entomology is also looking at methods to combat the sheep blowfly. The Division has bred mutant blowflies designed to breed with wild flies conferring a genetic death on their offspring.

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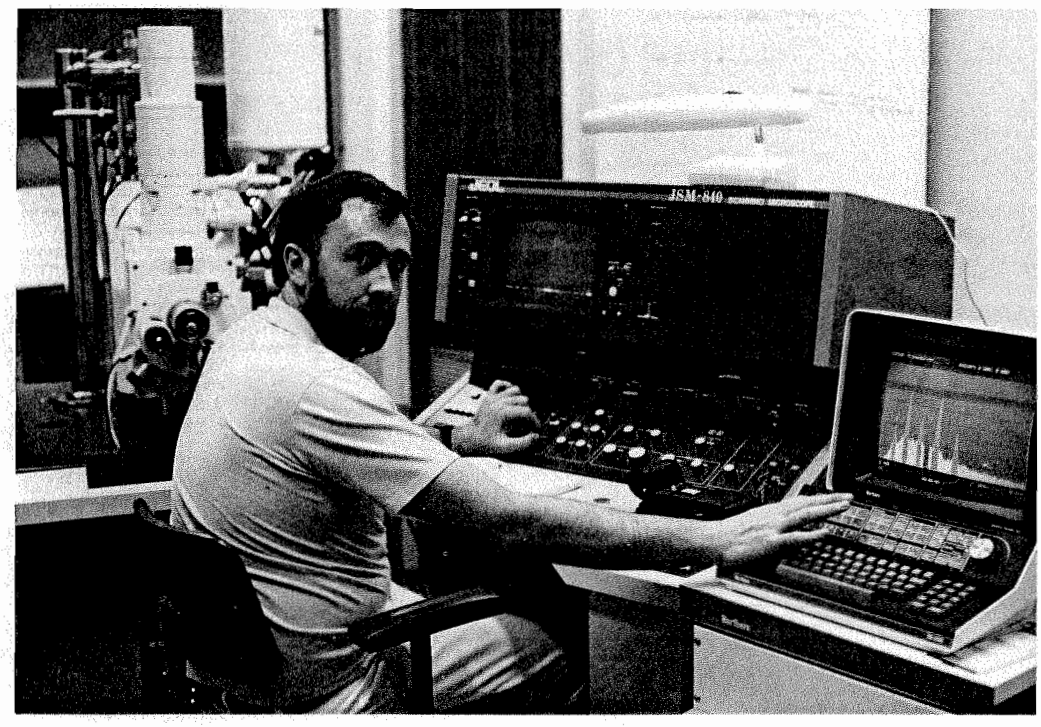
CSIRO Chairman, Dr Paul Wild, has accepted an invitation to become the third patron of Australian Skeptics.

The organization exists to scientifically examine psychic and similar claims.

Dr Wild joins Mr Philip Adams and Mr Dick Smith as patron.



ANAHL's electron microscopist, Dr Alex Hyatt, at the Laboratory's new JEOL 840 scanning electron microscope. This state-of-the-art instrument which has just been installed will be used in ANAHL's diagnostic work.

External communication report

Responses critical and constructive

The independent report on CSIRO's external communication has attracted a range of responses from within the Organization.

The report, outlined in the last issue of *CoResearch*, was released for comment from Chiefs and staff in early July, and 45 replies were received by 31 July.

Reactions were generally supportive of the aims of the report, however a number of individual concerns were raised.

All responses were to be considered at the 15 August Executive meeting and approved recommendations were expected to be implemented as quickly as possible. Modifications to some of the recommendations based on the responses was likely.

Following is a sample of comments from among the 45 responses to the report:

Dr Lex Blakey, Chief of the Division of Building Research, found the whole matter of external communication 'frustrating'.

'I believe that Building Research has long held a lead in CSIRO in the amount of effort that we have put into external communications and the achievements we have had,' he said.

'It had been characterized by outsiders as the best public relations exercise in CSIRO.'

However, he said as a result of criticism from the Executive he had been forced to cut back this activity substantially.

He said while endorsing the general thrust of the recommendations, he believed 'too much emphasis is being given to the role of the Director, Information and Public Communication, and not enough towards getting the Divisions to get their acts together.'

'Each Division is communicating with a different industry or outside group and this means that there can be no overall blanket arrangement which will work in every case. To move towards any central control would be completely destructive.'

Dr Bob Brown, Chief of the Division of Manufacturing Technology, was among respondents who voiced criticism of volume two of the report, the consultants' survey, saying it seemed unnecessary because it was already well-known that a broad sweep of industry and the outside world had little knowledge, or appreciation, of CSIRO's capabilities.

He went on to say 'the key matter in good communication is to ensure that each element of CSIRO performs effectively with its "clientele". Good performance will not go unnoticed and communication of that performance can frequently be achieved by methods other than CSIRO channels — ie. by other people — and this can certainly be one of the best ways of improving an image.'

Technology transfer

He also pointed to the danger of further centralization of external communication activities and noted the halting of 'very effective and publicly visible technology transfer activities by the Division of Building Research' as an example of individual sector communications in danger of being crushed 'by the possible centralist application of many of the recommendations of the review'.

In a lengthy response, Dr Ian White, Acting Chief of the Division of Environmental Mechanics was critical of the report, saying It often appeared 'muddle-headed' and confused'.

He said it didn't take into account the different character of information appropriate to each sector.

'CSIRO's communication performance is not uniformly bad across all sectors and its strengths and weaknesses needed to be Identified if the review was to have credibility.'

He criticised the consultants' survey, saying it invited comment from 'sometimes irrelevant and uninformed sources'.

However, the Chief of the Division of Tropical Crops and Pastures, Dr Ted Henzell said he regarded the consultants' report as far more important than the review report itself, because of the message it contained.

'(The) consultants' survey reveals a marked lack of confidence in the value of CSIRO to the community on the part of industry and politicians.

'CSIRO must take urgent action to restore its reputation for being useful and user friendly,' he said.

He also expressed concern that too much concentration on public relations would encourage scientists to make only cosmetic changes in response to community dissatisfaction with the Organization's performance.

'It seems appropriate for the senior management of CSIRO to develop higher level contacts with community decision makers and this aspect has been well addressed by the Review Committee,' he said.

He, among other respondents, commented on the need for the report to be implemented and not end up like some of its predecessors — 'failed through lack of action or follow-up'.

Mr George Fisher, Consumer Liaison Officer at the Division of Food Research, had little argument with the list of review recommendations, although he noted that there was no mention of CSIRO's responsibility to communicate other than its own research results.

'I have been making this point ever since I became involved in consumer liaison in the early 1970s,' he said.

'It must be obvious to all that much work is done in disseminating scientific and technical knowledge that does not necessarily emanate from the Organization's own research programs.'

He welcomed recommendation 26, which would re-define SSO classification criteria 'to enable excellence in communication to be recognized and rewarded by promotion to the highest levels...'

He said 'there must be quite a few SSOs who are fully occupied with communicating with industry and the community at large but who have no assistance and thus no managerial component to their duties. They are at a serious disadvantage so far as promotion goes.'

General Manager Personnel, Mr Kevin Thrift, confined his comments to recommendations involving personnel policy.

He said he agreed with recommendations 24, 25 and 28 which seek to further encourage excellence in communication through personnel policy.

However, he raised some concerns about recommendations 26 and 27 (ie. redefinition of SSO classification criteria, and the requirement for communication skills and knowledge of communication techniques to form part of selection criteria).

'(It's) quite clear that the key factor underpinning promotion to the most senior levels of SSO is responsibility for managing important scientific activities or functions. At SSO5 a significant policy role is also appropriate,' he said.

Communication excellence

'Excellence in communication is implicit in these roles but alone will not satisfy the criteria.'

Sirotech's Manager, Technology Communication, Mr Lionel Wisbey, acknowledged that the review excluded technology transfer from its terms of reference, but he maintained it should have been included.

'It is our premise that the transfer of technology must be achieved for CSIRO to fulfil its responsibilities and that all communication activities should have this as their prime objective,' he said.

He said while recognising the importance of raising community awareness, public relations and the support of education and other research activities aspects, these were really just part of the Organization's administrative needs or were support activities to the final goal of technology transfer.

CSIRO's professional communicators were generally in agreement with the findings and recommendations of the report.

Co-ordinator of the Community Interests Group, Dr Michael Dack, said the recommendations were 'both sensible and achievable'.

He pointed to recommendation 20 (the establishment of a $0.5M fund in the first year, increasing to $1M in the second year and $1.5M in the third and subsequent years, to provide subsidies to Divisions and Units for communication activities) as the most crucial.

'Divisions will take neither the Executive nor the Director of Information and Public Communication seriously if the Executive rejects this proposal,' he said.

At the Communicators Advisory Team meeting of 22 July, members 'enthusiastically supported both the letter and spirit of the report'.

CAT believes it has been successful 'in raising the level of debate on communication in CSIRO to a position where real change will take place.'

'Implementation of the report's recommendations will mean that most of CAT's objectives have been met.' In anticipation of this, the group was disbanded on 22 July.

Senior Media Liaison Officer, Mr Richard Eckersley, said while he applauded the broad thrust of the report, he believed there was an unduly negative impression of CSIRO's performance in external communications.

He said the report does not acknowledge adequately the steps CSIRO has taken over the past two years to improve its effectiveness in communication.

'The report of the committee reviewing CSIRO's external communication activities is a pleasure in the communication goals and standards it has set the Organization; it is a disappointment in the impression it gives that CSIRO has done nothing to address the problems the committee has identified,' he said.

26-30 August 1985

CSIRO staff urged to support ANZAAS Congress

A letter urging strong CSIRO attendance at the ANZAAS Congress in Melbourne this month has been sent to all Division Chiefs by Congress Director Professor John Swan.

The Congress, this year with the theme, 'Festival of Science', is being held on 26-30 August.

The letter points out that high attendance levels could have important consequences for the standing of science in the community.

'We believe that success of the Festival of Science, measured in terms of public participation in the Science Congress, is of great importance to the long-term health of science in Australia,' said Professor Swan in his letter.

'Government funding of research is declining, and support by private industry remains low by world standards.

'There are still no votes in science — but we hope to help change that perception,' he said.

'We have had strong support from government and industry, but if audiences are thin we expect that all the current prejudices against science and scientists will be reinforced to the further detriment of research in Australia.

Professor Swan asked the Chiefs to urge their colleagues, along with their friends and relatives, to attend one or more sessions.

'CSIRO has a great deal at stake in the Science Congress. Lack of interest could be read as a signal to the government to introduce further cuts in research funding,' he said.

'We want to show the media and the politicians that there is indeed solid community interest in science, technology and the related social sciences.'

Festival of Science executive secretary, Mr John Thompson, emphasised the message in the letter by saying 'house full' signs at Festival sessions will provide a good public image.

'It's important this event should be seen as having wide public support,' he said.

'We need the help of CSIRO staff to make this happen.'

This year's ANZAAS Congress forms part of the 'Festival of Science' designed as a high-profile event aimed at all members of the community.

Congress chairman, Professor John Swan, says he wants both scientific and non-scientific people to take part in what is described as an 'information market'.

'Like farmers on market day, top scientists from Australia, New Zealand and around the world will be showing their wares to all comers — to other scientists sharing their disciplines, to scientists in other specialities and to the public in general.'

This year, it won't be necessary to register for whole or part of the conference, and attendance at the 130 sessions will be

Information mart

through the purchase of individual tickets (costing $8 each, or $5 for students).

Several sessions, such as the ANZAAS history workshop, will be free.

The Festival has four segments: the 55th Congress at Monash University; the Community Science and Technology program at about 100 venues around Melbourne; Youth ANZAAS, involving more than 1500 secondary school students from Victoria, other States, New Zealand and neighbouring countries in a week of free scientific activities at Dallas Brooks Hall; and the ASEAN Interaction for invited participants from ASEAN countries.

President of ANZAAS, Sir Edmund Hillary, will deliver the Presidential Address on Monday evening, 26 August.

Wool industry benefits from ATLAS

Another step towards the selling of wool 'sight unseen' was taken on 30 May with the signing of an agreement for the manufacture of ATLAS, a CSIRO-developed instrument for measuring the length and strength of samples from wool bales.

ATLAS (Automatic Tester for Length and Strength) was developed by the Division of Textile Physics with funding from Wool Research Trust Funds.

It will be manufactured by a Sydney engineering firm, KEL Engineering Laboratories of Asquith, as part of a four-way agreement between CSIRO, KEL Engineering, the Australian Wool Testing Authority Ltd and the Australian Wool Corporation.

The Assistant Chief of the Division, Dr Murray Andrews, said ATLAS was a key step in the development of 'objective measurement' technology, aimed at saving the wool industry millions of dollars by making it unnecessary for wool to be displayed at the point of sale.

'Instruments such as ATLAS make it easier for wool buyers to make complex judgements about the suitability of wool fibres for mill requirements,' he said. 'The eventual aim is to provide a comprehensive profile of wool qualities which will enable buyers to make these judgements 'sight unseen'.

'Transfer of the technology from CSIRO to KEL Engineering has been assisted by involving a potential customer, AWTA, in the agreement and also by involving the Australian Wool Corporation, which has granted research funds for technology transfer,' Dr Andrews said.

ATLAS Project Manager, Mr Richard Thompson, and operator Ms Beres White, with a CSIRO prototype now in full-time use at AWTA Ltd, Guildford, Sydney.

Sirotech assisted in the negotiations.

ATLAS is computer-controlled and uses photoelectric cells, an electrically-driven stretching mechanism, conveyor belts, air jets and sensitive balances to measure the length and strength of a 'bundle' of wool fibres every six seconds.

The system aims to eliminate the uncertainty in buying wool. At present, length, strength and the position of break of wool staples are estimated by the buyer, often with considerable error.

Basic work at the Division had shown that these parameters were too important to be estimated in this manner.

Two prototypes built by the Division of Textile Physics are already operating at the Guildford Laboratories of AWTA Ltd. They have enabled a reduction of $5.50 in test charges in anticipation of the savings expected from ATLAS.

Staple length and staple strength measurements have also been the subject of a project called TEAM (Trials Evaluating Additional Measurments). Earlier this year, AWTA Ltd, The Australia Wool Corporation and the Division of Textile Physics announced the successful completion of the operational phase of this project which was funded by Australian wool growers.

The TEAM project involved co-operation by 14 combing mills in nine countries, as well as 26 Australian wool-buying firms and 55 brokers and private treaty merchants: the main purpose was to encourage the wool manufacturing industry to use staple length and staple strength measurements.

The International Wool Textile organization welcomed the TEAM project's final report which will assist combers of Australian wool to benefit from the new measurements.

'BRIAN' gives reef maps at bargain prices

A CSIRO software package named 'BRIAN' has enabled production of maps for the Great Barrier Reef Marine Park Authority for $250 000, compared with $21 million over 10 years using conventional techniques.

BRIAN, the Barrier Reef Image ANalysis system, was developed for the Authority by Dr David Jupp of the Division of Water and Land Resources in Canberra.

It enables rapid and inexpensive mapping of shallow marine areas on a very large scale, using data from the American LANDSAT satellites.

Announcing the technique, the Minister for Science, Mr Barry Jones, said BRIAN had tremendous significance for the Marine Park Authority's work in monitoring and protecting the Reef.

'It also has significance for mapping islands and shallow water areas throughout the Pacific and ASEAN regions, and is the latest in a series of Australian successes in developing software to analyse LANDSAT data,' Mr Jones said.

Mr Jones announced BRIAN on 16 July during an address at the Chisholm Institute of Technology, where he opened a three-day symposium on computer image processing.

He said a successful pilot project using BRIAN had already been completed in Papua New Guinea, and interest in the technique has been shown by government authorities in Indonesia, the Philippines, Malaysia, Thailand, the Republic of the Maldives, Fiji and the Solomon Islands.

'A program now developed for use on microcomputers, 'MICRO-BRIAN', will increase its usefulness in developing countries,' he said.

'The technique is an outstanding success. It was developed initially to map sea depth and interpret marine resources in shallow waters in particular areas. The Authority realised that BRIAN could also be used for large-area mapping of the entire region at international cartographic standards of accuracy at 1:250,000 scale.

'Once this potential was realised, the Authority played a major part in transferring BRIAN to the Australian Survey Office. All the work necessary for production of maps covering the entire 348 000 square kilometre Great Barrier Reef region has now been completed by ASO at an approximate cost of $250 000.

'This has been estimated by the Chairman of the Authority, Mr Graeme Kelleher, to be a saving of $21 million and 10 years effort on pre-existing techniques. A UNESCO workshop will be held in Townsville in August to transfer the technology to ASEAN nations.'

Dr Don't Know beats Einstein

Was Science Minister Barry Jones looking despondent (see page 3) during his speech at CSIRO Headquarters to the ACT Science Teachers' Conference in Canberra because he was talking about the extent of community ignorance about science?

He quoted a recent opinion poll in the *New Scientist* in which people were asked to name the three most famous scientists that they knew of.

'The most famous scientist (living or dead) was revealed as "don't know", with 47 percent of the vote,' said Mr Jones.

Albert Einstein was next, but Mr Jones maintained this was probably because of his activities outside his professional discipline.

He said a number of factors, such as the prevailing anti-intellectualism in Australia and the 'ultra-specialization' of scientists, are contributing.

'Science was the subject of intense popularization until World War II,' said Mr Jones.

'Right through the 19th Century and well into the 20th the exposition of science and its impact on life was a highly visible intellectual activity.

He said the 'honourable tradition' of scientists as lecturers and popularizers has now largely disappeared, and Carl Sagan and Stephen Jay Gould are the exception rather than the rule.

'Scientists are now ultra-specialized, hermetically sealed off not only from the community, but often from other practitioners in related disciplines.'

He said the complexity of post-war science has barred any understanding by the average person, and by politicians.

'Typically we downgrade the importance of things we do not understand. Politicians and bureaucrats who might have been reasonably confident of their layman's grasp of how the motor car worked, or the significance of penicillin or DDT have nothing whatever to say about the significance of microelectronics, computers, information theory, subatomic particles, superconductivity, DNA, RNA and molecular biology.

'Since they don't even pretend to understand any of these but are naturally unwilling to confess ignorance, the 'avoidance syndrome' comes into operation. Politically, science is at the outer periphery,' he said.

But he confidently predicted that by 1987 the often-quoted statement 'there are no votes in science' will have less force.

'However, the application of scientific knowledge is not solely the responsibility of scientists. There are other players in the game.

'I consider it essential that the scientific literacy of the population be increased greatly,' he said, adding that the education system was vital to this process.

'This scientific consciousness should develop in conjunction with social conscience so that people — scientists, engineers and the community at large are cognisant of the impacts of science and technology on society.'

(The Science Teachers' Conference was sponsored by CSIRO and gave teachers the opportunity to see Canberra-based research and speak to CSIRO scientists about their work. More photos and stories from the conference will appear in the next issue of CoResearch.)

***CoResearch* is produced by the Science Communication Unit for CSIRO staff. It is also circulated to a number of people outside the Organization who have a professional interest in CSIRO activities. Readers are invited to contribute or send suggestions for articles. The deadline is normally the 5th day of the month of publication. Material and enquiries should be sent to the Editor, PO Box 225, Dickson, ACT 2602. PH: 48 4479. Editor: Liz Burden.**

CoResearch

CSIRO's staff newspaper *September'85 284*

1985 Federal Budget

CSIRO gets $14.2M more

A 'holding our own' budget is how new CSIRO Chairman Dr Keith Boardman has described this year's Government allocation to the Organization.

That comment contrasts with remarks last year, which labelled the 1984/85 allocation 'one of the worst'.

The Organization has received $14.2 million more this year than last year, an increase of some 4.5 percent on last year's low level of $322.5 million.

However, the CSIRO Executive and the Department of Finance have agreed that a figure of 7.3 percent should be used when comparing funding.

This takes account of the budget allocation (less some specific non-recurrent funds), plus revenue and cash on hand.

The budget specifies that this year's increase includes an allowance to cover the effect of inflation during the past year, but the decrease in the value of the Australian dollar against the United States dollar and other currencies means CSIRO will not get the full benefit.

Expenditure from these funds was $311.2 million in 1984/85 and is estimated at $334.1 million in 1985/86.

With industry contributions added, CSIRO is expected to spend $410.2 million in the current financial year.

The Executive-designated growth areas will benefit most from the additional funds. About 30 per cent of the Organization's research effort is carried out in eight priority areas.

Science Minister Barry Jones has allowed for a special additional provision of $1.4 million for manufacturing technology research and $0.8 million for information technology.

The Executive will allocate a further $2.4 million to growth areas by redeploying resources.

Funds for capital works include $10.4 million for continued construction of the Australia Telescope and $4.8 million for further work on new laboratories for the Division of Applied Organic Chemistry.

However, it's in the building program that Dr Boardman sees the greatest disadvantage for CSIRO from the budget.

'While it is certainly better news than last year, there will be no room for expansion,' he said.

He said although we will be static, or a little under, in terms of operating and staffing, the Organization's building program is falling behind.

The repairs and maintenance program is of particular concern, said Dr Boardman, and in some parts of the Organization this is becoming a serious problem.

...but not everyone is happy

Opinions within CSIRO on the effect of the latest Federal Budget are divided.

A substantial number of people say the two steps back of last year's Federal Budget have *not* been balanced with even one step forward this year.

However, others say there has been a step in the right direction.

There is still the unmistakable sound of belt-tightening around many Divisions and some officials have gone so far as to say they are worse off than last year.

This is not the case across the board, however, and while no Chief *CoResearch* spoke to is completely happy, some say the allocation will enable them 'to breathe a little more easily'.

Divisions in the Institute of Animal and Food Sciences are incensed with the treatment they have received and some fear considerable cutbacks to their operations.

And while the Science Minister, Mr Jones, may believe science has come out of the 'political death valley', some scientists are concerned that deep problems in funding the Organization will be hidden by the relief that the horrors of last year's budget weren't repeated.

The Secretary of the Institute of Animal and Food Sciences, Mr Alan Charles, said 'we don't really believe it was a status quo budget'.

'Although there was an allowance for inflation on operating costs, this was inadequate to meet the increased costs of goods and services arising from devaluation,' he said.

Mr Charles maintains that CSIRO is harder hit by the devaluation than the community at large because of substantial overseas equipment and services purchases, including official overseas travel by CSIRO members.

Other Institutes have offered a somewhat less gloomy outlook, although many comments can only be described as lukewarm.

The Secretary of the Institute of Industrial Technology, Dr John Yates, said he believed the Institute had done 'reasonably well'.

'We haven't gone backwards and that's the main thing,' he said.

'The Institute fared quite well from the Executive allocation for its designated growth areas, and this, together with some allowance for inflation, has enabled most Divisions to consolidate their key programs,' he said.

'It is also pleasing that the budget encourages expenditure on R&D and for new technology by industry and this should bring some additional benefits to CSIRO.'

Secretary of the Institute of Energy and Earth Resources, Dr Neville Byrne, welcomed the budget, saying he didn't foresee any major difficulties.

He said the Institute had done much better than last year, when there had been substantial cutbacks.

Several Chiefs in the Institute were cautious however, saying the full impact hasn't yet been assessed.

A major concern of the Chiefs contacted was the effects of the devaluation. This was seen as eroding the benefits of the allowance for inflation.

It was much the same story with the Institute of Biological Resources.

While Institute Secretary, Mr Keith Avent, didn't see any reason for celebrating, he felt the Budget would not have the devastating effect of last year.

The Secretary of the Institute of Physical Sciences, Dr Rosalind Dubs, said 'on the whole we think the budget was reasonable'.

Institute Director, Dr Neville Fletcher, said 'it kept total resources available to us roughly constant and because of retirements and changes in emphasis we have indeed been able to shift a fair amount of resources from one program to another'.

Redeployment in the Institute has meant a number of changes, including new initiatives in drought and space research, and Dr Fletcher believes these will be able to make substantial progress on the money allocated.

The Institute also received an injection of $1.2 million to establish the Division of Information Technology. This area is one of the high priorities which the Executive has earmarked for growth.

However, Dr Fletcher said financial constraints raise the possibility that the Organization may no longer be able to operate its Fokker F27 research aircraft.

He said it costs about $1 million a year 'and there are serious questions now about whether we can continue with it'.

Farewell to Paul Wild

By Dr Keith Boardman

As the seventh CSIRO Chairman in the Organization's 56-year history, Dr J Paul Wild is assured of an important place in the annals of Australian science.

But it's not just for this reason that we honour him on his retirement.

CSIRO has benefited greatly in having such a distinguished scientist, firstly as a researcher of renown and later as its leader.

His career as one of the world's leading radioastronomers and solar physicists had to take a back seat when he accepted the job as CSIRO Chairman.

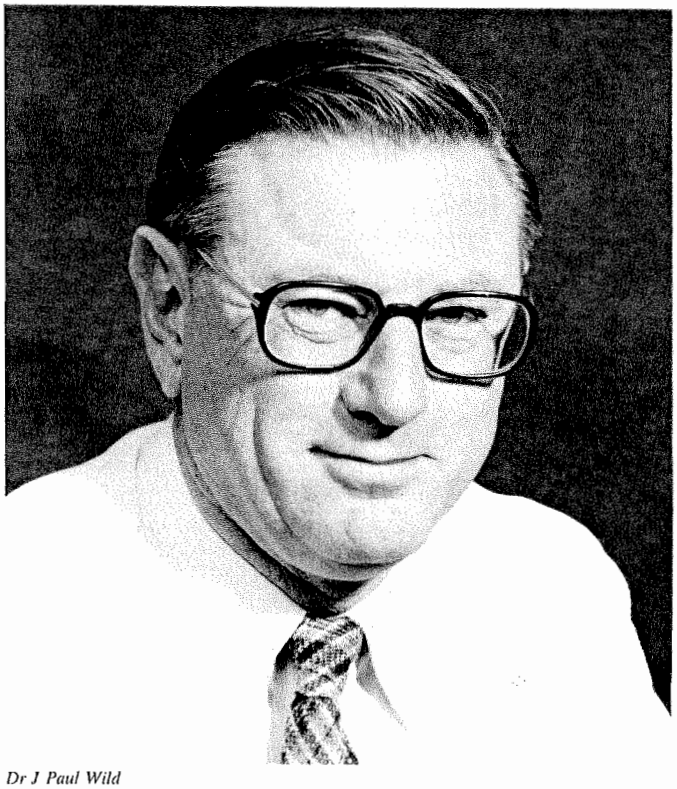
This must have been a tremendous sacrifice for him, but now seven years later he can feel justifiably proud that his contribution to administration of the Organization, like his contribution to scientific knowledge, has been of the highest order.

He has held the post during what surely has been CSIRO's greatest period of change since the late 1940s.

Paul was born in Sheffield in England, but spent much of his early life in London. Later, at Cambridge he studied mathematics and physics.

It was during the war that Paul came to Australia, decided to stay, and soon was in

Cont. on p.2



Dr J Paul Wild

Letters to the Editor

Dear Editor,
Recent press reports (eg *The Age*, 31 August, page 19) indicate that CSIRO is considering selling off CSIRONET to the private sector by the end of the year.

As a long-time supporter of CSIRONET, I am at a loss to understand what CSIRO and CSIRONET users in CSIRO can gain from this move. Will CSIRO buy computer time at commercial rates from CSIRONET, or will CSIRO set up its own central computer facility and network again?

Unlike CSIRO, no overseas research institute in my Division's field (Atmospheric Research) operates its computing facility on a cost-recovery principle: maximum utilization is the aim. Separation of CSIRONET from CSIRO can only make matters worse.

Would the CSIRO Executive please release its plans for the continuation of large-scale computing facilities for CSIRONET users in CSIRO.

Robert Bell
Division of Atmospheric Research
Aspendale

(A reply from the Executive will appear in the next issue of CoResearch)

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Dr R G Ward, BHP's General Manager Research and Technology, replies to Dr David Batten (CoResearch 283, August'85)

Dear Dr Batten,
Thank you for your letter of 12 July together with a copy of your submission to the ASTEC Review on Public Investment in R&D in Australia.

I was unaware that Paul Wild had quoted me in *CoResearch* and was interested to chase up that particular copy. Although the diagrams were exaggerated to prove a point I strongly believe that the Universities have a primary responsibility for fundamental research, the CSIRO has a primary responsibility for strategic research, and industry and its research associations have a primary responsibility for tactical research. Clearly the overlap between the three groups is both necessary and desirable.

Your submission to ASTEC is very much in keeping with my own overall beliefs, particularly that CSIRO is the best place to do first class strategic research for the benefit of the future development of Australia. It is most unfortunate that Ministers have been talking in terms of CSIRO doing trouble-shooting research. Presumably they have been talking to people with little idea of the way in which research operates.

You propound what your refer to as the Research Council Model in which CSIRO and other publicly funded research organizations, including the universities, would compete for public funds set aside for specific areas of research. Some modification of this could be made to work in Australia provided that the Research Council could be staffed with suitably well-informed and sympathetic people. The alternative would appear to be the British Model which uses a number of Research Requirements Committees representing the needs of the various Ministries of Government.

The important thing is for the present uncertainty regarding CSIRO to be rectified and for Government to make a definite commitment to the future conduct of CSIRO. I cannot imagine anything more destructive than the present atmosphere of insecurity and lack of confidence.

Thank you again for your letter.

Dr R G Ward

Dear Editor,
Re. your paragraph informing us that Dr Wild has accepted an invitation to join Philip Adams and Dick Smith as patron of Australian Skeptics (*CoResearch* 283, August'85), does that complete 'the good, the bad and the ugly'? Note that the order of names here was chosen arbitrarily. Readers may wish to re-order and insert 'respectively' as they feel it appropriate.

Geoff Kirkwood
Division of Fisheries Research

HEALTH MATTERS

See the Good News
The OHS Unit has been busy previewing a wide range of OHS films, videos and slide/tape presentations to assess their suitability for CSIRO audiences. A number have been purchased and others, available from various film libraries, have been identified.

A comprehensive 'OHS Audio Visual Newsletter' will be issued on a regular basis to all Divisions and Units so local OHS committees can make use of these valuable training aids. The only cost to Divisions will be for transport. So — watch out for the good news on your health and safety.

PS, we're considering the use of a consultant to help produce some in-house CSIRO videos on health and safety. Staff who want to break into the movies can apply for a screen test.

Occupational Health Monitoring
Dr John Graham (occupational health advisor) is reviewing the results of a recent survey being arranged by Divisions. John will be using this data as a basis for identifying 'at risk' groups and developing a protocol of baseline and on-going tests that are both appropriate and cost effective. The CSIRO Health and Safety committee will be presented with the survey results and proposals at its next meeting.

I want to be alone
Recent press reports about a South Australian Department of Agriculture field officer who lay injured for four days in the outback and the Queensland Premier's son, lost after falling from his motorbike while doing farm work, highlight the need for a review of policy on staff working alone. A minimum field party of two, backed up by reliable radio communication, is the only sure way to prevent accidents of this type ending in disaster. The OHS Unit would welcome staff views on this issue and the related matter of driving long distances alone, often after field work and over outback roads.

