CSIRO

CO Research

CSIRO's staff newspaper

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Energy shifts with the global focus

by Jane Kahler and Wendy Parsons, CNA

CSIRO Energy Technology's headquarters at North Ryde, Sydney, will relocate to Newcastle in line with plans to build a world-class sustainable energy research and demonstration centre for Australia.

CSIRO announced the move in January following confirmation of backing of $10 million from the NSW State Government.

The move is expected to occur within three to five years as the proposed centre undergoes completion.

The centre is the brainchild of CSIRO Energy Technology Chief, Dr John Wright, who sees it as representing the global shift in focus to renewable energy sources, by showcasing the latest and brightest energy technologies Australia has on offer.

"The Energy Technology site at North Ryde is 40 years old and shares the area with parts of six other Divisions. Our buildings have no energy efficient distinguishing features and I think it is important for a centre that is researching energy technology, particularly new technologies, to practice what it preaches," he said.

Dr Wright said he started to look for an alternative site over two years ago while devising a concept for the new building.

Around the same time, BHP was setting up a 2,000 person eco-industrial park at the Steel River development site in Newcastle.

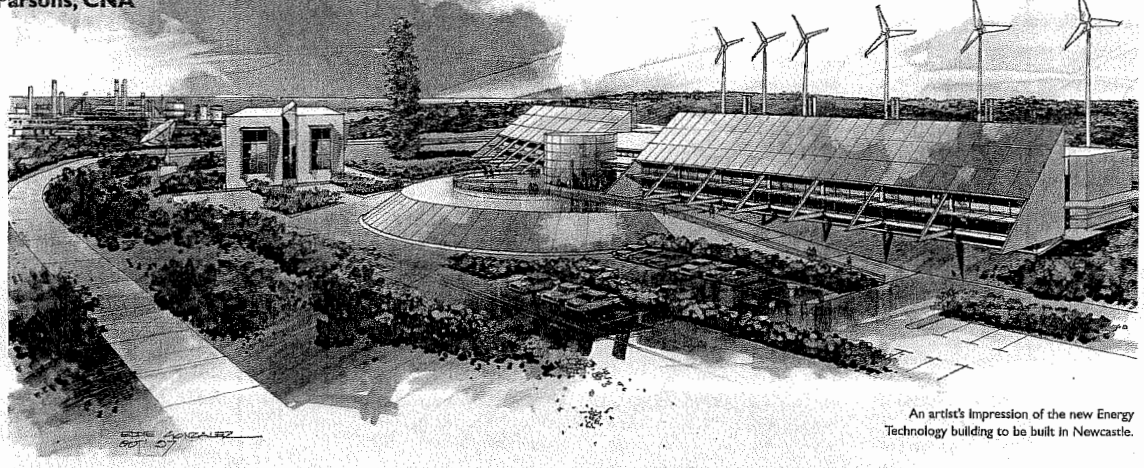
"Through my contacts in the industry, BHP Newcastle got wind of the fact that I was looking for a site and we sat down and with the help of the CSIRO Property Group, brokered a deal where BHP facilitated purchase of land at Steel River at no cost to CSIRO.

"Newcastle is an ideal location for Energy Technology because of the links we have with the university, the Cooperative Research Centre for Black Coal Utilisation and the coal power industries there.

"The site itself has everything we wanted too—it's on a hill, has high wind loading and faces north giving unrestricted access to the sun.

"Newcastle is also looking to remake itself as a high technology city, so our building will be a real landmark. The centre will employ about 100 research staff and, with an annual budget of around $11 million, will make a significant economic contribution to the community."

Dr Wright says the core of CSIRO's scientific effort into sustainable energy technologies will be housed in the new centre, which will also serve as a national and global showcase for the Australian energy industry and its latest technologies.



An artist's impression of the new Energy Technology building to be built in Newcastle.

> *"... the core of CSIRO's scientific effort into sustainable energy technologies will be housed in the new centre ..."*

"The centre will be designed to make optimum use of the sun, with facades that bounce light into the building and innovative environmental controls. All its fittings will be low energy, using sensors to minimise energy use or loss. It will employ natural ventilation," he explained.

"The outside will be extensively clad in solar panels to generate electricity. A solar pond is being considered to heat water for space heating.

"Consideration will also be given to using geothermal heat pump technologies for air conditioning," Dr Wright said. "We will collect all the building's rainfall, store it and use it to water the landscaping."

The building's materials will be carefully chosen to minimise the amount of "embodied energy" and greenhouse emissions involved in the actual manufacture of the materials themselves.

Dr Wright hopes to draw on expertise within CSIRO to help in the design and construction of the centre. He also hopes to attract other energy researchers in the Organisation to work with the centre and said he believes CSIRO's Sector system will make that much easier to arrange.

Dr Wright informed staff of the proposed move over a year ago and said that most accept it as a good plan in general terms because it shows the direction in which the Division wants to go.

"There will be some difficult personal decisions for people though, but I hope the three to five year time frame gives people the opportunity to sort out what they want to do.

"It's up to me and my management to provide the information people need to make their decisions and to make the transition as smooth as possible."

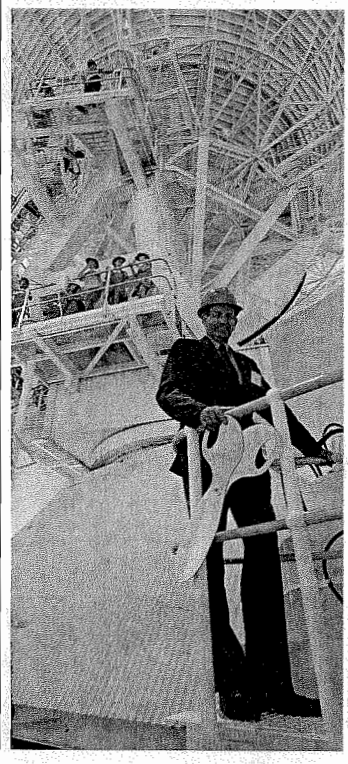
Dr Wright said the Newcastle Regional Development Board and other local organisations have been very supportive and will visit the North Ryde site to inform staff about schools and other facilities in the region.

CSIRO Chief Executive Dr Malcolm McIntosh said that the NSW Government, the Federal Government, BHP and particularly local Government are strongly supportive of the new energy centre.

"It is a visionary project, and as such, will be a lot more complicated to design and build than your typical research building. The support of both government and industry has been vital in getting it off the ground.

"It is also singularly appropriate that it be located in the Hunter, because CSIRO will continue to place a high priority on assistance to Australia's coal and power generation industries and enhance Australia's position as a world leader in clean, efficient energy production." CoR

Telescope a site for sharp eyes



Around 270 people gathered at the Paul Wild Observatory near Narrabri, NSW recently to help celebrate the tenth anniversary of the Australia Telescope.

Celebrations extended to welcome an upgrade to the telescope that will allow it to see more detail in the objects it studies.

At high noon CSIRO Chairman Charles Allen stood poised on the base of one of the Australia Telescope's moveable dishes, armed with a giant pair of ceremonial scissors. Behind him on the dish were stacked fifty members of the local high school band, which had earlier been playing for the crowd. In front, a ribbon stretched across the rail track on which the dishes move.

The dish rolled forward, the scissors snapped. From the top of the dish the kids blew whistles and threw streamers at the crowd below, who threw their own streamers back. The antenna sailed off down the track with its delighted cargo, leaving in its wake the tangled streaks of coloured ribbons. More on page 3. Photo J. Masterson. CoR

Better beans means soy much

by Anna Petrou, CTAg

A new improved soybean variety developed by CSIRO Tropical Agriculture is attracting overwhelming interest because of its high isoflavone content, its wide planting window and high yield.

Developed out of a move to improve the culinary soybean industry in Northern Australia, Melrose is set to provide soybean growers with a variety better suited to our sub-tropical climate while producing a premium quality grain.

Altogether, Melrose is set to make farmers happier and consumers healthier.

"In addition to protein, fibre, polyunsaturated fat and omega-3 fats, soybeans contain a range of other possible health-promoting compounds. Research indicates that these substances may play a role in preventing or fighting some types of cancer, heart disease, osteoporosis and menopause symptoms," said Ms Cindy Hamill, a Brisbane-based nutritionist.

"Most research has focused on the isoflavones, especially genistein. Soybeans are one of the best sources of two isoflavones, genistein and daidzein," she said.

Both genistein and daidzein belong to the isoflavone group of substances that belong to the family of phytoestrogens. Phytoestrogens are the plant substances that are a weaker version of the body's own oestrogen hormone, and can play a role in reducing the symptoms of menopause.

The Melrose soybean variety was named after well known soybean pioneer Mr Jack Eggleston, of Melrose, Brookstead. Left to right are Mr Andrew James (Melrose developer), Mr John Philp (Philp Brodie Grains), Mr Richard Eggleston and Mr Jack Eggleston. (photo courtesy of Miles Noller of The Chronicle, Toowoomba).

Isoflavones also act as antioxidants that help protect against cancer and heart disease. As anti-cancer agents they can also inhibit the several enzymes cancer cells need for growth, help cut off the blood supply to tumours so they can't grow, and encourage cancer cells to change back into normal cells.

"Melrose has all the health attributes of any soybean, but three times the isoflavones," said Ms Hamill.

CSIRO researcher and Melrose developer Mr Andrew James, says the new cultivar has the potential to supply higher yields and better quality soybeans to markets both domestically and overseas. Though soybean production has risen sharply over the past three years to an estimated 94,000 tonnes, Australia still cannot meet its own domestic demand of over 200,000 tonnes per annum.

Mr Peter Brodie from Philp Brodie Grains, the Darling Downs based grain merchants and seed specialists exclusively marketing Melrose, sees the variety as something completely new given its wide planting window and has great expectations that it will do well.

Melrose was developed as part of CSIRO Tropical Agriculture's Northern Grains Improvement research program. Its development was assisted through the support of CSIRO's Tropical Agri-exports Program with partial funding from the Australian Centre for International Agricultural Research (ACIAR) and the Grains Research and Development Corporation (GRDC). CoR

Triple gongs for Malcolm

Dr Malcolm McIntosh, Chief Executive has been appointed a Companion in the Order of Australia (AC) for his service to excellence in scientific and technological research, to providing new opportunities for industries, and to Australian defence industry and science policy.

Dr McIntosh already has a British Knighthood and the US Department of Defence Medal for Distinguished Public Service.

"The award was a real honour", said Dr McIntosh, "more than most, this is a CSIRO award."

Also among the award recipients on Australia Day was Dr Malcolm Gill from Plant Industry. Dr Gill received an OAM for his service to scientific research into bushfires and their effects on the environment. CoR

Dr Malcolm McIntosh

The Sci Files-radio portraits of scientists at work

Radio listeners around Australia have been treated to a year of stories about scientists at work.

CSIRO's national radio program *The Sci Files* is entering its second year. It's produced by CSIRO National Awareness and the Melbourne firm Pegasus Media.

Executive Producer of the series, Mr Nick Goldie, says that *The Sci Files* is designed to show people what scientists do for a living.

"People are really curious about what those guys in white coats actually do all day," he says. "So when I'm looking for talent for the show, I try and make sure that as many as possible of the guys in white coats are not guys, not in white coats, and are not in laboratories.

"There's such a vast range of occupations that come under the heading of 'science'. We've had astronomers, physicists, foodies, the young woman who looks after foxes—a great radio story—mining technologists, but we still haven't scratched the surface."

Mr Goldie says that he looks for twenty scientists a month, from within CSIRO, the CRCs, or other research institutions, who are willing and able to talk informally about their work and their interests. He does a short interview with each one and then the interviews are packaged as a CD and mailed to radio stations each month. Of Australia's 360 radio stations, about 215 are on the mailing list—at their own request. The CDs are also sent to Divisional libraries.

The Sci Files team recently received a grant from the Federal Government's Science and Technology Awareness Program, to make a special edition of the program to coincide with National Science Week in May 1999. It will be called *The New Wave*, and will highlight young scientists—or research that is important to young people—and have a young guest presenter.

Any suggestions for 'talent' for *The New Wave*, or *The Sci Files*, will be gratefully received. Email Nick.Goldie@nap.csiro.au CoR

Scientists reveal media tips

by Carrie Bengston and Dr Arkadi Kosmynin, CMIS

If you want your message to get through to the public, don't undervalue radio talk shows and 'lightweight' magazines like *New Idea* because this is what most people listen to and read.

If you are in a position where you deal with the media get some preliminary training. Decide on the message you want to give and stick to it.

These were three of the hints imparted by a panel of CSIRO scientists and Nobel Prize Winner Professor Peter Doherty at a media skills workshop held on a mild December day in Melbourne.

About 40 CSIRO scientists and communicators attended the workshop, which came about because of the results of a survey by CSIRO National Awareness of scientists listed as contact people for media releases in the past year.

The survey revealed how effective media releases are for research and making industry contacts, what support scientists would like in handling the media and how they felt the interaction with the media went.

The workshop's purpose was to share ideas for scientists and communicators when working with the media.

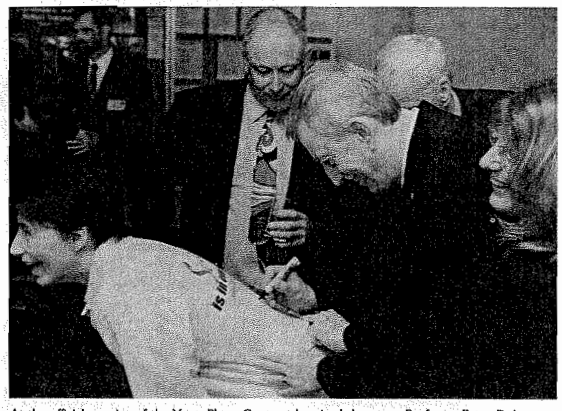
Other tips offered by the panel included the benefits of letting the public know what CSIRO does with their money like attracting better funding and attracting attention of industrial partners.