OHS seminars
The recent two-day seminars in Adelaide for safety officers and committees was well attended and successful. Dates have now been announced for the Sydney region. There will be two seminars, on 22-23 and 24-25 October. Melbourne and Townsville dates will be announced soon.

Meaty meeting
The Health and Safety Committee will meat (sic) at the Cannon Hill Meat Research Laboratory on 26-27 September. The Committee will be considering draft policy proposals on RSI prevention, eyesight testing for VDU operators and accident reporting. Other agenda items including progress on an OHS agreement.

Gary Knobel
Manager OHS Unit

Dr Wild
Cont. from p.1

the thick of the new science of radio-astronomy at CSIRO.

He was to play an important role in the emergence of Australia as a leader in the field.

In 1949, on a miniscule budget, Paul developed the world's first solar radiospectrograph for studying radio waves from the sun.

Using the new device he was able to identify, interpret and classify three different types of solar radio emission bursts, and the findings are now the internationally accepted standards.

More remarkable achievements in the realm of radioastronomy followed, including the development of a properly engineered dynamic radio spectrograph and a new type of interferometer which pinpointed where the disturbances were coming from.

In the 1960s, he and his team started work on a radioheliograph — a huge radio telescope based at Culgoora in New South Wales which 'photographs' the sun.

This was a great breakthrough and enabled more secrets of the sun to be unlocked.

Perhaps the achievement with which Paul is most often associated came after his appointment in 1970 as Chief of the Divison of Radiophysics.

Interscan, now the standard airline landing system worldwide, was a direct result of Paul's quest for applied projects.

After becoming CSIRO Chairman in 1978, he was charged with implementing the proposals of the Birch Inquiry, and since then the momentum for change has been building up.

This has, of course, been a time fraught with criticism and debate, but Paul believes 1985 marks a turning point, following the turbulence and intense scrutiny which has characterized the past few years.

Not just the ASTEC inquiry but also the new corporate strategy, external communication policies and other initiatives are fundamentally altering the Organization.

His wish for the coming years (and I hope he's right) is for a period of consolidation, stability and untroubled creativity.

Paul has had numerous high honours bestowed on him, but remains a very modest man.

For his outstanding contribution to solar radio astromony, he was awarded the first Herschel Medal of the Royal Astronomical Society.

He was elected a Fellow of the Australian Academy of Science in 1962.

From 1967 until 1979, he served as President of the Radio Astronomy Commission of the International Astronomical Union and in 1970 was elected a Fellow of the Royal Society of London.

He joined the Board of the Anglo-Australian Telescope in 1973 and was Chairman from 1975 until 1980.

His scientific work, as well as his staunch advocacy of the proposal for a high-speed train between Sydney, Melbourne and Canberra, will now take up his time.

I have a feeling he's also looking forward to further pursuing another great passion — cricket.

It has indeed been a great pleasure working closely with Paul for the past seven years. One could not wish for a more supportive chief. His friendly encouragement, calm disposition and keen understanding have made my own task so much easier and enjoyable. Paul's unswerving faith in the Organization and its creative staff has been an inspiration to all and a strength, particularly in the more difficult periods of the past few years.

On behalf of my colleagues on the Executive and all staff of the Organization I thank him for his fine and courageous leadership and wish him a long, happy and above all interesting retirement.

TECH TALK

This new occasional column is designed for CSIRO technical staff who would like to exchange information with their colleagues in the Organization. All technical staff are invited to send contributions. The first column has been contributed by the Division of Environmental Mechanics.

PORTABLE DATA ACQUISITION SYSTEM

Technical staff at the Division of Environmental Mechanics have developed a portable data acquisition system for use in field studies. The device has been used to measure the transmission of direct sunlight through a vegetation canopy in research on the architecture of plant stands.

It consists of two main components: an A4 size portable EPSON HX20 computer and a Burr Brown digital acquisition module. It can measure voltages in the range ± 5.0 V with a discrimination of 2 mV. Alternatively, ranges as low as ± 10 mV can be selected by changing the gain of an amplifier.

Measurements are programmed in BASIC. Results may be displayed on a 40 x 8 character screen or recorded with a 24 column printer or a minicassette. Results can also be transferred to another computer.

For further details, contact Mr Garry Miller, CSIRO Division of Environmental Mechanics, GPO Box 821, Canberra, ACT 2601 (Ph. 062-465659).

Maths-in-industry

A range of industry representatives have been invited to offer study problems to this year's Mathematics-in-Industry Study Group being co-sponsored by the Division of Mathematics and Statistics.

The Division expects about 30 industrial researchers and 70 professional mathematicians to participate in coming up with some solutions.

The study group will be held at the University of New South Wales from Monday, 2 December until Friday, 6 December, by the Division and the University's Industrial Mathematics and Statistics Group.

PS...

Can any CSIRO staff member beat this? CILES Administrative Officer, Mr Jim Short, has retired after 45 years, having clocked only one day, three hours and 11 minutes of sick leave. Apparently, Mr Short had a day off in 1941 because of a 'bilious attack'. Then, sometime during the 1950s a foreign body got into his eye while he was fitting a number plate and he was forced to take off three hours and 11 minutes. If anyone can better this record *CoResearch* would like to hear from you. Incidentally Mr Short's wife Ilma, who retired from the RAO in Melbourne recently, was with the Organization for 32 years. So between the two of them they have served CSIRO for a total of 77 years.

From the Chairman -

A final column by Dr J Paul Wild

At about the time this issue appears I shall be in the process of undergoing an abrupt transition from being the chief executive of a very large organization to being a private citizen with nobody reporting to me.

Well I think the change is much rosier for people like scientists (artists, too, for that matter) than it is for some others. The most exciting and absorbing years of a scientist's life are often the early ones when doing his or her own work, either creating individually or working in a small group of people with complementary skills, including technicians and craftsmen. One is vaguely aware of a shadowy figure in the background known as the Chief, and one doesn't give a damn about Head Office.

With success and advancement comes increased responsibility and often less time to pursue the lines of thought and experiment which are closest to your heart. The few who become Chiefs of Divisions have even less time, but I admire those who keep deeply involved and give part of their time to personal research.

For those who take, or are pitch-forked to, the next step — the Executive — there is no time at all to do your own thing except for weekends leave or an occasional stolen hour and yet you are still a scientist at heart; and while you are wallowing in general policies and broad administrative concepts, there is still a part of your that wants to be pursuing creative and magical lines of thought according to the strict discipline of the scientific method.

For such reasons there is part of me (about half) that warmly welcomes the impending transition. There is another that will miss the hurly burly, but then surely there is a Parkinson law to say that the void will soon be filled.

So now perhaps there will be a chance to return to the problem I once abused this column to discuss (remember, Doris?) — how to devise the physical laws of nature from mathematical theorems like Pythagoras' theorem and the Bianchi identity: at best a stirring challenge, at worst a harmless delusion.

And then, of course, we still have a train to put on the rails...

***

This being my last column in *CoResearch* I take the opportunity of expressing my gratitude to that very special body of people which comprises CSIRO — officially referred to rather flatly as 'the staff' — for the overwhelming support they have given me during my time in office. It has been a vital, exciting and sometimes tempestuous period of rapid evolution, each day bringing forth its challenge, its crisis, its humour and its promise. I would not have missed any of it.

As an Organization our resolve and morale have been critically tested and my belief is that we have emerged from the struggle stronger than we entered it; nostalgia aside, stronger than ever. I have complete faith in the future of CSIRO and its capacity to maintain its high scientific profile while adjusting to the changing needs of industry and society.

I know I leave the Organization in very good hands at every level, not least at the level of Chairman, who I know will keep this column going.

Paul Wild

External communication

New policy starts rolling along

In scenes modestly reminiscent of Treasurer Paul Keating's tax cart, CSIRO Executive Member Dr Geoff Taylor has taken the new external communication policy on the road to the Organization's staff.

Happily, indications are that the communication cart will enjoy more success than Mr Keating's, which lost its wheels before reaching the finishing line.

Dr Taylor has embarked on a series of seminars in all capital cities to explain what the new policy involves.

At its 15 August meeting, the Executive accepted 36 of the 38 recommendations in the independent external communications report.

There were some modifications to certain recommendations following a high level of comment, much of it critical, from within the Organization (see *CoResearch* 283, August '85).

The Executive deferred recommendation nine, which said CSIRO should accept de facto responsibility for a major part of the national scientific collection.

While this will be considered later, for the time being the 1983 Executive decision to contribute but not take responsibility will stand.

Recommendation 26 has also been deferred. This sought re-definition of classification criteria for SSOs, experimental scientists and technical grades to give greater recognition of communication skills and activities.

Instead this recommendation has been referred to a committee to examine promotion criteria for communicators.

Of the recommendations accepted, some were changed to increase the role of Institutes, without reducing the role of Divisions and Units.

For instance, the key recommendation three which had read: 'A major responsibility for external communication of research needs, opportunities, objectives, results, potential for application and implications should remain with Divisions and Units' now reads 'The major responsibility for external communication (etc) should remain with Institutes, Divisions and Units'.

A rider was also added: that 'without diminishing the role of Divisions, Institute Directors should, in consultation with the Director of Information and Public Communication, take a greater degree of responsibility for external communication on an Institute and sectoral basis'.

Recommendation 20 which will permit special funds to be made available for communication projects in Divisions has been modified so that Institute Directors will be able to consult with the soon-to-be-named Director IPC on allocations and proposals.

Concerns raised in responses to the report that the new Director IPC may bring about a centralization of communication activities in the Organization have been rejected by Dr Taylor.

Far from wanting to centralize communications, the Executive maintains it wants to devolve more responsibility for this to the Divisions and especially research staff.

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Corporate strategy

Human resources section changed

The final corporate strategy plan has emerged with one section significantly different to the draft released in July (*CoResearch* 282, July'85), following discussions at the 15 August Executive meeting.

The document, which outlines a blueprint for development during the next five years, arose from the recommendations of five working parties set up last year.

It was the 'human resources' component — the area which had attracted the most criticism from people within CSIRO — which underwent considerable change at the Executive meeting.

It now allows for further examination of staff problems and options, such as voluntary early separation and incentives, but does not lay down any hard and fast plans.

First drafts of the strategy had come in for considerable criticism, particularly from the Officers Association which received some press coverage when it attacked what was seen as the 'secrecy' surrounding development of the plan.

OA President, Mr Roy Bond, said the Association is now happier with the Executive-endorsed strategy and supports the proposal for more consultation before decisions are taken.

Mr Bond said members had been disturbed that the original personnel proposals in particular had been formulated without reference to the OA.

The second draft released in July made provision for fixed-term promotions for senior classifications, adjustment of the classifications of these staff on the basis of annual performance appraisals and a bonus scheme.

It also proposed an early separation incentive scheme, for a limited period only.

'It's a pity this draft was so widely circulated, and sent to ASTEC,' said Mr Bond.

'It had such a negative effect among members, and that's unfortunate.'

He called on the Executive to forward the final strategy to ASTEC as soon as possible.

He added he thought it was unfortunate that the OA had been forced into an 'adversary' role when the draft strategy came out, and this could have been avoided if the Association had been involved in early discusssions.

Apart from human resources, the strategy deals with four other areas: balance of research, concentration of effort, assessment of benefits from research and interaction with industry.

The Executive made only minor changes, designed to clarify these sections.

The strategy will appear soon in booklet form.

Tens of thousands of potential home buyers have now inspected homes carrying the Five Star Design Rating formulated by the Division of Building Research.

DBR Chief, Dr Lex Blakey, opens the first Five Star House in Melbourne, watched by the managing Director of R W Johnson Homes, Mr Roger Johnson.

The rating has resulted from a research project undertaken by the Division on behalf of the GMI Council of Australia, an independent non-profit making body.

The Prime Minister, Mr Hawke, launched Five Star last year (*CoResearch* 275, Nov.'84).

The rating, awarded to builders through State Government Energy Information Centres, enables home buyers to identify houses which incorporate five main features — comfort, quality, value, energy efficiency and low maintenance.

Major contributions to the development of the technical aspects of the rating were made by Mr Ron Ballantyne, Dr Angelo Delsante and Mr Derek Dubout at the Division.

The first homes to receive the rating were officially opened in Melbourne, Adelaide and Sydney. Others have followed, and now more than 50 project homes have qualified for the award.

Jones: industry should get into space race

The Federal Minister for Science, Mr Jones, has urged industry to play its part in the development of Australian space technology.

Mr Jones told an ANZAAS Symposium on Opportunities for Space in Australia and New Zealand last month that the Budget had demonstrated the Government's good faith and it was time for industry to make its contribution.

'Industry has to become enthusiatic about becoming part of an Australian space industry,' he said. 'Your goal should be participation in the international market for operational space systems.'

In the past Australian Governments had not taken the initiative and had made a very small contribution towards an indigenous space industry. However, Mr jones said he could 'confidently predict a much greater leadership role from the Federal Government in the future.'

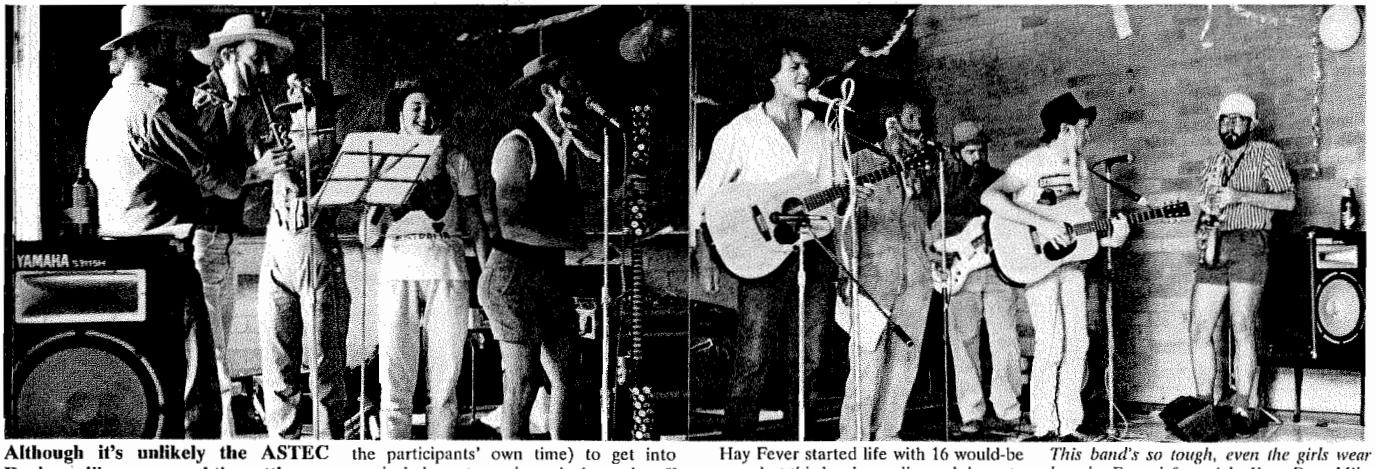
'This year's Budget allocation of $2.6 million for several space technology projects is a very important start,' he said.

Mr Jones said Cabinet would consider its response to the Madigan report on a Space Policy for Australia later this year.

A report on the ANZAAS Congress appears on p.6.

Division of Entertainment Research?

Hay Fever with a bush slant



This band's so tough, even the girls wear beards. From left to right Kym Day, Mike Hutchinson, Elaine Cork, Fiona Mitchell, Trevor Dowling, Paul Hutton, Howard Crockford, Peter Minchin, Brenden Mackey and Neil Mitchell.

Although it's unlikely the ASTEC Review will recommend the setting up of a Division of Entertainment Research, informal lobbying by some civic-minded members of the Division of Water and Land Resources is gathering pace.

The new Division would certainly help struggling CSIRO bush bands (or one in particular) expand their horizons, and Australia would ultimately benefit from higher standards.

Well, that's the theory anyway.

With Christmas approaching faster than most people think, the Division's bush band Hay Fever is feverishly rehearsing (in the participants' own time) to get into musical shape to again rock the socks off lucky party goers at Black Mountain.

The band will tackle any type of music and give it a bush slant — folk bush, blues bush, jazz bush, kate bush or even george bush.

Hay Fever was purpose-made last year for the Water and Land Resources Christmas Party, but word filtered downhill to the Division of Plant Industry and negotiations were soon complete to do another gig (perversely pronounced 'jidge' by band members).

This year, the possibilities are only limited by work commitments and indeed invitations to play.

Hay Fever started life with 16 would-be musos, but this has been slimmed down to a flexible person-count in the 5–10 range.

Among the hard core are lagerphone (ie. beer bottle tops on a stick) player Trevor Dowling, recorder player Mike Hutchinson, base guitarist Peter Minchin, flutist and ex-CSIROist Elaine Cork, laud (pronounced la-ood as in wood) player Brendan Mackey and rhythm guitarist and lead vocalist Paul Hutton.

'Guessed' stars are likely to be didgeridooist Kym Day, Fiona Mitchell on kazoo and blues harp/blues sax player Neil McKenzie.

Some of the participants do have genuine musical involvements outside the band.

Indeed Trevor Dowling said he was amazed at the musical talent called forth when Hay Fever was formed (maybe a Division of Entertainment Research could promulgate this amazing phenomenon).

At present the band's repertoire is relatively small, ranging from 'The Band Played Waltzing Matilda' to 'Mothers Lament', however this is soon to be augmented by masterpieces such as Monty Python's Lumberjack Song.

Dr Rob Walker is the new Officer-in-Charge of the Division of Horticultural Research's Merbein Laboratory following the retirement of **Mr Max Sauer**. Dr Walker has been with the Division since 1975. He leads a research program concerned with investigating various aspects of plant nutrition, with special emphasis on understanding the physiological basis of salt tolerance in woody perennial plants.

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Mr Don Brown, who was with the Division of Wildlife and Rangelands Research at Gungahlin for 16 years, has died in Queensland.

Mr Brown worked as a Senior Laboratory Craftsman and was in charge of the carpenters' shop until 1976.

He also co-ordinated and supervised a range of work including the planning and construction of various buildings and special facilities and equipment for the Division's research projects.

Colleagues say he was renowned for his ingenuity, inventiveness and outstanding skill.

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Mr Les Edye has become the fourth person from the Division of Tropical Crops and Pastures to be made a Fellow of the Australian Institute of Agricultural Science. The other members are **Dr Ted Henzell**, **Dr Ray Jones** and **Dr John Russell**.

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Mr Dave Tolson has retired from the Davies Laboratory after 15 years' service with CSIRO.

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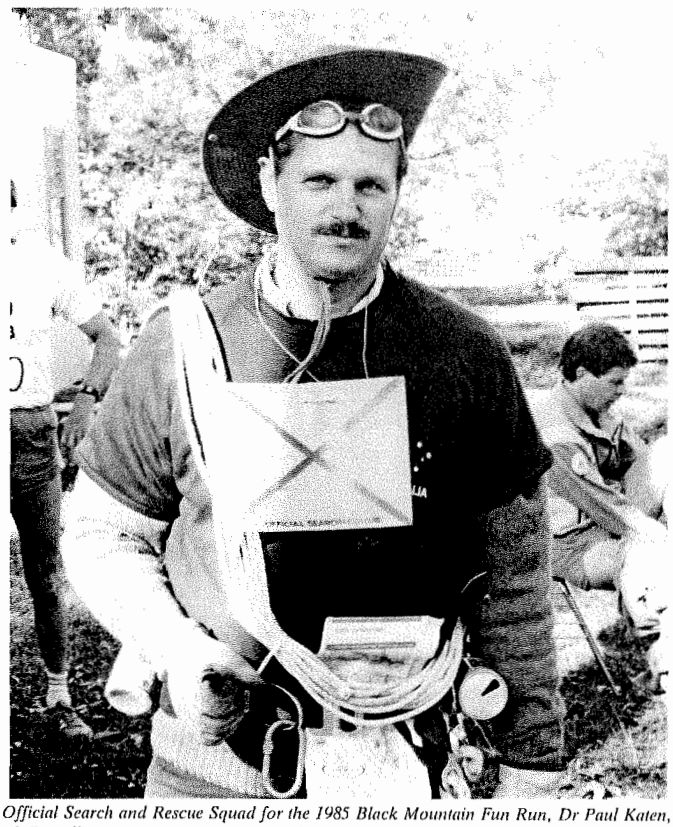
Ms Meredith Blesing-Wallwork is the new Information Officer for the Division of Horticultural Research.

Indiana Katen to the rescue



Official Search and Rescue Squad for the 1985 Black Mountain Fun Run, Dr Paul Katen, of Corvallis, Oregon, currently on a three year term at the Division of Environmental Mechanics. Note all-conditions underwater goggles, all-unAmerican hat, oven gloves, Tower Scaling Rope (that end is not frayed, just experienced) and map of Gosford in case someone gets really *lost. Ignore editor of* Industrial Research News *quietly taking his trousers off in the background.* *Peter Martin*

The North Ryde Laboratory of the Division of Food Research recently awarded its E.W. Hicks Memorial Prize to apprentice carpenter Mr Glenn Hodson.

The prize is for 'the most meritorious performance in a course leading to a first post-secondary qualification of a member of staff'.

Glenn completed his Trades Course with consistently high marks, and is also studying in his own time for the Building Certificate Course.

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The end of an era was marked recently at the Wheat Research Unit with the retirement of Dr Wilson Lee who served as a Research Scientist for more than 35 years.

He joined the Unit in 1959, soon after its commencement, and has taken a prominent role in its research program.

Before joining the Unit, Dr Lee served in the CSIRO Dairy Research Laboratory, where he was largely responsible for the introduction of milk powder as a major additive to bread.

During his 25 years with the Wheat Research Unit, Dr Lee has made many important contributions to the chemistry and biology of cereal grains, contributions which were acknowledged by the award to him in 1974 of the first F B Guthrie Medal by the Cereal Chemistry Division of the Royal Australian Chemical Institute.

At a farewell dinner to mark his retirement, Dr Colin Wrigley (current Officer-in-Charge of the Unit) paid tribute to Dr Lee's research findings in the role of proteins and carbohydrates in wheat quality, the microstructure of the wheat ear and grain and the development of a procedure to culture detached wheat ears in a synthetic medium to permit better study of the flow of metabolites and the synthesis of starch and protein.

Max Sauer leaves Merbein

The retirement of Mr Max Sauer, Officer-in-Charge of the Merbein Laboratory of the Division of Horticultural Research, has brought to an end almost 40 years of service with the Division.

Max was farewelled by past and present colleagues at an informal luncheon at the laboratory on 2 August 1985.

He left the Division a distinguished nematologist of international repute, whose career in this field commenced at a time when nematology was an unexplored field in Australian agricultural research. His considerable impact on the science of nematology and grapevine productivity resulted in improved grapevine performance and yield, providing substantial economic benefits for the Australian viticulture industry.

Initially, Max's research at Merbein was concerned with the vegetative and reproductive growth of citrus in the field.

However, when in the early 1950's, a tomato breeding program at the laboratory encountered severe nematode problems, he was asked to take an interest in this area.

As a result, the foundations were laid for the development of nematology research programmes in Australia.

Max followed up this work with studies of the nematode populations of the irrigated vineyards of the Murray Valey and investigated their effects on grapevine growth and yield.

Alongside the more applied research for which he has been responsible, Max developed abilities and knowledge in the field of nematode taxonomy.

Work in this field has earned him international respect and recognition as the leading nematode taxonomist in Australia.

Max will be sadly missed by the staff of both the Merbein and Adelaide laboratories, who all appreciated his honest, open and friendly manner.

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Architect retires

Mr Robert Fuller has retired this month after 22 years as an architect in the Buildings and Property Section.

Mr Fuller was responsible for many CSIRO building projects including the Marine Laboratories in Hobart, the Radiophysics Laboratories in Epping, NSW, the National Measurement Laboratories, stage one of the Cannon Hill Meat Research Laboratories and the Mineral Engineering Laboratories in Melbourne.

He has been in charge of the Melbourne office of the Buildings and Property Section since 1975.

Mr Fuller was in private architectural practice before joining CSIRO and brought with him a wide knowledge of building design and construction and high professional standards.

Harry Hayes heads for the coast

Mr and Mrs Hayes at the farewell function at North Ryde.

The Divisions of Food Research, Fossil Fuels and Mineral Physics and Mineralogy and the Bread Research Institute last month farewelled Mr Harry Hayes, the resident caretaker at the North Ryde site.

Harry claims to be the longest serving person at North Ryde, because he moved into the caretaker's cottage very early in 1961, before 'Coal Research', 'Food Preservation' and 'Bread Research' had established themselves in their new laboratories there.

His colleagues presented Harry with a Makita router to help him carry on with this original trade of carpentry when he and his wife retire to their new home at Umina on the NSW Central Coast.

Jock Mackenzie retires

Dr J K (Jock) Mackenzie retired recently after a distinguished career spanning 40 years with CSIRO

An honours graduate in mathematics and physics from Melbourne University, Jock spent the war years at the AWA Research Laboratories in Sydney. He later joined the Division of Physics and in 1947 was awarded a CSIR studentship. He completed his PhD under Professor Mott at Bristol University, during an exciting time, scientifically — especially for people interested in the defect structure of metals.

In 1950, Jock joined the Division of Tribophysics, and was its first theorist with overseas experience. A highlight of his work there was his collaboration with John Bowles on a phenomenological theory of the martensite transformation and its experimental confirmation. The resulting publications are now regarded as classic papers on martensite crystallography.

After working overseas between 1962 and 1964, he returned to the Division of Chemical Physics. Two outstanding achievements since then have been his contribution to the analysis of X-ray intensity data resulting from a number of international projects for the comparison of data, and his collaboration with Bill James in developing methods for testing the auxiliary optics of the 150" Anglo-Australian Telescope at Siding Spring.

Throughout his career Jock has been widely consulted on scientific matters and has displayed an ability to assist colleagues in clarifying their own ideas.

Since his retirement, Jock has been appointed visiting lecturer at the Department of Mathematics at Monash University.

Forest Research scientist off to Sweden

A CSIRO scientist from the Division of Forest Research is to spend 12 months in Sweden working on a tree breeding project.

She's Ms Caroline Raymond, an Experimental Scientist who has been working on a range of genetic research, particularly involving pine breeding.

Ms Raymond, who has never been to Europe before, leaves Australia on 13 October.

The offer of the trip arose out of a visit to Australia in 1983/84 by Professor Dag Lindgren from the Swedish University of Agricultural Sciences at Umea in northern Sweden.

Ms Raymond worked with Professor Lindgren, and at the beginning of this year he invited her to pursue research work at the University.

The trip will involve two projects.

Firstly, through the use of seed orchard material Ms Raymond will be examining the size of the breeding zone necessary to produce seeds for Sweden's forest industry, taking into account the particular environmental factors such as extreme cold in some areas.

Her work will mainly be with pinus contorta, however Ms Raymond said the theories developed will apply to other species worldwide.

Secondly, she will be doing work on early selection, identifying the most desirable trees at the earliest possible stage in their development.

'One of the biggest problems in forestry is the long life span of the trees you're working with,' said Ms Raymond.

'We'll be looking at testing them at the nursery stage, because there's a gap in the genetic theory about how you go about using estimates from that age.

Dr Rovira a 'classic'

Dr Albert Rovira from the Division of Soils in Adelaide has joined a small group of CSIRO scientists whose papers have become 'Citation Classics'.

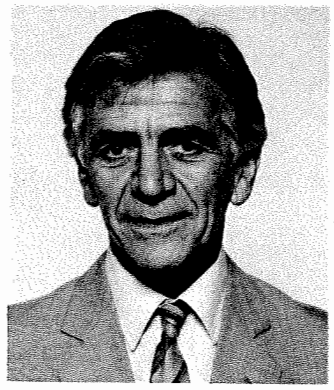
This honour is reserved for work calculated to be most frequently cited by scientists in its particular field.

The index of Classics is prepared by the Institute for Scientific Information (ISI) in Philadelphia.

About 20 CSIRO scientists have been recognised by the Institute, out of the 61 Classics from Australia.

Dr Rovira, a Chief Research Scientist, has been with CSIRO since 1956. His article, Plant Root Exudates, appeared in *The Botanical Review* in 1969.

In accepting the honour, Dr Rovira was required to write a short commentary and abstract on the work for publication in the Citation Classics section of ISI's Current Contents, a scientific information service.



In this, he said he wrote his article after 14 years in the field of root exudates because he felt a need to produce work relevant for soil and plant scientists as well as for soil microbiologists and root pathologists.

The article examines plant exudates, which 'influence the biological and chemical properties of soil and are important in plant nutrition and root diseases'.

CSIRO scientists to attend leather fair

Two scientists with the Division of Protein Chemistry will visit Paris this month for a major international leather fair.

Dr Neil Evans, Leader of the Hides, Skins and Leather Program and Dr Jim Scroggie, a Senior Principal Research Scientist with the same program will attend the Semaine du Cuir, which attracts thousands of people involved in the hides, skins and leather industries.

While in Paris they will also attend the meeting of the Executive Committee of the International Union of Leather Technologists and Chemists Societies (IULTCS).

Final arrangements for the IULTCS Congress in Melbourne in March 1987 will be presented to the committee.

The staging of the congress, which is expected to attract at least 400 scientists and industrialists from around the world, will focus attention on Australia as a major hide, skin and leather producing country.

Blakey to address Conference on need for infra-structure action

A position paper on the state of buildings and other structures in Australia will be delivered by the Chief of the Division of Building Research, Dr Lex Blakey, to next month's National Infrastructure Conference in Canberra.

The conference is expected to attract considerable attention and debate because it will focus on the possibility of Australia's structures falling down around us.

Already, studies have indicated that parts of our infrastructure are incomplete, aging and in many instances inadequately maintained.

The Infrastructure Conference will examine the extent of the deterioration.

'So far there's no co-ordinated source of information on the real state of Australia's infrastructure,' said Dr Blakey.

Dr Blakey will speak on the first day of the three-day gathering, which will be held 22-24 October at Canberra's Lakeside Hotel.

He said there's considerable evidence that in both the United States and Europe a large number of buildings are in very sad repair.

The 'fabric' of cities developed during the last century in the US and Europe is deteriorating faster than it is being renewed, and Dr Blakey is concerned that similar, potentially devastating, deterioration has already started in Australia.

'I'll be telling the conference that it's time Australia stopped kidding itself. The problem is with us now and it could be serious,' he said.

Wave good-buoy

Life on the ocean waves is becoming more predictable for fishermen as a result of research by the Division of Oceanography off the west coast of Tasmania.

The study into the growth of waves is being undertaken in some of the world's wildest ocean and data is being made available to the fishermen to help them plan their expeditions.

Some of the west coast waves have had the whole of the southern ocean from Africa to in which to grow, and they're monsters by the time they reach Tasmania.

Two wave rider buoys have been moored off Strahan by Dr Chris Fandry and Dr John Reid from the Division, with the buoys transmitting the height of each wave passing by to a central computer screen.

That screen has been the focus of the attention of fishermen because it accurately shows the size of the swell. Before this, the swell size and the mood of the ocean waters had to be estimated by eye from the shore.

'With the buoys out, we may get a picture of the world's biggest wave,' said Dr Reid.

In late July, shortly after the computer in the Forestry Commission store began to record the swells, a storm struck the coast, and waves measuring as much as 20 metres from crest to trough were recorded.

The team from the Marine Laboratories in Hobart is planning to set up a computer screen in a more accessible area of Strahan before Christmas. The screen would be available both day and night for assessment by fishermen.

The small module established at the Forestry Commission will continue to be the scientists' headquarters.

'From shore, it is difficult to estimate wave and swell size,' said Dr Reid. This uncertainty can result in loss of revenue and even danger to the fishermen.

Now all the fishermen's stories of the huge west coast waves (thought by some to have the same credence as the story about 'the one which got away') have also been verified.

ANZAAS Festival of Science

Room for (further) improvement

In the last week of August, the 97-year old Australian and New Zealand Association for the Advancement of Science (ANZAAS) held its 55th congress. It was the boldest experiment in science communication Australia has seen. Three new elements —the Youth ANZAAS, the community program of visits to laboratories and factories, and the Questacon Science Circus — were outstandingly successful. But despite drastic reorganisation, the main Congress at Monash University attracted audiences not significantly greater than previous Congresses. CSIRO journalist TOM GOSLING offers some possible explanations.

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The middle-aged woman in the audience at the ANZAAS Festival of Science plucked up the courage to ask her question: 'Is there an ulterior motive in all this study of the solar system — are you looking for a place for us to emigrate to?'

Her question was greeted with some muffled laughter, and dismissed quickly by the astronomer with a 'I don't think I'm qualified to comment on that one'.

The gulf between scientists and the public yawned. Was the woman's question all that silly? Was the scientist's aloof answer learned or dismissive?

In the session, entitled 'New astronomy: unveiling our beautiful Universe', couldn't the astronomer have shown more patience, and taken the opportunity to explain to the whole audience the very fundamental point that science doesn't always *have* to have a pragmatic goal?

And would it really have compromised the scientist's integrity to conjecture a little? After all, it is more than likely that some planetary settlement *will* take place in the not too distant future.

A similar episode occurred during another session, on 'Fluoridation — risks and benefits', where the zeal of some members of the public for the anti-fluoride cause clearly alarmed some scientists. To make matters worse, the pro-fluoride dental authorities, although invited, didn't participate, making it a lop-sided debate.

Such incidents spoke volumes about the difficulty of getting scientists and the public to understand each other. There is no doubt that the new elements of the ANZAAS Festival of Science succeeded in building new bridges of scientific understanding — but the disappointing attendances at the Congress showed clearly that ANZAAS still has a long way to go before understanding what the public needs.

Why, for instance, wasn't more of the Congress held over the weekend or at nights, when the public would be able to attend without taking time off work? And why was there an admission charge of $8 for each two-and-a-half hour session? This must have kept people away in their droves.

The (free) Youth ANZAAS was held at Dallas Brookes Hall, close to the centre of Melbourne — but why was the main Congress held at out-of-the-way Monash University? Why was the Festival program poorly presented and difficult to understand? Why was there no daily advertising of events during the week? And why, if the aim really is to communicate with the public, will the next ANZAAS Congress be held at Palmerston North in New Zealand, miles from anywhere?

Judging from the enormous time and energy devoted to the Festival, there is no question that ANZAAS considers that science needs public support and understanding. What is at question is whether ANZAAS, and scientists in general, have sufficient imagination to put themselves in the place of the public.

CSIRO'S role

CSIRO's role in the Congress was not a major one. Of the 600 or so speakers listed in the official program, only 24 were CSIRO scientists. They spoke at 17 of the 130 sessions.

Topics covered by CSIRO speakers ranged from deer farming (Dr Graeme Caughley) to the status of rainforests (Dr Andy Gillison), engineering innovation (Mr Lindsay Cuming) and mathematics in industry (Dr Bob Anderssen).

The largest single contribution came in the session entitled 'Australia Telescope — something for everyone', in which all five speakers were from CSIRO. Drs Paul Wild, Bob Frater, Neville Fletcher, Brian Robinson and Des Cooper gave a three-hour presentation on all aspects of the Telescope, accompanied by a carefully-prepared dual-projector slide show.

Information was pitched at exactly the right level for the interested layman, but the audience of 35 was disappointingly small. It is to be hoped that a more imaginative ANZAAS format in future will make more effective use of high-quality presentations.

In terms of media coverage, the biggest impacts were made on Monday, by Dr Mark Diesendorf's controversial comments on fluoridation, and on Tuesday, when the Minister for Science, Mr Jones, launched a new CSIRO-developed satellite receiving and image processing system. As mentioned previously, the scientific argument in support of fluoridation was not presented at ANZAAS, because of the refusal of advocates of fluoridation to take part in the program. As *The Age* commented on 2 September, this refusal 'did the cause of rational debate on scientific issues of public concern no good', and 'worse still, it left the public no wiser'.

A more positive result was achieved by Mr Jones' launch of the new satellite receiving and image processing system, jointly developed by CSIRO's Division of Atmospheric Physics and two Australian companies, PCM Electronics and the Dindima Group.

In a widely-reported speech, Mr Jones said the new system was expected to find a large domestic and overseas market, particularly in the Asian and Pacific region.

'It will enable users to produce pictures from environmental satellites such as the polar-orbiting NOAA satellites to obtain data on fisheries and minerals resources, weather and agriculture for a relatively low initial purchase price,' he said.

'It consists of two separate but complementary elements: a satellite tracker and receiver developed by CSIRO and PCM Electronics Pty Ltd, and a hardware and software system to process the satellite pictures, developed by CSIRO and Dindima Pty Ltd.

'The high-resolution images generated by the system can provide weather maps and other meteorological data and earth resources information such as sea temperature for fisheries, vegetation indices for agriculture, and areas of potential or actual mineralisation.'

Community displays

Another significant contribution from CSIRO was the presentation of displays at five locations around Melbourne in conjunction with the 'community science and technology program'.

This innovative program of ANZAAS involved the opening of factories and laboratories throughout Melbourne to demonstrate everything from the manufacture of engines for the Hornet jet fighter to beer brewing. It was a spectacular success, attracting some 14,000 people during the week, and may form the basis for an annual event in Melbourne sponsored by the Victorian Government.

CSIRO's low energy house at Highett was the venue for displays by four Divisions: Building Research, Energy Technology, Chemical and Wood Technology and Dairy Research, on Monday 26 August. About 160 people saw these displays, and took in a general introduction to CSIRO given at the nearby Science Education Centre.

About 150 people attended a 'Science through Cinematography' display, held twice daily all week, operated by the Film and Video Group at East Melbourne. Mr Nick Alexander demonstrated the use of high speed photography, time lapse photography and cinemacroscopy as research tools.

Other CSIRO displays in the program included 'The Weather by Satellite' at the Division of Atmospheric Research, 'Measure for Measure' at the Division of Applied Physics and 'Counting our Mineral Blessings' at Mineral Engineering.

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Meet the Executive...

In July, the new Chairman of CSIRO and three new Executive Members were appointed. In this issue, *CoResearch* introduces Chairman Dr Keith Boardman and new faces Dr Michael Pitman, Professor Adrienne Clarke and Dr Kevin Foley.

• Dr Keith Boardman

The outcome of the ASTEC review won't interfere with a number of important changes already underway in the Organization, according to the new Chairman Dr Keith Boardman.

Dr Boardman, who has been appointed to the top job until 30 June next year, said the next nine months won't be frustrating despite some decisions being made which are largely out of CSIRO's hands.

'This is partly because we have in the last two years put in place a number of policy initiatives which are in urgent need of being implemented,' he said.

He cited the new corporate plan, external communication policy, Sirotech and collaborative projects with industry as examples of important developments underway.

A major area of uncertainty lies in the upper management structure.

The Executive's submission argues for continuation of the status quo, but the possibility of splitting the Chairman and Chief Executive roles is likely to be under active consideration by the reviewers.

'To my mind, there are only two real options — to have a full-time Chairman/Chief Executive or to have a part-time Chairman of the Board and a Chief Executive,' said Dr Boardman.

Management changes notwithstanding, it's the priorities which have already been decided upon which are Dr Boardman's main concern.

He sees the new communication policy as likely to have the most important impact on the Organization's direction.

The communication report showed clearly the need to enhance greatly the exchange between researchers and potential users.

'The poor exchange in the manufacturing industry sector has meant that industry people didn't really know what CSIRO had to offer, and the CSIRO people didn't really know what the problems of industry were and whether their research results had a potential use,' he said.

'Industry is now ready to admit that it's as much their fault as CSIRO's that research results are not getting through.

'I've heard that from some of the top people — managing directors in industry — who are saying they must take equal blame for this situation,' he said.

'I think there's a feeling everywhere that you can't completely blame anyone in particular and we'd better all put our best foot forward to improve it,' he said.

Dr Boardman puts considerable emphasis on the role of researchers talking publicly about their research, and CSIRO in general.

'Scientists must be able to communicate what they're on about in non-technical jargon so it's at least understandable to the 'intelligent layman' — the sort of people who read the Scientific American and feature articles about science in newspapers.

'It's a matter of selecting those who have a natural ability to communicate, and giving those people additional skills for communication,' he said.

Dr Boardman would like his chairmanship of CSIRO to be remembered as a time in which the Organization was able to grow much stronger.

Communication and corporate planning will help in this process, he said, but a broader base of research and development is also required. 'Above all, we must maintain the quality of our research and continue to attract staff of the highest calibre,' he said.

'If Australia's standard of living is to be maintained and if the country is going to become more competitive, it's essential that there be a greater input of R&D,' said Dr Boardman.

'There is a role for both CSIRO and the private sector to ensure this is brought about.

'This is not to say we should neglect the areas into which CSIRO has made a strong R&D input in the past — the rural and mining sectors.

'It's been said that our success in the international marketplace in both those areas relects the fact that there was a commitment to R&D over many years, both by the industry itself and by government in support,' he said.

'What we're trying to do is see whether we can bring about the same sort of input in the manufacturing industry.

He admits to suffering somewhat from 'withdrawal symptoms' when he eschewed research work for his Executive responsibilities. However, in the eight years since he joined the Executive he feels a number of highlights have compensated for this.

For example, he believes his promotion of the new genetic engineering biotechnology was an important involvement.

He feels he has had a role to play in alerting the Organization and Australia to the potential of biotechnology and there has been a big expansion in this area.

Dr Boardman also has found his role in advocating collaborative schemes between CSIRO and universities particularly worthwhile.

Dr Boardman, a biochemist, is best known in the research area for his contributions to the understanding of the energy conversion reactions of photosynthesis and the structure of photosynthetic apparatus in green plants.

He was a member of the Australian Research Grants Committee from 1971 to 1975, President of the Australian Biochemical Society from 1976 to 1978 and Treasurer of the Australian Academy of Science from 1978 to 1981.

Dr Boardman is also a Fellow of the Royal Society.

He is currently a Member of the Council of the Australian National University, the CRA Scientific Advisory Board, the Board of Management of the Australian Centre for International Agricutural Research and the Advisory Committee for the National Biotechnology Fund.

• Dr Michael Pitman

Dr Michael Pitman brings to the CSIRO Executive a distinguished record as a scientist in his field of plant physiology and a strong desire to improve management skills and internal communication in the Organization.

He has been appointed Associate Member of the Executive until 30 June 1986, and will take on many of Dr Boardman's former responsibilities.

Born in Bristol, UK, Dr Pitman went to Cambridge University in 1952 and after graduating, went on to do his PhD on ion transport in plant tissue.

He then worked at Cambridge as a Demonstrator in the University's Botany Department and at the same time was a Fellow of St John's College.

He stayed at Cambridge until 1962, when he and his family migrated to Adelaide.

As a lecturer at Adelaide University, Dr Pitman found himself if the midst of a 'very stimulating environment'.

'It was a time of an expansion of science and Adelaide had at that time probably one of the highest concentrations of very able scientists in Australia,' he said.

Dr Pitman thinks an important aspect of his time in Adelaide was the start of his involvement in the Web of Life biology course for secondary students — 'It was I think one of the most useful things I've ever done,' he said.

He was an editor on the first and subsequent editions. The book is now used as the standard text in Australian schools.

Dr Pitman stayed in Adelaide for four years, and in 1966 was appointed to the Chair of Biology in the School of Biological Sciences at the University of Sydney.

He was to remain at Sydney University for 17 years as Professor. (He is now an Emeritus Professor).

At the University of Sydney, he was part of a pioneering group of lecturers using television as a medium for teaching biology.

'That was in the days before editing facilities, so when we made a program we went from start to finish in 35 minutes. If there was any mistake, we had to start all over again.

'It was really exciting in the early days trying to learn the techniques in this area,' he said. This work gave him a good insight into media practices and skills.

RESPONSIBILITIES OF FULL-TIME AND ASSOCIATE MEMBERS OF THE EXECUTIVE

	N K BOARDMAN	G H TAYLOR	M G PITMAN
INTERNAL FUNCTIONS	Executive	manufacturing industries	rural industry
	Management Committee public relations	mineral resources energy resources	environment water resources
	Organization development	information industry	health
	planning	tertiary industry	biotechnology
		technology transfer	international activities
	space science and technology	finance and administration	personnel internal communication
	computing	building & property program	Science and Industry Endowment Fund
LIAISON AND REPORTING	(The Heads of these operational units are responsible to the Executive through the Executive Member as indicated)		
		Institute of Industrial Technology	Institute of Biological Resources
	Corporate Planning Unit	Institute of Energy & Earth Resources	Institute of Animal & Food Sciences
		Institute of Physical Sciences	CIRC
	COSSA	information and public communication	personnel branch
COMPANIES	CSIRONET	SIROTECH SIROMATH	
EXTERNAL FUNCTIONS	Minister, Government and Parliament	Australian Industrial Research Group	CSIRO/Australian Vice-Chancellors' Committee
	Australian Science & Technology Council (including review of R&D)	National Energy Research Development and Demonstration Council	Consultative Council (from November 1985)
	Consultative Council until October 1985)	Industry & Community liaison	Industry and Community
	Advisory Council	Academy of Technological Sciences	Departmental liaison
	Industry & Community liaison	Departmental liaison	
	Academy of Science		
	Australian Centre for International Agricultural Research		

During his time in Sydney, Dr Pitman continued research into the way plants take up nutrients through their roots and effects of salt on plants, ranging from mangroves to marine algae, and including the effects of sea spray and pollutants on Norfolk Island pines on the Sydney beaches.

The decision to leave Sydney was a difficult one for Dr Pitman, partly because of his attachment to the University of Sydney, but also because of his position as Chairman of the Royal Botanic Gardens Trust.

Prior to his work with the Botanic Gardens, he was a member of the Australia Museum Trust for 10 years and President for three.

Dr Pitman was a member of the Australian Science and Technology Council (ASTEC) for one year, but resigned on joining CSIRO.

In 1983, he was appointed Director of the Institute of Biological Resources.

'The attraction of coming to CSIRO was that I'd always had a great respect for the quality of science here and I also was becoming interested in scientific administration.'

'I thought the Institute was a very useful structure because it brought together a lot of closely related skills, and biology is such an intermeshing subject,' he said.

Cont. on p.8

Dr Pitman

Cont. from p.7

'There was a need, and is still a need, for the Director to show leadership in bringing people together in the Institute, making sure internal communication flows properly.

'One of the interesting things about the Institute of Biological Resources to me is that it has a very wide spread of science,' he said.

This has meant the opportunity to be involved with the diverse range of research conducted by the Institute, plus a lot of travelling to visit Divisions and Units around Australia.

Dr Ted Henzell is now Acting Director of the Institute.

'When I was asked to join the Executive I had very mixed feelings because I realized how much I cared about the Institute and how much I enjoyed meeting the people,' said Dr Pitman.

His new responsibilities are wide-ranging (see table of Executive functions), but his major campaigns will involve personnel issues and internal communication.

'I think CSIRO has to find a way of both passing its philosophy throughout the Organization and of picking up the reactions and ideas of the staff,' he said.

'The maintenance of effective science will depend very much on people understanding what is happening and on CSIRO trying to avoid as much as possible the uncertainties which make people feel insecure.'

'I think the ASTEC review is more likely to give us guidelines for development rather than a prescription, and it will be the determination of the details, both within CSIRO and in discussion with Government, which will have the greatest effect on the Organization.'

• Professor Adrienne Clarke

As a part-time Executive Member, Professor Adrienne Clarke is keen to promote greater collaboration between CSIRO and Australian universities.

'It's necessary to optimize the base of fundamental research in Australia to benefit the country to the full,' said Professor Clarke.

She said she would like to promote conditions which are favourable for increased collaboration.

Professor Clarke has been co-director of the Plant Cell Biology Research Centre at the University of Melbourne's School of Botany since 1982.

She believes she can contribute both her academic expertise and her experience in working closely with industry to her new role in CSIRO.

Professor Clarke is also a foundation member of the National Biotechnology Programme Grants Advisory Committee (which was formed in September 1983).

While hesitant to comment at length on the CSIRO Executive — having been to only two meetings so far — she said first impressions were that there was a useful mix of complementary skills among the part-time members.

After graduating from the University of Melbourne, Professor Clarke pursued her post-doctoral education at Baylor University (Houston) and the University of Michigan in the United States.

She has held positions on the academic teaching staff of the University of Auckland as well as the University of Melbourne and was appointed to a personal Chair in Botany at the latter this year.

Her research has covered cellular recognition in plants, particularly in interactions controlling fertilization and pathogenesis.

This field also includes the chemistry of complex carbohydrates found in plants.

Professor Clarke may be new to the CSIRO Executive, but during her career she has collaborated with the Organization at a number of stages.

In her early post-graduate research, she was granted a CSIRO junior studentship in biochemistry and worked as a laboratory assistant at the Division of Chemical Physics.

Over a number of years, her group has worked closely with the Division of Protein Chemistry, mainly on projects involving the structure of plant proteoglycans.

In this, she collaborated with Dr Michael Jermyn, who recently retired from CSIRO.

Current work with Drs Imrie and Irwin from the Division of Tropical Crops and Pastures involves examination of fungal disease in cowpea.

There has also been an exchange of research between Professor Clarke's Centre and two other Protein Chemistry scientists (Mr Adam Inglis and Dr Charles Roxburgh).

In this, the CSIRO scientists provide amino-acid analyses, while analyses for carbohydrate components of plant material being investigated at the Division is undertaken by Professor Clarke's group.

Professor Clarke has been involved in a range of collaborative projects with overseas and Australian companies.

The Research Centre also undertakes consultative work with local companies.

• Dr Kevin Foley

New part-time Executive Member Dr Kevin Foley will add his considerable experience as a senior research economist, businessman and politician to Executive meetings during his nine-month tenure.

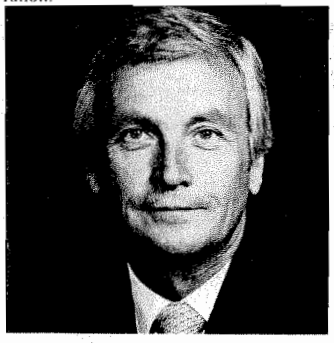
Dr Foley started his working life with the Royal Australian Air Force in 1954, and has maintained contact through the Air Force Reserve since his career moved in totally different directions after 1960.

He's no stranger to CSIRO. Soon after receiving his PhD in economics in 1972 from the Australian National University he joined the Australian Objective Measurement for Wool marketing project being conducted by the Division of Textile Physics at Ryde. He stayed for the final year, as a research economist, and found the work not only important but extremely interesting, particularly the time spent in the actual wool stores.

'It was great seeing the work we had done being applied. They were great days,' he said.

His next move was to London, were he worked for several years at the International Wool Secretariat.

He returned to Australia as chief research economist with the Australian Wool Corporation.



Public policy and politics started to entice him, and in 1976 he was elected to the Victorian Parliament as Liberal Member for Boronia. He was also the foundation chairman of the Parliament of Victoria Public Bodies Review Committee — a committee 'which changed the nature of Victorian Government,' he said.

For six years, Dr Foley immersed himself in political life until he was voted out in 1982, a casualty of the big swing to Labor.

He then set up his own consulting company, Kevin J. Foley & Associates Pty Ltd, a role he continues despite his appointment as chairman of the Australian Industrial Research and Development Incentive Board (AIRDIB) in 1983.

He said he was 'pleasantly surprised' to be invited to join the CSIRO Executive.

His early impressions, after two meetings, were that 'it's a more interesting, more complex and more important organization than I had originally thought'.

'Both Adrienne Clarke and I have come into CSIRO at a particularly critical time in its history. There will be a number of major decisions which will have quite a profound bearing on the future direction of the Organization and Australian science,' he said.

Forest Research assists Ethiopia

CSIRO is involved in an assistance scheme to reforest drought- and famine-stricken Ethiopia as part of an effort put the country on the road to recovery.

A tree seed supply project is being co-ordinated by the Division of Forest Research, using money from the Australian Development Assistance Bureau (ADAB).

Extensive felling has decimated Ethiopia's forest resources, and despite the introduction of eucalpyts late last century, the Australian trees — many of which are ideally suited to the conditions — have not been productively used.

In December 1984, the Ethiopian Government asked for Australian help in supplying seeds of about 40 species.

It's hoped that an intensive campaign will more fully establish the faster-growing Australian tree varieties to provide much-needed fuel, help retard further soil erosion and increase the productivity of the land.

Wood is the principal source of energy for cooking and heating in Ethiopia, but the supply of indigenous species is now reduced mainly to brushwood. Collection often involves a two-and-a-half hour walk each way.

The use of eucalypts was first suggested to the Emperor Menelik II in 1895 by a French railway engineer, M. Mondon-Vidaillet.

The Emporer thought it was a great idea, and trees such as E.globulus soon appeared.

In fact, the eucalypts planted around the capital, Addis Ababa, have been credited with enabling the permanent establishment of the city, which had previously been moveable according to the availability of fuel.

ADAB has supplied $8500 for seed supplies and $500 for the provision of technical information about the species for use by Ethiopian authorities.

A range of seed types is being provided in both research and plantation quantities through CSIRO.

Species of acacia and casuarina are also being sent because of their nitrogen fixing qualities which will improve the soil.

Seed project member, Mr John Doran, said the eucalypts take well the environment in the country and are fast-yielding and easily renewed.

Ethiopian native species often grow slowly and in the past little effort has been made to renew the resource.

An ADAB-sponsored mission to Ethiopia in May this year revealed only two species of eucalypts extensively planted — 'a situation which provides little insurance against the effects of a future attack by pests and disease' according to the resulting report.

Gremlin is a hoon

CoResearch ***recently received a letter from Mr Tony Adriaansen at the Division of Atmospheric Research, which has cleared up an 11-year mystery.***

'Late in 1974, CoResearch announced a Gremlin had been found by Dr Keith Bigg while observing tiny particles with an electron microscope.

At the time, there was no explanation available as to why this Gremlin should wear a beanie, but 11 years later I have found the answer. The latest find shows his method of transport — an early model car.

Not your average family sedan, however, but a 3.5 micron long convertible - hence his beanie!'

***

CoResearch has been inundated with responses to the readership survey which was sent out with the last issue. Analysis of the replies — many critical and many supportive — is underway and a full report will appear in the October issue.

CoResearch **is produced by the Science Communication Unit for CSIRO staff. It's also circulated to a number of people outside the Organization who are interested in CSIRO activities. Readers are invited to contribute or offer suggestions for articles. A new deadline will be announced in the next issue but for October all contributions should be in by the 5th. Address to Liz Burden, Editor, PO Box 225, Dickson ACT 2602 Ph: 48 4479.**

CoResearch

CSIRO's staff newspaper October'85 285

Manufacturing Technology expands to Sydney

A West German expert in production engineering with wide experience of automation in German industry has been appointed to head a new Sydney base for the Division of Manufacturing Technology.

The Chief of the Division, Dr Bob Brown, has announced the appointment of Professor Hartmut Kaebernick, Head of the Institute of Production Engineering at the University of Hamburg, as Officer-in-Charge of the new team.

'We are fortunate to secure the services of Professor Kaebernick, who, at the age of 42, is a leading figure in the German industrial research scene,' said Dr Brown.

'He will take up his appointment in February next year, by which time we expect the size of the Sydney laboratory to have grown to eight scientific and technical staff.

'Three staff, formerly from the Division of Applied Physics, have already been appointed, and other appointments will follow over the next few months.'

Dr Brown said Professor Kaebernick had worked with the Division of Manufacturing Technology in Melbourne for 12 months while on sabbatical leave from Germany in 1984. He was keen to join CSIRO, and he and his family also wanted to move to Australia because of their concern about uncertainties in the northern hemisphere.

The three staff already appointed are: Dr Ken Crane, Senior Research Scientist, Mr Brian Bartlett, Experimental Scientist, and Mr David Kells, Technical Officer.

Dr Crane is a specialist in the use of lasers for industrial processing. The Sydney laboratory will initially concentrate on lasers and robot demonstration, but, said Dr Brown, 'we will be on the lookout for new areas of collaboration with industry'.

Dr Brown explained the reasons for the Sydney move at a 'getting to know you' seminar in Sydney on Monday 30 September, attended by 40 representatives of NSW-based companies and government agencies.

He told the seminar that when the Division was formed by the CSIRO Executive in 1980, it consisted of 50 staff in Adelaide and 15 staff in Melbourne.

Today, there are 56 staff in Adelaide and 56 staff in Melbourne, and by next year, there will be a further eight in Sydney.

Major activities

'Right from the beginning, we have taken the very strong view that we must have major activities in Melbourne and Sydney, which are Australia's two biggest centres of manufacturing industry,' said Dr Brown.

'In 1980 we had no track record, and to gain acceptance from industry it was necessary for us to achieve a track record quickly. We concentrated our work initially in Adelaide and Melbourne, and in five years we have had considerable success in collaborative research with industry.

'Some of the processes and products which have been profitably developed in conjunction with Australian companies include: a high performance pulse welder; wear resistant coated materials; innovations in diecasting; a computer simulation system; a computer software package for diecasting die design, and a very high speed vision processing system.'

Dr Brown also announced at the seminar that the 'flexible manufacturing cell' a half-million dollar robot demonstration unit which has proved extremely successful in Melbourne, would be transferred to Sydney.

'In Melbourne, we had some 500 people a day inspecting this unit at three open days in 1982, and we have had about 35 people attending monthly demonstrations ever since,' he said.

'It has prompted dozens of Melbourne companies to improve their production methods, and we expect the same will happen in Sydney.'

The Sydney seminar was divided into two sessions, a morning session at which CSIRO and the Division's activities were outlined, and an afternoon session at which industry representatives from Victoria spoke about their interaction with the Division. It closed with a lively discussion period.

Dr Brown said the seminar had achieved what it had set out to do, 'not to talk to every company in NSW' but to talk to some of the key ones, and to alert other bodies involved in research and technology transfer, such as the universities, institutes of technolgy and the NSW Science and Technology Council.

The seminar was followed by a useful four-day round of talks with Sydney-based companies, such as Sunbeam, which is enthusiastic about further collaborative work with CSIRO in a number of areas.

CSIRO speakers at the seminar were Dr Brown, and Drs Bill Whitton, Warren Gellie, Ken Crane, Ian Sare, Graeme Ogilvie, Henri Martel and Mr John Grace of Sirotech.

Other speakers included Mr Vic Whitehouse, Managing Director of Vida-Weld Pty Ltd, Dr Andrew Lucas, consultant, PA Technology, Mr Noel Bate, General Manager, Lawrenson Diecasting Pty Ltd and Mrs Rosemary Howard, NSW Science and Technology Council.

CSIRO Medals honour three innovative scientists

The three winners of the inaugural CSIRO Medals received their awards at a ceremony at Headquarters earlier this month.

Dr Peter Colman (Division of Protein Chemistry), Dr Raymond Jones (Tropical Crops and Pastures) and Dr Graeme Ogilvie (Manufacturing Technology) have received the awards for their contributions to Australian science and the community.

Dr Colman was honoured for his work in understanding the molecular mechanisms involved in viral infection and immunity, Dr Jones for his recent findings on the cause and cure of leucaena toxicity in cattle in Australia and Dr Ogilvie for his unique system for control of the transfer of weld metal droplets in electric arc welding.

Each award acknowledges work which, through its creativity and impact, has captured the imagination of the researcher's colleagues.

The medals were presented on 9 October by former CSIRO Chairman Dr Paul Wild.

Next year, a fourth CSIRO Medal will be awarded to a researcher in a non-CSIRO laboratory who has advanced the well-being of the community through his or her work.

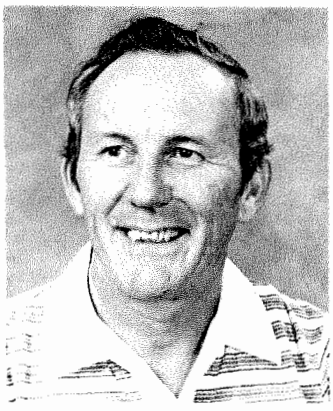
*The CSIRO Medals will be complemented by the inaugural Sir Ian McLennan Achievement for Industry Award.

The new award, instituted by the CSIRO Advisory Council, will honour work by CSIRO scientists which directly benefits a firm, industry or public authority.

Cont. on p.2

Photo: L Monarch

Dr Peter Colman has made an outstanding contribution to the unravelling of the molecular mechanisms involved in viral infection and immunity. His recent determination of the three dimensional structure of the influenza virus coat protein, neuraminidase, has been hailed as a landmark in molecular virology and has received widespread international recognition because of its implications for community health and the pharmaceutical industry. The work explains the mechanism by which influenza virus changes its coat proteins to evade the immune response and has revealed the highly conserved structure of the enzyme active site. This led Dr Colman to suggest that the future control of influenza could be by use of prophylactic blocking drugs specifically designed to fit this highly-conserved structure. His work involves the response of the immune system to viral (and other) infections and the potential of neuraminidase inhibitors as anti-viral agents. Dr Colman has provided new data on the way antibodies interact with antigens and a basis for the design of drugs effective against influenza. He joined CSIRO in 1978.



Dr Ray Jones, who joined CSIRO in 1960, has made an exceptional contribution to the science and practice of animal production for improved tropical pasture in Australia. The shrub *Leucaena leucocephala* (leucaena) has long been regarded as a promising pasture legume in Australia but until recently its practical use was inhibited because of toxic symptoms in cattle when it formed a significant part of their diet. Dr Jones was aware that this problem didn't arise in some other countries and developed the theory that animals there had in their rumens bacteria capable of breaking down the toxic principle, mimosine, whereas Australian cattle did not. In the face of scepticism about this theory by rumen microbiologists, Dr Jones pursued his belief with a series of definitive experiments in Hawaii, Indonesia and Australia which proved the phenomenon was microbial and that the toxicity problem could be cured by introducing detoxifying bacteria into the rumens of Australian cattle. Since isolating the bacteria, inoculated cattle grazing experimental leucaena grass pastures in parts of northern Australia have shown record gains of almost 300kg per head a year.