Or being aware that the media may encourage you to exaggerate the significance of the events you are reporting on, or introduce controversy where there is none. CSIRO communicators, especially those working with the media regularly, are usually of great help with knowing how to handle media enquiries.

The panel warned that you might spend half a day working on an episode with a news team and then see only four seconds of it in the nightly news.

Panellists included 1998 CSIRO Medallist Dr Steve Wilkins, indoor air quality expert from Building, Construction and Engineering Mr Steve Brown, CSIRO spokesperson on nutrition and diet from Human Nutrition Dr Mannie Noakes, and the Australian Animal Health Laboratory's Dr Harvey Westbury. The media contacts Dr Westbury whenever a nasty virus is found. CoR

X-ray lab opens



At the official opening of the X-ray Phase-Contrast Imaging Laboratory, Professor Peter Doherty (right) turns a tee shirt into a collector's item. Proud owner of the autographed shirt is CMST's Ms Melissa Roffey. Looking on are X-ray team leader Dr Steve Wilkins, Honorary Research Fellow at CMST, Dr Alan Head and CMST's Ms Michele Gaca. Photo Mark Fergus, CMST.

The X-Ray Phase-Contrast Imaging (PCI) Laboratory at CSIRO Manufacturing Science and Technology in Melbourne officially opened on December 3, 1998, after the award of CSIRO Medals to the X-ray Phase-Contrast Imaging Team.

Deputy Chief Executive Dr Bob Frater gave a short account of the X-ray group's activities in developing phase-contrast imaging as a new "window" with exciting potential applications in clinical medicine, biomedical research, industrial inspection and geophysics.

Chief Executive Officer of X-Ray Technologies Pty Ltd, Mr Ray Wood, gave a short account of the structure and role of this new company, which has been established to commercialise the PCI technology developed by CSIRO. CoR

Gentle giant sadly missed

Friends and colleagues of Arthur 'Tiny' Clark were saddened by his recent death.

Arthur, or 'Tiny', as he was always known, was a staff member of the North Ryde laboratory of the former CSIRO Division of Food Science and Technology between 1944 and 1986.

Ill health dogged him at an early age. When he was sixteen, surgeons at Royal North Shore Hospital removed one of his lungs in the first operation of its type in Australia. The doctors were so proud of their ground-breaking surgery, that they invited visiting colleagues from the UK and the USA to examine their handiwork at every opportunity. For this Tiny was paid ten shillings a time. He always hoped that others would benefit from the example of his successful operation.

Unable for health reasons to enlist in the Australian Defence Forces of World War II, Tiny volunteered to be a driver for the Americans in the New Guinea campaign.

It was also as a driver that he began his 42 years at CSIRO, but later he became a carpenter. Tiny was regarded by his colleagues as the classic 'gentle giant'; someone who made time to listen to those around them and to lend a helping hand. His rare 'practical' sense, which assisted him to solve even the most difficult construction and maintenance problems, led to his appointment as workshop supervisor in 1975, a position he held for the eleven years preceding his retirement. CoR

Australia Telescope gets sharper eyes

CSIRO's Australia Telescope is undergoing an upgrade that will allow it to see the southern skies in more detail than ever before.

"The upgraded telescope will allow us to detect radio waves at much higher frequencies. We will be able to see radio waves ten times smaller than before—millimetre wavelengths. This means that for the first time we will be making highly detailed millimetre pictures of the sky from the Southern Hemisphere," said head of Astrophysics at the Australia Telescope National Facility, Dr Ray Norris.

"This opens up a new window in the radio spectrum. We will be able to get information we could never get before. So it will be a very exciting time for us.

"This work will also be a stepping stone both scientifically and technologically to a new generation of telescopes now in the planning stages, that will be built next century by international consortia. It will put us in the position to make a unique contribution to these telescopes," Dr Norris said.

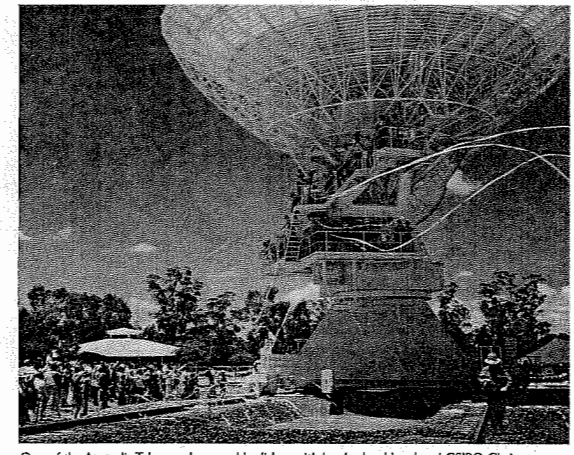
The Australia Telescope is the only one of its kind in the Southern Hemisphere. Its heart is a set of six 22 metre diameter dishes—antennas—that collect radio waves from space. These radio waves give astronomers detailed information about objects they are observing.

"The Australia Telescope has been a vital part of astronomy in Australia, and in fact the world," said Director of the Australia Telescope National Facility, Professor Ron Ekers.

The Telescope's achievements in its first ten years include making the first 3D image of Jupiter's magnetic field; finding the smallest, and most theoretically challenging, quasar; and gathering crucial radio data on Supernova 1987A, the most important supernova of modern times. And in 1998 it studied what may be the first known case of a star imploding to form a black hole.

"We have two outstanding features in our favour—location in the Southern Hemisphere, which means we can see the southern half of the sky, including the heart of our own galaxy, and the technology to be able to study what is going on there," said Professor Ekers.

Its special virtue, compared to earlier, Northern-Hemisphere telescopes, was that it incorporated the technologies of the 1980s, such as optical fibre systems. In the last ten years the Telescope's hardware and software have both been developed further, making the instrument even more versatile.



One of the Australia Telescope's moveable dishes with local school band and CSIRO Chairman, Mr Charles Allen aboard, sails off along a new piece of rail track—an important part of the upgrade.

> *"We will be able to get information we could never get before."*

Not surprisingly, the Australia Telescope is in demand by both local and overseas users. The number of overseas organisations using the facility has grown from ten in 1988 to 83, from 19 countries, today. Demand for observing time outstrips that available.

The Telescope's upgrade consists of several components, including: new receivers for detecting the radio waves; new surfaces for the dishes to allow them to work better at higher frequencies; an expanded fibre optic distribution network to handle the huge amounts of data the telescope will collect; and a system to compensate for the blurring effects of water vapour in the atmosphere.

An important part of the upgrade is a new piece of rail track, running north from the original east-west track along which the antennas move. For some millimetre-wave observations the antennas will be placed along this arm, in arrangements that avoid the need for them to look down near the horizon. This is because at low elevations the telescopes must peer through lots of atmosphere, and water vapour in the atmosphere degrades the quality of millimetre-wave observations.

The upgrade is being funded by the Commonwealth Government's Major National Research Facilities Program and CSIRO's Capital Investment Plan.

The development of the Australia Telescope over the past ten years has had spin-off benefits for non-astronomers.

The designs and techniques for making components of the antennas, such as the surface panels, were transferred to the telecommunications industry.

"The antenna story is a key one," says CSIRO Deputy Chief Executive, Dr Bob Frater, who was responsible for the construction of the telescope in the 1980's. "It was our antennas that beamed the America's cup races in Fremantle to the world and our designs that took OTC to Vietnam."

"This established Australian telecommunications expertise in the Asian arena. The financial benefits flowing from all of this amount to many tens of millions of dollars," he said.

The Australia Telescope National Facility operates the telescopes at Narrabri plus the 64-metre telescope at Parkes and another 22-metre telescope near Coonabarabran.

The telescope upgrade is being managed by the ATNF. Participating companies include Connell Wagner Pty Ltd, Barclay Mowlem Construction Ltd, and Evans Deakin Engineering Pty Ltd. CoR

CSIRO moves on Enterprise Agreement initiatives

CSIRO has started implementing initiatives set out in its latest Enterprise Bargaining Agreement (EBA).

The Agreement was certified in June last year.

"Everything could not be done simultaneously, so activities have been prioritised," said Corporate Human Resources General Manager Mr Peter O'Keefe.

"The main focus to date has been salary packaging, enhancing employee consultation, reviewing the salary and classification system and reviewing the performance management system."

Mr O'Keefe expects salary packaging to be available in February following changes to the payroll computer program and selection of a contractor.

Information sessions for staff will be conducted during February and March.

While the implementation of effective employee consultation mechanisms has been a long-standing issue for CSIRO, the Staff Opinion Poll and Enterprise Agreement have provided greater focus on the need for staff consultation he said.

"The Enterprise Agreement formalises the role of staff in decision making in relation to decisions affecting their work and workplace. Effective consultation will also be critical for decisions that impact on the whole Organisation, such as the reviews currently underway of the Salary and Classification and Performance Management Systems, to ensure outcomes are acceptable to staff and meet Organisational needs."

Mr O'Keefe said that in order to meet the Enterprise Agreement commitments relating to modifying the existing salary and classification system, it has been necessary to move quickly.

"Decisions regarding any system changes will need to be made no later than the second half of 1999 for the changes to be implemented and training provided by August 2000, the date established in the Enterprise Agreement.

"As a result we have started collecting data about approaches used in other research and knowledge based organisations in Australia and overseas to see if there are systems that might be a better fit for CSIRO's culture."

He said Human Resource Managers have been gathering information through focus group discussions in each Division on a broad range of Salary/Classification and Performance Management issues.

Focus group discussions were completed in most Divisions by the end of last year. A random sample of staff—between 5 per cent and 10 per cent—in each Division were involved in the focus groups and the information provided by staff will be used to guide the reviews of the salary and classification and performance management systems.

The Commonwealth Public Service Union (CPSU) has also sought its members' views on Performance Management and the Salary System using a survey developed by the Department of Management at the University of Melbourne.

The survey is based on international research regarding employees' reaction to remuneration issues.

CSIRO Chief Executive Dr Malcolm McIntosh considers the survey a valuable source of information for discussions in the forthcoming review of the Performance Management and Salary and Classification Systems.

Dr McIntosh is seeking the agreement of the CPSU to work with CSIRO to extend the survey to all staff.

Mr O'Keefe said the plan is to have a reference group in place by mid 1999 to consider all available information so that effective options for improving the Performance Management Salary and Classification systems can be developed. CoR

More information on the Salary/ Classification and Performance Management review from your Divisional Human Resource Manager.

Celebrating the CSIRO Medals are (left to right) CSIRO Chief Executive Dr Malcolm McIntosh, multibeam team leader Dr Lister Staveley-Smith, hard x-ray phase contrast imaging team leader Dr Steve Wilkins, CSIRO Chairman Mr Charles Allen, OPTIM team leader Dr David Phillips, Nobel Laureate Professor Peter Doherty, medal winner Dr Robert Leicester and external medal winner, Professor David Boger. Photo: Mark Fergus

Wool wins Chairman's Gold

by Karen Robinson, CNA

CSIRO Wool Technology has received the Organisation's highest award for developing OPTIM™ a longer, finer and stronger strain of wool fibre.

The CSIRO Chairman's Medal was awarded to a team of eight scientists at a lunchtime ceremony in Melbourne last year.

Dr Ahmed Bhoyro, Dr John Cook, Dr David King, Dr Gary O'Loughlin, Dr David Phillips, Dr John Rippon, Keith Thomas and Dr John Warner will share a gold medal and $25,000 prize money.

Presenting the award, Mr Charles Allen, Chairman, CSIRO described the technology as "the most significant innovation in the wool industry since the launch of machine washable wool in the 1960s".

"It has some properties of wool, some of silk, with a cool touch, a soft drape, and a fine lustre. Indeed X-rays show that the processed fibre is closer to silk in structure, and stronger and finer, than its parent wool," he said.

An Australian company was licensed to produce and market OPTIM™ early last year, and industry sources anticipate that demand could rise to 2,400 tonnes per year, worth $12 million annually to Australian industry, creating a sustained demand for Australian wool.

Nobel laureate Professor Peter Doherty presented the 1998 CSIRO Medals, which honour excellence in Australian research to benefit the nation. Up to three Medals are awarded annually, with one External Medal.

Dr Robert Leicester from Building, Construction and Engineering was recognised for his contributions to improving the structural use of timber.

Dr Lister Staveley-Smith and team from the Australia Telescope National Facility and Telecommunications and Industrial Physics received a Medal for the Parkes 21-centimetre Multibeam System.

Dr Stephen Wilkins and team from Manufacturing Science and Technology and Forestry and Forest Products were recognised for developments in hard X-ray phase contrast imaging.

The External Medal was awarded to Professor David Boger, Department of Chemical Engineering at the University of Melbourne, for his work on viscoelastic fluid mechanics.

After the presentations, Professor Doherty gave a hilarious illustrated talk on some of the unexpected consequences of becoming superfamous as a Nobel Prize winner.

Side effects included becoming a subject for cartoonists, being pictured on a Melbourne tram and being quoted on non-science topics such as the republic.

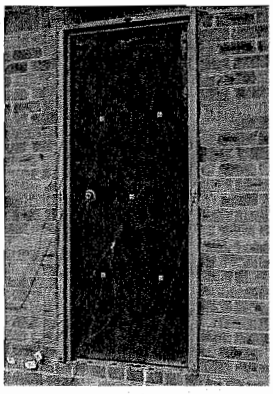
An evaluation sheet was given to CSIRO staff who attended, seeking their comments and suggestions on improving the event.

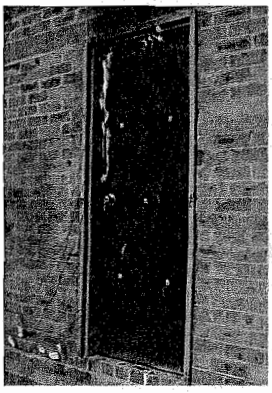
Professor Doherty and the videos were the most popular aspect; free food was also appreciated!