Photo: H Nibiett

Dr Graeme Ogilvie conceived a unique system for control of the transfer of weld metal droplets in electric arc welding. He then led a combined team of industry and CSIRO personnel to develop industrial welding equipment exploiting this concept. The equipment, the *Synchropulse CDT*, was launched onto the Australian market by Senator John Button on 26 October 1983. Since then the manufacturer, Welding Industries of Australia Pty Ltd, has sold all machines produced (several hundred) and has started to export the devices to Great Britain and the United States. The system has caused a turnaround in the company's profitability and contributed to a big improvement in welding productivity for many Australian companies. Division of Manufacturing Technology's Chief Dr Bob Brown said Dr Ogilvie's invention and the close collaboration with an industrial partner 'has provided a model for CSIRO involvement with the manufacturing industry'. Dr Ogilvie started with CSIRO in 1947. Since 1978 when he started studies of the electric arc, Dr Ogilvie has made a unique contribution to precision electronic control over weld metal droplet transfer.

Letters to the Editor

Dear Editor,

In *CoResearch* 283 were printed some responses to the CSIRO External communications report, including some of mine.

I was sorry, however, that you left out what I believed to be the most important (perhaps the most unpalatable) of my points; this was that the report makes 'no mention of a most important fact of life: that many of CSIRO's research results, even if ably communicated, are of no interest to industry (especially Australian industry). This results from the history of the Organization, which, in the days of plenty (i.e. expansion) sometimes appointed scientists simply to further scientific knowledge. Their careers depended on the excellence of their scientific output above all other considerations..... I make no further judgement here, but simply observe that herein lies perhaps the main reason for what is termed 'lack of communication with the community'.

('...one could add that a lot of science, even that of potential application in Australia, is extremely difficult to explain to non-specialist audiences. Exceptional communicators (viz. Robyn Williams of the ABC) are rare indeed.')

I still think the point worth making.

G. Fisher
Division of Food Research

Dear Editor,

I refer to Robert Bell's letter in *CoResearch* Number 284 under 'Letters to the Editor'.

It is incorrect to say that CSIRO is considering selling-off CSIRONET to the private sector. The possibility of incorporating CSIRONET in an organisational form external to CSIRO is under consideration at present. If this move takes place it is anticipated that it would have a majority of Government ownership and CSIRO would certainly be a very large shareholder.

In these circumstances I would imagine that CSIRO would continue to buy computer time at commercial rates from CSIRONET. However, it might be expected that CSIRO divisions will continue the development of their own dedicated computing facilities.

You refer to the difficulties associated with operating computing facilities on a cost recovery basis. The Executive is very conscious of the problems of operating computing facilities on a cost-recovery basis and this was in part the reason for supporting the current study into CSIRONET.

You also refer to the arrangements to be made for the continued use of large scale computing facilities for use in CSIRO. It is not possible to be definite about the future arrangements for the Cyber 205. However, present thinking is that the nature of super computing is such that the cost-recovery mode of operation is not always appropriate and regardless of the future of CSIRONET very serious consideration is being given to operation of at least 50 per cent of the Cyber 205 on the basis of it being a national facility. This would be analogous to the present scheme which involves the delivery of some $2.5m worth of computing time on the Cyber 205 on the basis of merit allocation.

N.K. Boardman

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Cont. from p.1

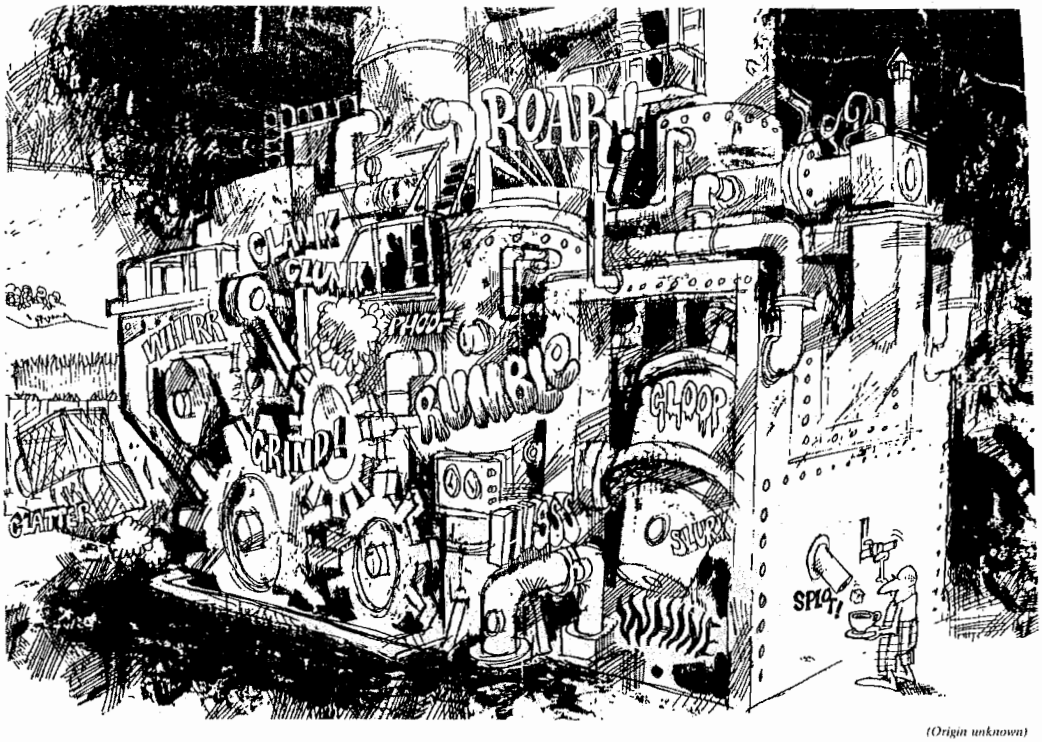
Fourteen nominations have been received by the four-man judging panel. Presentation of the award will be made on 2 December, the night before the December Advisory Council meeting.

The panel comprises chairman Mr Jan Kolm (chairman, Victorian State Committee and former research director for ICI), Mr John Huessler (grazier), Mr Keith Satchwell (chairman, NSW State Committee and former managing director of Australian Fertilizers Pty Ltd) and Dr Geoff Taylor (CSIRO Executive Member).

The award has been named after eminent businessman and industrialist Sir Ian McLennan. Sir Ian, who retired as chairman of BHP in 1977 and as chairman of the ANZ Banking Group in 1982, is now chairman of Elders-IXL (a position he retires from next month).

Donations to the award trust fund have come from a number of Australian companies and individuals.

The award offers around-the-world air ticket and expenses for around four weeks.



(Origin unknown)

Of equal concern

This month's EEO column illustrates a recent case which could have wide ramifications.

For those of you who have not had the opportunity to cast your eyes on the recent 'gate seniority' case, this may interest you:

In bringing down a decision in favour of a group of retrenched women steel workers, the New South Wales Equal Opportunity Tribunal has found that Australian Iron & Steel at Port Kembla, a subsidiary of BHP, had discriminated against women since June 1977. The premise for enabling this to happen was the application of a state regulation preventing women from lifting weights greater than 16kg at work.

Between June 1977 and June 1980, more than 4200 job vacancies were advertised. Of this number, 98.65 percent were given to men and 1.35 percent to women. Some women had had their names on the waiting list for three to seven years.

Using Section 36 of the Factories Shops and Industries Act, the company maintained that 'it could not have given a single further job to a woman'. The Tribunal decided that a strong case of discrimination had been made out. This was highlighted by two aspects: firstly, in the arrangements the company had made for the purpose of determining who should be offered employment and secondly in the actual decisions themselves.

Reverse gate seniority, ie. 'last on, first off', although argued as non-discriminatory by the company, was held to operate to the disadvantage of women who had to wait years to get jobs compared with men who were employed immediately or without much delay. This ensured that they had less gate seniority than men who applied for jobs at about the same time. It was held to be unreasonable and unfair to apply a gate seniority test to victims of past discrimination without making an appropriate adjustment to take account of that discrimination.

An interesting point raised by this issue is that many of the regulations considered discriminatory against women in the workplace provide them with protection or special treatment which men could also benefit from. Should these regulations be scrapped or should they be extended to cover men as well?

As to the 16kg limit for women — a full basket of wet washing could top that weight, and so could two children.

A point worth considering is that Australia has not adopted the International Labour Organization's recommended weight-lifting limit of 55kg for men. Why is this important? Thirty percent of workers' compensation claims in Australia stem from back injuries, often arising from lifting weights.

Jeeva Kumarasubramaniam
EEO Unit

Another step towards scientific co-operation with ASEAN region

CSIRO's Centre for International Research Co-operation recently co-ordinated two meetings designed to bring Australian scientists and their counterparts in the ASEAN region closer together.

The meetings had their origin in 1983 when the ASEAN Committee on Science and Technology identified biotechnology and materials processing as two priority areas.

It was decided to hold a series of 'joint experts' meetings to discuss and review project proposals and develop them to a standard suitable for presentation to funding agencies.

In August and September, experts in biotechnology and materials processing from ASEAN countries and Australia met in Melbourne.

In all, experts from nine divisions and 12 other Australian organizations attended the Melbourne meetings. They, and the 40 ASEAN delegates, reviewed 86 project proposals.

As a result, a number of sub-projects were formulated and proposals for these will be sent to the ASEAN-Australia Forum to be held in Bangkok at the end of the year.

PS...

The following item reached *CoResearch* via the Division of Soil's newsletter, Profile. It appeared with the wry comment: 'I know the Division is desperately short of computing resources, but this form of payment is just not on...'

MYSTERY OF THE MISSING APRICOTS

Barson Computers is attempting to find the fate of two Apricot computers stolen from a recent shipment from the UK.

The theft was discovered when a crate of computers was being unpacked at the Barson warehouse in Melbourne and two boxes were found to contain soil.

The theft had apparently gone undiscovered because the crooks responsible had replaced the computers with the correct weight in soil to fool the weight checking process.

Barson has sent samples of the soil away to a laboratory for analysis in the hopes of discovering where the switch took place but to no avail.

The job is now in the hands of the security people who are still attempting to figure out where the dirt originally came from.

Alex McBratney
Computing Australia 19 Aug. 1985

Publicity campaign

High PR profile for CSIRO role in Voyager and Giotto missions

The USA's National Aeronautical and Space Administration (NASA) is boosting its public relations effort in Australia and will use the Voyager fly-past of Uranus in January as a focus.

CSIRO's Parkes Telescope will play a crucial role in data collection for the mission.

Scientific Advisor to the Chief at the Division of Radiophysics, Dr Andrew Pik, was invited by NASA to visit the Jet Propulsion Laboratory (JPL) in Pasadena recently to help prepare a public awareness package.

Dr Pik later went to Europe for talks on publicity for the European Space Agency's Giotto mission to Halley's Comet and CSIRO's involvement in that project.

In the United States, Dr Pik was accompanied by the acting director of public relations for the Department of Science, Mr Peter Bramwell, Mr Art Lefkowitz from the US Information Service in Canberra and Mr Mike Stevens, NASA's senior scientific representative in Australia.

The trip resulted from a management review NASA conducted in Australia which found the Administration's public relations activities here were 'falling down' said Dr Pik.

'They decided to make an attempt to re-invigorate their PR presence and the Voyager fly-by of Uranus was the ideal time,' he said.

A preparation program has been formulated involving a visit to Australia by a three-member JPL team towards the end of November, for talks with CSIRO staff at Parkes and NASA staff at Tidbinbilla, as well as publicity activities.

A media conference in conjunction with that visit will be held in Canberra, with journalists having the opportunity to visit the Tidbinbilla Tracking Station. Television crews will be invited to film the facility (something they won't be able to do when the encounter is taking place).

Media conferences also will be held at Parkes and Sydney, and a reception for VIPs will be held at the revamped Visitors Centre at Tidbinbilla a week after the encounter.

Voyager will have its closest encounter with Uranus on 25 January next year and will send back data on the planet which was first discovered by English amateur astronomer William Herschel in 1781.

For the first time, the Parkes and Tidbinbilla antennas will operate together by a microwave link.

'This real-time link will mean we will get back 50 percent more pictures than would have been the case if NASA had used only its facility at Tidbinbilla, because it will create a much larger "bucket" to catch the data sent back from the spacecraft,' said Dr Pik.

The near encounter will be brief, and NASA wants to collect as much data as possible before the craft continues its voyage on to Neptune.

The microwave link will be retained permanently and radioastronomers will have access to the facilities for one month each year.

In preparing PR information on the Giotto project, Dr Pik first visited British Aerospace in Bristol. The company was the prime contractor for the construction of the Giotto spacecraft.

He then went on to ESTEC, the technology development centre of the European Space Agency at Noordwijk in Holland, the European Space Operations Centre at Darmstadt in West Germany and to ESA headquarters in Paris.

Halley's Comet

Giotto, which was launched on 2 July, is travelling at 60 kilometres a second towards Halley's Comet and is now more than 20 million kilometres from Earth.

It will complete the remaining 390 million kilometres by next March, when it's likely to do a 'kamikaze' entry into the debris surrounding the comet.

Although it has been designed to withstand pounding from particles of up to 100 milligrams, with a specially-designed double shield with cavity incorporating the tough Kevlar material, anything larger is likely to penetrate the shield and destroy the spacecraft.

That's the price ESA is willing to pay for close-up shots of the nucleus of the comet.

It's planned Giotto will come within 500 kilometres of the nucleus.

The Parkes telescope will play the key role in receiving data from Giotto, but it will have to be transmitted to Europe for processing before being released to the world press.

Dr Pik now has a range of material available for media in Australia and has established a network of contacts. While Halley's Comet itself has received wide publicity, not so much is known here about Giotto's role in scientifically analysing the comet.

It's a unique mission because although Japan and the USSR are sending spacecraft to Halley's Comet, the craft will be much further away and are intended to continue their journeys to other parts of the solar system.

(Two new books on Halley's Comet are available from the CSIRO Visitors Centre at the Parkes Telescope. The Astronomical Society of New South Wales has edited a book called 'Observing Halley's Comet', while another by David and Joy Allen is entitled 'Halley's: the Once in a Lifetime Comet'. Mail orders can be placed by sending a cheque for $9.95 including postage to the CSIRO Visitors Centre, PO Box 276, Parkes NSW 2870. Backyard astronomers please note!)

CSIRO to go on display at new Westpac museum

CSIRO is to be the first guest exhibitor at the new Westpac bank museum to be opened in The Rocks in Sydney next year.

The Organization will mount a display covering almost 1000 square feet, which will be in place for about five months.

The museum is scheduled to open in August next year on the corner of North George and Playfair Streets. An old bond store is being converted to house the temporary guest exhibitions, while the bank's own display will be housed in a new adjoining section.

The original sandstone and wooden beams will be retained in the bond store to provide a backdrop for guest exhibitors.

A meeting to discuss the content of CSIRO's display was held in Sydney late this month. Sydney-based divisions and the Science Communication Unit are involved in the deliberations.

Changing needs

Dr Michael Dack from the SCU said the display could revolve around the ways CSIRO has responded to Australia's changing needs.

This may include CSIRO's advances in agriculture, assistance to the Second World War effort (eg. lightweight radar, freeze dried food), work to help overcome the energy crisis and contributions to secondary industry, the environment and high technology.

'The important thing is that it will be aimed at the everyday level to show how CSIRO's scientific developments have affected the lives of all Australians,' said Dr Dack.

He said as much as possible, it's hoped to make it a 'hands on' exhibition in the same manner as Canberra's successful Questacon science centre run by the Australian National University.

CSIRO's finance committee has allocated $30 000 for the display.

When it closes, all material will be transferred to the Division of Applied Physics for storage and use by interested people.

For further details, contact Dr Michael Dack 062-48 4586 or CILES liaison officer Mrs Yvonne Esplin (who is based at Applied Physics) 02-467 6526.

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Top Unilever exec to new CSIRO Directorship

Unilever's corporate affairs chief in Australia has accepted the appointment as Director, Information and Public Communication for CSIRO.

He's Mr Peter Dunstan, who will take up the newly-created position in Canberra early next month.

Mr Dunstan's new role will involve integrating the Science Communication Unit and the Central Information, Library and Editorial Section (CILES) and creating a more unified and dynamic public image for the Organization.

His brief is to: develop policies, structures and procedures to ensure effective communication between CSIRO and industry, business, government, academic and community leaders and the general public; co-ordinate and manage the entire range of CSIRO's central information services; and give particular assistance to developing contacts with business.

Mr Dunstan has an impressive track record with Unilever and in his business associations. These include Chairmanship from 1978 to 1984 of the Australian Council of the International Chamber of Commerce and two years as President of the Sydney Chamber of Commerce.

He remains Chairman of the Market for Research Society of Australia, Executive Member of the Committee for Economic Development of Australia, Fellow of the Australian Institute of Management and of the Australian Marketing Institute.

He joined Unilever in 1958, initially as the company's first marketing cadet but soon after became a management trainee.

In 1960 he was appointed Brand Manager for World Brands Pty Ltd.

A posting to Britain followed. On his return to Australia in 1963 he was appointed Senior Brand Manager with Rexona Pty Ltd and in early 1968 as Group Marketing Manager with Lever & Kitchen Pty Ltd. Later he was to work for four years as Marketing Director for Unilever in Malaysia/Singapore.

In 1975 he was selected to form and become General Manager of a new department — Information & Public Affairs. In 1978 he was given additional responsibilities for the co-ordination of Unilever Australia marketing policies and also appointed a permanent member of the new National Business Development Unit.

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...and thousands dial-a-comet

The dial-a-comet service operated jointly by Telecom and CSIRO attracted thousands of calls in its first two weeks of operation.

The service — a two-and-a-half minute talk updated weekly by CSIRO comet specialist Dr Ray Norris — started in Sydney, Brisbane and Melbourne on 1 September (see *CoResearch* 283, August '85).

In Sydney, 12 060 people dialled the service during the first 14 days. In Brisbane there were 3800 calls. Figures for Melbourne are not yet available.

It's hoped that the service will be offered in all state capitals by the end of the year (Canberra is not expected to come on-line because of its small population).

New observatory named after former Chairman

The central site for the Australia Telescope at Culgoora has been named after Dr Paul Wild, former Chairman of CSIRO and an internationally renowned radioastronomer.

The Paul Wild Observatory will house the central facilities of the Telescope, which is scheduled for completion in the bicentenary year, 1988.

The announcement of the honour was made at a dinner on 9 October at Canberra's Lakeside Hotel to farewell Dr Wild as Chairman.

Dr Wild was instrumental in the establishment of Culgoora as the world's leading solar radioastronomy observatory in the 1960s and played a major role in obtaining Government backing for the Australia Telescope as a bicentennial project.

Dr Merv Probert at the Division of Tropical Crops and Pastures will move from the Davies Laboratory to Brisbane to become Officer-in-Charge of the Brisbane region of the Division of Soils. The appointment takes effect from 1 January.

***

Dr Gordon Friend has left the Division of Wildlife and Rangelands Research to join Western Australia's Department of Conservation and Land Management. Dr Friend joined the Division's tropical ecosystem program in 1978 as the first manager of the Kapalga Field Station. After two years he moved to Darwin to concentrate on research into species diversity.

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Dr Toon Rijven has retired from the Division of Plant Industry after 31 years' service. He was farewelled at a function in the Phytotron.

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Mr Mario Sanguineti has been forced to retire from the Division of Plant Industry for health reasons. Mr Sanguineti has worked in the Glasshouse Services Section since 1967.

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The Division of Plant Industry has a new Finance Officer. He's **Mr Peter Chapman**, who was previously with the Division of Entomology.

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Dr Maurice Mulcahy, a former Assistant Chief with the Division of Fossil Fuels, has become the first scientist outside Britain to win the Royal Society of Chemistry medal for combustion chemistry. Dr Mulcahy, an Honorary Research Fellow, was awarded the medal at a brief ceremony held at the University of NSW in July. This is the third time the award has been made.

***

Mr Hart Schroeder at the Division of Plant Industry has been awarded the Sir John Crawford Medal for his Master of Science thesis submitted to the Australian National University. The thesis examines the role of genetic and hormonal factors regulating the composition of the storage protein fraction of pea seeds. He is also involved in the breeding of improved lines of phalaris. He has worked at Plant Industry for nearly 30 years, initially as a Technical Assistant and more recently as an Experimental Scientist.

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Top award for CSIRO nematologist

A CSIRO nematologist has become the first non-American to be awarded the prestigious American Society of Nematologists Best Economic Paper Award.

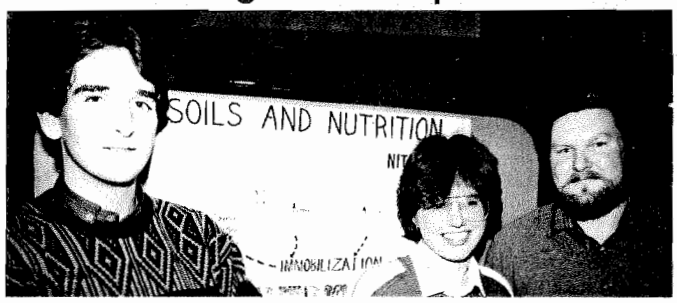
He's Dr Robin Bedding, who has received the honour for his paper entitled 'The large scale production, storage and transportation of the insect parasitic nematodes *Neoaplectana* species and *Heterorhabditis* species', published in the *Annals of Applied Biology*, Vol. 104, 1984.

Dr Bedding, who is based at the Division of Entomology's Hobart Laboratory, was presented with the award plaque by Associate Member of the Executive Dr Michael Pitman at a ceremony in Canberra this month.

The Society has made the award each year since 1979. It's open to all nematologists, but in the past had always gone to American entries.

Dr Robin Bedding, centre, receives his award from Dr Michael Pitman, as Assistant to the Chief of Entomology, Dr George Rothschild looks on. Photo: John Green.

Peer teaching scheme presentation



Forest Research Technical Officer Mr Mike Connell with students Julie Blunt (Dickson College) and Trevor Robertson (Narrabundah College) at the Peer Teaching Scheme presentation night in Canberra. The scheme enables ACT students to work with CSIRO staff in the lab.

Protein Chem. Chief awarded for fibre research

The Chief of the Division of Protein Chemistry, Dr Bruce Fraser, has won the international Textile Institute's S G Smith Memorial Medal.

The medal, which was presented to Dr Fraser at a ceremony in London recently, is awarded in recognition of devotion to furthering scientific knowledge of the physical and structural properties of fibres.

At the presentation ceremony, Dr Fraser said he regarded the award as recognition of the substantial contribution to knowledge of wool fibre made by the staff of the Division.

The award was presented by the President of the Textile Institute, Dr John McPhee, formerly of the Division of Textile Industry and currently Managing Director of the International Wool Secretariat in the U.K.

The month Dr Fraser will take up a Fogarty Foundation Scholarship at the National Institutes of Health, Washington, U.S.A.

Over the next five months he will set up joint projects, with U.S. scientists, related to the Division's wool and leather interests as well as organizing an International Conference which will be held in September 1986.

The conference will review recent work on intermediate filaments, the main structural components of wool.

***

Staff at the Division of Tropical Crops and Pastures' Cunningham Laboratory were saddened by the sudden death of Technical Officer Mr John Zwierzchaczewski.

Mr Zwierzchaczewski had been with CSIRO for 11 years, in the Plant Breeding Section.

Colleagues say his enthusiastic and dedicated approach to the various *Stylosanthese* programs will be very much missed.

Mr Norman Cholson has retired from the Organization after 36 years. He commenced with the CSIR Division of Fisheries in 1949 and was Storeman at the Marine Laboratories at Cronulla until they were closed in January this year. Mr Cholson's final task there was the relocation of all the effects of the Lab from Cronulla to Hobart. He then transferred to the McMaster Laboratory of the Division of Animal Health.

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Mr Les Wilson has retired from the Division of Building Research after 33 years' service with CSIRO. Mr Wilson was a Senior Laboratory Craftsman.

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Senior Stores Supervisor at the Division of Textile Physics **Mr Colin Ferguson** has retired after more than 30 years with the Division.

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Mr Les Crabb has retired from the Katherine Research Station. Mr Crabb, a Technical Officer, was with the Organization for 23 years and played a major role in the cattle breeding program and the establishment and sampling of pastures.

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Mr Michael Menshun has retired from the Division of Chemical and Wood Technology after more than 29 years. Mr Menshun, a Senior Technical Officer, worked mainly in the lignin and ethanol recovery projects.

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Dr John Russell has stood down as Assistant Chief of the Division of Tropical Crops and Pastures. He has returned to full-time research concentrating on modelling the management of dryland cropping systems.

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Mr Bob Dalgleish has retired from the Centre for Irrigation Research after 23 years. He started work as a groundsman in 1962, later becoming a Technical Assistant and more recently a Technical Officer.

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Principal Research Scientist **Dr Margaret Sedgley** has left the Division of Horticultural Research to become a lecturer of Horticulture at Waite Institute.

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Dr Peter Hannaford from the Division of Chemical Physics has been awarded the prestigious Walter Boas Medal.

The award, made by the Australian Institute of Physics, was established to honour the memory of Dr Walter Boas, a distinguished pioneer in metal physics who headed the Division of Tribophysics (now Materials Science) for many years.

Dr Hannaford is a Senior Principal Research Scientist and leads a small group engaged in laser atomic spectroscopy. His work has led to a wealth of new information on atomic constants.

In astrophysics, for instance, the work has enabled the revision of the solar and stellar abundance values for many elements.

The medal is awarded for what is judged to be the most important original work in physics recorded in papers during the past four years.

An Experimental Scientist with the Division of Tropical Crops and Pastures returns to Australia soon after taking up his Prince of Wales prize.

He's Major Ross Hansen, who received one of six awards for excellence made to Defence Reserves from the three services throughout Australia.

The award involves one month's civil and military attachment overseas - two weeks with a civil organization to further the recipient's civilian occupation and two weeks with a military organization.

Major Hansen's first stop was the Citrus and Subtropical Products Laboratory of the United States Department of Agriculture in Winter Haven, Florida.

While there, he was to study sample preparation techniques for High Performance Liquid Chromatography (HPLC).

He was then to move to Seattle to study the application of computers for information transfer in the United States Army.

Dr Keith McLaren has retired from Lucas Heights after 21 years with both the Australian Atomic Energy Commission and more recently the Division of Energy Chemistry.

Dr McLaren, a Principal Research Scientist, initially joined the Division of Coal Research for a short time after completing his PhD at Cambridge in 1962. He then moved to AAEC and for 17 years worked on a variety of problems in the field of radiation and polymerization chemistry.

During this period he collaborated with a number of CSIRO divisions including Textile Physics, Textile Industry and Chemical Technology.

He transferred to CSIRO in 1982 where all non-nuclear energy research being undertaken by AAEC had been moved. He joined the newly-formed Division of Energy Chemistry to carry out research on oil shale chemistry for three years before his retirement.

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Precision measurement work awarded

For his contribution to the use of superconducting phenomena for precision measurements, Mr Ian Harvey at the Divison of Applied Physics has been awarded the 1986 Morris E Leeds Award.

The award is made annually by the Institute of Electrical and Electronics Engineers in the United States for outstanding contributions to the field of electrical measurement.

It will be presented to Mr Harvey at the next International Conference on Precision Electromagnetic Measurments to be held at Gaithersburg in the US next June.

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Mr Clyde Garrow has been forced to step down from his position as Manager, Central Information Service, on medical grounds. He will now work part-time at CILES on a number of new projects. **Mr Jim Gilmore** will act as Manager, CIS.

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Obituary: Eikichi Suzuki

Staff at the Division of Protein Chemistry were saddened to learn of the death on 17 September of their colleague Mr Eikichi Suzuki after a long battle with cancer.

Eikichi joined the Division in 1963. He came from an engineering background in Japan, with research experience in the fine structure of fibre-forming polymers at the Textile Research Institute, Yokohama.

His visit to Australia was supported by the Australian International Awards Scheme.

In 1964 he was granted a further three years' leave from his position in Yokohama and was appointed to the Division as a research officer. In 1969, he was offered indefinite appointment.

His contributions to science were marked by care and thoroughness and he had an outstanding capacity to translate theoretical treatments into practical operating procedures. He was co-author of 52 papers during his scientific career in Parkville.

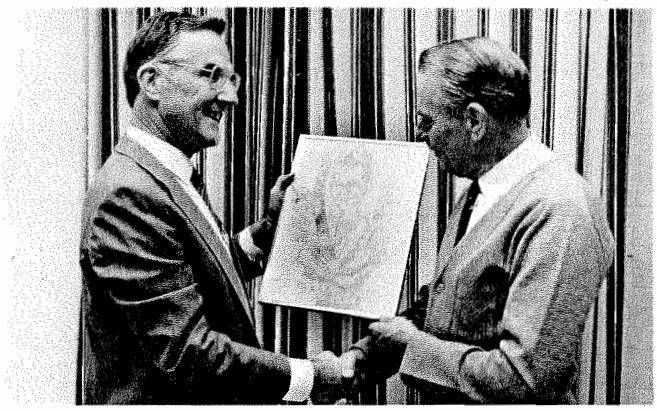
He suffered the loss of his first wife, Kimiko, with great courage, and his approach to his own illness was determined yet tranquil — reflecting great credit on himself and his wife Helen who supported him so splendidly during the past year.

Peter Beck

High speed caricature for Paul Wild

Headquarters staff last month farewelled Dr Paul Wild with a spit roast and the presentation of a signed caricature. The Chairman, Dr Boardman, left, made the presentation. The caricature, which was drawn by CSIRO graphic designer Ian Sharpe, shows Dr Wild riding on a 'supertrain'. Photo courtesy of The Canberra Times.

...while Tom Elich gets a more laid back drawing



Dr Ted Henzell, the acting Director of the Institute of Biological Resources, presents a caricature drawn by Bill Silvey to Tom Elich.

The longest-serving staff member at the Division of Tropical Crops and Pastures retired recently from the Cunningham Laboratory.

Senior Technical Officer Mr Tom Elich joined CSIR at Lawes in 1947 and transferred to Brisbane in 1951.

He was involved in the evaluation of pasture species and grazing systems at Rodd's Bay near Gladstone and at the Narayen Research Station.

In 1980, Mr Elich joined the Division's Communication Activities Section as Technical Information Officer.

Ms Rosemary Wren is now working as Scientific Advisor to the Chief of the Division of Horticultural Research, **Dr John Possingham.** Mrs Wren replaces **Ms Anne Frodsham** who is now with the Division of Entomology.

***

Dr John David has retired after 35 years with the Division of Plant Industry. Dr David worked for two years at the Division of Building Industry before becoming a Research Officer in Plant Industry in 1950.

The Division of Energy Technology recently hosted a seminar given by Mr Don Pescod on the work of TAD (Technical Aid to the Disabled).