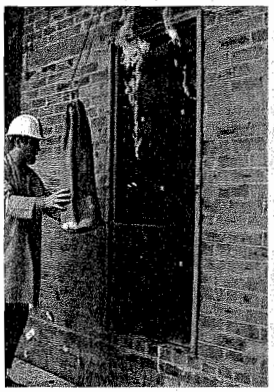
Many useful ideas were offered for making the event even more enjoyable and organisers plan to incorporate some for Medals '99. CoR

Japan gives CSIRO the thumbs up

by Justine Leadbetter, CBCE







CSIRO Building, Construction and Engineering has been accredited by the Japanese Ministry of Construction as an "Overseas Trading Laboratory for the vertical and horizontal fire-testing of building products". In the pic above, scientists put a door through its paces.

CSIRO Building, Construction and Engineering (CBCE) is opening doors to Japan for Australian building products manufacturers.

The Japanese Ministry of Construction has accredited CBCE as an "Overseas Trading Laboratory for the vertical and horizontal fire-testing of building products", making CSIRO only the second organisation outside Japan to win approval to conduct fire-tests to strict Japanese standards.

With the level of investment in Japanese construction valued at US$850 billion and the private housing market accounting for 30 per cent, the number of new housing starts in Japan is as large as that of the United States, with approximately 1.3 million starts in 1998.

Forecasts indicate a continued high level of starts over the medium to long term, despite Japan's economic downturn.

According to industry representatives, the accreditation of a local laboratory is excellent news for the industry, as it will streamline the once cumbersome accreditation process that required Australian manufacturers to send test products to Japan for approval.

Apart from the obvious time delays and expense this has created for companies trying to break into Japan's lucrative housing market, product development often stalled as a result of the distances between manufacturers and end users.

This lack of direct communication has in the past had a negative and direct impact on the cost of doing business with Japan.

CBCE scientists have been establishing contact with the Japanese Ministry of Construction, and travelling to Japan to build good working relationships with staff at the Building Research Institute (BRI) and the Building Centre of Japan since early 1996.

According to CBCE Manager Industrial Research Services, Dr Vic Deeble "We were honoured to host the head of BRI, Testing and Evaluation, Dr Ichiroh Nakaya, while he inspected our facility and staff competence.

"Overall, the Japanese were most impressed with our Quality Assurance System and that we are registered members of and audited by the National Association of Testing Authorities Australia.

"They acknowledged that we have an excellent level of scientific capability, and suggested that we could amend our operations manual to include flow diagrams, which the Japanese tend to favour over text descriptions.

"We had to demonstrate that we have an established traceability of our documents, a system in place that can track our work from first customer contact, to actually conducting the tests, to producing a final assessment report."

Mr Garry Collins, CBCE Manager, Fire Testing and Assessments, said the main challenges they faced were the Japanese emphasis on using internal specimen temperatures as a means of assessing performance, the location of furnace measurement points, and application of cedar wood pads rather than fibreboards as the backing material for the thermocouples.

> *"...the accreditation of a local laboratory is excellent news for the industry..."*

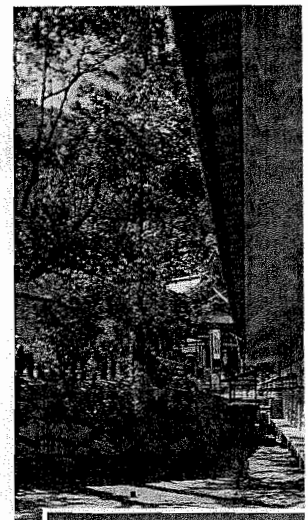
"Japan's standards and report formats are quite unique. In some cases we are required to complete some parts of our reports in Japanese. Despite the obstacles, our procedures are now working very well," Mr Collins said.

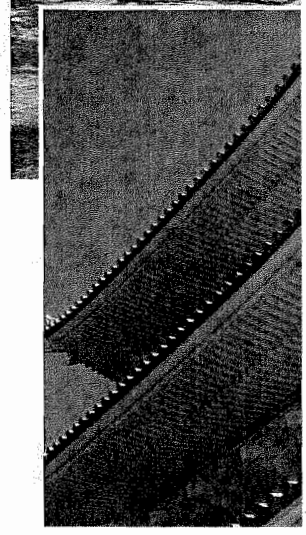
Representatives from the Departments of Science, Industry, and Resources, Foreign Affairs and Trade and CSIRO met in Japan in December last year for the official presentation of a Certificate of Designation.

The Japanese Ministry of Construction sees this meeting as "a result of close collaboration between Australia and Japan, including through the Japan-Australia Building and Construction talks (JABC)."

CBCE has conducted tests for a number of years for companies who export to other major overseas markets including China, Malaysia, Singapore, Hong Kong, New Zealand, Germany and the USA.

CBCE scientists are currently fostering even closer ties with their Japanese counterparts in a bid to gain accreditation to test a wide range of products for the building and construction industry. CoR





Japanese experiment

by Paul Spurling*

As CSIRO's 'man on the ground in Tokyo' working with the Japanese giant Itochu, Dr Paul Sims reckons his job to be "one of the best in the world".

While such judgements are ultimately subjective, an MBA, a PhD in biochemistry and "survival level Japanese language ability" ensures that one thing is for certain—he is highly qualified.

The September 1996 posting of Dr Sims to Itochu can be seen as a manifestation of the Organisation's response to the increasing globalisation of markets characteristic of economic life in the 1990s.

Dr Colin Adam, Deputy Chief Executive, who has corporate responsibility for commercialisation, explained that the last twelve years had seen the Organisation shift focus from the internal to the external world.

"And I think it was inevitable that that focus would move from not just Australian companies, which was much the case at the end of the '80s, to developing relationships with a whole range of institutions world-wide," he said. "My colleague Chris Mallett decided that seconding someone into Itochu would be one way of gaining insight into the way Itochu operated world-wide, and I think it was a very clever move."

Mr Terutada Ikezawa, Itochu's Assistant General Manager for its Technology Research Division, confirmed that Dr Sims' permanent presence in Tokyo provided CSIRO with a distinct advantage over institutions attempting to navigate their way through the global economic maze in a less personal manner.

"We receive lots of information each day about hi-tech opportunities, but it is rare to develop successful business according to just the information supplied," he said.

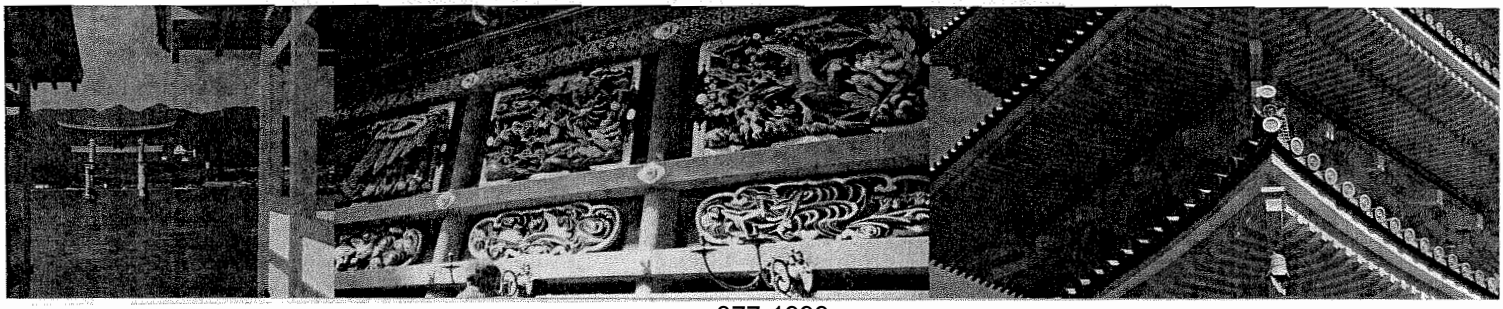
Mr Ikezawa also indicated that the personal interaction with Dr Sims ensured that Itochu had full confidence in the information it was receiving and in the resultant technology transfer and commercialisation.

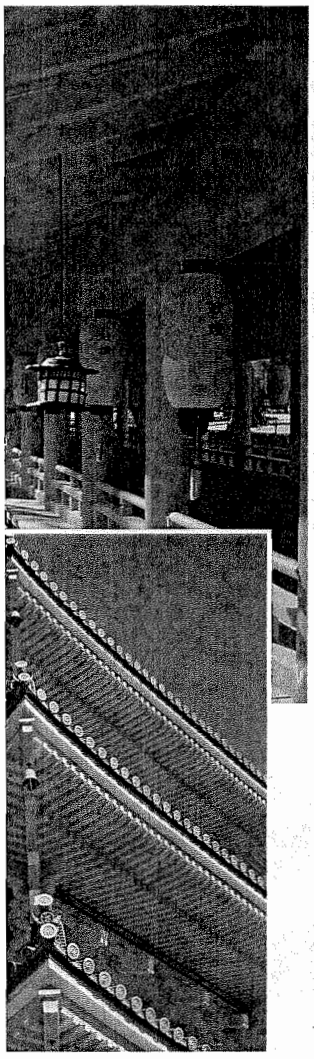
Furthermore Dr Sims stressed the importance of "building personal relationships and developing trust when looking to establish long-term relationships for the benefit of all parties involved".

> *"...the Organisation must be as creative in the business of science as in the science itself..."*

Mr Stephan Wellink, CSIRO Principal Commercial Adviser, stressed that it was of increasing importance that the Organisation be "as creative in the business of science as in the science itself", and that the Itochu secondment model was already starting to pay dividends.

"The money's come through for a deal between Itochu and the Process Engineering Group at Food Science Australia," he said. "It is a $3 million contract, which is quite significant."





OBITUARY

Sir Otto Frankel, former Chief of CSIRO Plant Industry, died in Canberra at the age of 98 on 21 November, 1998. Dr Jim Peacock, Chief, CSIRO Plant Industry gave the following oration at Sir Otto's funeral:

"Otto Frankel was a man with a Triple A rating—Austrian, Autocratic and Argumentative.

Austrian, yes. And he retained some European characteristics, many of them the ones that endeared him to us. But, on one of the few occasions when Otto revealed his underlying emotions to me, he emphasised that he felt deeply about Australia and his role in this country. He felt that this was home.

Autocratic: Otto did use the power of his various positions, there is no doubt of that. He had belief in his views and this enabled him to carry things through to an end-point. Fortunately many gave outstanding outcomes.

Argumentative: Hardly needs elaboration. For many years I had Saturday lunch with Margaret and Otto. After lunch, Otto and I would retire to his study, basically for an argument—his weekly shot of adrenalin. Otto used argument very constructively and it certainly helped him maintain an active and alert mind. Those arguments taught me a lot, even if the learning was tough at the time. Fleur, my personal assistant, said to me on hearing that Otto had died that I had lost my old mate and now I'd have to find someone else to argue with.

Sir Otto Frankel, a visionary in his field

I did regard Otto as a mate in the best Australian sense although I am not sure he would have approved of me saying that. He often criticised me for having too much emotion. But then again he criticised me for just about everything.

Otto's major contributions to science whilst he lived in Australia were to set up CSIRO Plant Industry as one of the leading plant research institutes in the world. He built its scientific capacity and its international status. It was something that he was proud of and I believe one of the things he really enjoyed in his life.

His other scientific contribution was in genetic resource conservation. Otto's training was in genetics and this, along with his vision of the importance of genetic resource conservation for the future of the world's food supply, helped make the whole enterprise of genetic resource conservation what it is today. His efforts with the original FAO Working Group and his speeches at the Stockholm Convention on the Environment were of huge impact. Additionally, his writings, some with CSIRO colleagues, are some of the most important base documents in this area.

I want now to say some other things about Otto in the framework of his partnership with Margaret. For most of us that is how we always think of Otto—with Margaret. 41 years ago when I was a vacation student I had my first job with CSIRO in the Kosciusco region with Alec Costin. One day Alec had told us that we needed to clean up the lab because the Chief of the Division was coming the next day to inspect things. Otto and Margaret arrived in their MG Magnette and I was impressed because Otto even showed interest in the absolutely boring work I was doing in drying soil samples.

But what I remember most was Margaret leaning out of the window of the car saying 'Otto come now—it's time we were going'. Margaret's influence was important. Otto had many opposing characteristics. He enjoyed his privileges and yet he was very much a socialist at heart. He was often rude and apparently unfeeling and self-centred, but he was a loyal friend and with strong, warm feelings for many people, many with very different backgrounds to his own. He was frugal and careful with his money and yet he was generous to others with his time and advice, and especially with his vegetables.

He was a man with rituals. I can still see him peeling and sectoring his apples in lunchtime seminars. He did it the same way for years yet his mind was agile and flexible—he was always willing to embrace new ideas.

It was Margaret who maintained the balance between these contrasting personas. Their own partnership was unusual with firmly espoused views on both sides of virtually every topic.

Returning to Plant Industry and CSIRO, Otto remained an active and contributing member of Plant Industry for his whole life, long after he retired. He had a marvellous influence here on young people and through his interactions with many of us made sure that the pursuit of excellence remained a dominant part of our ethos. In a way Otto remained Chief of Plant Industry. He made no bones of the fact that he had a lot to do with ensuring that on more than one occasion one of his boys was appointed to lead the Division. In fact, I am wondering who he has put in line to be my successor.

Finally, I wanted you to know that Margaret and Otto have bequeathed generous funds to Plant Industry for the construction of a sculptural garden, a quiet place where our staff will be able to converse, contemplate, and hopefully have creative thoughts. The design for the garden, by one of Australia's leading artists, has captured the essence of the Frankel partnership with influences of both art and science. It will be a wonderful way to perpetuate the memory of them both and especially of the major contributions that Otto Frankel made to Plant Industry, to CSIRO and to science." CoR

›ays off

"The group has spent many years building up expertise in the area of automating abattoirs and done some fantastic work. That's the technology we're now exploiting over in Japan."