Mr Pescod was a Senior Research Scientist with the Division before his retirement in 1981.

TAD is a voluntary, non-profitmaking organization dedicated to the design and construction of aids for people with disabilities, when such aids are not available commercially.

Dr John Kowalczewski, Chief Research Scientist at the Division of Energy Technology, retired recently after 35 years with the Organization.

Dr Kowalczewski joined CSIRO as an assistant engineer in August 1950 to work at the Maribyrnong Laboratories of the Central Experimental Workshops. During the following 35 years he was involved in many major projects, including research related to refrigeration and air conditioning, economics of solar energy, thermal comfort studies and human stress levels in different climates.

More recently he led a group working on the utilization of coal/oil mixtures in diesel engines.

In 1963, Dr Kowalczewski became the first person in the Division to hold a doctorate.

He was appointed acting Chief of the Division in January 1974 and served in that role until the appointment of a permanent Chief in May 1975.

China/CSIRO Study agreement

A co-operative project between the Division of Geomechanics and a university in China will examine mining applications of rock mechanics.

The signing of the study agreement marks the culmination of efforts by Division Chief Dr Barry Brady and Professors Wang Yongjia and Lin Yunmei of the Northeast University of Technology in Shenyang to establish a joint venture.

The two-year agreement will enable the investigation of problems in rock mechanics as applied to mining, slope stability in surface mining and the materials science aspects of geological engineering.

Personnel will be exchanged for short (two to three week) or longer (six months +) terms, and it's intended that the Division will supply equipment and instrumentation.

The Australian Development Assistance Bureau funded a trip by Dr Brady and Dr Cliff Mallett to China to sign the agreement. Money has also been allocated by ADAB to enable Professors Wang and Lin to work in the Division this year.

Geoscience Forum launches new Division to the world

The newly-formed Division of Mineral Physics and Mineralogy showed off its talents to industry, universities and government at an Exploration Geoscience Forum held at the National Measurement Laboratory, Sydney, on 24-25 September.

The 135 delegates heard Executive Member Dr Geoff Taylor give the opening address.

Research groups which make up the Division have enjoyed fruitful association with exploration companies in the past both through AMIRA and by direct contact.

The Division is seeking to expand these interactions, and the forum provided an excellent opportunity for some useful and frank exchanges from the platform and afterwards at the personal level.

The first day of the Forum program consisted of presentations by Division researchers, while industry had its turn on the Wednesday morning. The afternoon was devoted to a visit to the North Ryde Laboratories, the Division's headquarters. About 20 visitors returned the following day for a workshop to explain the application and potential of the Division's particle accelerator.

UNESCO science prize for weed suppression project

It's been called a prime example of basic research leading to spectacular practical results.

The Division of Entomology's *Salvinia* eradication project in Papua New Guinea recently received international recognition with a very high honour indeed — the UNESCO Science Prize.

The award, given every two years, is for work of major benefit to developing countries.

The Brisbane-based team behind the project to free the Sepik River of disastrous *Salvinia* congestion established biological control through the discovery and import ation of a previously unidentified weevil which attacked *Salvinia* in its native environment in Brazil.

The award comes after thousands of hours of painstaking 'basic' work, which featured three major breakthroughs.

Team leader Dr Peter Room was responsible for the discovery of the role of nitrogen in initiating growth of the weevil population.

Dr Don Sands found the weevil which previously was unknown to science, while Dr Ken Harley and Dr Wendy Forno discovered the original home of the weed in Brazil.

Other team members are Mr Michael Julien and Mr Richard Kassulke.

After successfully suppressing the weed in Australia, the team started work on the Sepik.

In 1980, the weed occupied 500 square kilometres of waterways. Half of this area was covered in tangled weed mats.

After the weevil was introduced, the weed retreated to 24 square kilometres by this year.

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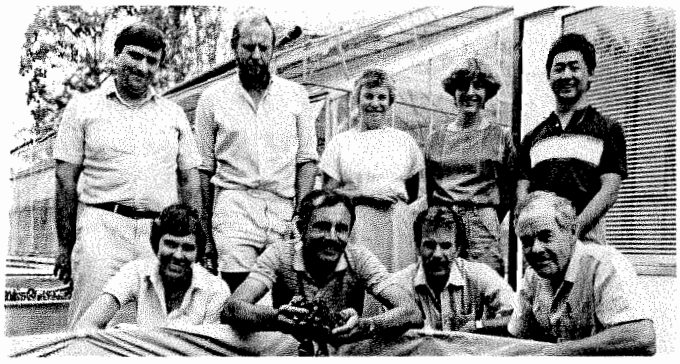
The Winston Churchill Memorial Trust is calling for applications for its 1987 Fellowships.

The Fellowships provide the opportunity for expenses-paid overseas study, usually for about three months.

Inquiries should be directed to the Trust, GPO Box 478 CANBERRA ACT 2601.



Staff at the Division of Entomology's Queensland lab, including the five Salvinia team members, with a sample of the weed. Left to right back row: Don Sands, Mick Julien, Martina Schotz, Jane Semple and Richard Chan. Front row: Wendy Forno, Peter Room, Richard Kassulke and Ken Harley.

Environmental Mechanics assists Canberra motor registry

Wind tunnel studies by the Division of Environmental Mechanics in collaboration with the Department of Housing and Construction have assisted in the design of building modifications at an ACT motor vehicle testing station.

The station, in the Canberra suburb of Dickson, is plagued by cold, gusty winds in the winter, which lead to very uncomfortable working conditions for staff.

The problem is complicated by the need for adequate ventilation on calm days, when accumulation of carbon monoxide in the building could pose serious health risks.

Mrs Candida Griffiths, an architect from the Department, and Dr John Finnigan from the Division, collaborated in the construction of models of the station, execution of the wind tunnel experiments and interpretation of the results.

The Division's research showed that the modification originally favoured by the department — ie. roofing the forecourt and partially enclosing it with a solid south wall and louvred west wall — was unsuitable.

The wind tunnel tests indicated that a roofed forecourt with completely louvred walls satisfied all design criteria. Architects from the Department and the National Capital Development Commission are finalizing the design for the modifications.

Mrs Candida Griffiths and Dr John Finnigan with testing station model.

New energy management seminars now on

A new round of CSIRO energy management seminars is now underway.

Work so far by the energy management unit (see *CoResearch* 282, July '85) has resulted in major cost savings at Black Mountain, Long Pocket and other sites.

The half-day seminars, which are intended to show how divisions can get more money for research by cutting power bills, have been organized by Ms Susan Moore from the ACS training unit at headquarters.

Technical information is presented by Officer-in-Charge of the Energy Unit, Mr John Buhot and Dr Ron McLaren from the Department of Resources and Energy.

All seminars will run between 10am and 1pm, at the following venues:

SYDNEY October 25
Hicks Room, Division of Food Research

GEELONG October 31
Conference Room, ANAHL

MELBOURNE November 1
Division of Chemical & Wood Technology

PERTH November 6
Conference Room, Division of Groundwater Research

ADELAIDE November 8
The Charles Hawker Conference Centre, Waite Institute

HOBART November 13
Conference Room, Marine Laboratories

News from the divisions

a round up of latest press releases

Tropical Animal Science: A working group from the Division's advisory committee has been established to review the program of industry co-operation in cattle breeding and management. The group will assess the current system, which has been in place since 1971, look at new possibilities and incorporate the findings in the Division's five-year plan.

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Tropical Crops and Pastures: Further funding restrictions have prompted the establishment of a new advisory committee to the Division, to ensure concentration of resources on important industry problems. Industry representatives will participate.

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ANAHL: A new reagent should boost ANAHL's diagnostic ability without the need to import live foot-and-mouth virus (which has been banned by the Australian Government). Inactivated diagnostic reagents produced by ANAHL staff in England have been shown to be effective in diagnosing outbreaks of the disease. Field testing is expected to get underway early next year in Thailand as part of a co-operative project between the Thai and Australian Governments.

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Building Research: The Division is now producing and marketing artificial intelligence systems to help in the design of industrial plants, buildings and cities. The systems will allow architects, builders and planners to produce more cost-effective facilities and better utilize building technology from Australia and overseas.

Venture capital for kenaf pilot project

Several years after research work was completed, commercial production of the fibre and paper crop, kenaf, in northern Australia could now become a reality.

The Queensland Government has allocated $400,000 in venture capital for a pilot project which, if successful, may provide a new crop for the state's cane growing areas and help in the conservation of tropical timber.

A Sydney-based company, Ankal Pty Ltd, will grow and process kenaf in the Lower Burdekin irrigation area, to assess its commercial viability.

It's too early to say whether it will in fact be a 'money tree' for Australian farmers, but kenaf pulp *can* be used to make banknotes among many other uses.

Exhaustive research into cultivating kenaf — a member of the *Hibiscus* family — in northern Australia was conducted by two CSIRO divisions during the 1970s. Before that, sporadic research had been done for many years.

The Division of Tropical Crops and Pastures undertook the agronomic research while Chemical Technology (now Chemical and Wood Technology) studied pulping and papermaking processes using kenaf.

The project also involved collaboration with government and private companies.

Most kenaf reserch has been located in Australia and the United States.

In Australia the emphasis was on year-round production under irrigation in the tropics, in contrast with the United States where researchers concentrated on temperate rainfed conditions.

A conference presenting the results of the CSIRO work was held in Brisbane in 1981.

The crop has been grown successfully overseas for some years. In Thailand, for instance, a mill in the north-east region has a capacity to process 200 tonnes of kenaf pulp a day.

The paper produced from kenaf can be used for a wide range of products, including writing paper, newsprint and cigarette paper.

Study Awards

CSIRO Study Awards have been granted to four staff members.

1. Mr Arthur Banks, Senior Laboratory Craftsman at the Marine Laboratories in Hobart.

2. Mr Roger Lipscomb, Administrative Officer at the Division of Food Research.

3. Mr Christopher Freund, a Senior Technical Officer at the Division of Applied Physics.

4. Mr P M Husband, Scientific Services Officer at the Division of Food Research Meat Research Laboratory in WA.

The CoResearch survey
Readers have their say

Most of the more than 600 staff who responded to the CoResearch survey support the concept of the newspaper.

But in their written comments many respondents indicate dissatisfaction with *Coresearch*'s style, content and editorial policy.

Sixty-eight per cent of the 630 respondents supported a newspaper like *CoResearch* compared with 13 per cent favouring a colour magazine, two per cent a monthly staff video and 11 per cent a video and *CoResearch*.

Asked whether *CoResearch* was useful in keeping staff in touch with what is happening in CSIRO, 68 per cent said it was 'quite useful', 18 per cent said it was 'very valuable' and 11 per cent said it was of 'little value'.

Most (83 per cent) want *CoResearch* to remain monthly and 69 per cent believe it should remain the same size.

A majority supported the continuation of the Chairman's, equal employment opportunities and health and safety columns. However, 54 per cent of respondents rated their interest in the equal employment opportunities column as low and 38.5 per cent said their interest in the health and safety column was low. Twenty-two per cent rated their interest in the Chairman's column as low.

Other results of the survey are:

- Seventy-four per cent felt the number of photographs were 'about right now'.
- Thirty-nine per cent thought regular cartoons would be an improvement, but 34 per cent thought cartoons would not be worthwhile.
- A majority (52 per cent) thought more reports of political and public debates about CSIRO would be an improvement.
- Seventy-one per cent supported the introduction of a regular Divisional feature detailing work in a particular Division or site.
- The proposed 'point of view' column written by individual members of staff attracted the support of 53 per cent of respondents and an 'in brief' section dealing with Executive decisions and policy circulars attracted the support of 62 per cent.

Seventy-eight per cent of respondents said *CoResearch* did not need a new name. However, 30 new names were suggested by those who supported change. These include CSIRO News, Siromag, Sirovine, Sci-tech News, CSIRO Bulletin, Sirobull, and CSIRO Reporter.

Many respondents made suggestions for change and criticisms of *CoResearch* in their written comments. We can't publish all of the comments, but this is a selection chosen to represent the most commonly expressed opinions:

I look forward to getting CoResearch each month, but would like to read more about the Divisions. Sometimes it is months before you see anything about some Divisions.

CoResearch at present seems to concentrate on the heavies. More emphasis should be given to the real people. As a staff paper, *CoResearch* should be targeted to giving information about all the staff that make up CSIRO. If articles on research achievements or political events are to be included in *CoResearch* more emphasis should be given to including those people that are directly affected and not just the figureheads. Research scientists already have professional outlets for their achievements even though they rarely contribute more than 10 per cent of the effort.

More from country divisions and less from Barry Jones and city divisions.

Lighten the content away from the bureaucratic ivory tower mentality. CoResearch is basically a boring paper to the majority of its readers. Its prime function is to use as a mat for peeling water and rock melons on for smoko. It is generally scorned as a useless bit of propaganda aimed at the few who maintain themselves in the job of creating the magazine. I would suggest that the paper down note itself so a much larger section of CSIRO (technicians, labourers, casuals etc) can read it without nodding off to sleep.

Note from the editor, Liz Burden

The readership survey in the August issue of *CoResearch* brought forth a worthwhile and fairly substantial response. There was much criticism (as you'll see from the comments) but it was heartening to see there were many constructive suggestions as well.

Many respondents blasted *CoResearch* for what they saw as it's Headquarters and/or scientific staff bias. The message was clear — make *CoResearch* a newspaper for ALL staff. With your help we're happy to do so, and your contributions will be sought in various ways.

One of the contradictions in the results was that while the overwhelming majority wanted *CoResearch* to remain a monthly publication, many people also wanted it to be more 'newsy'. This is understandable — after all what's the point of getting information long after it's been distributed by other means. The fact remains that it's very difficult in a monthly format to be completely up-to-date. But the good news is that steps are being taken to get *CoResearch* to you faster (see story over page).

Another conflict which emerged was whether we should make *CoResearch* a 'serious' scientific publication or one which would appeal to all staff regardless of their work. All I can say is that we have a charter to try to inform everyone. I suspect if we made *CoResearch* into a learned journal we would lose a huge number of readers and probably not satisfy those who wanted the change in the first place. I hope this is the correct assessment. We will aim in future issues to write on a broad range of issues and subjects and hope everyone can find something of interest.

This report on the readership survey has been compiled by Ellen Peterson.

Health and Safety could be better. Exples and methods of avoiding hazards are needed. I think a divisional column and a point of view column are excellent ideas. The trouble with all of these types of staff papers is that they always have to give a good front. I disagree with the idea of a column written by the staff associations because they have their existing publications. It might be worthwhile to get an occasional article from the staff councillors on general topics. eg the nature of cynicism among scientists.

More information of relevance to staff who aren't scientists. The problem with *CoResearch* is that it is too bland. It paints a rosy picture of CSIRO where everybody is patting each other on the back about all its achievements and ignores controversy, dissenting views and the parts of CSIRO that are not achieving anything, in terms of the management deficiencies that are a plague in CSIRO. In this age of industrial democracy *CoResearch* should be used as a medium for ordinary staff to vent whatever feelings they have about CSIRO and for controversial issues to be raised.

Are you game enough to be controversial? Do you have editorial/contributor networks/stringers who can represent common beliefs, feelings? How about some CoResearch awards of the month? Maybe solicit nominations for an award for some example of excellence/perseverance/dedication.

RAO Melbourne does not seem to get any mention — not that there is much to say – but if there was we don't seem to hear anything. Why don't you have a gossip column?

My major criticism of CoResearch is that it does not contain much news. Most of the information has been seen and circulated a month or two before it appears in CoResearch. Notices about new appointments are not worth printing unless they provide information about previous experiences and/or specific project involvement.

While some of the Chairman's columns have been informative, in general I haven't enjoyed the column. Some of the columns have been simply embarassing, some have been egocentric, bombastic and pitched at too high a level — typical ivory tower stuff.

	A	B	C	D
How often would you like to see CoResearch published? a. monthly b. fortnightly c. weekly	83	13·6	1·4	
CoResearch aims to keep you in touch with what's happening in CSIRO. In this respect is CoResearch a. useless b. of little value c. quite useful d. very valuable	1·1	11	68	18
Do you read people articles including retirements, obituaries a. always b. often c. rarely d. never	35	45	16·5	1·1
Do you read CoResearch stories on CSIRO research achievements a. always b. often c. rarely d. never	45·5	47·6	5	0·3
Do you read the letters to the editor section a. always b. often c. rarely d. never	35·5	47	15·7	0·6

Answers expressed as % of respondents. Some didn't answer all questions

The one that sticks in my mind is the one where he went right over the top, playing around with some mathematical equation or other. It seemed he was trying to be smart and little else. Perhaps *CoResearch* needs a fresh format, but please retain the letters to the editor and the people notes.

Intrinsically tedious topics, which I suppose you must cover [in reference to the equal employment opportunities and the health and safety columns].

At present *CoResearch leaves me feeling that it represents the party line rather than risk publishing anything really contentious. This makes it uninteresting and only marginally better than a sort of bulletin board. I would like to see more photographs taken especially for publication rather than dreary old record photos dragged out of someone's file. This would require a full-time, highly mobile photographer with a press background, not technical. A rich source of material, not often tried might be staff hobbies/enthusiasms. Run a second colour and considerably improve typography — at present it is visually unappealing.*

More humour. CSIRO has an unfortunate tendency to take itself too seriously.

An occasional bit of science among all the social, admin and political gossip.

I think that the editors of CoResearch do a very good job and should be congratulated for that.

More science, but with emphasis on the people behind it.

I recall on first joining CSIRO my astonishment and disappointment that CoResearch was the official staff newspaper. CoResearch looked like an evening glosssy tabloid minus the bums and tits. More serious journalism and a less glossy approach.

More technical articles.

More graphical explanations of the Organization's goals and how well (or poorly) they are being achieved. In 12 years with CSIRO I have never heard what CoResearch stands for — the name is not immediately identifiable with CSIRO and should be changed.

More fact. More criticism. Less CSIRO trumpet blowing. Less infantile humour. It should be a matter of concern to CSIRO that its house journal has something of the tone of a church magazine.

CoResearch appears to me to be an extravagant publication which serves little or no purpose (except to employ those persons involved in its production). At a time when CSIRO is being urged to curb expenditure and is suffering budgetary cutbacks, I believe the abolition of CoResearch would benefit CSIRO more than its continued existence.

The way in which most articles are written bothers me. In a staff newspaper I don't expect to see 'the minister annouced today that such and such has been discovered by CSIRO'. If it is a staff newspaper it should be written by staff for staff.

Basically the mag is boring. It is also very uncontroversial. It never seems to get involved in the issues. How about a few really hard-hitting and controversial articles/editorials. I image the editor as a geriatric, namby-pamby, do-gooder (nearing retirement of course). Is he/she?

I feel there should be more effort on staff matters including conditions of work and somewhat less of promoting 'gee-whiz' projects and stroking the big wigs.

Not enough attention is paid to scandal, bad treatment of officers, wastage of resources, failures etc, which is the sort of thing that makes newspapers seem like free press, rather than indoctrination propaganda, which we would expect from a totalitarian CSIRO.

If you do take on board more controversial items by staff then you will risk dirty laundry being displayed to the wider circulation. This may not help our image. I get an enormous number of policy papers circulated to me, so I would prefer commentaries by people rather than the statements themselves.

Have rarely seen a copy of CoResearch in the month of issue.

Bearing in mind the many demands on the CSIRO budget, I suspect that it might be hard to make a case for spending more on *CoResearch*.

Cont. on p.8

Parkville lab closes

Materials Science marks the end of an era

The transfer of the Materials Science Parkville laboratory at Melbourne University to the new laboratory complex at Clayton marked the end of an era. Mr John Spink, a Senior Research Scientist, offered this look back at the long association between the Division and the University.

The Division of Materials Science has vacated its laboratory established more than 30 years ago in the grounds of Melbourne University.

To mark the occasion, a farewell gathering was held on 22 August. Attended by present and past Division members from both its Parkville and Fishermen's Bend laboratories as well as a number of senior members of the University of Melbourne, this 'wake' signalled the end of a long and fruitful association between CSIRO and the University.

The Division had its origins in the CSIR Lubricants and Bearings Section established in 1939 as a wartime laboratory under the leadership of friction and lubrication expert Dr F P Bowden of Cambridge University. Dr Bowden, a graduate of the Universty of Tasmania had gone to Cambridge in 1926 as an Overseas Scholar and following completion of his PhD under the renowned surface chemist E K Rideal had achieved some eminence there for his studies on electrochemistry and the physical and chemical properties of surfaces.

The Lubricants and Bearings Section was to carry out vital research into the manufacture and maintenance of aircraft bearings, the nature of the initiation and propagation of explosives reactions, the measurement of the muzzle velocity of projectiles as well as improvement to oils and lubricants especially in regard to their use in internal combustion engines.

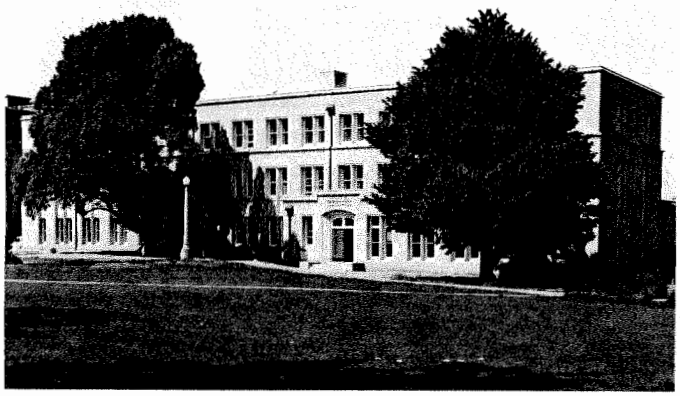
Through the generosity of the then Professor of Engineering, Prof. A Burstall, initial accommodation was provided. This was followed by long-term accommodation in the newly-completed Department of Chemistry with full co-operation of the Professor of Chemistry, E J Hartung. Throughout the war years, valuable assistance was rendered by the schools of Engineering, Chemistry, Natural Philosophy and Metallurgy in the provision of equipment for the new CSIR laboratory.

Pressures on University accommodation following the end of World War II in 1945 led to the Lubricants and Bearings Section — by this time renamed Tribophysics — having to make extensive use of temporary accommodation in the form of 'army' huts. By 1950 a new laboratory building for Tribophysics (which by then had been raised to the status of a Division) was under construction on a site adjoining the Melbourne University Chemistry School. The new laboratory was opened officially by 1953 by R G Casey who had, incidentally, played a crucial role in 1939 in the original appointment of Dr Bowden by CSIR to establish the research group.

For more than 30 years the Division of Tribophysics, renamed Materials Science in 1979, has occupied this Parkville laboratory and has maintained very close and cordial relations with the University of Melbourne. This has involved members of the Division assisting as part-time lecturers and demonstrators at the University and at the same time giving assistance, in the form of knowhow or the use of specialized equipment, to certain departments for post-graduate research activities.

An air of sadness prevailed at this farewell meeting of CSIRO and University colleagues. The association between the laboratory and the University of Melbourne is reflected in the fact that the present Chief of the Division, Dr J R Anderson and his predecessor the late Dr W Boas, had been senior members of University staff at Melbourne.

Despite the transfer of the Division to a site some 25km away, one hopes that many of the firm friendships and associated collaborative efforts will be maintained.



An early photograph of the Tribophysics Laboratory at Melbourne University taken shortly after it was officially opened in 1953.

The readership survey

Cont. from p.7

It would be interesting to have some convincing explanation why Headquarters is setting up more and more administrative specialists (and their support staff) who churn out more and more memos, requests and questionnaires so that the scientists who are the only reason why Headquarters exists have less and less time and fewer and fewer staff with which to perform the primary function of CSIRO. This is of some relevance to scientists because our general opinion is that the Headquarters admin performance is parasitic, largely irrelevant and incompetent.

As a scientist I am bored rigid by the never-ending committee reports, reviews and policy debates which have little or no end effect at the lab bench. Don't waste everyone's time by reporting them it only encourages more reviews. Instead concentrate on the scientific achievements (and failures) and the opinions of the scientific staff (not administration or management). This is where the real work gets done.

If just one enthusiastic reporter could be found in each location the flow of interesting snippets (both personal and technical) would be greatly enhanced. However, I don't fancy your chances.

CoResearch ***is technically very good and there is probably not a better publication of its type in Australia. My only criticism is that it is sterile and lacking in excitement.***

CoResearch is a valuable resource which should be enhanced, increased in size and distributed widely and quickly. Save money — use newsprint.

In a climate of the need to save money here is one that could sink and not leave a ripple. Producing *CoResearch* ***is an utter waste of money being an ego booster for the few.***

It is disturbing to have to throw such a beautifully printed paper and such a rare quality of polished paper in the bin after a couple of minutes perusal. Either make it more interesting so as I can waste more time reading it, or make it cheaper so as I don't feel so guilty discarding it.

It appears that of recent years *CoResearch* ***articles have been aimed at a wider audience than CSIRO staff. I believe that*** *CoResearch* ***should return to being a staff journal and if required other publications or means for external consumption be instituted.***

CoResearch has served little useful purpose throughout its entire history. There has been a slight improvement in recent times, but it does not warrant the cost of production. In these times of shrinking budgets and genuine financial hardships in the Divisions, I believe *CoResearch* should be discontinued and the money saved should be distributed to the Divisions to promote more research activity.

Less crawling to the brass.

A less patronising, more critical appraisal of the defects of CSIRO in its internal organization. *CoResearch* comes across as a patronising, unimaginative, rubber stamp news sheet for the bureaucracy in head office. it is too concerned with peripheral things and fails to communicate effectively as a staff newsletter. Where are all the articles criticising administrative bungling that we all know goes on? Where are the criticisms of head office delays.

CoResearch ***has improved in leaps and bounds in recent times. Do not fall into the trap of making too many changes too quickly and therefore run the risk of losing direction altogether.***

More humour and lighthearted treatment of science/scientists.

Is there censorship? All letters should be accepted.

A chattier style. More shorter articles. News of coming events. At present we only read about things long after they have happened.

I regard internal information with CSIRO as abysmal. There is a great need for a paper like *CoResearch* ***to be filled with regular, serious articles about research giving names of people involved. I feel that a paper with cartoons, non-scientific chit chat and pictures is a waste of taxpayers money. Unless*** *CoResearch* ***fulfils a scientific function it should be discontinued.***

CoResearch needs more people/Division-orientated articles and less on retirees. They deserve recognition, but that is all I seem to see.

I enjoy *CoResearch* ***which steadily improves. I would like to see greater independence with more critical appraisal of contentious issues. For example, case studies of research programs, instances where administrative inaction or ineptitude existed.***

CoResearch needs a new image. It has become predictable and boring. Would like to see a new format, perhaps smaller page size with colour. More articles on achievements.

Keep on putting across positive messages, it will improve many areas of CSIRO's operations.

I regard the regular column from the Chairman as very interesting and well presented.

I would like to see *CoResearch* ***used more by the staff of CSIRO as a means of improving the levels of internal communication within CSIRO. I would like an expanded letters to the editor and perhaps more opportunity for all members of staff to comment on matters that concern and/or affect them — from science budgets through to policies that apply on different CSIRO sites.***

We seem to have a personality cult pushed by *CoResearch* — too much Wild and Boardman. *CoResearch* is for staff. It is not for the Executive or HQ to peddle its line, nor should it carry information which should be disseminated through official channels. Badly edited and proof read. If CSIRO is going to have a staff newspaper at least let us have one free from schoolboy 'howlers'. In conclusion, I (and almost all staff I know) read *CoResearch* from cover to cover, but increasingly comments made are anti-*CoResearch*, anti-editor, anti-HQ, anti-the Executive. Maybe many of the faults lie at the Executive's door,

CoResearch ***appears to me to be an extravagant publication which serves little or no purpose (except to employ those persons involved in its production). At a time when CSIRO is being urged to curb expenditure and is suffering budgetary cutbacks, I believe the abolition of*** *CoResearch* ***would benefit CSIRO more than its continued existence.***

The way in which most articles are written bothers me. In a staff newspaper I don't expect to see 'the minister announced today that such and such has been discovered by CSIRO'. If it's a staff newspaper it should be written by staff for staff.

Try employing good/respected journalists.

There are people in CSIRO without PhDs believe it or not — you'd hardly know it from some issues. Am generally positive about the publication.

I think that the size of *CoResearch* ***should be increased and more people from CSIRO encouraged to contribute on their activities.***

There have been superlative examples of sirohumour in the past (eg exploding cowpats). More?

Copies of the present *CoResearch* ***end up on the media desks and they must have a great laugh at the rubbish presented in editorial and photography.***

Whatever the cost it is too much. Out here in the Boonies we suspect that the group of people in HQ responsible for all media and dissemination is overstaffed, overfunded, under employed, self congratulatory, holding major responsiblity for the internal and external communications failure of CSIRO in recent years.

A good well-balanced publication which I would not like to see changed significantly.

CoResearch does not involve staff, it is directed and run from HQ. Try getting more staff commitment. Some means could be appointing regional or divisional agents, sponsoring some staff activities, more humour. *CoResearch* editor to make public appearances at Divisions.

****

Future issues of *CoResearch* will be a little different.

Apart from some cosmetic changes — a red banner, new column sizes, matt paper, etc — the content is also being altered.

For instance, we will be including a pull-out Division feature, which is intended to keep everyone in the Organization up-to-date with what goes on in the divisions. The first to appear will be Forest Research. A different division will feature each month.

We are expanding our Letters to the Editor column and will include a new section inviting comment on a particular issue.

We will be attempting to give a much greater emphasis to the work and people of all the divisions.

Distribution will be different too. From November, *CoResearch* will be published in the first week of the month, not the last. Steps are being taken to cut printing and distribution time so it reaches you faster.

The editor, Liz Burden, would like to hear your comments on the new *CoResearch* in November (see address and phone numbers on this page).

CoResearch **is produced by the Science Communication Unit for CSIRO staff. It's also circulated to a number of people outside the Organization who are interested in CSIRO activities. Readers are invited to contribute or offer suggestions for articles. The deadline for contributions is the last Monday** *before* **the issue month. Editor: Liz Burden, PO Box 225, Dickson ACT 2602 Ph: 48 4479.**

CoResearch
CSIRO's staff newspaper
No. 286 November '85

Z-TECH moves CSIRO closer to manufacturing sector

'One of the Organization's most significant achievements in the manufacturing sector' — that's how CSIRO Chairman Dr Keith Boardman summed up CSIRO's research on PSZ and zirconia.

Dr Boardman was speaking at the launch of the new company Z-TECH in Melbourne late last month.

CSIRO (through Sirotech) and ICI Australia have set up the company to penetrate major overseas markets for high-technology ceramic materials.

The partners expect their zirconia products to be of higher quality than those manufactured overseas — an important factor in the new uses being developed for zirconia.

A $500 000 pilot plant has been commissioned. This plant, which is used for part of the process, was built by ICI Australia at the Division of Mineral Chemistry in Port Melbourne.

ICI Australia proposes to build in two stages a full-scale production plant, costing a total of about $12.5 million. Construction of the first stage will begin later this year at Kwinana in Western Australia.

Dr Boardman said the annoucement of this venture comes at a crucial time in CSIRO's efforts to improve relations with the manufacturing sector and more projects on a similar scale will follow.

In June last year the Science Minister, Mr Jones, had announced the collaborative agreement between the two organizations to develop new technologies to manufacture zirconia and related products in Australia from Australian zircon sands.

Since then, each has contributed about $1 million in research and development and ICI Australia has invested a further $6 million in plant and equipment.

Under the new agreement, the collaborative R&D program will continue for at least the next three years. So far, this program has resulted in a novel and flexible production process which enables a wide range of zirconia based powders and several grades of chemicals to be produced.

CSIRO will hold a 15 percent stake in Z-TECH, through Sirotech which negotiated the agreement with ICI Australia.

The agreement gives ICI Australia exclusive licence to manufacture zirconia products in Australia and overseas, except where overseas manufacturing would be against the national interest.

CSIRO will withdraw from Z-TECH after three to seven years, when the R&D phase is completed. At that stage, the Organization will convert its interest into royalties paid on sales for 15 years.

PSZ, the super-tough ceramic produced from zirconia, was discovered in 1974 when a group of scientists led by the late Dr Neil McKinnon stumbled on a phenomenon which has come to be known as transformation toughening.

Important discovery

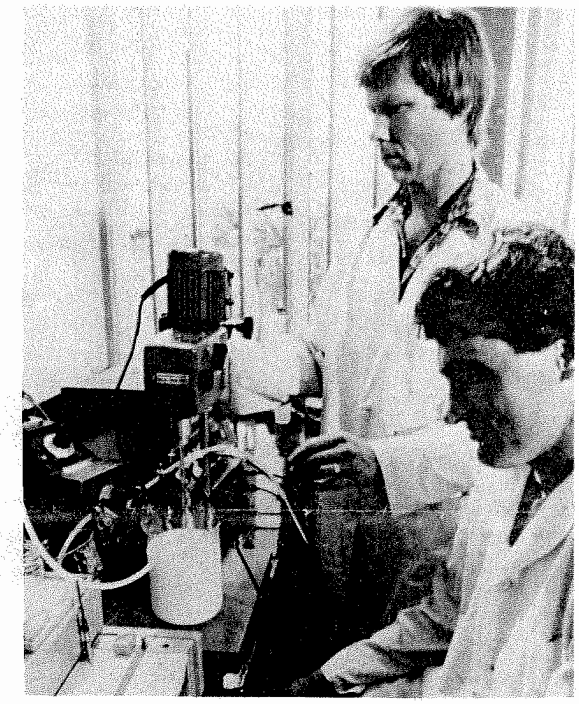
This discovery is now recognised as one of the most important single events in the science of ceramics. CSIRO patented the new process and the technology was licenced to a Melbourne company, Nilcra, which is now creating an important position in overseas markets.

One of the problems which has dogged the development of PSZ was the unreliability of the zirconia powders which had to be imported from the United States, Europe or Japan.

Because of the need for a reliable supply of zirconia, CSIRO began researching new processes for the production of high purity zirconia and by 1983 the work was sufficiently promising for the Organizaion to advertise for an industrial partner.

The major collaboration is between the Division of Mineral Chemistry, Sirotech and ICI Australia, although other divisions have also been involved, including Materials Science and Applied Physics.

CSIRO scientists involved in the project are Dr Hari Sinha, Dr Mike Murray, Dr David Conochie, Mr David Jenkins, Dr Martin Houchin, Ms Mary Woodward and Mr Eric Caesar, while the analytical support team comprises Mr Philip Strode, Ms Ilona Palmer and Ms Robyn Whiteley. Mr John Moresby was with the project until earlier this year.



Laboratory trial preparation of highly pure zirconia. Dr Martin Houchin, standing, and Mr Mark Frizzell.

While PSZ was the catalyst for CSIRO's move into zirconia R&D, it has always been realized that manufacture of zirconia powders for PSZ alone could not be an economic proposition. After extensive market research conducted by ICI Australia with potential zirconia customers around the world, significant market opportunities have been identified for Z-TECH's zirconia in the fields of engineering, electronics, abrasives, ceramic colours and refractories and for the zirconium chemicals in an even wider range of industries.

Australia produces about 60 percent of the world's supplies of the raw material, zircon sand. At the moment all of that said is exported to manufacturers in Japan, the US and Europe. Some then process it into zirconia and sell it back to Australia. Z-TECH will eliminate that system.

ASTEC report on CSIRO to PM this month

The report of the ASTEC inquiry into CSIRO is expected to be sent to the Prime Minister, Mr Hawke, on 15 November according to ASTEC Chairman Professor Ralph Slatyer.

Professor Slatyer said the ASTEC working party had received about 300 submissions, many from CSIRO staff.

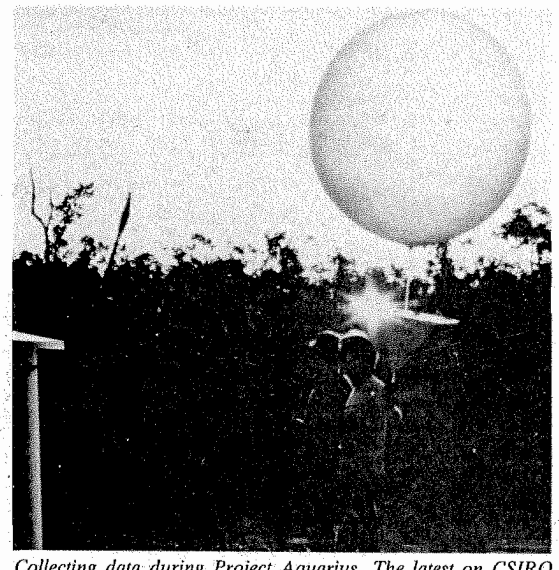
'We have appreciated the opportunity to consult widely within CSIRO and with the users of its research during the review,' he said.

Under the terms of the ASTEC Act the report will have to be tabled in each House of the Parliament within 15 days after being received by the Prime Minister.

'The report is now close to its final form and will be discussed at a meeting of the Council on 12 November before being forwarded to Mr Hawke,' said Professor Slatyer.

'The report will not become public until it is tabled in Parliament, which should be before the House rises on 6 December.'

The balloon goes up



Collecting data during Project Aquarius. The latest on CSIRO bushfire research and a lot more about the Division of Forest Research is in the first CoResearch *Division Feature, pp 5–8.*

From the Chairman

A column by Dr Keith Boardman

Many of the letters of good wishes which I received on my appointment reminded me that I was taking over the reins from Paul Wild at an uncertain and critical period for CSIRO, and my well-wishers were in two minds whether to send congratulations or commiserations.

I must confess that I would have wished for a more settled climate particularly during my early weeks as Chairman, but I am encouraged by the discussion I had with the ASTEC working party and am hopeful that CSIRO will emerge stronger from the review for the important challenges ahead. ASTEC will be reporting to the Prime Minister on the future of CSIRO within about 2 weeks of the appearance of this issue of *CoResearch* (see p.1).

It is now generally acknowledged that Australia must improve its performance of R&D, particularly in the private sector, if Australia is to gain a larger share of the world markets and maintain or improve its living standards. CSIRO has a central role to play. It is vital that strategic applications-oriented research, often with longer term perspectives, is maintained in Australia. Strategic research of this nature which is the principal activity of CSIRO is rarely undertaken by the private sector in Australia. I believe that CSIRO also should be willing to undertake more tactical research on behalf of the private sector at least in the shorter term. A small amount of fundamental research is needed in our programs to underpin our strategic research and ensure that our scientists are able to draw on the world bank of advancing knowledge. We should be striving to improve the effectiveness of our research effort to ensure that more of our research results are commercialized for economic and community benefit. However, I perceive in my interaction with economists and bureaucrats and many other groups that there is often an unrealistic expectation of the outcome of research and a lack of an appreciation that research is often a gamble.

The CSIRO strategy document 'Shaping the Future' was released soon after I became Chairman. It could not have come out at a more appropriate time in relation to the ASTEC review, and I was very encouraged by the amount of publicity it received and by the positive comments. The strategy formed the basis for the editorial of the 10 October edition of *Nature*. It acknowledged that our new policies were a step in the right direction, but it asked the question whether we will be able to turn the general principles into a more pointed pattern of research and whether the government will allow us time to do so. I have no doubt that we can achieve the objectives of the strategy if all staff play their part.

Peter Dunstan takes up his appointment as Director of Information and Public Communication at a critical time for the Organization. The review of external communication highlighted the need for CSIRO to become more effective in communicating with the users or potential users of our research and with the community generally. Peter, who previously was General Manager, Corporate Affairs for Unilever Australia, brings a wide experience to the task and I wish him well. I know that visits to Divisions are high on his list of priorities.

Internal communication

The recent study by the Consultative Council of internal communications recommended that we also improve our flow of information throughout the Organization and particularly between management and staff within divisions. The study recommended meetings of staff on a regular basis. This causes me to reflect on my early days in the Division of Plant Industry where Otto Frankel held regular meetings of the staff to discuss a wide range of matters. We valued those meetings and the opportunity to express views and even argue with the Chief, although there was a feeling among most of my colleagues that it was a case of guided democracy. Nevertheless, we appreciated the free exchange and the occasions did provide for information flow from the Chief.

I offer my personal congratulations to Graeme Ogilvie, Peter Colman and Ray Jones, the winners of the first round of CSIRO Medals, which were appropriately presented by Paul Wild during the annual meetings of chiefs.

I had intended to visit as many Divisions as possible in the period between the announcement by the Minister in June and taking up the position of Chairman, but the demands of the ASTEC review and Paul's absence overseas heavily curtailed my plans. I value my discussions with divisional staff and look forward to resuming my divisional visit itinerary when the ASTEC review is completed.

The dinner in Canberra for Paul and Elaine Wild to mark Paul's retirement was a great evening. The warmest of tributes were paid to Paul for his outstanding career and contributions to CSIRO and Australia. I was struck by the marvellous corporate spirit, which augurs well for the future of the Organization.

N Keith Boardman

Health matters

New OHS Advisor

Mr Ian Coady has taken up his position in the OHS unit. Ian, who worked previously within the OHS division at the Australian Atomic Energy Commission (Lucas Heights) brings with him considerable experience in the areas of safety engineering and radiation protection.

Medical Monitoring

A draft policy and guidelines on medical monitoring of staff is being circulated to divisions and units for comment. The CSIRO Health and Safety Committee will then consider responses and make recommendations to the Executive. Broadly the guidelines will assist local OHS committees to identify 'at risk' groups of staff who are to be offered relevant baseline and ongoing medical tests which are aimed at early detection of potential occupational diseases and provide a basis for suitable intervention. Dr John Graham, occupational health advisor, will supervise testing arrangements and will assess individual and group results.

A List of Lists

The OHS unit is compiling a series of mailing lists which contain the names of safety officers and other specialist OHS staff. These will be used as a basis for distributing copies of relevant journal articles and other OHS literature relevant to fields such as radio-isotopes and biological safety.

Management Committee Gets RSI (Paper)

At its October meeting, the Management Committee discussed a paper on Repetition Strain Injury (RSI) within CSIRO. Particular concern was expressed at the increasing incidence of this condition among technical and scientific staff carrying out keyboard and other repetitive work. The Management Committee noted action being taken to develop a comprehensive policy on the issue and requested that awareness and prevention training sessions continue to be carried out by the OHS unit.

Smoking in the Workplace

The Organization's policy on smoking in the workplace appears to have been generally well received although there are some areas where the wishes of individual members of staff can't easily be met. Many divisions and units have already erected the necessary 'no-smoking' signs in relevant public areas, hazardous laboratory areas and in shared offices where the majority of staff have requested the area to be a non-smoking zone. The support of all staff in respecting the wishes of those working in such areas is requested.

From next month, the Letters to the Editor column will be in two parts — the usual general section in which readers are invited to comment on any issue, and a new section in which we will ask for comment on specific issues. For the December edition we would like to hear your views on CREATIONISM.

Authors of all published letters will receive an instant lottery ticket. The deadline for December contributions will be Monday, 25 November.

Dear Editor,

The note (*CoResearch* Oct'85) about the TAD seminar given by Don Pescod at the Division of Energy Technology, prompts me to put in a plug for Technical Aid to the Disabled.

TAD uses the skills of volunteers to help disabled people. Many such people are also handicapped by low income. Commercially made appliances tend to be expensive, because of the small market over which the manufacturing overheads are spread, and are sometimes unsuitable without modification. TAD assistance improves 'quality of life' — for example making it easier for a person to get in and out of a car to give greater mobility.

TAD volunteers usually have a workshop, or access to one, and work with a 'client' to produce a tailor-made aid. The client pays for the materials only.

There are already several TAD workers in CSIRO, but more would be welcome. (Not only engineering, technical and science; there are administrative/secretarial jobs to be done as well.) TAD branches are in all States/Territories; new volunteers may contact a regional TAD (see local telephone directory) or they could call the TAD Federation at Royal Ryde Rehabilitation Hospital (02 808 2022), or me (062 48 4525).

Graham Warden
CSIRO HQ

Measurement parity between NML and UK/USA counterparts

Australian high-tech business will benefit from a new agreement between the National Measurement Laboratory and corresponding United Kingdom and United States laboratories.

The NML — headquarters of the Division of Applied Physics — and its counterparts have exchanged statements recognizing the equivalence of six primary standards of measurements.

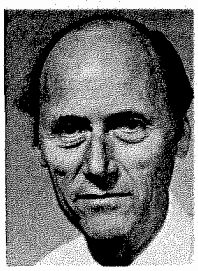
The move will particularly assist Australian manufacturers of high-technology products.

They had been required to satisfy stringent technical specifications set by UK or US partners and this had often involved traceability of measurements back to the national standards laboratories in those countries.

In the past it has sometimes been difficult to convince foreign companies that Australian-based measurements would fully satisfy their requirements. The formal recognition of equivalence between the national laboratories should help to overcome this problem.

The statements recognize an extremely high degree of equivalence between the national standards. For example, the standards of electric resistance are equivalent to within two parts in one thousand million, and the standards of time and frequency to within two parts in ten million million.

A Matter of Opinion



The first contributor to our new point of view column is Consumer Liaison Officer from the Division of Food Research, Mr George Fisher.

I think I know why I was asked to be the 'first cab off the rank' with this column: something to do with comments I made about technology transfer, perhaps? That, at any rate, is what I want to write about today, since it is a subject close to the heart of very many of us at all levels in CSIRO.

One of my jobs in Food Research for 15 years now has been talking to visitors, in organized groups as well as individually. Inevitably one develops a certain 'patter' in describing the work of the Division, suitably adapting it to the particular audience; yet two of the most frequently asked questions remain the hardest to answer — because there is no simple answer to either of them. They are: 1) 'how does CSIRO choose its research projects?' and 2) 'how does CSIRO communicate its research results to industry?' (*or* 'how do you ensure that industry takes up CSIRO ideas?', *or*, worse still, 'how do you decide whether the taxpayer receives good value from CSIRO?') I am sure many Tech. Secs./Liaison Officers etc find the explanations quite difficult to get across.

The 'Lucky Country'

I don't want to go into question 1) here, except to point out how exceptionally fortunate we are that the Organization remains free to determine its own program of research. Much has been said of late implying that there is too much interference from government in setting research priorities, yet no-one has even ventured to 'do a Rothschild' on us, ie. set a limit on basic, as against applied, research — 10 percent in the UK, I think. Considering where the bulk of our money comes from, we are indeed in the Lucky Country.

I happen to be one of those who believes that without a proportion of fundamental work, the applied side will eventually suffer also. Which brings me to question 2) the success or otherwise of technology transfer. 'You've got to have what the market wants at the right time and in the right place' said a colleague and I would add 'at the right price' because the customer must be sure there'll be a profit in it in the *foreseeable future*! There are few things sadder than to show off innovations which have been patented (sometimes at great expense), which work and which produce a better mousetrap but which industry has not taken up. It is therefore all the more pleasing that two such developments from the Division of Food Research at North Ryde have recently gone commercial, though only after 15 years of waiting on the shelf! Scientists, even those who are *not* wimps, are not often renowned as entrepreneurs, so what qualities should they exhibit to succeed in the technology transfer game? Please send your list of criteria to the editor. For my part, and judging by those who made it in this Division's labs in Sydney, Melbourne and Brisbane, they need the persistence, perseverence, the patience of Job, and intimate knowledge of the industry they intend to help, the unstinting co-operation of their chiefs, a great deal of luck and (let's not forget) an innovative mind. No, I am not forgetting helpful colleagues, great publicity facilities or Sirotech, but without the former the latter won't be enough, I fear.

Scientific literature

As I see it, there are many first-class scientists (and others) whose work will continue to be published in the scientific literature but have no application in industry. CSIRO needs these people as much today as it does the 'innovators'. Both have made CSIRO what it is today and for the powers-that-be to change the mix too drastically and too quickly (in response to demands by short-sighted politicians) will not serve Australia well.

If you want to know which of our innovations has done well, read *Food Research Quarterly* and our *Report of Research* (it appears around Christmas every year).

PS. I have just received part one of the Department of Science submission to ASTEC's Review of Public Investment in R&D in Australia. For a more detailed treatise of my subject, see pp.42–65.

External communication

Divisional campaign aims for full Myer report implementation

The role of divisions as the major communicators for CSIRO is being given a boost with a new awareness campaign designed to get active participation from chiefs and other staff members.

Ms Wendy Parsons *Photo: Peter Hay.*

Instigator and co-ordinator of the push for Myer report implementation at the divisional level is long-time campaigner Wendy Parsons from the Division of Forest Research.

Ms Parsons is now involved in gathering information and ideas to take to the meeting of all divisional chiefs in Sydney next February.

She will be making a presentation based on the results of a series of meetings of communicators in each state, as well as a major meeting planned for this month of Institute of Biological Resources communicators and scientific staff.

'I want to work towards top management getting a better understanding of what effective communication from the divisions is all about,' said Ms Parsons.

Ms Parsons wholeheartedly supports the recommendations of the Myer committee report (which is outlined in *CoResearch* 282, July'85), and believes the key to effective communication of research planning and results lies with the divisions.

not so easy to understand if you're not in a division,' she said.

'No one model will work for CSIRO. The divisions are so diverse in their work and the ways of getting through are diverse, although there are of course some basic techniques which you can use. But it's up to the chiefs and the scientists themselves to influence the way their division operates.'

The campaign is taking a two-pronged tack, working both within the Institute as well as on an Organization-wide basis with the chiefs' awareness campaign through communicators in each state.

Communicators are being asked to fully discuss the Myer committee recommendations with their chiefs (in many cases this has already been done) and to organize a divisional seminar seeking input from all staff members on ways of achieving the recommendations in that division.

Divisional communication

'The key to this issue is getting the scientists involved in thinking about divisional communication,' said Ms Parsons.

She said it's well known there has often been an uneasy relationship between the divisions and head office and this is detrimental to effective communication with the outside world — 'you can't separate internal and external communication'.

'I think both sides have been missing out because of a lack of trust, but I wish central management would realize what a gold mine they have in chiefs and staff who are on side,' she said.

'If they don't trust the chiefs to do some influencing of "key constituencies" then they're dismissing the major part of their strength to the outside world.'

There have been meetings held in most cities to talk about the Myer report and how it affects divisional communication operations. 'The results of those meetings are being fed back to me and I'll be making a presentation to the chiefs' meeting which will pull together any common threads which I can find from those meetings,' she said.

Women in Science project gets off the ground

More than 130 women scientists and technicians have volunteered to take part in CSIRO's Women in Science project.

The project, which was launched last month by the Federal Minister for Education, Senator Ryan, and the Minister for Science, Mr Jones, aims to encourage girls to continue with science subjects in secondary schools and to consider science careers.

Under the program women scientists and technicians working for CSIRO will visit high schools to discuss science careers with small groups of Year 10 (16-year-old) girls.

Since the program started in the ACT earlier this year, 134 scientists and technicians in Canberra, Melbourne, Sydney, Adelaide, and Hobart have volunteered to take part. The Science Communication Unit's Community Interest Group hopes to extend the project to Western Australia and Queensland next year.

Project co-ordinator, Mr Ross Kingsland, said schools wanting to take part in the program were sent a kit consisting of a videotape, activity sheets and suggested discussion topics for the whole class.

CSIRO, in association with the Women's Bureau of the Department of Employment and Industrial Relations, has prepared the 15-minute videotape on women and science careers.

'The kits will be used in lessons before the speakers visit and will allow students to consider the issues of a science career and to prepare questions,' Mr Kingsland said.

Senator Ryan, who is also the Minister assisting the Prime Minister on the Status of Women, said there were potentially as many able scientists and technicians among females as males, but far fewer girls than boys take science and mathematics subjects at schools.

'We are wasting a large proportion of our intellectual resources for science and we are failing to use the full potential of our young people,' she said.

Retirements

Mr John Russell is retiring from the Institute of Physical Sciences after 38 years with CSIRO. He was until recently with the Bureau of Scientific Services, but during his long career with the Organization he has also worked at the Division of Building Research and later Computing Research where he managed CSIRONET for many years.

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Dr Jim Esdaile has retired from the Division of Mineral Engineering after more than 20 years with the Organization.

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Mr John McKellar has retired from the Division of Entomology after 27 years. Mr McKellar, an Experimental Officer, has worked on a number of projects, including chitinase chemical work on defensive secretions and lipids.

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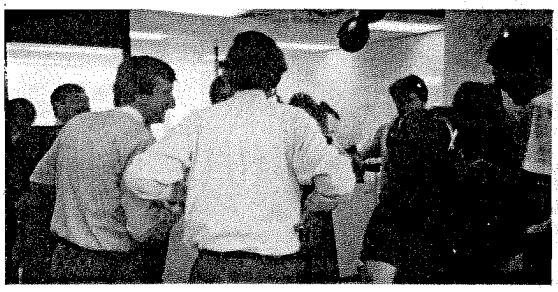
Senior Technical Officer **Mr Jim Birch** has left the Organization after more than 36 years. Mr Birch was with the Division of Plant Industry.



At last month's Octoberfest lunch hosted by the word processing catering whizzes at Headquarters a new dimension was added.

The usual spread of good food and drink was supplemented by entertainment. Mike Patchell, Terry O'Mahony, Tom Gosling, Neville Fletcher, Jeff Culnane and Greg Batchelor were volunteered from the Bavarian beer drinkers to participate in 'The German Bird Dance'.

After considerable personalized tuition from Letitia O'Connor, Eneley Leyes, Anne Lock, Jan Collins and Helen Hoare, the music commenced and these remedial foot-tappers proceeded to mimic the actions as they went.

The Maypole posed little problem. They all held hands tent-like in the centre. Although there was some confusion about which was clockwise on more than one occasion, obviously due to all those new digital watches.

The hand clapping was extremely well done given they only had to clap their own hands.

The finger motions to indicate birds chirping and the accentuated elbow movements symbolic of wings flapping were done with varying degrees of ineptitude.

But the highlight of the dance was the 'wiggle'. A graceful/not so graceful swaying of hips to the beat of the music, while lowering down onto their haunches — not unlike the movements of a brooding ostritch. An interesting assortment of co-ordination was revealed.

Now that the 'volunteers' have mastered the dance movements perhaps we could expect to see a polished performance, in costume, at the 1986 Octoberfest lunch, or short of that at some highly regarded ornithological extravaganza.

Jill Colefax

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Honourable mention for Paul

A sheet metal apprentice at the Division of Food Research's Dairy Research Laboratory has received recognition for the high standards he has attained in his course.

He's Paul Stephenson, who received the 'Special Honourable Mention Certificate for Craftsmanship' from the Industrial Training Commission. His pass rate was between 81 and 89 percent for all the subjects he undertook last year.

Paul has been with the laboratory since February 1983.

Four decades of CSIRO jazz

With a slight band reshuffle and three rehearsals behind them, the SIROCATS were back on the road playing their favourite jazz pieces to an almost capacity crowd at the grounds of the Division of Building Research. On stage at the 'sound shell' (a spin-off from the Division's research into the acoustic design of Melbourne's Myer Music Bowl), the six-piece trad-jazz band performed their own special renditions of 'Bill Bailey', 'Georgia', 'Dark Town', 'Royal Garden', 'What a Friend We Have In Jesus' and 'Tiger Rag'. For all you jazz buffs and boffins, the two listed songs the band didn't play were 'At the Jazz Band Ball' and 'Alexander's Rag Time Band' — the lunch time concert had run out of flex and it was back doing the laboratory swing. Meanwhile, afterhours, the evolving SIROCATS are rehearsing for the 40th Australian Jazz Convention at Ballarat, 26-31 December. Be there or be square.

Peter Russ

Members of the original SIROCATS jazz band, photographed in 1946 at a function in Camberwell, Melbourne town hall. From left: Charles Proctor, clarinet; Dave Patton, second trumpet; John Moresby, trombone; Tony Evans, guitar; Len Coe, trumpet; Horace James, drums; Ted Pilkington, piano; and Harry Simmonds, bass.

Looking more sedate these days, an impromptu version of the SIROCATS performed at the Division of Building Research in Highett, Victoria. Back row, left to right: Cliff Restarick, bass, from Mineral Engineering; Hal Christian, piano, and Rod Evans, banjo, both from Building Research; and John Moresby, washboard, from the original 1946 band. Front row, left to right, Rupert Palmer, trombone, from Building Research; David Patton, cornet trumpet, from the original band; and Fred Somerville, clarinet.

DFR integral part of Australian forestry network — Landsberg

Forest Research typifies all CSIRO Divisions. That is, it's unlike any other Division.

This is certainly the case in the usually oversimplified and confused issue of external communication with that amorphous group known collectively as 'industry'.

'The word industry is bandied about as a kind of generic term in CSIRO, and it's almost meaningless in some divisions,' said DFR Chief Dr Joe Landsberg. His user group is totally different from the 'industries' other divisions serve, and little comparison can be made.

DFR's user groups are diverse and often conflicting: State forest services who control 70 percent of Australia's forests; other land managers such as National Parks and Wildlife Services; private companies; conservation groups; the 'general public'; local government; and fellow scientists.

But Dr Landsberg believes that contrary to the findings of the recent independent external communication report which pointed to inadequacies in the Organization's interaction with the outside world, there's no significant gulf between DFR and user groups.

The Division deals with all aspects of forestry — from rainforests in north Queensland to South Australia's *Pinus radiata* industry.

Its charter calls for the provision of information to all groups, regardless of the views they espouse.

Dr Landsberg is a member of the standing committee which reports to the Australian Forestry Council. The Council is headed by Federal Primary Industry Minister John Kerin.

The DFR Chief also chairs the Directors of Research Committee which reports to the standing committee, and he provides a link between the two groups.

At the next level are about 12 research working groups, consisting of people at the 'rockface' — state forest service people, CSIRO and University scientists, company people.

'There's a good formal network, and a good informal one,' said Dr Landsberg.

'I think our efforts over the past few years have improved communication with professional groups in Australian forestry and helped bridge any gaps between these groups and our researchers.'

In fact, the major problems have stemmed from differences about the definition of the term 'forest research' — with foresters often more concerned with ad hoc, sometimes qualitative research rather than rigorous scientific experimentation.

'The Division is usually able to stay out of conflict between people who want the forests to be left alone and those who want to exploit them by making it clear that as far as possible only objective information is provided.

Dr Landsberg has taken on the formidable task of interacting with the hugely fragmented forestry sector.

He has had to explain the change of emphasis in the Division — away from tactical research and towards the strategic end of the scale. Instant, highly-specialized problem solving is no longer the way.

'I believe that by-and-large we are successful in explaining our redirection,' he said. 'We have gained respect for, although not always agreement on, the direction of our research. And the results we are supplying are being recognised by users as relevant.'

DFR has an Australia-wide charter and this is frequently at odds with the requirements of State governments. (The Federal Government doesn't own any forests, and CSIRO relies on forest owners for access to experimental sites).

Dr Landsberg finds the attitudes of state governments can be a problem, given their strongly localized interests.

'Their interests are state first and Australia second,' he said.

A living link to the ANZACS preserved by DFR technician

Stephan Mucha has responsibility for the controlled environment glass-houses and the 'mini-phytrotron' at Yarralumla.

But he also finds time to pursue his great interest — 'cloning' a living link with the 1915 ANZAC Gallipoli campaign.

He has done this by propagating grafts or growing seedlings from the Aleppo Pine at the Australian War Memorial in Canberra. This pine has a remarkable history dating directly to the ill-fated campaign.

In 1915, Lance Corporal Benjamin Smith of the 3rd Battalion pocketed a pinecone at Gallipoli and later sent it home to his mother at Inverell in New South Wales.

There's no indication that the cone came from the famous Lone Pine, but it almost certainly came from Lone Pine Ridge where thousands of ANZACs died.

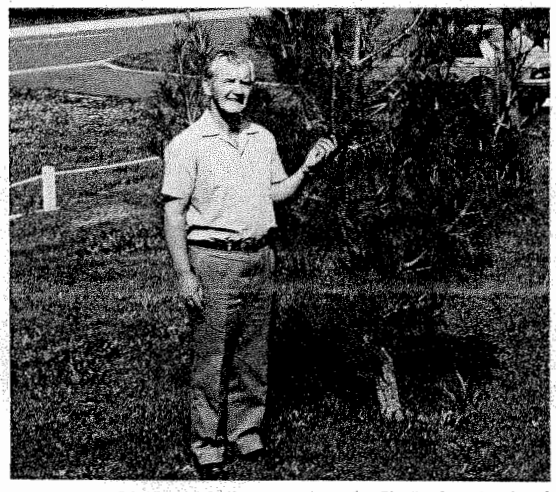
The original solitary tree, used as a marker by the Australian troops, was apparently shattered by shell fire and schrapnel between 5 and 10 August before the Australians got really close to it.

Lance Corporal Smith's pine cone was plucked from branches which the Turks had used to construct their overhead cover.

After reaching Mrs McMullen, the *Pinus halepensis* seeds were consigned to a drawer for 13 years. Then, in 1928, she decided (for reasons unknown) to plant the seeds. This was done, and despite the long delay she was able to raise two trees.

The following year, she presented one to the town of Inverell and the other to the Parks and Gardens section of the Department of the Interior in Canberra.

In October 1934 the Duke of Gloucester planted this second tree in the grounds of the Australian War Memorial, in memory of Australians who fell at Lone Pine.



Mr Stephan Mucha with 'lone pine' at the Sir Leslie Morshead War Veterans Home. Photo: Peter Hay.

There the matter rested until 1981, when Mr Mucha became concerned that the (thriving) tree would not last forever and it was time to consider propagating.

Buds from the pine were grafted onto *P. halepensis* seedlings, they thrived, and the following year Mr Mucha presented the resulting tree to the Sir Leslie Morshead War Veterans Home.