Mr Buhot, who is now the Manager, Corporate Strategy for Food Science Australia, played an important role in securing a contract to provide research and competencies for the Japanese meat process industry, which included the development of new technologically advanced equipment and processes.

"Itochu went all over the world looking for R&D capabilities in abattoir engineering and decided CSIRO's was the best; however without Paul Sims as our man on the ground in Tokyo the deal would have been very difficult to clinch," Mr Buhot said.

CSIRO develops technology and intellectual property on behalf of the Australian taxpayer, and it is with one eye on the potential benefits for Australia and Australians that such deals need to be struck according to Dr Adam.

Dr Paul Sims, CSIRO's man on the ground in Tokyo, with his daughters Dominique and Katy at Kinkakuji—the Golden Temple—in Kyoto. Dr Sims has been in Japan since 1996 and reckons he has one of the best jobs in the world. Photo courtesy Paul Sims.

"The arrangements that are made are complex by nature, but you can generally negotiate a benefit that is completely Australian as well as having a benefit for the company," he said. "This is very much a two-way street and it's got to be a good deal for both parties, and in my experience there's very little hint of exploitation on either side."

In the case of the Itochu deal, the intellectual property derived from the CSIRO research is fully owned by CSIRO worldwide with the exception of Japan.

"The successful outcomes from the research can be applied to the Australian industry," Mr Buhot said.

Dr Adam cited CSIRO's long-standing deal with DuPont as a good example of how the Organisation can pool intellectual property with overseas companies and reap the benefits for Australian industry. "It was important for DuPont to access some catalytic patents held by Dr Ezio Rizzardo within CSIRO. DuPont came to us with an arrangement whereby they were prepared to pool a dozen or so of their patents in a related field with our patents, with the combination providing a very much stronger business base for DuPont."

"They agreed to manufacture some of these intermediate compounds in Australia and export them from Australia and that has grown into a substantial specialty chemicals export business for DuPont Australia," he said. "DuPont Australia now supplies the world market with the intermediate specialty chemicals from an Australian manufacturing base."

Dr Adam believes that Dr Sims' stationing in Tokyo is representative of a "very strong model" to ensure that CSIRO becomes part of the global marketplace.

"I think the real danger is that Australia becomes insular and believes it isn't part of the global business district and that our science is not part of the global scientific system," he said. "So I think as a matter of principle we should have people seconded into those international organisations that we do business with, as I think the return on our investment will be such that we'll do much better deals for Australia."

"We should be doing more of it. We are considering putting a senior CSIRO officer into Seattle at the Boeing organisation."

Meanwhile, as the human face of what Mr Wellink described as a "very brave, but very necessary experiment for us to undertake", Dr Sims reflected on family life as a CSIRO officer based in Japan.

"On New Year's day 1999 we went to the Tokyo Disneyland for the fourth time, and we often take the kids to the Bicycle Park—a track where children can have unlimited use of a range of model pedal cars, tricycles, bikes, and pedal go-carts. Some of the facilities for children are absolutely wonderful."

How safe an environment Japan provided for him and his family to live also struck Dr Sims. "Women can walk down dimly lit lanes well after midnight and there's no danger whatsoever," he said.

He foresees his time at Itochu having a large impact on the future directions that his life will take. "Despite Australia being the best country in the world, the excitement and opportunities associated with living overseas probably mean that we'll try and spend the majority of our future working lives outside Australia." CoR

*Paul Spurling is a freelance writer based in Melbourne.

Money whips leather industry into shape

Last year Ms Catherine Money was recognised in the Queen's Birthday Honours List and awarded the Public Service Medal (PSM) for outstanding public service in the development of new technologies and improvement of processes for the leather industry.

This was a high honour on its own, but the PSM has even greater significance because Ms Money has taken on a career and succeeded in a traditionally male dominated industry.

She has worked hard to make sure that environmental regulations affecting the industry were practical and based on the best available scientific evidence.

The Australian leather industry now looks to her to help it guide and monitor tanneries around the nation, and she is also highly regarded by leather industries internationally.

The PSM is awarded twice a year by the Governor General and recognises those who have consistently performed demanding jobs to the highest standards, and have made a major contribution to the Australian community.

Ms Catherine Money with CSIRO Chief Executive Dr Malcolm McIntosh, at the Public Service Medal ceremony in Canberra last year.

CoResearch: Where do you work and what do you do?

Money: I have recently become the leader of the Leather Research Centre in Melbourne, which is part of CSIRO Wool Technology.

CoResearch: How long have you been with CSIRO, and in what areas have you worked?

Money: I have been doing Leather Research for 36 years! I have worked closely with industry and most of my work has been developing processes for tanneries to help them become environmentally acceptable and economically viable.

CoResearch: How would you describe your career at CSIRO?

Money: Great: really interesting, rewarding and frustrating.

CoResearch: Greatest achievement?

Money: Combining family and work.

CoResearch: Greatest challenge?

Money: A better process for unhairing hides. I've spent many years on it. We have an improved system where the hair becomes a valuable by-product of the tanning process. However, industry will need an even better system for the future.

CoResearch: Least favourite work moment?

Money: Computer crashes.

CoResearch: What book/s are you reading over the Summer?

Money: The Man in the Ice, Spindle; Hannah and her Daughters, Fredrickson; Romulus my Father, Gaita; The Reader, Schlenk.

CoResearch: Plans for 1999?

Money: Obtaining funding. I'm starting with two weeks in India!

CoResearch: What advice would you offer women starting out in science?

Money: You need persistence and lots of chemistry. CoR

Offshore

Forestry in South East Asia

CSIRO Forestry and Forest Products has been working for almost twenty years with peer organisations in countries in South East Asia under research contracts largely administered through AusAID, ACIAR and the FAO*.

Work under these arrangements has led to the development of strong and lasting relationships with its counterparts.

But in countries where these relationships are integrated with culture and business development, CSIRO needs a simple yet powerful tool to foster its relationships and continue research collaboration once existing projects are complete.

CSIRO Forestry and Forest Products has in place a series of Memoranda of Understanding (MoUs) to accommodate future collaborative activities for reciprocal training and development, and initiatives for funding from other international sponsors.

CSIRO now has MoUs in place with Indonesia, Sarawak, Thailand, Vietnam and Papua New Guinea, and proposes future MoUs with Cambodia, Laos and China.

They are not legally binding and commit no resources, but represent an expression of intent based on existing goodwill.

Potential benefits to Australia and CSIRO include developing CSIRO's capacity and knowledge to influence forest practices, opportunities to realise a return on some of its past R&D investment and to bring back knowledge to assist Australian business development for the forestry and forest products industries.

The MoUs have provided an important facilitating piece in the jigsaw of maintaining research networks and developing independent bilateral initiatives and related sponsorship in the forestry and forest products environment of South East Asia. They were developed in consultation with the Australian Government Solicitor and Edwina Menzies of Minter Ellison.
Rob Lockwood—FFP

**AusAID is the Australian Agency for International Development. ACIAR is the Australian Centre for International Agricultural Research. FAO is the UN Food and Agriculture Organisation.* CoR

Sun, sand, surf and CSIRO

by Neil Weise*

Three CSIRO Divisions gave an especially warm welcome to summer in Adelaide by co-hosting a special outside broadcast with ABC Radio from popular Glenelg beach.

Having heavily pre-promoted the event as a day of "sun, sand, surf and CSIRO", radio 5AN broadcast its first day of December breakfast program, from 6am, in the public square overlooking the beach and Glenelg Jetty.

CSIRO provided invited guests and members of the public audience present with a healthy, smorgasbord breakfast, using foods recommended by CSIRO Human Nutrition.

Human Nutrition's Dr David Topping joined ABC host Richard Margetson in the outside studio to explain the benefits of healthy eating in summer and to outline some of CSIRO's collaborative research with industry to improve food content.

CSIRO Plant Industry Assistant Chief Dr Nigel Steele Scott, also stepped into the guest's chair, surrounded by mangoes, cashews, grapes and macadamias, to explain to Margetson and his audience the work CSIRO was doing with such foods and the role of Plant Industry.

With the CSIRO banner fluttering alongside that of the ABC above the studio, invited guests and the general public sat in the square under large beach umbrellas watching the broadcast and eating muesli, toast and honey, yoghurt, a wide variety of summer-based fruits and drinking fresh fruit juices, low fat dairy and soy milk, tea and coffee.

CSIRO Land and Water senior research scientist Dr Peter Cook completed the CSIRO guest list, outlining to the audience some of the Division's water projects in South Australia—the nation's driest state.

ABC Local Radio program director Sandra Winter-Dewhirst congratulated CSIRO on its initiative in suggesting and then helping to organise the broadcast.

She said audience response to the broadcast was unanimously positive and she hoped the ABC and CSIRO could join forces again in 1999 for another successful promotion.

**Neil Weise is a roving communicator for CSIRO National Awareness in Adelaide.* CoR

Race to conserve the pine

by Mick Crowe, CFFP

The backbone of the burgeoning Australian softwood industry is under threat from disease and habitat loss.

But efforts by CSIRO Forestry and Forest Products scientists could help turn the tide.

Radiata pine, or Monterey pine as it is called in the US, supplies over 50 per cent of wood harvested in Australia.

The wood is used widely for furniture, construction, packaging, newspapers and other paper goods like tissues.

Radiata has a very limited natural range in five locations in California and the Mexican islands and is under extreme threat.

"In California radiata grows in some beautiful locations and these have become very desirable for residential and other development, such as those around Monterey, reducing the natural stands," said CSIRO Forestry and Forest Products Research Scientist Dr Colin Matheson.

"More important, in recent years a disease called pitch canker has severely damaged these native stands and will eventually kill many of the trees.

"In Mexico on one of the two islands where radiata occurs naturally there are no young trees as goats make short work of any seedlings as soon as they appear."

Dr Matheson says Australia needs to worry about the trees' native habitat because to continually improve a species for cultivation, breeders need access to the natural population in order to find new genes for a particular desired characteristic.

"A particularly handy one now would be a gene or genes conferring resistance to pitch canker. Because the fungus that causes pitch canker can be transmitted in seed we can no longer access native populations for seed," explained Dr Matheson.

"Stopping pitch canker taking hold in Australia is a number one priority for maintaining the Australian softwood industry."

Fortunately, says Dr Matheson, scientists from CSIRO Forestry and Forest Products, including Dr Ken Eldridge, the New Zealand Forest Research Institute and the University of California at Berkley carried out a range-wide collection of radiata seed in 1978 before pitch canker was found in California.

Some of the seed brought back was used to establish 50 conservation plantings across southern Australia ranging in area from less than 0.1 hectares to more than 100 hectares.

The importance of these plantings was recognised at a recent CSIRO-organised Canberra workshop attended by scientists and forest industries representatives.

"The workshop agreed on proposals designed to boost the genetic conservation effort in Australia and New Zealand of radiata pine. These included further planting of seed collected in 1978 from the natural stands and aiming for an effective population size of 2,000 trees where possible in conservation plantations," said Dr Matheson.

CSIRO is helping conserve radiata pine, an American tree species under threat from habitat loss and disease. Radiata pine is an important species in Australia's softwood industry. The photo above shows Radiata in one of its threatened native habitats, Gaudalupe Island, Mexico. Photo CSIRO Forestry and Forest Products.

Another CSIRO FFP scientist, Dr Mike Devey with Dr Matheson organised a second workshop in California to discuss pitch canker and its threat to *Pinus radiata*.

As Dr Devey said, "Stopping pitch canker taking hold in Australia is a number one priority for maintaining the Australian softwood industry. The workshop in California was held to bring together all known information about pitch canker and the genetics of host resistance and involved people from six countries. The plan is to test pedigreed trees from Australia, New Zealand and Chile along with native Monterey pines in California. Information on resistance could then be applied in each country's breeding program. Resistant Californian trees will boost local conservation efforts." CoR

Research Roundup

CSIRO research in the news compiled by Nick Goldie, CNA

Historic tree cloned

In 1824 explorers Hume and Hovell camped under a river red gum, beside what they had (modestly) named the Hume River. They explored southern New South Wales, crossed the Murrumbidgee, and eventually arrived at Port Phillip Bay.

Later the "Hume River" was renamed the Murray, and the place where they camped became Albury. The explorers had marked their passage by carving Hovell Nov R17/24 in the tree.

Today, the historic tree is still alive, but showing signs of age. Last year Mr Vic Hartney of CSIRO Forestry and Forest Products used a cherry-picker to collect shoots from the top of the tree, and is creating clones of the original tree, on river red gum root stock. Albury City Council is planning to plant the new trees close to the 'Hovell Tree' so that when it finally dies, its genes will live on.

Oiled penguins point finger

Hundreds of Australian penguins are suffering a horrid fate as they become contaminated with oily sludge—in the ocean.

According to Dr Andy Revill of CSIRO Marine Research, some ships ignore environmental guidelines, and illegally discharge oily waste at sea. It is cheaper than using the commercially-run facilities in harbour.

One solution, suggests Dr Revill, is to include the cost of harbourside discharging in port fees, with easily accessible discharge facilities.

However we are all liable to some extent. Road runoff and industrial stormwater dumping carries a vast amount of oil into inland water systems and so into the sea. The US Academy of Sciences has estimated that 37 per cent of the world's marine oil pollution enters the sea from the land.

Alien invaders: stars and crabs are coming

Thirty million seastars have invaded

Tasmania's Derwent Estuary. Green crabs are on the march.

Both these pests—the Northern Pacific Seastar and the European Green Crab—are believed to have hitched rides to Australia in the ballast water of ships. Both are voracious predators of shellfish, and are a serious threat to Australia's marine farmers and aquaculturists.

Tasmanian marine farmers have joined scientists in a program to trap and monitor the two pests, says Mr Dick Martin of CSIRO Marine Research.

"Involving the farmers is critical. It won't just provide the scientists with information, but it will play a vital role in raising awareness of the seastars and the crabs in the industry."

According to rodent expert Ms Monica van Wensveen of CSIRO Wildlife and Ecology, South East Asian rice farmers have (delicious) recipes for the rats that steal their rice. Some chopped garlic, fresh ginger, chilli, a splash of soy sauce—perhaps this is a solution to the green crab invasion. If you can't beat them, eat them.

Don't waste water!

How much water does your household use for the lawn? For washing the car? For making cups of tea? Down the gurgler?

1999 is the year of CSIRO's Urban Water Program. Director Mr Andrew Speers of CSIRO Building, Construction and Engineering explains: "We're taking six hundred typical Australian households, and using 'smart' meters and family water logs to record water use, over two consecutive summers."

We use two-thousand-year-old technology in the form of water-borne sewage and effluent systems. In an era where water shortage is becoming a global issue—wars may be fought over water supply—it's time that we re-think Australia's urban water use.

"If Australia can pioneer clever solutions to the water issue, we can be sure that there will be worldwide demand for them," says Mr Speers.

The households taking part in the survey are in Perth (WA), but are representative of typical homes anywhere in urban Australia.

Marsupials in the mist

Like flood victims, rare marsupials retreated to cool mountain tops in Australia's wet tropics.

Seven species of leaf-eating marsupials—two tree kangaroos and five kinds of possum—are now stranded in the high country, the last remnants of the rich fauna that flourished in Australia millions of years ago.

But what will happen when the new global warming begins to bite in the next century? Mr John Kanowski of CSIRO and the Rainforest CRC is working against the clock to find out.

"We think these animals need cool conditions, not only to keep their body temperatures down, but to provide the dew they drink on misty mountain tops. If the cool wet forest retreats, the animals have no choice but to go with it."

Urine with a chance

Each year we Australians (a nation of beer drinkers) produce 5 to 10 billion litres of urine—as much as 500 litres per person per year.

And we use ten times this amount of water to carry the urine away.

Dr Rhys Leeming of CSIRO Marine Research has been working with Swedish researchers to design a practical urine separating toilet system, and then to assess the effects on soil, plants, and water, of using urine as a fertiliser.

Before anyone asks, what about the other component? We can report that Dr Phil Polglase of CSIRO Forestry and Forest Products has been helping boost the growth of radiata pine plantations south of Sydney, by the judicious tractor-driven application of biosolids—described as "thick muddy solids derived from waste water treatment". CoR

PAs connect at conference

At the conference dinner (from left to right) Valerie Blackley, Margaret Redford, Jane Lowther, Mary Siggers, Eleanor Oyston and Beverlie Johnstone. Photo: Bronwen Healy.

Job sharing, working from home, training, multi-skilling, secondments and flexibility were issues raised at the CSIRO Personal Assistants' National Conference held late last year in Melbourne.

The conference focused on the PAs role in assisting scientists, senior managers and decision makers carry out their work, and learning more about the way CSIRO is run.

CSIRO's Chairman, Mr Charles Allen, opened the conference and was followed by a number of prominent keynote speakers. The Chief Executive, Dr Malcolm McIntosh, was unable to attend due to overseas commitments, but sent a comprehensive "state of the nation" address to each participant.

The conference enabled PAs to get to know their colleagues and improve their personal effectiveness. A PA email network has been established for group discussion or requests for assistance. Several Divisions are now running regular lunchtime meetings for PAs and intend to hold local workshops during the year.

"PAs have a lot to contribute to the organisation and their networking is vital in the day to day running of CSIRO", says the Chairman's PA, Pauline Macca, who was delighted to attend the conference.

Dr McIntosh agrees: "Networking is what the conference is all about. In an organisation like CSIRO, we all rely on each other to create a team that can do much more than we could ever achieve behaving as just a group of individuals. The communicators, lawyers and commercial managers have such CSIRO-wide networks and I hope that PAs will do the same."

Another attendee, Carolyn Szczepaniak, PA to the Chief at Wildlife & Ecology, believes the Conference accomplished its aim of improving internal communication and has contributed to a freer exchange of, and access to, information within her work environment.

The whole conference engendered a spirit of friendly cooperation and pride in belonging to CSIRO. Delegates and their supervisors have reported their enthusiasm for continuing with conferences regularly in the future—and this has the Chief Executive's full support. CoR

Ian farewells Animal Health

Ian McTaggart has farewelled the Organisation after a 34-year career with CSIRO Animal Health.

Ian started with CSIRO Animal Health in Parkville as a technical assistant in the media preparation laboratory, producing vaccines for the successful eradication campaign against contagious bovine pleuropneumonia.

"Things have certainly changed since I first joined CSIRO. I remember when young technicians wouldn't dream of addressing senior staff by their first names. And when my wife Judith and I became engaged, we were told that we couldn't work at the same Division," he said.

After six months Ian joined the parasitology research program, under Norman Anderson. The team was researching gastro-intestinal parasites of sheep and cattle in the regions of southern Australia.

In 1975 Ian and family left Melbourne for an onsite field trial in Victoria's Western District, where Ian undertook both the animal husbandry and laboratory work for the parasitology project.

Since 1983, Ian has been with CSIRO's AAHL—before the world class facility was even opened.

His first role was to establish and manage AAHL's large animal facility.

Joining Ian McTaggart (left) at his farewell was former Chief of AAHL, Dr Bill Snowdon.

Ian undertook a two-year secondment to the Human Resources Branch in Canberra on a project to coordinate training and development activities on a regional basis. He then returned to the Division where he joined the Communication Group.

"I didn't have much time to settle into the Group, as the Hendra horse virus story hit within a couple of weeks of joining in 1993. Then in 1994 the rabbit calicivirus disease (RCD) project was up and running along quite nicely... until October 1995 when the virus escaped from Wardang Island and kept us all very busy for the next 12–18 months," Ian said.

Ian plans to play golf, and see more of Australia. CoR

Molecular scientists lend a hand

Drs Keith Gough and Peter Hoyne of CSIRO Molecular Science have been doing a bit of 'outreach' science.

They have been assisting students at Swinburne University with their 16 week projects. These projects, which investigate a particular aspect of biotechnology, are an essential part of the work requirements for their diploma.

One student is looking at the use of methods that employ polymerase chain reaction, protein expression and electrophoresis of DNA.

"We're helping the students to investigate the protein VAMP I, which has been researched by CSIRO Molecular Science at Parkville," said Dr Gough.

"The protein is partly responsible for allowing glucose to be transported and absorbed by insulin-sensitive cells in the body."

"It is important for CSIRO scientists to shed their white coats and get out among the community to let them know what we are doing, and to help foster a love of science in students." CoR

Dr Keith Gough (second right) and Dr Peter Hoyne (centre) of CSIRO Molecular Science discuss biotechnology projects with Swinburne University students. Photo courtesy Swinburne University of Technology.

Science quick quiz

CSIRO's DOUBLE HELIX SCIENCE CLUB

Test your encyclopaedic knowledge of science! Brought to you by CSIRO's Double Helix Science Club*, there's no prize for this quiz except a warm, fuzzy feeling generated by getting all the right answers, but there is a prize for donating questions (see below).

Questions

1. What American scientist/author created the three universal rules of robot behaviour?
2. When was Darwin's theory of evolution first published?
3. Who carried out the first successful vaccination two hundred years ago?
4. In which year was Australian Nobel Prize winner Frank Macfarlane Burnet born?
5. Why did he win the Nobel Prize for Physiology or Medicine?

Answers

1. Isaac Asimov. 2. 1859. 3. Edward Jenner. 4. 1899; this year we celebrated the centenary of his birth. 5. For work in immunology that led to organ transplants. He predicted that developing immunity-producing tissue learns to recognise and remember its own pattern, and that if tissue from another body were introduced to it (tissue at the right time), it would learn not to reject. The fetus's immunity-producing tissue could be grafted into being tolerated to tissue or organs from the different body, even later in life. Dr Peter Medawar proved Burnet correct with experiments on mice, and the two shared the Nobel Prize for Physiology or Medicine in 1960.

Double Helix Club quiz question competition

The competition is still open for people who have the questions rather than the answers. If you can think of some tricky, yet solvable, quiz questions, send them to Simon Torok at Simon.Torok@helix.csiro.au for a chance to win a $10 Double Helix merchandise voucher and the honour of having their questions in the Double Helix quizzes running in *The Age*, *The Canberra Times*, *The Helix*, and *CoResearch*.

***To join CSIRO's Double Helix Science Club call (02) 6276 6643, email: education-programs@helix.csiro.au or see http://www.csiro.au/helix on the WWW.** CoR

CSIRO around the nation

Backpage

O caption, my caption!

We've got off to a great New Year with plenty of humour for the Caption Competition.

Marijuana was by far the most popular theme. These two came from Greg Doran of Manufacturing Science and Technology: "Colin Tann harvests leaf and head for world's biggest joint" and "Colin Tann of CSIRO Entomology determines the effects of marijuana as possible pesticide. Insects taking part in the trial claimed they 'could really munch some pizza' and were 'really hangin' to go catch some waves', but no longer exhibited the urge to devour crops. CSIRO entomologists are now working days, nights and weekends to determine safe human exposure levels for the revolutionary pesticide".

Zoe Phillips a student in Canberra sent: "I'm sure they said that the harder I sucked the higher I'd get".

Bill Winter of Tropical Agriculture offered: "Just a few more plants and I'll have the biggest joint in the universe!"

Bernard Doube from Land and Water sent: "and it was from this simple device that the Hoovermatic finally evolved".

Patrick Rohan of Mathematical and Information Sciences wrote: "How do I get the bugs to let go of the leaves? . . . Well, I . . . er . . . well, . . . um . . . I just suck them off . . ."

Two entries were received from Warrick Glynn of Molecular Science: "Two for research, one for me, two for research, one for me.." or "Flat on my back? No worries—built in chair mate!"

Exploration and Mining's Patricia Arguello de Avila sent: On control of feral cats and foxes: "Here . . . kitty, kitty, kitty . . .".

Philip Orr of Land and Water sent: "Colin Tann road tests the world's largest bong".

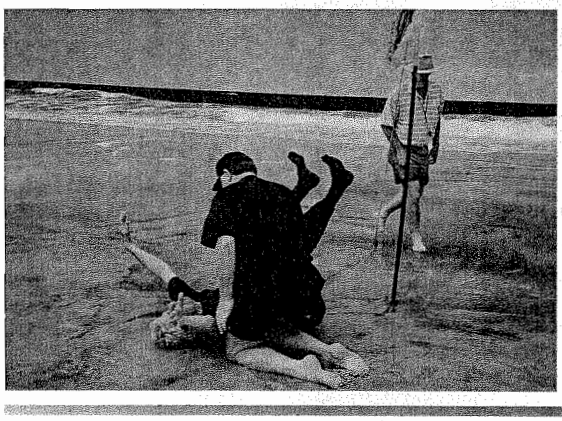
And finally this from John Morrissey at Information Technology services: "Another ten minutes and I'll have enough for a lovely aphid soup for Xmas dinner".

And the winner is—Ian Haynes of Food Science Australia for: "Cripes! I'll never find the bong in all this grass!", Ian wins a book called "Let your Creativity Bloom".

Now back to saving Colin Tann's reputation. Colin was actually using a noisy petrol driven "D-Vac" to suction sample cotton insect pests at the Australian Cotton Research Institute, Narrabri.

Our latest pic is from Maria Knox, of Energy Technology. Best caption wins a stylish Double Helix Cap.

Send captions and pics to *CoResearch* Caption Competition, PO Box 225, Dickson, ACT 2602, or email Karen.Robinson@cc.csiro.au. CoR



Farewell Dick and Mike

CSIRO Tropical Agriculture recently bade farewell to Dr Mike Foale and Dr Dick Date.

Dr Date leaves CSIRO after more than thirty years of service. He retired from Tropical Agriculture's Root Nodule Bacteria crew to travel around Australia. His extraordinary research career has led him from the palace gates of Ethiopia to the Yangtse River and the Great Wall of China.

Dick and his wife now plan to see much more of Australia, which includes travelling up to Northern Australia to see the Kimberleys.

Like many of the recent departures from Tropical Agriculture (TAg), Dr Mike Foale will continue to pursue further research activity and maintain his associations with the Division.

Dr Foale has made many important contributions since joining CSIRO in 1969, one of these being his key part in facilitating the gap between resource modelling technology and the people it was designed to benefit—farmers. CoR

A jolly good fellow

Dr Brian Spies of CSIRO Exploration and Mining and Director of the CRC for Australian Mineral Exploration Technologies was elected as a Fellow of the Australian Academy of Technological Sciences and Engineering at their annual meeting in Fremantle on 23 November, 1998. His citation reads ". . . for major contribution to geophysics for resource exploration and non-destructive pipeline testing and to managing collaborative research." CoR

The Australian Ark

The *Australian Ark—A history of domesticated animals in Australia* by Dr Ian Parsonson, is a new book from CSIRO Publishing. It begins with the domestic animals that came with the first white settlement in 1788, and explores the foundations of our wool and beef industries, examining the role of early leaders like Phillip, King, Macarthur and Bligh.

The book considers the successful introduction of the horse, Australia's first live animal export, and goes on to explore the role of the acclimatisation societies, the development of the veterinary profession and the control and eradication of some of the major exotic and introduced diseases of sheep and cattle.

Dr Parsonson was formerly Assistant Chief of the Australian Animal Health Laboratory at Geelong, after a long career in veterinary practice and research. The Australian Ark costs $59.95. CoR

Energy honours

Congratulations to Dr David Rand who was elected a Fellow of the Australian Academy of Technological Sciences and Engineering at its Annual General Meeting in Perth in 1998. CoR

Give blood

CSIRO Minerals recently hosted an Australian Red Cross Blood Service mobile unit at Clayton. Forty donors from across the Clayton site banded together to support the Blood Service.