Since then, both grafts and seedlings have gone to a number of interested people. Not surprisingly, the Returned Services League has taken a great interest. In September this year two seedlings were planted in the grounds of the Turkish Embassy in Canberra by RSL National President Sir William Keys.

But perhaps the greatest accolade for Mr Mucha's work came on 31 October when two grafts were planted at the Australian Army's Armoured Centre at Puckapunyal in Victoria.

The Centre has been rebuilt and was officially opened on that day by HRH Prince Charles.

Mr Mucha has a special interest in the historic pine because of his own military background.

He was a second lieutenant in the Polish Army's armoured corps during World War II, serving under General Anders of the 2nd Polish Corps.

He saw service in Russia, North Africa and Italy — where he took part in the famous Monte Cassino campaign.

With his country occupied by Russian forces after the war, Mr Mucha didn't return but went to Scotland where for two years he was trained in forestry to equip him for civilian life.

After a short stint with the English Forestry Commission, he was sponsored by former comrades-in-arms the Rats of Tobruk to migrate to Tasmania.

He initially worked for the Hydro-Electric Commission but moved back into forestry soon after and has worked in the area ever since.

POLICY STATEMENT

All work at the Division is now planned on the basis of a six-page policy statement which firmly places DFR in the strategic research mode.

Although such an initiative from a CSIRO Division is a first, the document aligns pretty well with current CSIRO thinking — ie. that tactical research should be the responsibility of the user while the Division should establish broad scientific principles applicable across the entire forestry sector (often using the results of tactical projects).

The aim of the Division's research program is summarised in a single sentence: '...to supply a scientific basis for the balanced management of Australia's forests to meet the needs of a broad range of uses including wood production, water supply, recreation, ecosystem conservation and scientific reference'.

The policy calls for careful planning when undertaking collaborative projects and an openly-stated condition that the research is not for exclusive use by the collaborator.

In common with other Divisions, more resources must be deployed to Executive-designated growth areas. For example, work in the information technology area is being stepped up.

Plant pathology, another Executive-designated growth area, is strongly supported by the Division. This work is done in the Forest Diseases program, which complements research being done by State departments.

Divisional priority areas are considered as a two-dimensional matrix of broad forest types and disciplinary areas. The forest types are: protected forests; native forests managed for wood; and plantations.

The disciplinary areas are: genetics and physiology; soil management and tree nutrition: and management and control of pathogens.

Included in the protected forests category are those managed for habitat and watershed protection, and national parks. The central problems in these forests involve, for instance, fire management and ecology. The establishment of trees to protect the land is supported under this heading.

The consequences of disturbance (such as thinning) of native forests is examined in the second category. Rainforests — especially tropical rainforests – are classifed high priority.

Both softwood and hardwood plantations are examined in the third category.

Dr Landsberg on internal communication

Internal communication difficulties contribute significantly to what Division Chief Dr Joe Landsberg rather ruefully describes as the 'managerial nightmare' of running a division spread all over Australia.

The Division has centres at Atherton, Brisbane, Hobart, Mt Gambier and Perth as well as Canberra.

The tyranny of distance accounts for many of the problems Dr Landsberg faces in trying to keep his five regional outposts informed, happy and motivated.

'There's nothing more calculated to cause management and communication problems than being 3000 kilometres away from head office,' said Dr Landsberg. 'It's very easy, in that situation, to believe your work is not appreciated or your interests are being overlooked.'

Visiting the regionals involves about five weeks' travel each year and individual regional scientists come to Canberra as often as possible (which unfortunately works out at only about once every two years each).

'We are making a very strong sustained effort to encourage regional centres to see themselves as part of a single Division,' he said.

Articulate, communicative Dr Landsberg acknowledges the significant communication problems in DFR — far greater it would seem than those of external communication because people have to work so closely together and are in constant competition for resources.

Dr Landsberg maintains his eight program leaders should not only be good scientists, they should also be good communicators, and they are now chosen for these attributes.

Effective communication by the program leaders means communication skills are less important among the rest of the scientists, who should be free to get on with their research.

The problem doesn't lie with exchanging scientific information, but with the dissemination of the myriad administrative details which plague the lives of scientists caught up in bureaucracy.

Dr Landsberg meets regularly with his program leaders, although this doesn't always ensure perfect information flow. Pressure of work and other factors can even cause communication problems between floors in one building so it's not surprising that these are magnified when the workers are not on the same site.

Further complications arise from the heavy information requirements of headquarters which sap valuable time.

New bushfire unit to tackle high intensity fires

The National Bushfire Research Unit was established on the initiative of Dr Joe Landsberg, in response to widespread concern about the lack of any coherent and continuing research into bushfires. The Standing Committee of the Australian Forestry Council recommended in March 1984 that: all research related to bushfires be co-ordinated by a central authority or agency representative of the State and Commonwealth authorities involved; funds from State and Commonwealth governments be allocated for research and these be co-ordinated by the new authority; and that consideration be given to using the expertise developed during Project Aquarius to conduct research programs identified as high priority after the completion of that project in 1985. (Aquarius was set up to examine the use of airtankers in Australia to fight bushfires).

The NBRU is headed by Mr Phil Cheney. Apart from three other staff who have been seconded from DFR, one administrative and eight research positions have been created for the unit, seven in Canberra and two at the Division of Atmospheric Research in Aspendale, Victoria. In addition, the Division of Atmospheric Research will make available up to four of their staff to work with NBRU members on atmospheric problems associated with bushfires.

Once the new unit is fully operational, its wide-ranging charter will include tackling the 'grey areas' which limit the ability to fight high intensity, potentially devastating fires.

Mr Cheney said a great deal is known about fire control at low and moderate intensities, but once heat levels of 3500 kW/m are reached not even tankers on a 40m firebreak can hold the blaze. The effectiveness of fire retardant dropped from air tankers ceases at 2500 kW/m.

Some fires reach intensities of 100 000 kW/m and these have the potential to cause devastation on a similar scale to the infamous Ash Wednesday blazes which claimed many lives and destroyed millions of dollars of property.

Experiments conducted by Mr Cheney in 1983 indicated that actual fire behaviour often differed markedly from predictions made using current knowledge.

The unit will formulate mathematical models of fire behaviour to enable more accurate predictions to be made.

The information produced will be in a form which can readily be put into practice by firefighters, including volunteers.

Under its charter, the unit is committed to carrying out research in all important fuel types, not just forest fires — although it's based at DFR.

For instance, development of a national fire danger rating system for application to all fuel types will be a priority.

The research program will be devised in conjunction with a research advisory committee on which financial contributors will be represented.

It will not be directly involved in ecological research although it will be available to advise or co-operate on problems of fire behaviour or heat transfer with researchers in other groups within or outside CSIRO.

Within five years, it's hoped to establish a National Fire Research Laboratory in Canberra where studies on some fundamental aspects of bushfire behaviour can be carried out under controlled conditions of temperature, relative humidity, wind speed and radiation flux.

The unit will be able to let contracts to other bodies for research on matters such as the physiology of firefighters or the economic effects of fires and will be free to carry out fully-funded contract research.

CSIRO's continued funding for salaries and core programs will be dependent on the unit obtaining operating funds for major field programs from outside organizations.

So far there have been three offers of funding — from the giant Elders IXL company, the Country Fire Services of South Australia and an anonymous benefactor. There also have been offers of support (mostly in kind) from other forest and rural fire control authorities.

Mr Cheney estimates that $300 000 per annum will be sufficient for many programs but large amounts of operating funds are required to validate fire behaviour and suppression models (like Project Aquarius — $1 000 000) at moderate levels of fire danger. Much preparatory work, planning and a lead time of at least 18 months are required to ensure maximum benefit before going into the field.

Significant funding must come from outside organizations which may be more concerned with quick tactical solutions to problems. These problems can be tackled but Mr Cheney feels that the unit must also be committed to strategic research targeted at understanding how fires behave beyond the limits of field experimentation.

'We still have to reach a balance,' he said. 'We have to persuade our users that it's worth their while putting money into the unit to get some better answers on fire control than we have now'.

A number of project proposals are on the drawing board, subject to funding.

These include further development of the Project Aquarius suppression models for easy use by bushfire authorities, research into fire acceleration (one of the major 'grey areas'), the effects of hazard reduction burning on fire behaviour, fire management systems and wind flow patterns around the fire front and in uneven terrain.

Marion Fallon has responsibility for much of the communication/liaison work required by the unit and will work as its front-woman.

Through her work with Aquarius she has got to know the workings of bushfire research very well. Apart from her administrative work, Marion was also the 'mother hen' to the researchers during the three lengthy field trips in the Western Australian and later Victorian bush.

'At Nowa Nowa in Victoria I started running the radio communications during the experimental fires in 1983/84 and 1984/85, in the "esky" — a refrigerated shipping container where we had all the computer equipment,' she said.

Marion Fallon in the 'Esky'.

'At the height of the project there were probably about 70 people involved and it was imperative to know where everybody was at all times.'

Marion operated three radios — one on the Aquarius frequency, one on the Forest Commission frequency and also an air to ground radio to contact various aircraft — the airtanker, the Birddog helicopter and the CSIRO F27 which was doing infrared scanning.

Hectic stuff. Just as well, says Marion, that during the first year she was staying on a farm where she was able to keep her golden retriever, Matilda. 'I used to go for long walks in the evening and unwind,' she said.

'They were great years and great times, and I think they gave me a very good grounding for applying for this new position with the Bushfire Research Unit. I came to know the people in various rural fire authorities and research bodies fairly well and I think a link has already been created which will be very useful in this communication role,' she said.

Although the Unit isn't fully operational, there is a continuous stream of calls about bushfire research. Marion is now planning a series of information leaflets on bushfire research in Australia, as well as a tour of all states with fire behaviour scientist Jim Gould as early as possible next year.

'We'll be talking to various publicity departments and the forest commissions, rural fire authorities and fire research people to see what they would perceive as their needs of the unit. Then we will try and respond,' said Marion.

BARK has some bite

BARK — the Division's compact little newsletter — is claimed (by its creators) to be the most successful of its kind in CSIRO.

Wendy Parsons edits the bulletin, which recently hit the 100-issue mark. It first emerged on 6 July 1981.

It is rather different from other Divisional news sheets because it often contains controversial statements. Indeed, it sometimes gives the impression that BARK (and its editor) are not averse to a little 'stirring'.

It's not only snapped up by all Divisional staff, but also 'watched with great interest by all sorts of bureaucrats,' said Wendy.

She illustrated this claim by events which followed a comment in BARK by Joe Landsberg. He said 'I'm mounting a major offensive to try and persuade our honoured [Institute] Director to help alleviate the parlous state of the Divisional economy. I think he has to join me in an attack on the way the finance people do their sums...'.

BARK
P.O. Box 4008, Canberra ACT 2600

Says Wendy: 'Well! The road between Limestone Avenue and Yarralumla just about burned up under the wheels of an HQ car bearing certain senior finance men to 'discussions' with the Chief. This kind of public criticism burned deep into fragile bureaucratic egos...'

Plantation Forest Research Centre, Mt Gambier

O-I-C: Sadanandan Nambiar*. Staff: Brian Mitchell, David Sheriff, John Ruiter, David Fife, Philip Smethurst, Rae Lowther, Julian Mattay, David Gritton, Martyn Howard, Philip Keeley, David Klem, Leanne Haines, Gwendolyn Grace,, John Hall and Kevin Nickolls. (*Dr Nambiar is also leader of one of DFR's eight programs — Soils and Nutrition)

The group carries out highly regarded research on nutrient dynamics and their effects on photosynthesis and growth, root production and turnover, water relations in plantations and site productivity.

The centre provides a convincing illustration of the benefits of close co-operation with the user group.

An example of this is the extremely successful lupins project which has gone past the research phase and into the hands of timber companies in the region.

The project has examined the effective use of lupins (a species of legume) to help manage the nutritional resources in *Pinus radiata* forests.

With careful management, it's been shown that lupins can provide an effective nitrogen fertilizer for young plantations.

There was considerable initial scepticism about intercropping young pines with lupins for fear of inducing water stress in pines — and also about the feasibility of large scale operations.

However, Dr Nambiar argued the case with aeromonic considerations and theoretical calculations of available water with South Australian Perpetual Forests Ltd (SAPFOR), and the company agreed to provide the logistical support for the project.

Today, apart from SAPFOR, Softwood Holdings Pty Ltd and South-East Afforestation Services have taken up the developmental aspect of this research and a few thousand hectares of young plantations including a series of operational trials are under the regime.

Dr Nambiar conducted the first experiments in 1978. The problem he faced was to find a way of biologically fertilizing the soil (through both nitrogen fixation and organic matter) without using up the water necessary for the pines themselves.

Only about 600-700mm of rain falls in the region during the winter months, so water is a valuable resource.

A system of intercropping without causing water stress in the pines was developed. Correct timing is necessary and the lupins must only be cropped from May to November so they don't water in the summer.

Apart from the fertilizing action, the lupin plants can also provide shelter for the very young pines.

From the companies' point of view, a profitable offshoot could be the sale of lupin seeds — for which a big market already exists. The seeds contain 4.6 percent nitrogen and crops can provide high-protein feed for cattle.

Effective use of lupins commercially could drastically alter current fertilization practices undertaken by the forestry industry in the region and provide greater management options.

Dr Nambiar has since received substantial external grants from user groups to strengthen the research on the critical issue of the dynamics of organic matter and nitrogen between clear-cutting one crop and establishment (canopy closure) of the next. This project is spearheaded by Experimental Scientist Philip Smethurst and assisted by David Klem, Philip Keeley and Leanne Haines.

Another major venture at the Mt Gambier site has also attracted enthusiastic industry support.

Dr Paul Cotterill's research (assisted by Christine Dean and David Gritton) into tree genetics led directly to the establishment of a co-operative company to undertake tree breeding of superior *P. radiata* trees on behalf of major plantation owners in South Australia. (Dr Cotterill has since transferred to St Lucia).

The Southern Tree Breeding Association Inc. was created from a plan formulated by Dr Cotterill and is receiving international attention.

It has been backed by South Australia's Department of Woods and Forests, Softwood Holdings and SAPFOR.

The manager of the co-operative, Mr Tony Rout (a former CSIRO staff member), works from the centre's laboratory. CSIRO is represented on the board of management and provides a scientific consulting service.

It's the first time in Australia that this type of venture has been tried.

After two years, good progress has been made said Dr Nambiar. Seed orchards are growing and harvests are expected in about six to seven years.

The superior seeds produce trees between 10 and 18 percent bigger than usual. The trees also have very straight stems, making harvesting and milling easier.

Biology of Forest Growth experiment revealing how forests grow

Co-ordinator: Martin Benson. Sune Linder, Brian Myers, John Raison, Bill Thompson, Annabel Wheeler, Kurt Cremer, Wilf Crane, Tjeerd Talsma, Partap Khanna, John Banks, Arthur Eilert, Ed Meredith, Ian Craig, Jack Talbot, Dean Tompkins, Don Platts, John Smith, Graham Nicholls, David Bellingham.

Martin Benson explains how drought stress affects pine needle production. Photo: Peter Hay.

The fastest-growing radiata pine trees in Australia may soon become the fastest in the world at a major experimental site run by the Division in the ACT.

Work started in January 1983 at Pierces Creek using a 10-year-old *Pinus radiata* plantation. The experiment was established to describe why trees grow at different rates under a range of environmental conditions and to use the data involved in these explanations for mathematical models which should then predict the behaviour of trees and forests on other sites.

These models could have important consequences for the forestry industry. For instance, by determining growth rates in relation to fertilizers and/or irrigation, the economics of optimum growth can be decided by foresters.

But record-breaking growth is not the real aim of the research team. The goal is to fully explore the biological aspects of forest growth to enable the most effective management of Australia's forests.

A range of treatments is being applied to the original stand, causing the trees to grow at different rates.

There are five basic treatments:

- irrigated (since Spring 1984)
- fertilized with a single heavy dose of balanced solid fertilizer
- irrigation on top of the solid fertilizer application
- irrigated together with the weekly application of a complete nutrient solution supplied at a rate estimated to maintain maximum growth
- control (no treatment)

The difference between the control trees and those receiving the irrigation plus weekly nutrient treatment is dramatic. The latter's tall, lush growth is in marked contrast to the control stand just a few metres away.

Scaffolds which penetrate the plantation canopy enable the scientists to monitor stress levels and physiological processes such as photosynthesis and stomatal conductance as well as needle and branch elongation at all heights in the crowns of the trees.

On the ground, a variety of measurements is taken, including stem respiration in a specially-made chamber. Changes in stem diameter are recorded hourly by automatic dendrometer bands.

In the two years since the experiment was established the general weather patterns have swung from one extreme to the other, accentuating the effects of the treatments.

The CSIRO seed centre: an important international resource

Officer-in-charge: John Doran. Staff: Lex Thomson, Jerry Cole, Beryl Thompson, Steve Roffey, Tim Vercoe, Camille Erwin (plus Brisbane-based seed collectors — Suzette Searle and Jim Moriarty)

The seed centre provides an important resource for many countries needing information and small quantities of seed of our indigenous species for research, founder stock and pilot plantations.

For a number of developing countries in Africa, Asia and the Pacific, the supply of tree seed is made possible by the Australian Development Assistance Bureau (ADAB). Apart from seeds, the centre also provides literature, training and on-the-spot advice to organizations in these countries.

The Division is playing a vital role in finding and sampling the seed of species with the potential for community forestry projects where characteristics such as size and fibre properties become subordinate to growth rate and burning qualities. Much of this work, which is concentrated on the seasonally dry tropics and subtropics, with centre collectors based at Atherton and now Brisbane, is being funded by the Australian Centre for International Agricultural Research (ACIAR). The properties of these little known Australian species will be assessed in co-operative projects in East Africa, South-East Asia and China.

The seed centre now distributes more than 4000 seed lots per year to more than 80 countries.

The centre is jointly funded by CSIRO and ADAB with token support from FAO.

ADAB sponsorship of the program since 1977 tops the half million dollar mark.

As part of the service to developing countries, officers from the centre make advisory visits once a year to help determine the most suitable Australian species for the conditions. It's not uncommon to find mistakes in the identification of species in cultivation.

The centre has seed of 800 different species — 450 eucalypts, 200 acacias and a range of others such as casuarinas and grevilleas.

The majority are native Australian species, although some exotics are kept.

An index system provides detailed information about the seed collections to assist in finding the best collection sites.

At the centre, the seeds are first fumigated, catalogued and tested for viability, then most are placed in calico bags and stored in tins stacked on shelves.

A small number require cooler conditions or even freezing.

Not all seeds are sent overseas. About 10 percent are despatched within Australia — to CSIRO Divisions, State Forestry Departments, universities, forestry and mining companies.

Alcoa, for instance, is heavily involved in reforesting its land mined for bauxite in Western Australia and already has made use of several eastern state species which do well in the conditions.

Mr Doran said mining companies are becoming increasingly involved in restoring trees to mined areas and are devoting considerable resources to tree projects.

He is joint author of a chapter of a new book funded by the Australian Mineral Industries Research Association called Germination of Australian Native Plant Seed.

His chapter covers germination and seed development of the species in the family *Myrtaceae*. (The book is yet to be released).

The Division claims that work by the seed centre has helped to boost Australia's international reputation.

With more than 80 percent of the work at the centre directed toward developing countries, researchers are looking to the aid community for continuing support at least to allow the present activities to be maintained.

Tasmanian Forest Research Group deals mainly with native trees

Officer-in-Charge: Glen Kile. Staff: Bob Ellis, Chris Beadle, Frank Podger, Philip West, Trevor Bird, Adrian Graley, Pat Hallam, John Honeysett, Charles Turnbull, George Dolezal, Rick Hand, Derek McLeod, Nicky Barr, Malcolm Hall, Bernard Kunda, Philip Pennington and Brian Boxall.

Work at the Tasmanian Forest Research Group assists the state's important wood production industry which is mainly concerned with native forests.

The 10 scientists in the group run six project areas and work where possible in close cooperation with the Tasmanian Forestry Commission, other State instrumentalities, the University of Tasmania and private forestry companies.

Officer-in-Charge Dr Glen Kile, said one of the major projects is ecophysiology of plantation species, and a recent field day to demonstrate progress in the work proved highly successful.

The project involves studies in tree physiology and ecology, with emphasis on photosynthesis, dry matter distribution, water relations and tree growth patterns.

Four sites have been planted with *Pinus radiata* and five fast-growing Eucalyptus species in the Esperance Valley in the south-east of the State. Information on how each species responds to its environment, particularly in relation to temperature and water availability, can be used to predict growth patterns and suitability in particular areas.

State forestry commission, forestry company and university staff attended the open day — the first of its kind held by the group.

Meanwhile, work on tree breeding strategies is being stepped up by the group and a new geneticist is being appointed this month.

That person will initially be based at Burnie, with Australian Forest Resources and the new position will involve breeding eucalypts, with particular emphasis on *E. regnans*.

'There will be a lot of basic genetic work to improve productivity through breeding,' said Dr Kile.

Other projects in Tasmania are: forest diseases, ecology, silviculture, dendrochronolgy.

Tropical Forest Research Centre

OIC: Frank Crome. Staff: Geoff Stocker, Ian Webb, Tony Irvine, Geoff Tracey, Greg Unwin, Keith Sanderson, Dan Fitzsimon, Ron Knowlton, Stephen Barry, Denise Mallett, Les Gampe, Roy Phelps, Neville Starkey.

Rainforest research has been earmarked as a priority area for CSIRO and greater resources are being directed to the Tropical Rainforest Research Centre at Atherton.

The Institute of Biological Resources has allocated $180 000 for building work to accommodate up to 16 new full–or part-time staff members from several divisions.

Already, five staff are to be redeployed from Brisbane and Innisfail to Atherton.

Professional staff at the Atherton laboratory comprise six from DFR plus one from Wildlife and Rangelands Research and one from Plant Industry.

Interviews are likely to be held in January for a new research leader, to head the new research drive at the centre.

The rainforests in northern Queensland extend in a discontinuous belt for about 500km along the state's eastern coast (mainly between Townsville and Cooktown) and are an important national resource.

Research staff at the Atherton laboratory conduct research into the Division's Soils and Nutrition, Genetic Resources and Breeding Strategy, and Ecophysiology programs, directed at better understanding rainforest structure, floristics and dynamics.

The Centre works closely with organizations associated with the the tropical rainforests on a number of projects.

A member of the laboratory's staff was represented on a working party which reported in September to the Federal Minister for Arts, Heritage and Environment, Mr Barry Cohen, on rainforest conservation in Australia.

That report pointed to inadequacies in the extent of information available on rainforest resources and the effects on these resources of various activities and management practices, including logging.

South Queensland Regional Group

OIC: David Cameron. Staff: Stan Rance, Paul Cotterill, Christine Dean, John Burette, Bob Hewitt, John Maggs, Bronwyn Nelson, Bob Voss

David Cameron heads the Division's South Queensland Group which is based at St Lucia, with a field station at Samford, 29 kilometres away.

It's at Samford that the major project for the group has been set up, under David's vigorous leadership.

The project is called STAG, which has little to do with the forest animal but stands for Soil Trees and Grass.

This is a collaborative study involving the divisions of Forest Research, Soils, Tropical Crops and Pastures, Mathematics and Statistics and researchers from the Botany Department of the University of Queensland and the Griffith University School of Australian Environmental Studies.

It's a 10 hectare area where fast-growing eucalypts have been planted in pasture in an experimental 'wheel' design made up of concentric rings of trees planted at varying spaces apart.

The aim is to improve our understanding of what happens in the tree-pasture interaction at a time when the great value of trees in land management is being recognised throughout Australia.

One important outcome of this recognition is the increasingly popular business of agroforestry, where pasture, crops, trees and animals are raised together in varying combinations.

Equally important is the role of trees in helping reduce the problems of soil erosion and salinization.

In all these, land managers need to have the answers to a number of fundamental questions, such as what depth can tree roots penetrate and extract water from the water table? What is the effect of various tree densities on pasture production? Can frosting and heat scorching of pastures be reduced by establishing trees in the pasture? What is the role of trees in cycling nutrients?

Results from STAG should provide answers to at least some of these questions.

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Western Australian Regional Group

OIC: Frank Hingston. Staff: Ian Brooker, Nick Malajczuk, Tony O'Connell, David Murray, Geoff Dimmock, Ian Foster, Jeff Galbraith, Tim Grove, David Darling, Les McGann, Phillipe Menage, Barry Rockel, Helen Anderson, Mark Jones, Shirley Snelling and Frank Broomfield.

A major project underway now at the Division's Western Australian site involves measurement of the effects of fluoride on native trees.

The Division is working closely with two State government departments on the project, which will be part of an environmental impact statement on the likely effects of establishing a smelter in the region.

Officer-in-charge Dr Frank Hingston, said the experiment involves fumigating the trees in an open-top plastic canopy with low level doses of fluoride. The uptake of fluoride from the air and the effects on growth are being measured for four native WA trees.

Another important project at the centre is being conducted by Dr Nick Malajczuk in collaboration with the State Department of Conservation and Land Management and Alcoa.

Dr Malajczuk is working of a remarkable symbiotic relationship between the feeder roots of eucalypts and fungi which could soon lead to the availability of superior eucalypt seedlings specially suited to particular sites.

The WA Chip and Pulp Company has provided a grant for the work.

CURRENT PROGRAMS AND SUB PROGRAMS

PROGRAM C — MODELLING AND BIOMETRICS (Leader — Ross McMurtie)

Sub program	1	Forests stand modelling
	2	Forest canopy modelling
	3	Plant-water relations of trees
	4	Nutrient cycling
	5	Data management
	6	Forest statistics and modelling
	7	Models for forest management

PROGRAM D — SOILS AND NUTRITION (Leader — Sadanandan Nambiar)

Sub program	1	Soil processes and nutrient cycling in termperate forests
	2	Soil processes and nutrient cycling in tropical rainforests
	3	Soil processes and ecology in *E. delegatensis* forest in Tasmania
	4	Measurements and analysis of biomass and wood yield from forests under different management regimes
	5	Site factors and productivity of radiata pine plantations
	6	Nutritional physiology of radiata pine and Eucalyptus plantations
	7	Soil-tree relations in sub-tropical forests

PROGRAM E — GENETIC RESOURCES AND BREEDING STRATEGY (Leader — Rod Griffin)

Sub program	1	Breeding strategy
	5	Seed centre
	6	Gene resource assessment
	7	Systematic botany
	8	Reproductive biology of *Eucalyptus*

PROGRAM F — FOREST OPERATIONS (Leader — Bill Kerruish)

Sub program	4	Harvesting and processing small eucalypts

PROGRAM G — ECOPHYSIOLOGY (Leader — Sune Linder)

Sub program	1	Ecophysiology of eucalypts
	2	Ecology and physiology of Tasmanian forests
	10	Vegetative propagation of forest trees
	11	Biology of forest growth
	12	Silviculture of *Pinus radiata*
	13	Environmental physics
	14	Rainforest dynamics

PROGRAM H — NATIONAL BUSHFIRE RESEARCH UNIT (Leader — Phil Cheney)

Sub program	1	Bushfire research

PROGRAM I — FOREST DISEASES (Leader — Ken Old)

Sub program	1	Diseases of *Pinus radiata*
	2	Dieback of native forest species
	3	Pathology and ecology of *Phytophthora cinnamomi*
	5	Forest microbiology
	7	Eucalypt cankers
	8	Eucalypt mycorrhizae

PROGRAM — FOREST ECOLOGY (Leader — Frank Hingston)

Sub program	1	Management of Native eucalypt forests

HOW TO CONTACT THE DIVISION OF FOREST RESEARCH

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Tropical Forest Research Centre, Atherton	Maunds Road, Atherton QLD PO Box 780 Atherton QLD 4883 PH: (070) 91 1755 TLX: 488840
South Queensland Forest Research Group, Brisbane	C/- Division of Tropical Crops & Pastures, Samford Pasture Research Station, Old Cedar Creek Road Samford QLD PH: (07) 289 1685 c/- Division of Tropical Crops and Pastures Cunningham Laboratory, 306 Carmody Road, St Lucia, Qld. 4067 PH: (07) 377 0209 TLX: 42159
Tasmanian Forest Research Group, Hobart	'Stowell' Stowell Avenue, Hobart, Tas. 7000 PH: (002) 23 5555 Hobart Airport, Llanherne, Tas. 7170 PH: (002) 48 5051 TLX: 58300
Plantation Forest Research Centre, Mt Gambier	Mount Gambier Airport, Mount Gambier, SA PO Box 946, Mount Gambier, SA 5290 PH: (087) 25 5555 TLX: 80024
Western Australian Forest Research Group, Floreat Park	Underwood Ave, Floreat Park, WA Underwood Ave, Floreat Park, WA Private Bag, PO Wembley, WA 6014 PH: (09) 387 4233 TLX: 92178

'An ordinary and great heart'

Dr Keith Bigg, who has been at the forefront of CSIRO cloud physics research, recently had to cope with the accidental death of his wife during a visit to China. After the car accident, interpreter Miss Hao Suisheng wrote a moving tribute to Mrs Bigg — and to Dr Bigg's courage. Dr Bigg has consented to *CoResearch* reproducing the tribute, along with his own account of the accident.

Dr Keith Bigg was invited by Governor Huang of Qinghai Province to deliver lectures at Xining. There were many scientists scholars, technicians from seven provinces came to Xining to listen to his lectures. I was deeply moved by his spirit of brave, staunch, selfless and amazing willpower and especially his friendship to the Chinese people.

Dr Bigg's wife, an ornithologist, came with her husband in order to observe the birds in this unique continental environment.

On 28 June a tour to the famous Bird Island was arranged. But a terrible car accident happened on the way. Mrs Bigg was dead and Dr Bigg was also injured on his leg and arm. During this very sad time he insisted on giving a last lecture without care for his own health.

On 1 July he gave us a wonderful last lecture. All the people who attended were deeply moved by his spirit and there were tears in the listeners' eyes.

While Dr Bigg knew both Governor Huang and the Australian Embassy would assist him in transferring his wife's body back to Australia, he decided on another plan — a plan suggested by Mrs Bigg's intense love of nature and particularly of birds. He asked that Mrs Bigg should be cremated locally in accordance with local custom, that her ashes should be distributed on Bird Island and a small memorial plate be erected with the words in both English and Chinese 'To the memory of Mrs Robin Bigg of Sydney Australia who loved wild birds and died in a car accident on the way to this sanctuary on 28 June 1985. Her ashes have been distributed near this spot'.

According to international customs and our State regulations, our province should pay $2000US in compensation to Dr Bigg. But he asked that the money be used in some way to benefit the people of Qinghai Province and has suggested upgrading the facilities of a hospital. Also, he donated the money which Mrs Bigg planned to spend in China to our province with the request that it be used as a small contribution to the upkeep of Bird Island.

All the people who met Dr Bigg were deeply moved by Dr Bigg's high spirit of brave, staunch, selfless, fearless and amazing willpower. He is a really great scientist and truly a friend of Chinese people. Just as Governor Huang said: 'Dr Keith Bigg has ... recorded a brilliant page on the history of the friendship of Chinese people and Australian people. The four million Qinghai people will always remember him'.