CSIRO Minerals will continue to host a mobile unit in 1999 and is looking for more donors. It aims to increase its donor number from 40 to 60, which will assist in making it viable for the Blood Service to continue servicing CSIRO on site. More from Bernie Washington at Bernard.Washington@minerals.csiro.au

Operations club

The CSIRO Operations Research Club is a special interest group for scientists working in such areas as scheduling, production planning, operations, logistics and rostering. Mathematicians from CSIRO Mathematical and Information Sciences (CMIS) initiated the Club.

Dr Mohan Krishnamoorthy of CMIS's Operations Research group and Club organiser says, "We have often felt in our group that our research and client service would benefit from the input of others working in operations research elsewhere in CSIRO and, likewise, we could share some of our expertise. The beauty of CSIRO is that it is large enough to support such interactions."

The aim is to form a network of staff undertaking operations research to share ideas, recent advances and practical know-how. Proposed activities include e-mail discussion groups, meetings, workshops and newsletters. The first meeting is proposed for 8 and 9 July 1999 on Queensland's Gold Coast immediately after the national conference of the Australian Society for Operations Research (ASOR).

Operations research is a discipline that helps decision makers in sectors including integrated manufactured products, mineral processing and metal production, exploration and mining, food processing, built environment and services. It uses methodologies such as simulation, optimisation, mathematical programming and heuristic search.

Any CSIRO researchers with an interest in operations research are welcome to join. More information Dr Mohan Krishnamoorthy, (03) 9545 8042 or e-mail Mohan.Krishnamoorthy@cmis.csiro.au CoR

Travelling scholar

CSIRO Minerals' Dr Fiona Solomon has been awarded the 1999 Travelling Scholarship at the Environmental Awards presented by the Australian Minerals and Energy Environment Foundation (AMEEF).

The scholarship, which is awarded annually, will enable Fiona to travel overseas to investigate a project entitled "Communities in partnership: an investigation of international strategies for stakeholder involvement in the minerals industry." At the completion of the scholarship Fiona will make recommendations to AMEEF for "best practice" in industry-community partnerships in Australia. CoR

Young Aussie star

Astronomer Dr Bryan Gaensler is the 1999 Young Australian of the Year.

Dr Gaensler used CSIRO's Australia Telescope for his recent PhD thesis on how the debris of exploding stars expand into space.

He made a startling find that exploded stars in our Galaxy act as 'cosmic compasses', lining up with the Galaxy's magnetic field.

The Young Australian of the Year Awards recognise outstanding young achievers within the community. CoR

Bright Sparcs

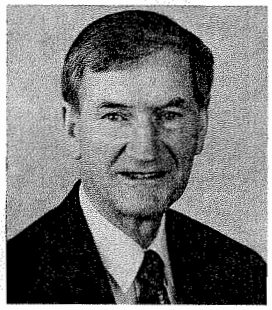
Explore Australia's scientific heritage at http://www.asap.unimelb.edu.au/bsparcs/

Bright Sparcs has information on over 2,500 Australian scientists from the 18th century to the present. CoR

US Award

Dr Stuart Godfrey, an oceanographer, with CSIRO Marine Research is the 1999 winner of the prestigious Sverdrup Gold Medal, awarded by the American Meteorological Society. Dr Godfrey won the award for advancing the understanding of climate variations such as *El Nino*. CoR

Osborne Medal



Dr Finlay MacRitchie, an ex-CSIRO scientist, has been awarded the highest honour in the USA at the annual meeting of the American Association of Cereal Chemists. Dr MacRitchie was awarded the prestigious Thomas Burr Osborne medal for research in cereal chemistry.

Dr MacRitchie was a research scientist with CSIRO for 30 years until his retirement twelve months ago. He is currently a Professor in the Department of Grain Science and Industry at Kansas State University. CoR

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Tel (02) 6276 6589
Fax (02) 6276 6273.
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CoResearch

CSIRO's staff newspaper

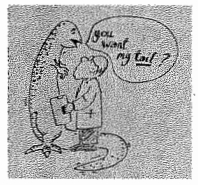
No. 378 Winter 1999

AAHL has key role in Malaysian virus fight
page 2

Obituary Sir Robert 'Jerry' Price
page 5

Desert defender
page 6

Research Round up
page 7



Science Budget didn't budge

by Jane Kahler, CNA

Science can expect $3953 million from the Government's 1999–2000 Budget handed down in May, around the same level in real terms as last year's.

Of that, CSIRO will get $597.54 million, which while it looks like a significant increase on last year's Budget, works out around the same.

The apparent increase reflects accounting adjustments made as the Government shifts from cash accounting to its first accrual Budget.

Although the outcome may at first glance seem disappointing, the Organisation has sailed through the annual Budget storm relatively unscathed.

First CSIRO is in the final year of its funding triennium, which means that its budget was agreed at the time of the 1996–97 Budget and it was unlikely that any startling increases could be expected.

Second the $20 million per annum over three years given to CSIRO by the Government in its 1996 Budget, but required to be paid back from asset sales and efficiency gains in that triennium, has been permanently restored to the Organisation's bottom line without repayments.

Third CSIRO will receive full compensation for the 1 per cent efficiency dividend that would otherwise be levied on its research funding—around 70 per cent of the Organisation's total appropriation.

"We knew that this was going to be a tight Budget," said CSIRO Chief Executive Dr Malcolm McIntosh.

"For CSIRO to ask for an increase this year would have been swimming against the tide. Given Budgetary constraints, the outcome for CSIRO is rational and reasonable."

Medical science on the other hand, looked to be a winner with funding for the National Health and Medical Research Council (NH&MRC) boosted by 8 per cent to $173 million.

"Unfortunately CSIRO scientists won't get any of this because we're not eligible for NHI&MRC money," said Dr McIntosh. "Not unless we work with someone that is." Other health R&D will be boosted by 21.3 per cent shared among HIV/AIDS research ($12 million), the Australian Institute of Health and Welfare ($8 million), medical research infrastructure ($20 million), and a National Institute of Clinical Studies yet to be established, but with a budget allocation of $20 million over three years.

Biotechnology also looked to be a favourite with the Government promising $17.6 million over two years for its Biotechnology Strategy, which will set up an office of biotechnology, Biotechnology Australia, and an Office of the Gene Technology Regulator.

But these three initiatives will provide a regulatory and educational role only and will not conduct biotechnology research.

"CSIRO will be involved in these initiatives," said Dr McIntosh.

"CSIRO has very stringent guidelines for its biotechnology research, but we believe there should be an information program for the community run by independent people of stature that the community feels it can trust.

"There has to be an authority in place for biotechnology so the community is confident that it's not being sold products that are unsafe, or that unsafe things are being allowed into the environment."

As for science generally, there were no big winners this year.

Funding for targeted higher education R&D, which includes the Australian Research Council, decreased by 5.5 per cent. Other higher education R&D, which includes the Research Infrastructure Program, suffered a 2.3 per cent decline.

Cooperative Research Centres, of which CSIRO is involved in 52 out of 62, will feel the pinch of a 5.5 per cent decrease in funding, and funding for rural R&D will decline by 4.7 per cent on last year.

The Defence Science and Technology Organisation's funding will drop by 2.3 per cent, while other research agencies like the Australian Institute of Marine Science and the Australian Nuclear Science and Technology Organisation will receive slight increases.

A big loser is the National Space Program, with its entire budget of $1.5 million gone. Joining it in the losing stakes is the Australian Geological Survey Organisation (AGSO) with about 20 per cent slashed from its funding. AGSO expects it will lose up to 100 staff as a result of the cuts.

Some good news occurs on the business side of things with initiatives like the Government's R&D Start program boosted by 23 per cent and the Industry Research and Development tax concession scheme by around 10 per cent. CoR

It's show time!

From National Science Week in Australia to Germany's Hannover Fair, CSIRO has been busy out and about showing Australia and the world the technology and expertise it has on offer. The photograph above shows CSIRO's latest exhibit at The Amazing World of Science held in Canberra as part of The Australian Science Festival in May. More on pages 4 and 5. Photo Bronwen Healy. CoR

'Flu drug shows it's not to be sneezed at

by Jane Kahler, CNA

Initial setbacks to the regulatory approval and sale of the 'flu drug Relenza™ on world markets are fading fast with a go-ahead for the drug in the European Union announced in June.

The news led to a jump in the share price of Biota Holdings Pty Ltd, the Australian company that funded the research by CSIRO, Monash University and Australian National University scientists, to $6.10.

Earlier this year Biota's share price plummeted from $9.40 to a low of $3.00 when the US Food and Drug Administration (FDA) committee recommended against approval of sale of Relenza™ by a vote of 13 to four.

This was despite the fact that 15 days earlier Relenza™ had received regulatory approval from the Australian Drug Evaluation Committee (ADEC) for sale in Australia.

It had also received approval for sale in Sweden, which acted as the Reference Member State for the European Union.

ADEC's green light for the Australian-developed drug was a feather in the cap of the scientists and commercial partners who brought it to market after 20 years of research and development.

International pharmaceutical company Glaxo-Wellcome has been busy commercialising the drug and conducting clinical trials around the world, and Relenza™ is now approved for sale in 16 countries.

While Relenza™ (Zanamivir) is not a cure for the 'flu, it prevents the virus from replicating.

Studies in Australia and Europe showed it eased symptoms of the 'flu with patients reporting they felt better two and a half days sooner than those taking a placebo.

Results from these studies led to the Australian go-ahead, and shortly afterwards approval for sale in Sweden by its Medical Products Agency.

But the FDA Committee based its decision on results of a US study, the largest conducted so far.

Unlike the Australian and European trials, the US study showed that people who took the drug felt better in five days, compared to six days for those that took a placebo.

The FDA's Anti-Viral Drugs Advisory Committee said it was not concerned about the safety of the drug, but questioned whether it was effective enough.

But Glaxo-Wellcome remains confident about the future of Relenza™ in the US.

"Glaxo continues to work closely with the FDA to address the issues they raised," said the company's Industry and Public Affairs Manager Ms Fiona Palmer. "Things are moving full steam ahead on Relenza™."

In April, Glaxo advised that the US Food and Drug Administration (FDA) had extended its regulatory review of Relenza™. CoR

AAHL has key role in Malaysian virus fight

Australian scientists are playing a key role in the international effort to stop the deadly Malaysian Nipah virus, which has killed scores of people and thousands of pigs.

CSIRO Animal Health's Dr Peter Daniels and Dr John White have just returned from Malaysia, where they joined a team from the Atlanta-based Centers for Disease Control and Prevention (CDC), in investigating and controlling the outbreak.

Dr Peter Daniels is a veterinarian and project leader of CSIRO Animal Health's Diagnosis and Epidemiology section. He has been working with the Malaysian Department of Veterinary Services in conducting animal post mortems, and collecting blood samples from pigs and other animals for testing at the Australian Animal Health Laboratory (AAHL) in Geelong.

"Through testing at AAHL we have confirmed that humans, pigs, dogs, cats, horses, goats and bats have been infected by the Nipah virus. This information is critical in assisting the Malaysian veterinary services to successfully contain the virus and prevent further deaths.

"We are also undertaking transmission experiments with pigs to determine how they may be passing the virus to other pigs, and to people. The unique biocontainment facilities at AAHL make it one of the few places in the world where testing and research of this sort can be safely carried out.

"While collecting samples in affected areas in Malaysia, we wore special breathing hoods to help minimise any risk of infection.

"The Malaysian vets have now been equipped with similar apparatus and trained in its use, and strict protocols developed to ensure their safety while working on potentially infected farms.

"The most important part of the work has been to apply this early knowledge of the disease and how it is spread, to develop control measures. We assisted the Malaysian Veterinary Services Department in designing a national surveillance and eradication program for the disease in livestock, based on the detection and culling of infected pigs," Dr Daniels said.

Dr John White is a CSIRO Animal Health research scientist with experience in developing diagnostic tests for viral diseases. He worked with staff from the Veterinary Research Institute (VRI), in Ipoh, Malaysia to develop a blood test to show if pigs have been exposed to the virus.

"The test is now being used in Malaysia to screen at least 30,000 pig blood samples from more than 1,000 pig farms nationwide, as part of the control strategy for the Nipah virus. Pigs are also being randomly sampled at Malaysian abbatoirs to ensure that potentially diseased animals are not being submitted for human consumption," Dr White said.

From left, foreground, Mr Hume Field, QDPI, and Dr Peter Daniels, CSIRO AAHL. The scientists are pictured necropsying a pig suspected to be infected with the Nipah virus, at the Malaysian village of Sepang. Photo AAHL

Dr White will soon return to Malaysia to assist the staff at VRI to develop screening tests for other animals known to be susceptible to the Nipah virus.

At May 12, 100 people had died in Malaysia from encephalitis (inflammation of the brain), from a total of 257 human cases. Some deaths were due to Japanese encephalitis, but most appear to have been caused by the Nipah virus, a 'new' paramyxovirus that is closely related to Hendra virus. Both viruses belong to the 'megamyxovirus' genus. Hendra virus was first identified in Queensland in 1994, and has killed two people and sixteen horses.

Mr Hume Field, a wildlife expert from the Queensland Department of Primary Industry (QDPI), also worked in Malaysia, collecting animal samples for testing to determine the natural 'host' of the virus.

The Australian effort is coordinated by Australia's Chief Veterinary Officer, Dr Gardner Murray, through the National Office of Animal and Plant Health in Agriculture, Forestry and Fisheries—Australia (NOAPH—AFFA), and the Australian Quarantine and Inspection Service (AQIS). CoR

From the Chief Executive

The Government's 1999–2000 Budget was a sound one for CSIRO. Our appropriation funding base for 2000–01 to 2002–03 will be maintained at pretty much its current level.

Now included is the $20 million per annum that the Government gave us when it was first elected, but neutralised by requiring asset sales—a total of $60 million over three years. The $20 million is now restored and in our Budget baseline for perpetuity. We also have full compensation for the efficiency dividends levied on us and inflation.

So while the net effect is a small growth on last year, it's a perfectly sensible outcome that is well and truly manageable.

It was inevitable and in my opinion quite right, regardless of which Government was in power, that this had to be a tight Budget.

With the Asian economic circumstances the way they are and the European economies experiencing a decline, the Government had to hedge and that means a lean Budget.

But there is a sequence of events coming up including a major innovation summit run jointly by the business community and the Government, which is designed to prepare a set of initiatives for the Government on innovation from science and technology, and a review of taxation structures.

These events will leave CSIRO and science generally well placed to propose an increase in funding in next year's Budget or the one following. The Government has indicated a general willingness to look at a significant increase for science next time around.

But this year's Budget, while a good outcome for the Organisation, gives us a challenging scenario for the priority setting that, at the time of writing, we're about two thirds of the way through.

Fortunately, there has been a lot of rearranging going on already within Sectors. The Sector Priority structures —Sector Advisory Committees and Sector Coordinators—have been very effective at reorienting priorities.

The Sector Advisory Committees have clearly rolled up their sleeves and gone in there with CSIRO's people to go through our research in more realistic detail than we've probably done since 1926.

And some of the results have been clearly very well thought through, and very robust debates must have happened to get there.

In light of the Budget, there will be some more readjustment required, but because the Sectors have done such a good job within themselves already, there will be a lot less than if they'd left things the way they were. I think they've done extremely well—

Dr Malcolm McIntosh. CoR

Scientist gets his own reaction

CSIRO scientist Dr Andy Liepa has had a chemical reaction named after him.

Dr Liepa now joins people like Michael Faraday, Alessandro Volta, Edwin Hubble and Hans Geiger who have been immortalised by having processes or devices named after them.

He joins a very select group of Australian organic chemists who have achieved this honour.

The process, now called "Liepa phenanthrenes synthesis", makes it quicker and easier to reproduce certain naturally occurring chemicals, such as those used in antibiotics, in a laboratory.

Dr Liepa developed the process while he was a postdoctoral fellow in the US during the early 70's. He went on to further demonstrate its use while he was a research fellow at the Australian National University in the mid–70's and later at CSIRO Molecular Science.

According to Dr Liepa the process involves a breakthrough in controlling the behaviour of a carbon compound known as an aromatic ring.

"Aromatic rings play a very important role in organic chemistry as they form the building blocks of many complex substances," Dr Liepa said.

The most basic of these is the benzene ring, which consists of six atoms of carbon in a flat hexagonal shape that have a hydrogen atom attached to each one. The bonds between the carbon atoms are very strong, which makes the structure very stable, yet aromatic rings are able to react with other chemicals.

Aromatic rings have a wide range of industrial uses in making dyes, drugs and plastics and many other chemicals.

Dr Liepa said that while procedures have been developed for many kinds of chemical reactions, methods to form direct links between aromatic rings such as benzene have been few and inefficient.

"I found a chemical that was able to overcome this. This chemical had a strong affinity with electrons, and was able to remove one from the ring. This meant we were able to form a highly reactive chemical intermediate," Dr Liepa said.

"This could then be used to carry out chemical syntheses difficult to achieve by conventional chemical methods."

This procedure has subsequently been applied by Dr Liepa as well as overseas researchers as one of the key methods used to synthesise a number of natural products.

Dr Liepa said although so far mainly used for research, his process was recently a key method used in the US to produce the antibiotic Vancomycin. Vancomycin has become the treatment of last resort against antibiotic-resistant strains of golden staph (*Staphylococcus aureus*) which have emerged as a widespread and potentially lethal threat during hospitalisation. CoR

Dr Andy Liepa joins the ranks of people like Faraday, Volta, Hubble and Geiger. Photo CSIRO Molecular Science.

New Chief Scientist

CSIRO welcomes the appointment of Dr Robin Batterham as Chief Scientist of the Commonwealth of Australia.

Dr Batterham's experience in both public and private sectors will be extremely valuable to the Government and its agencies," said Dr Malcolm McIntosh, CSIRO Chief Executive.

"We look forward to a strong and productive relationship with Dr Batterham, who has already worked with CSIRO as Chief of the Division of Minerals and Process Engineering.

"Dr Batterham's predecessor, Dr John Stocker, has made a valuable contribution, particularly in his work with the Prime Minister's Science Engineering and Innovation Council," Dr McIntosh said. CoR

DCEs announced

CSIRO Chief Executive Dr Malcolm McIntosh has announced the appointment of Dr Paul Wellings and Dr Ron Sandland to the position of Deputy Chief Executive.

Dr Wellings will replace Dr John Radcliffe, and Dr Sandland will replace Dr Bob Frater. Dr McIntosh said the handovers will occur mid-year at mutually convenient times. CoR

Dr Paul Wellings

Dr John Radcliffe

Dr Bob Frater

Dr Ron Sandland

Media favourability even higher in 1998

by Rosie Schmedding, CNA

Media coverage of CSIRO and its science in 1998 was even more favourable than in 1997, leading media analyst CARMA International Pty Ltd has found.

CARMA—or Computer Aided Research and Media Analysis—looked at 4,117 newspaper articles about CSIRO published in 1998, and concluded that 87 per cent were favourable, 12 per cent neutral and only 1 per cent unfavourable.

CARMA found that articles about CSIRO had an average favourability rating of 61.9 on their 0 – 100 point scale, up from 60.2 the previous year—60 is regarded as the level of favourability typically obtained by sponsorship.

The CARMA study showed that the highest volume of newspaper reports—750—was obtained by the Biodiversity sector, followed by Land and Water at 717.

Two sectors showed a significant increase in their coverage. Marine an increase of 138 articles and the Built Environment Sector had an increase of 131 articles over the previous year.

The Petroleum, Mineral Exploration and Mining Sector followed by Chemicals and Plastics obtained the most favourable coverage.

The issues most commonly reported in the press about CSIRO were education and training, soils, staff, gene technology, wool and property. Favourable messages dramatically outweighed unfavourable messages, the report found.

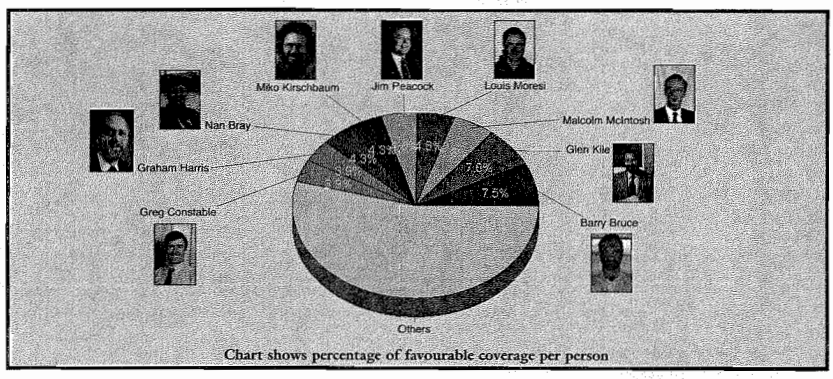


Chart shows percentage of favourable coverage per person

The leading favourable message embedded in the articles was "CSIRO is a world class research organisation vital to Australia's future".

Messages relating to CSIRO providing economic benefits received the most mentions followed by environmental benefits. The leading message relative to public expectations of CSIRO was: "CSIRO delivers a sustainable environment, particularly through introduction of alternative energy sources."

CSIRO's leading media spokespeople in 1998 were CSIRO marine biologist Mr Barry Bruce, followed by CSIRO Forestry and Forest Products Chief Dr Glen Kile, Chief Executive Dr Malcolm McIntosh and CSIRO and Australian Geodynamics CRC scientist, Dr Louis Moresi.

The report says that discussion of Rabbit Calicivirus in 1998 coverage was more favourable than in 1997 coverage. While there still were unfavourable stories the favourability index improved from 49 to 51. Other unfavourable messages related to staff and property.

The study found that CSIRO received most coverage in the Queensland press followed by New South Wales and Victoria. The leading coverage of CSIRO science was by *The Canberra Times*, followed by *The Age*, *The Australian* and *The Sydney Morning Herald*.

Media stories generated by CSIRO achieved an average favourability of 66, compared with 59 for autonomously generated media stories about CSIRO. Individual articles generated through one of CSIRO National Awareness' programs achieved ratings as high as 85. These were "Landscape Visionaries', which was a colour feature article in *The Bulletin*, March 24 1998; "An Australian-made Hybrid Electric Car by the Year 2000", *Motoring* Autumn 1998 and "Bush Tucker Dreaming", *The Bulletin*, July 7, 1998.

"Overwhelmingly apparent in the majority of CSIRO coverage was recognition that CSIRO research has valuable implications and applications for industry and the environment....," the report said.

CSIRO senior forest research scientist, Dr Miko Kirschbaum, and Chief of CSIRO Marine Research Dr Nan Bray, were quoted in 21 articles each.

Also prominent were CSIRO Land and Water Chief Dr Graham Harris, and principal research scientist at CSIRO Plant Industry, Dr Greg Constable, commenting favourably for CSIRO on 19 occasions each.

The "others" category included Dr David Roget, experimental research scientist, and CSIRO Western Australia scientist, Dr Margaret Roper, who were quoted on 16 occasions each. CoR

Grin and beard it

The Annals of Improbable Research invited organisations to submit a group photo of their bearded men for its special 'Bearded Men Issue' in September.

"Given the scenery around Entomology, we didn't think we could pass up a challenge like that!" said Liaison Officer Ms Julie Carter. "So all Ento bearded men were invited to appear to be captured for posterity. And everyone else was invited to watch the beards assemble!" CoR

Farmers baled out by CSIRO

by Fiona Myers, CLW

The end result from a CSIRO Land and Water irrigation experiment is helping farmers hundreds of kilometres from the site.

Truckloads of hay left the FILTER site at Griffith NSW, bound for farmers affected by bushfires near Crookwell last summer.

CSIRO Land and Water officer in charge Mr John Blackwell said the idea to send the hay produced at FILTER came from one of his fellow researchers. "Dr Warren Muirhead suggested that it would be great to be able to give the hay to the farmers at Crookwell," Mr Blackwell said.

"The Griffith City Council, who own the FILTER site and the hay, gave the idea the thumbs up and since then, things progressed quickly."

Farmers were not even required to cart the hay, with coordination between the Griffith and Crookwell Rotary Clubs ensuring the transport of the feed source.

Mr Blackwell said CSIRO Land and Water was always trying to improve agriculture through its research work, but that this was an additional way of helping out.

"Given our regional location, this laboratory works closely with farmers every day to increase their efficiency and sustainability. This is what the FILTER project and sequential biological concentration is about, in trying to find a way to re-use drainage water for a productive outcome.

"We think it is just great that we are able to help even more farmers by giving the hay grown on the FILTER site to those producers who lost stock and feed in the fires at Crookwell."

About 300 bales of the hay, which is a mixture of oaten and grass hay, was sent and a further cut of hay from the FILTER site was transported in autumn. CoR

Double Helix goes totally wild

CSIRO Education Programs and National Awareness have linked with Totally Wild, the long-running, high-rating national children's TV program, to devote its whole Tuesday program to science.

Totally Wild screens weekdays on Network Ten at 4pm. Its viewers are upper primary and lower secondary students and their families.

The Tuesday show includes a good smattering of CSIRO work and the activities of CSIRO's Double Helix Science Club.

The cooperative production will also provide film footage for CSIRO National Awareness' Australia Advances series.

The program reaches over 260,000 young people and their families. Ratings for the Tuesday program have increased since it started featuring science. CoR

Dr McIntosh speaks at NPC

by Karen Robinson, CNA

"The way to compete internationally is to have a technological edge over your international competitors and then, of course, be able to explain it with good marketing", said Dr Malcolm McIntosh, Chief Executive, CSIRO, in a speech to the National Press Club on 16 June.

Invited guests attended the lunch to hear the Chief Executive talk about "Money from Ideas".

"Science isn't simply about satisfying scientists and achieving knowledge for its own sake," said Dr McIntosh. But rather that science and technology "are major economic drivers" that can contribute to the growth of an economy.

"That's where the money comes in," said Dr McIntosh.

"CSIRO feels that science and technology underpins the future quality of life in Australia, both in money and non-money terms," he said.

Drawing on CSIRO's recent achievements in science and technology, Dr McIntosh illustrated a number of areas of research that had both economic and community benefits.

Examples included areas such as astronomy, with the possibility of participating in the "next generation of radio telescopes", the wool industry and the new 'Optim' wool fibre, ultra clean coal, Exelgram technology, for developing anti-counterfeiting devices for use on any security instrument, and the world's first truly novel influenza drug, Relenza™.

Dr McIntosh raised the question as to "which sectors might be the most profitable, and which will be the most important for Australia?" Answering it himself, he said "almost every sector".

Dr McIntosh's speech can be found at http://www.csiro.au/news/speeches/npc.html CoR

CSIRO or

CSIRO out and about in National Science Week

National Science Week is Australia's annual nation-wide celebration of science. Hundreds of schools, universities, societies, businesses, industry bodies and individuals participate to take science out of the laboratories and into the streets, beaches, auditoriums, sport fields and shopping malls.

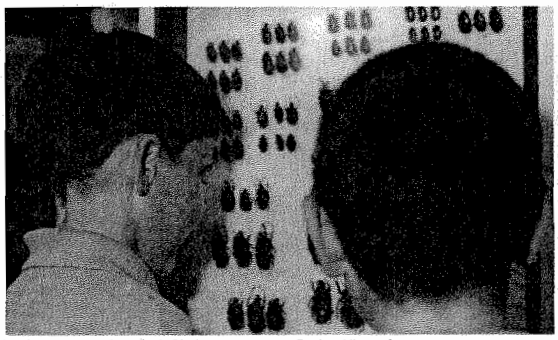
This year National Science Week was held from May 1 – 9 and was supported by major science programming on ABC TV and Radio, plus events in cities and towns in every state and territory.