Miss Hao Suisheng
The Government of
Qinghai Province
Xining, Qinghai,
Peoples Republic of China

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We left Sydney on 23 June and received a warm welcome in both Beijing and Xining, where I was to give a series of lectures. Xining is at the eastern edge of what used to be Tibet and is a curious mixture of ancient and modern. The extremely ancient and impressive city wall still exists in parts and the mud courtyard houses of Tibet, mixed up with large numbers of high-rise buildings.

Robin was escorted on sight-seeing tours by two people, Miss Hao Suisheng, a very pleasant young lady from the Governor's office and Mr Yao Gong-Qi from Xi'an University. I was helped by a scientist who came from Beijing with us, an expert in my field. To my surprise the lectures scheduled were for three hours each and instead of the limited audience I expected, people came from half of China to attend.

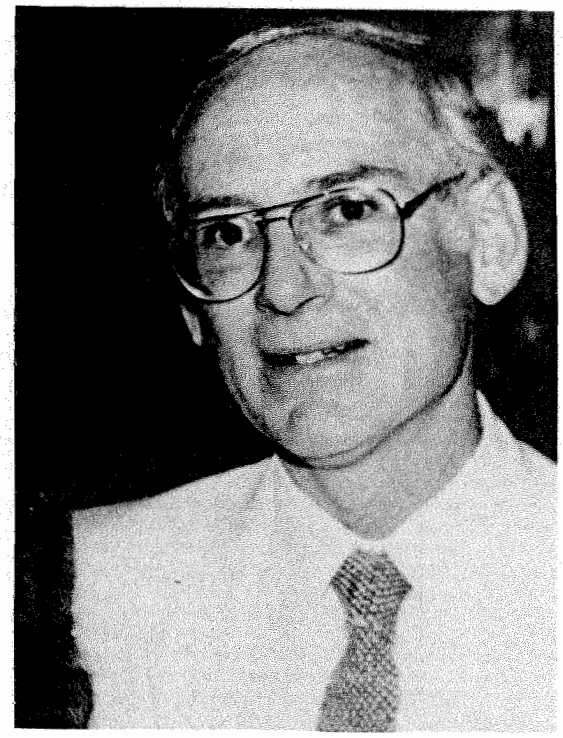
On Friday morning we climbed into a new Toyota Land Cruiser at 5.30 to set off for the lake — about a five hour journey. It was an interesting drive up the gorge of the Huang Shui River, a large vigorous stream travelling swiftly down a deep gorge. The road rose steadily from Xining's 7500ft to 10 500ft up on the treeless grasslands of the Koko Nor basin. After a brief stop, I asked Robin if she would like to change places because there were now for the first time many interesting birds around and the view was far better in front. We changed seats. This provides one of the subjects of the 'if only' routine with which I tortured myself for some days.

Fifty kilometres of dreadful gravel road followed. The potholes and ruts were almost deep enough to swallow a tyre. Then we came to a long straight level stretch of new gravel road in good order. Robin was very excited. She had just seen her first flock of seven bar-headed geese. Symbolic? Why was it not six or eight? The driver had put the speed up to 100 when without warning the left rear tyre blew out, we swerved left, he over-corrected and the vehicle rolled in a series of terrible crashes and thumps. I came out of the fog to find myself alive and the right way up. At the same time I realized that Robin had disappeared. The door, amazingly, still opened and I raced back down the road to find Robin on her back some 20m away with her eyes staring sightlessly into space. As I cradled her head, she suddenly focused, smiled and said 'help me to sit up'. The relief was too much! I said 'the mini-bus that is coming after us should be here soon and we will rush you to hospital'. 'Oh surely that won't be necessary,' she said, obviously worrying about missing out on the birding. She had had a terrible blow on the temple and the back of the head which was bleeding, but no other obvious troubles. Said she felt all right inside and could move arms and legs.

The first vehicle along was a small 4WD and we put the two seriously injured in that. The jolting was agony for Robin and it was a great relief when the mini-bus arrived. But the ordeal wasn't over. I'll pass over the next hour it took to get back to Gang Cha where there was a small hospital surrounded by a sea of mud. There were several doctors and nurses and they got into action very swiftly. Robin's blood pressure was dangerously low and they got her onto oxygen very quickly. They also got two drips going but warned me that what she needed urgently was a blood transfusion and they had neither facilities for taking it, keeping it or administering it — it would take a minimum of four hours to get it from Xining. Two hours later, without any warning her heart suddenly stopped and although they tried immediate resuscitation and injection they could do no good. Watching their faces, I didn't need an interpreter. Later it was found that she had had massive internal haemorraging for which there had been no external evidence.

The Governor, his wife, every major official in the province and half the senior staff arrived with the blood less than four hours after the telephone call for help, which must have been quite a drive. But even if they had arrived in an hour, or even if the best hospital in the world had been there I don't think Robin could have survived.

Vale Bill Kelly



CSIRO's first Senior Media Liaison Officer, W J (Bill) Kelly, died in Royal Canberra Hospital on 8 October.

His death, at the early age of 47, leaves not only a gap in Australia's journalistic community but in the community at large.

Bill joined CSIRO in 1974. He established the Media Liaison Group and introduced a new concept of media awareness for the Organization by taking it to the people via regularly produced bulletins for suburban, country and city newspapers.

Integrating a film unit into the Group he also produced radio, television and film clips about the Organization's activities.

This unique combination of film making and media liaison was so successful that, for many years, the Media Group served as a model for government departments and instrumentalities.

The elder son of Jack and Melba Kelly, Bill was born in the Sydney suburb of Belmore.

After completing secondary studies at Canterbury Boys High School, Bill joined the *Sydney Sun* newspaper as a copy boy, quickly moving on to become a cadet journalist.

His inquisitive, incisive mind and his ability to get to the heart of a story in a few succinct paragraphs soon made him one of the best young reporters in Sydney.

In his work, he championed the cause of the underdog, following a story day after day until, in many cases, he won a public victory for someone not able to stand up for himself.

Bill retained his sense of fair play and absolute integrity throughout his lifetime and these traits, along with his impish sense of humour, won him friends everywhere he went.

Bill first came to Canberra in the late 1950s as a young sessional reporter for the *Sun*. He moved to the national capital permanently in the early '60s so he could work full time in the *Sun*'s Parliamentary Press Gallery bureau.

In 1967 he joined the National Capital Development Commission's public relations team and in 1970 moved to the Department of Shipping and Transport's PR unit before joining CSIRO.

By 1982 Bill was ready for a new challenge — as Director of Public Relations for the Department of Employment and Industrial Relations, a position he held until his death.

Although he had been ill for some months, Bill only found out he had cancer four weeks before he died.

Until the end he fought the disease with great courage and dignity. The nursing staff around him gave him great support and care throughout the battle and many commented on his continual good humour and courtesy throughout his ordeal.

Although many people were shocked by Bill's early death, he leaves behind the memory of a fine man who lived his life well and honourably and who always had time to smile and lend a helping hand to a fellow human being.

Bill is survived by his widow, fellow journalist Ann Beaumont.

He also leaves behind his parents, a brother, four adult children, four stepchildren and seven grandchildren.

Natalie Provis

Algae — A new industry

A Melbourne-based company, Betatene Ltd, recently signed a $2 million sales deal for Australia's first shipment of natural beta-carotene. The deal could be the first step in the development of a new algal farming industry in Australia. SCU journalist, Ellen Petersen, reports.

A product which colours the African flamingo and many Australian salt lakes pink is shaping up as the basis of a major new industry. The product is beta-carotene and its unlikely sources are minute single-celled algae.

For the flamingo the source is spirulina, a green moss-like plant growing in the lakes near its breeding grounds, but for industry the world's highest known natural source of beta-carotene will soon be harnessed.

This source is *Dunaliella salina*, a tiny plant which survives in conditions which would destroy most other forms of life — the salt lakes common in many arid lands including Australia. Scientists have known about this rich source of a very valuable product for many years, but harvesting *Dunaliella* has proven too difficult or too expensive for commercialization.

But that situation is about to change. CSIRO in conjunction with a Victorian company, Betatene Ltd, has discovered a new way to harvest *Dunaliella* and extract the beta-carotene. The first Australian beta-carotene is expected to be on the market before the end of the year.

And a Western Australian-based company, Wesfarmers Algal Biotechnology Pty Ltd is also evaluating the production of high value products, including beta-carotene, from single-celled algae at its pilot plant at Hutt Lagoon, 600 kilometres north of Perth.

Beta-carotene occurs naturally in many foods — carrots, tomatoes, pumpkin, citrus fruits, lobster, salmon and butter. It is a precursor of vitamin A and a natural colouring agent. Vitamin A is essential for the health of eyes and skin and research suggests beta-carotene may play a role in the prevention of cancers.

The world market for beta-carotene is conservatively estimated to be worth $400 million a year and food companies now pay between US $285 and $800 a kilogram for the synthetic product which is used to colour a wide range of foods from cheese and margarine to soft drinks.

Techniques for harvesting the natural product are the result of several years work at CSIRO's Division of Chemical and Wood Technology in Melbourne. Dr Cyril Curtain, a Senior Principal Research Scientist with the Division, said there was a great deal of international interest in harvesting *Dunaliella*.

The Israelis had carried out considerable research, but there was no sign of a commercial process from their work. The Soviet Union was the only country to produce small amounts of natural beta-carotene from *Dunaliella*, but their process was extremely expensive.

Dr Curtain said the commercialisation of *Dunaliella* had failed in the past because under natural conditions the algae exist in very low concentrations. Although each cell contained high concentrations of beta-carotene the total concentration rarely exceeded two kilograms in a megalitre of water — a day's supply of water for a small town.

The cells are also very small with a density only slightly greater than that of the brine they live in so the conventional methods of extraction were expensive and inefficient.

The CSIRO research has shown that *Dunaliella salina* can be adsorbed onto a particular inert substance and specially treated to extract the desired products.

Betatene is operating a pilot plant producing beta-carotene

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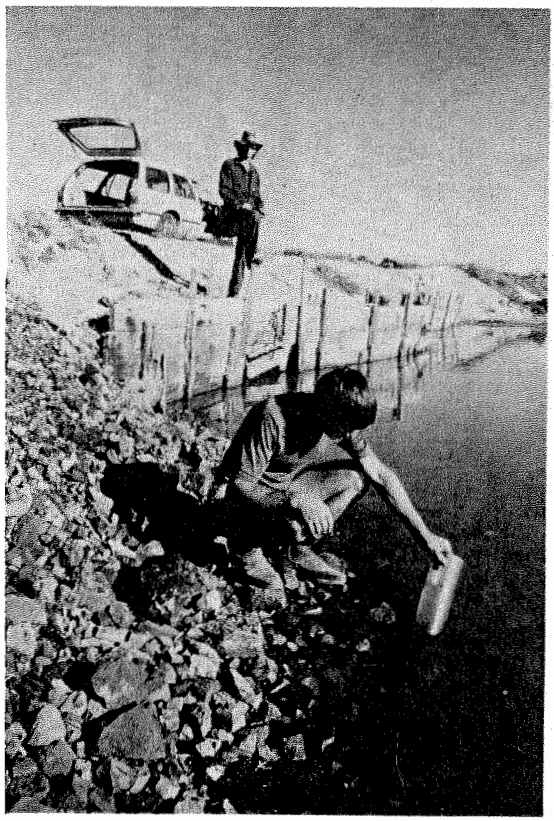

Constant analysis of water at the salt lakes at Whyalla assists quality control and systems management.

Nominations for 1986 David Rivett Medal now open

CSIRO research staff are now invited to send nominations and applications for the 1986 David Rivett Medal to be awarded by the Officers Association.

Applicants must be under 40 years as of 1 January 1986.

Next year's award is for outstanding research in the biological sciences carried out during the past ten years, based on published work.

A substantial part of the research must have been performed while the candidate was an officer of CSIRO.

The medal, awarded every two years and alternating between biological and physical sciences, is named after Sir David Rivett who was Chief Executive Officer and later Chairman of CSIR.

The most recent recipient was Dr J S Frederiksen at the Division of Atmospheric Research.

Candidates must submit a brief curriculum vitae, a short statement (no more than 200 words) of past and present research, a list of papers published or accepted for publication during the past 10 years and no more than 10 papers highlighting the main advances.

Applications should be sent to the General Secretary, CSIRO Officers Association, 3rd Floor, 9 Queens Road Melbourne 3004 before 1 March.

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Tech Talk

An occasional column by CSIRO technical staff. Readers are invited to contribute.

Microprocessors are finding many uses throughout CSIRO. However, to use these devices, one had to purchase expensive prototyping boards or development systems. Typical boards cost around $400 each and development systems start at about $4000.

Now technical staff at the Division of Environmental Mechanics have designed a low cost microprocessor development system, comprising a $500 transparent rom/eprom burner, and a microprocessor board developed around a 6511Q single chip microprocessor.

The microprocessor board provides 3 × 8 bit ports, 2 × 16 bit timers, full duplex RS 232 serial port, 5 edge sensitive interrupts, up to 12K of memory, onboard power supplies and low production cost of around $100 fully equipped.

Assembly code for the microprocessor can be developed on any computer with a serial line, and downloaded to the transparent rom. Development of the code can continue on the transparent rom via an inbuilt keyboard and television monitor. The code is available to the microprocessor via a single 24 core cable. Simple routines have also been written for the 6511Q to aid in program debugging.

For further details contact A V Jackson of the Division of Environmental Mechanics, Canberra (062) 465659.

News from the Divisions

A round up of latest news releases

Chemical Physics: The practical application of the basic theoretical physics concept of 'mathematical catastrophes' has enabled the design of specialized optical devices called generalized diffraction gratings. Master copies of these devices — tailor-made by the Division — are fabricated first using state-of-the-art micro electronics technology. Detailed studies are then carried out on vital optical properties of the resulting highly-exotic fields of light — diffraction catastrophes. This has led to 'a highly profitable application' in security printing.

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Textile Industry: Following a series of reports issued last July for the topmaking sector of the wool processing industry, the Division has now published the results of further carding trials. Report G54 contains results from a series of on-going experiments aimed at improving worsted card productivity and product quality. The latest figures confirm earlier findings on the benefit of using lubricating oils.

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Marine Laboratories: The CSIRO Women in Science project has been taken up in Hobart, and female scientific and support staff from the Organization's two Tasmanian research establishments will visit high school classrooms to encourage girls to choose careers in science.

Baffling moths' basic instincts

The 'pheromone confusion' technique developed by the Division of Entomology and marketed by Biocontrol (Aust) for use against oriental fruit moths has been successfully applied in California.

Trials in peach orchards have produced good results and there are plans to market the product there next year.

Damage to fruit in one test orchard was reduced from more than five percent using normal sprays to 0.6 percent using the confusing pheromones.

The product permeates the pheromone aroma throughout the orchard, making it impossible for the male moths to pick up on the real sex pheromone emitted by females as a 'mating call'. Without the ability to entice males, the females are not fertilized and pest populations decline sharply.

Oil recovery project expected to show good results in Bicentennial year

Dr B V (Dan) Bubela from the Division of Mineral Physics and Mineralogy at the Baas Becking Laboratory has been made a Fellow of the Australian Academy of Technological Sciences for his research into a radical new method of crude oil recovery.

In association with the Bureau of Mineral Resources, Dr Bubela's team has been investigating the feasibility of developing microbiologically enhanced oil recovery (MEOR) since 1980. Should the work be as successful as anticipated, the oil industry could start to benefit in 1988.

In simple terms, MEOR involves producing detergents ('surfactants') by biological means in crude oil reservoirs, to reduce factors which inhibit greater exploitation of the available resources.

There has been some resistance to the concept of using micro-organisms in crude oil recovery, but the project has succeeded in attracting major backing from the National Energy Research Development and Demonstration Council (NERDDC) as well as Australian-based Moonie Oil which operates in Queensland's Surat Basin. Supplementary finance has been supplied by the Australian Mineral Industries Research Association.

The work is aimed at lifting the current average crude oil recovery rate of 30 percent of original oil in place, to 60 percent or more.

The existing low recovery is usually caused by factors including high interfacial tension between water and oil resulting in high capillary forces retaining the oil in reservoir rocks.

Simple technique

The MEOR technique appears simple. Selected organisms are introduced into the reservoir where they produce a surfactant necessary for reducing the interfacial tension, thus reducing the capillary forces.

However, it's not suitable for all oil reservoirs (eg. those which maintain high temperatures). Dr Bubela and his team have formulated a screening test to be applied to each reservoir to determine suitablity for MEOR. Aspects examined include petrophysics, mineralogy, microbiology and environmental stresses.

It's estimated that MEOR could be employed effectively at about 25–30 percent of the world's crude oil reservoirs.

In this country alone, there are about three billion barrels of oil in known or probable deposits which are not extractable with present technology. The value of this resource? $75 billion, said Dr Bubela.

'Should we improve productivity by just 0.1 percent, this

Dr Dan Bubela

will mean $75 million which would otherwise have been unavailable,' he said.

Dr Bubela said the problem with most recovery processes using chemical surfactants (apart from low biodegradability and hence inherent dangers for the environment) is that they are use almost as much energy as they unlock.

It's been estimated that this pushes the price of the additional barrels up by about $US15 — on current prices from $US25 to $US40.

However, Dr Bubela said MEOR has been evaluated by the University of London as costing less than $US1 per barrel.

This will be of major importance, said Dr Bubela, because in the 21st century Australia will probably have to import most of its oil. At present only about 30 percent is imported.

Economic implications

'Extracting as much oil as possible from existing reservoirs could have important economic implications for Australia in the future,' said Dr Bubela.

Even if alternative energy sources are developed, the petrochemical industry alone will still need large (and increasing) quantities of crude oil to maintain production of plastics and other products.

He said it's a myth that there is a world-wide surplus of crude oil, but there is reduced demand. That demand could rise again putting more pressure on existing oil resources.

Close co-operation

The continuation of MEOR research in the Baas Becking Laboratory will involve even closer co-operation with the BMR staff. Before the technology can be handed to the oil industry, more work must be done to:

- evaluate the concentration of surfactant which will be required for optimal recovery from a given reservoir;
- attempt to develop, from laboratory and field data, a numerical model for the microbiological technique; and
- apply numerical simulation to a variety of Australian reservoirs so that we might predict the effects of MEOR on them.

The technology is likely to be available to the Australian oil industry by 1988.

*Dr Bubela who was born in Prague, Czechoslovakia, has worked with CSIRO since 1966.

He received his PhD at Adelaide University and was the first Fellow of the Rothman Endowment Fund. He is a Fellow of the Australian Institute of Energy. His work as a research scientist has led him to appointments at the University of California, University of Stockholm and the Johann Gutenburg University at Mainz in West Germany.

In the MEOR project, he is supported by CSIRO microbiologists Mr Craig Davis and Ms Andrea Blanks.

Forest Products Newsletter reappears

After a long interval, the Division of Chemical and Wood Technology is again producing its glossy *Forest Products Newsletter.*

The publication, edited by Mr Kevin Jeans, is designed to assist in communicating with the wood utilization industry.

Chief of the Division, Dr Warren Hewertson, said the decision to reintroduce the newsletter after a break of nearly 10 years 'was influenced strongly by the recognition that many of our "customers" and colleagues in industry don't have ready access to the range of journals and patent abstracts in which our work is published'.

'Indeed, not all our research finds its way to the printing press.'

The FPN will be issued quarterly.

Betatene

Cont. from p.10

from the algae in BHP owned salt ponds in Whyalla, South Australia. Betatene will not reveal the cost of producing the natural beta-carotene, but says it is more than comparable with that of the synthetic product.

But the desirable products of *Dunaliella* do not end with beta-carotene. Its survival in the salt lakes depends on its making another commercial product — glycerol. Glycerol is a thick, syrupy, sweetish liquid used in making cosmetics, soaps, drugs, explosives and plastics. Betatene believes *Dunaliella* harvesting may result in the world's cheapest source of this product.

There is a growing realization of the potential of algal farming. Wesfarmers Algal Biotechnology is receiving $6.85 million in public interest funding through the Department of Industry, Technology and Commerce.

The company's research director, Dr Lesley Borowitzka, said the objective of the public interest grant was to examine the feasibility of an algal biotechnology industry for Australia.

'We can certainly harvest Dunaliella on a pilot scale, but whether it is viable as an industry will depend on full costing,' she said.

Wesfarmers Algal Biotechnology is carrying out pilot plant research on growing, harvesting and processing a range of microalgae.

Dr Borowitzka believes Australia can be a world leader in algal biotechnology.

'We have the geographical advantages of a broad climate range, vast coastline for seawater-based processes and unparalleled salt lake and saline land resources,' she said.

'There is the technological edge of an early start with *Dunaliella* and good scientific background with other microalgae.'

Another CSIRO researcher, Dr Dennis Regan, agrees that arid areas adjacent to Australia's vast coastline could make the growing of microscopic plants like *Dunaliella* and *Spirulina* an ideal industry. *Spirulina*, which is fed to flamingoes in zoos around the world to maintain the pink tinge, is 50 to 60 per cent protein and is marketed as a source of vitamins, an additive to stock feeds and a natural food colouring.

Hundreds of years ago the Aztecs used to scoop the plant from the waters of Lake Texcoco. Dried and mixed with corn for breadmaking *Spirulina* made a high-protein diet supplement.

Dr Regan, a Senior Research Scientist also with the Division of Chemical and Wood Technology, believes it would be possible to use Australia's supplies of alkaline ground waters to produce commercial quantities of *Spirulina*. But he warns that growing algae may not always be the easy road to riches.

Researchers have only just started to explore the benefits of many microalgae and it may take many years before the full potential of these minute plants is realised.

'It is all very well to say lets grow algae, but you have to identify commercial uses and you have to have a high value end product,' Dr Regan said. 'For example some algae store energy as fats and oils and so have potential value as a source of liquid fuel.

'But, liquid fuels are still relatively inexpensive.' Dr Regan said a recent study indicated that the cost of using algae to produce liquid fuel was extremely high. 'We are more likely to turn to oil shale as a source of liquid fuels before we start harvesting microalgae for this product,' he said.

Dr Regan said marine microalgae could prove to be useful sources of new drugs including antibiotics, and vitamins.

'In certain marine environments, competition amongst microorganisms is intense and has produced protective mechanisms and active chemical agents of great potential for human use,' he said.

'Man has always used plants for therapeutic uses but he has mostly used terrestrial plants and microorganisms. 'We are only just looking at marine plants and there is great potential for research in this area.'

Food source

Another potentially profitable business could be growing marine microalgae as a food source for intensively farmed shellfish and crustaceans. Dr Regan said the high value of prawns, oysters and other shellfish could justify growing appropriate microalgae as a food source.

Fresh water algae could have a use in agriculture as a valuable fertilizer for crops.

'Blue-green algae fixes nitrogen and is already in use as a fertilizer in some parts of the world.'

Scientists at the Indian Agricultural Research Unit are actively promoting the use of blue-green algae as a biological method of fixing nitrogen in rice fields.

Their studies have shown that without any use of chemical fertilizers, the application of blue-green algae can fix about 25-30 kilograms of nitrogen per hectare per cropping season producing a 10 to 15 per cent increase in grain yield.

And blue-green algae may have a future in Australia, according to Dr Regan.

'If you were sowing a crop you could also sow an innoculation of the living algae,' he said.

'After it had rained the algae would grow in the soil fixing nitrogen and fertilizing the soil. Once established you would only innoculate occasionally perhaps every few years.'

On the record

A selection of quotes from the media about science and CSIRO

'Our poor performance is linked with an unusually high degree of managerial complacency.' **Federal Science Minister Barry Jones on Australia's poor showing in applied technology, *The Mercury*, 1 October.**

'We believe the aircraft should be kept going in whatever way is possible.' **A Department of Science official discussing the future of CSIRO's research Fokker Friendship, *The Sydney Morning Herald*, 1 October.**

'We'll be looking at areas to expand over a five-year budget, planning for them, then defining areas that need to be terminated.' **CSIRO Chairman, Dr Boardman, on the strategy paper, *The Mercury*, 30 September.**

'I just hope there is more floating around up there than Jackie Gleason re-runs.' **Film director Steven Spielberg switching on an antenna that US astronomers hope will detect radio signals sent from outer space, *The Sydney Morning Herald*, 1 October.**

'The loss of so much female talent is a tragedy for Australia, particularly at a time when high technology industries are so important to our future.' **Mr Jones, launching CSIRO's Women in Science Project, *The Courier-Mail*, 9 October.**

Ultimately man will go to Mars. It appears inevitable — only the timetable is uncertain.' **Mr Michael Carr of the US Geological Survey, one of several scientists claiming that there is water on Mars, *The Age*, 10 October.**

'It's such a childishly simple idea, it is almost embarrassing to tell people about it.' **Dr Martin Rice of the University of Queensland talks about a new blowfly and tick control method, *The Age*, 9 October.**

'This is a vital and necessary step for improving the nation's productive capacity in competition with other countries that have marked their research and development roads more clearly and built them more securely that Australia has.' **Dr Peter Pockley, an adviser in public affairs at NSW University urging greater public awareness of scientific developments, *The West Australian*, 1 October.**

'Science has to be marketed like toothpaste.' **The Director of CSIRO's Office of Space Science and Applications, Dr Ken McCracken, in an interview reported in *The Sydney Morning Herald*, 12 October.**

'I'm an egotistical bastard. I suppose I'm the last person you'd choose as a front man. I'm a bit of a loner and I'm no Messiah, but I do know how to mix it and I know what I'm talking about.' **Dr McCracken in the same interview.**

'We have done very nicely from mines and moo-cows, but they're under threat now.' **Dr McCracken again.**

'Oh no, they would certainly spare five or six nuclear bombs to make sure Australia doesn't take over.' **Ecologist, Professor Paul Ehrlich, on the nuclear winter theory, *The Age*, 10 October.**

'A creature of the cold war.' **The Federal Minister for Resources and Energy, Senator Evans, describing the Atomic Energy Act. Senator Evans was announcing the creation of a new atomic research body, the Australian Nuclear Science and Technology Organization.**

'The invitation is also a confirmation of the old adage about prophets being without honour.' **Mr Jones, reflecting on having to pay his own way (Air New Zealand economy class) to a technology conference of the seven summit nations in Ottawa, *The Sydney Morning Herald*, 18 October.**

'I would like to see us get to where we have a sort of ceramic valley here in Victoria.' **Dr Mike Murray, head of the Division of Materials Science advanced materials laboratory, on commercial development of PSZ ceramic, *The Age*, 21 October.**

'Evolution is just one subject the creationists are challenging: the whole of science is under attack.' **Professor Michael Archer, University of New South Wales, on the high number of biology students with creationist beliefs, *The Sydney Morning Herald*, 19 October.**

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Wild tames Russian bears

For Dr Paul Wild, his funniest moment as CSIRO Chairman had more than a touch of the bizarre...

It was quite early on, he says, when he agreed to a visit from the Russian ambassador when Russia was 'slightly out of favour' with the (Fraser) Government of the day.

'I was a bit taken aback when the Ambassador, a tall man, arrived with three even taller gentlemen accompanying him. When I saw the four of them come out of the lift, I asked Gratton Wilson, the Executive Secretary, to come with me for moral support.

'The Ambassador started explaining what a peace-loving country Russia was, how much they loved science for its own sake, and so on. He completely ignored my colleague, until Gratton asked an innocent question, for clarification. The Ambassador turned to me and said "Who's that man?"

'I thought for a moment, then answered "He's my KGB man!"

'There was a terrible silence for about ten seconds, then the Ambassador gave a small laugh which turned into a tremendous guffaw. The other three gentlemen joined in, and from then on we had a very good half hour's talk, with all the nonsense cut out, and we got down to business in a very satsifactory way.'

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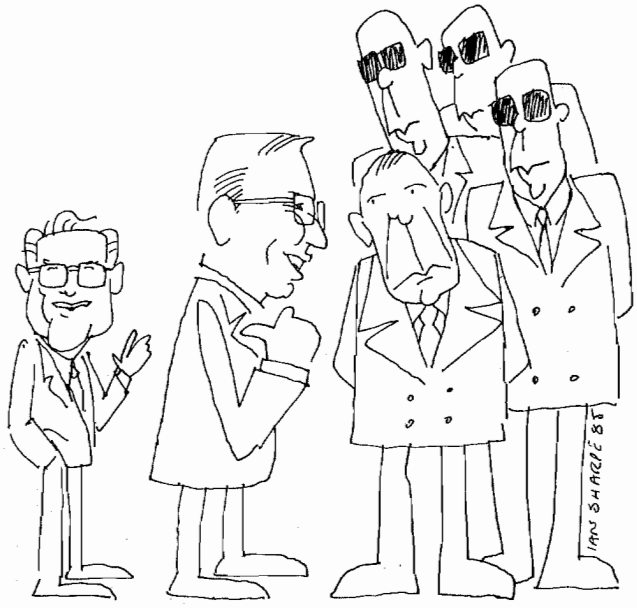
From *The Wild years in retrospect: a 'vital, exciting, and sometimes tempestuous' period for CSIRO*, by SCU journalist Tom Gosling.



Planning for new research briefings underway

Topics are under consideration now for the next round of 'Research Briefings' for senior public servants, to be held next year.

Under the chairmanship of Associate Member of the Executive Dr Michael Pitman, a group of communications staff from the Institute of Biological Resources this year devised and ran the first four seminars in the series in Canberra.

So far, the emphasis has been on agricultural and environmental matters. The four topics covered this year were: information technology for land management; biotechnology and industry applications; land degradation; and the role of space technology in the management of Australia's natural resources.

The strategy behind the series was to handpick the audience, select topics with clearly demonstrable national economic significance and, as far as possible, to select speakers for their ability to communicate — as much as for their position in a particular field.

The format involved three or four speakers with questions after each and a buffet lunch in a room fully set up with displays and working exhibits. A full rehearsal of the talks session was adopted as standard practice. All guests wore name tags and single page summary sheet was available after each briefing.

The response was generally very favourable and a 10-second questionnaire slip which people dropped in a box on the way out confirmed this impression. One feature of the series was a deliberate exclusion of the media, a decision made after some debate. The idea was to make it clear to the audience that the series was genuinely for their benefit and not a PR event for CSIRO.

Another policy aimed at reinforcing this line was to ensure that not all speakers were CSIRO staff. In fact, in the fourth session only Ken McCracken was from the Organization — the others being from the Western Australian Department of Lands and Surveys (Henry Houghton), the Great Barrier Reef Marine Park Authority (Richard Kenchington) and National Mapping (Con Veenstra).

Next year the format is likely to remain the same, with a preference for a maximum of three short talks per briefing and more attention to the display component. The organizers, at least for the moment, are continuing to emphasize agricultural and environmental issues.

(For further information about the Research Briefings, contact Peter Martin at the Division of Water and Land Resources in Canberra).

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Don't forget: authors of all published letters in* CoResearch *will receive a free instant lottery ticket (see page 2).