CSIRO's National Science Week contribution took many forms like the launch of The New Wave for radio, and a website by CSIRO Mathematical and Information Sciences called "Count me in", which featured mathematical topics like probability, mathematical misconceptions, puzzles and maths in everyday life.

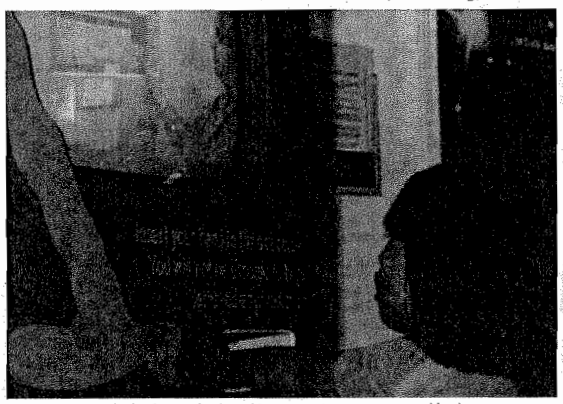
CSIRO Energy Technology set up a chat room with scientists on line to answer questions about life, the universe and everything.

ABC Classic FM's Margaret Throsby interviewed entomologist Dr Ebbe Nielsen who chose a program of music for his one-hour slot and talked of the joys and importance of entomology.

In Canberra CSIRO went on show as part of The Australian Science Festival. Its exhibit at ACTEW's Amazing World of Science at the National Convention Centre, featured five of CSIRO's "greatest hits"—the nanomachine, the flu drug, immunocontraception of pest animals, x-ray technology, and magnesium metal. There were also some hits of the past on film—radar, dung beetles and explosions on the Sun—made by the former CSIRO Film Unit and dug out of The National Film and Sound Archives.



Beetles prove popular at CSIRO's Greatest Show on Earth exhibit in Canberra. Photo Bronwen Healy.



Switching onto CSIRO's X-ray technology, this young visitor seems captured by the exposure. Photo Bronwen Healy.

Public lectures were held like CSIRO Wildlife and Ecology's Dr Steve Morton's on our lizard country and CSIRO Forestry and Forest Products' John Ward's on "Science and Art in the Microscopic World".

Open Days were held at CSIRO Animal Production in Sydney and at CSIRO Davies Laboratory in Townsville.

CSIRO's Double Helix Science Club and The Royal Australian Chemical Institute launched the National World of Colour Project—a global search to find sources of natural plant dyes.

In Brisbane, CSIRO Tropical Agriculture and CSIRO Land and Water were involved in a B105 radio promotion covering quality of meat, seafood, dairy products and water.

In South Australia CSIRO went to the Investigator Centre in Adelaide and showed off its research in nickel and gold, medical imaging, the ARIES satellite, sustainable energy, forests and urban water systems.

In Victoria there was the Great Australian Science Show and CSIRO had exhibits from its work in the environment, manufacturing, information technology, agriculture and minerals and energy. Visitors could talk to scientists and engage in interactive displays. CoR

CSIRO on Han

by Rosie Schmedding, CNA

CSIRO's exhibit at the world's biggest industry and innovation fair in Hannover in April, once again was a big success, according to Deputy Chief Executive Dr Bob Frater.

Dr Frater led the delegation of 22 Australian technologies to the European show following solid success at last year's event. He predicted that exhibiting at Hannover this year could generate exports worth "more than a billion dollars" for Australia over the next five years.

"The barriers to Australian exports are not in our technology, which is unassailably world class," says Dr Frater. "The barriers are in our attitudes, our export infrastructure, and in the way business, Government and R&D groups often fail to communicate with one another."

The whole point of regular attendance at Hannover, Dr Frater maintains, is to overcome these problems.

"Hannover is attended by 300,000 people, who come to see 7,500 companies and organisations show off their wares. It is the premier international industry and innovation event, and we must be there if we are to learn to take ourselves seriously. If we do that, others will do the same. Increasingly, they do."

Over 2,000 people visited the stand during the six days of the show, including four German ministers, both Federal and State. The Australian team logged some 600 serious enquiries from European and international organisations. Each one of these will be followed up.

Among concrete results achieved by CSIRO at Hannover are:

- a A$300,000 two-year collaboration deal with an Austrian high-tech company for flat panel LCD development;

Great National Australian Science Festival Week

by Nick Goldie, CNA

It takes an expert to tease the threads apart and distinguish between National Science Week, the Australian Science Festival, ScienceNOW!, Fresh Science, the Great Australian Science Show, and a slew of launches, seminars, unsung heroes, and 'media events'.

Some of the darling buds of May-week in Melbourne:

The 1999 Australian Science Communicators 'Unsung Hero of Science' is Dr David Jenkins, who knows more about dingoes and wild dogs than you would want to discover, especially as he specialises in hydatids.

These nasty creatures are spread far and wide, in dog-poo, and form cysts inside the bodies of their alternate hosts such as kangaroos, wallabies, or humans. The cysts get very big and very painful. Dr Jenkins said that he was present at the removal of a cyst from the liver of a burly farmer that contained fifty litres (!) of fluid.

If public health funding dries up, and the public health infrastructure is allowed to crumble, the result is catastrophe. Ms Laurie Garrett, author of *The Coming Plague* and science writer for *Newsday* (USA), told an appalled audience about rampant drug abuse and HIV/AIDS, out-of-control prostitution, a tuberculosis epidemic, and simple starvation in the countries of the one-time Soviet Union.

Ms Jane Gazzo (right) guest presenter on The New Wave talks to astronomer Ms Tracy Getts at its launch in Melbourne during National Science Week. Photo Nick Goldie.

ScienceNOW!, the new annual forum for science, offered sixteen young scientists telling the public about their work. At the ScienceNOW! dinner, a select audience heard the same sixteen, described as "bright sparks", invited to describe their doctoral thesis in simple language, while holding a lighted sparkler. Merciless judging marked down hesitation, deviation, and the great sin—scientific jargon.

More young scientists took to the stage as Ms Jane Gazzo, formerly of ABC TripleJ, launched The New Wave, a special Science Week edition of CSIRO's monthly radio program The Sci Files. The adults in the audience may not have recognised her, but Jane was cheered and hugged by mobs of schoolkids, all in the name of science.

Melbourne was a microcosm, Jeff's Shed (or The Melbourne Exhibition Centre) a paradigm. Stalls and shows, swirling crowds of all ages, serious seminars and frivolous fun ... another Science Week gone. CoR

Where art *metis* science

by Rebecca Scott, CEP

Throughout May and June artists got their chance to express their views on the importance of scientific research in our society.

metis—from the ancient Greek word for cunning intelligence—is a unique science art exhibition in the ACT.

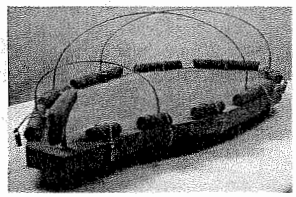
It featured nine separate *oevres* that fused scientific with artistic brilliance and imagination.

CSIRO is one of ten organisations coordinating the project, including the National Gallery of Australia, Questacon, Mt Stromlo Observatory, The Canberra School of Art at the Australian National University and the Australian Network for Art and Technology.

The project was initially undertaken because there was a strong belief that the two cultures have a lot in common.

Artists and scientists view the world with curiosity and, in seeking answers to their questions, use observation, imagination, creativity, communication and evaluation. A scientist tries to represent a concept, experiments with an idea and tests the validity of the creation. So does the artist, and both lead to discovery, new vision and illumination.

The exhibition works were diverse. Some artists made use of cutting edge science such as seismic profiles, underwater explosions, pulsars and even tissue culture to present science to audiences with a new way to view the world.



Jill Peck's Undercurrent was on show at the Australian Geological Survey Organisation. Undercurrent uses an upturned longboat in stone and stainless steel as a metaphor for scientific exploration.

Scientists at CSIRO Wildlife and Ecology shared their bird knowledge with Swedish artist, Henrik Hakansson who documented, filmed and recorded local birdlife.

Acclaimed artist Paula Dawson exhibited three of her largest and earliest holographic works across three venues. Ms Dawson started her career as a holographer with a residency at CSIRO Telecommunications and Industrial Physics in the 1970s.

metis was sponsored by the ACT Government Cultural Council, the Department of Industry Science and Resources through its S&T Awareness Program, CSIRO, Orica and Ericsson.

Contact Rebecca Scott at CSIRO Education Programs on (02) 6276 6639 or see http://www.csiro.au/metis CoR

show...

uilds over success

• the test installation of high efficiency electric motors at a major German manufacturing house, with potential for many more; and

• identification of a huge potential market for thin film measuring technology in the European steel and printing industries.

CSIRO's closed captioning and editing software drew keen interest from business people in India and the Middle East. Ceramic Fuel Cells Limited (CFCL)— which has commercialised CSIRO fuel cell technology—fielded a steady stream of enquiries from German city managers looking for 'green' energy options. And Australian environmentally friendly paint and adhesives technologies drew the attention of European component manufacturers in the construction and automotive industries.

"These successes are gratifying and important, but their real significance is as part of an on-going process," Dr Frater says. "People are gradually becoming aware of our capabilities. For our part, we are growing more aware of the potential market for our technologies—sometimes in areas we had never even considered."

This cross-fertilisation, Dr Frater believes, is one of the key benefits of exhibiting at a huge, non-specialist industry fair such as Hannover.

"We had no idea, for example, that our thin film measurement technology could be used in the printing industry," he says. "But it looks like solving a perennial problem in that industry, with big rewards for us."

Similarly, Farley Cutting Systems, which uses CSIRO's Internet-based remote monitoring and maintenance software to support steel processing plants overseas, discovered that the technology has applications in the design and manufacture of theatrical sets for major productions.

Water purification company Orica, which uses technology originally developed by CSIRO, generated unexpected interest from a manufacturer of dishwashers, a field in which it has never before been involved. CSIRO's FastFlo industrial simulation software has found a new market in the finance industry, where it is used as a tool for pricing options.

"All of these technologies have been on display at Hannover, and we have discovered that we are in a bigger business than we thought we were," said Dr Frater.

"What we need now is help in exploiting this knowledge and turning it into hard export dollars for Australia. We need the Government and the wider private sector to get behind us, to build on our successes. We need enthusiastic representation by our trade bodies and industry groups.

"We need to have a vision of ourselves as a successful high technology exporter," said Dr Frater. "In Europe, a lot of people already see us that way." CoR

CSIRO staff at the Hannover Fair debrief at the end of the day. Photo Albert Mau.

Taiwan ties boosted in Taipei

by Warrwick Glynn, CMS

CSIRO went to Taiwan in April to exhibit at OzTech 99, a showcase of Australian technologies and part of Australian Technology Week.

The central space at the Taipei International Convention Centre displayed some of CSIRO's hottest technologies like face recognition software, the nutritional supplement Nucolox, and polymer banknotes, soon to be adopted by Taiwan.

Australian Minister for Industry, Science and Resources, Senator Nick Minchin and Taiwan's Dr Shih Chin-Tay, President of Taiwan's CSIRO equivalent, ITRI (Industrial Technology Research Institute) launched Australian Technology Week, which was organised by the Australian Commerce and Industry Office to present Australia as a place of innovative technology.

At a formal dinner to mark the opening of OzTech 99, Senator Minchin witnessed the signing of a Memorandum of Understanding by CSIRO Deputy Chief Executive Dr Chris Mallett and Dr Shih Chin-Tay, which will pave the way for future collaboration between the two organisations.

CSIRO Molecular Science Chief, Dr Albert Mau, signed an agreement between the Division and ITRI's Union Chemical Laboratories, which will boost collaborative research into collagen based biomaterials that can be used in knee reconstruction surgery.

Other programs running alongside the technology exhibition were the Australian Technology Marketplace and the Research Collaboration Symposium.

Dr Mallett and other CSIRO personnel chaired and presented sessions on Australian investment opportunities, current technologies and future directions in research.

Nobel Laureates Professor Peter Doherty and Taiwan's Dr Lee Yuan-Tseh, who is also President of Academia Sinica, met with CSIRO staff to discuss the various technologies and research capabilities on display. Taiwan's Vice Premier, Dr Lieu Chao-Shuan, also visited the exhibition.

Australian Technology Week received widespread coverage in the Taiwanese National press and on radio. An afternoon program of radio ICRT was broadcast live from the exhibition. CoR

Minister for Industry, Science and Resources, Senator Nick Minchin (left) witnesses Deputy Chief Executive, Dr Chris Mallett (right) and Taiwan Industrial Technology Research Institute (ITRI) President, Dr Shih Chin-Tay sign an MOU between CSIRO and ITRI. Photo Ta-Yan Leong.

OBITUARY

Sir Robert 'Jerry' Price

James Robert Price was born on 25th March 1912 in Kadina, a small town on South Australia's Eyre Peninsula.

His family later moved to Mt Gambier. In 1923 he won a scholarship to attend St Peter's College boys school in Adelaide.

He was a boarder at St. Peter's for six years, and it was here that he acquired the nickname "Jerry". The origin of this name is uncertain, but it appears to have been a name bestowed at the time on anyone with the surname Price.

After school, Jerry obtained a cadetship in the Chemistry Department at the University of Adelaide.

He graduated BSc with Honours in 1933, and MSc in 1935, working on the chemistry of plant pigments.

Of the many friends he made at University, none was more significant to his later life than Joyce Brooke, a science student three years his junior and whom he later married in 1940.

In 1935 Jerry was awarded an overseas scholarship by the Royal Commissioners for the Exhibition of 1851, to spend two years at Oxford University as a member of Magdalen College.

After graduating DPhil. in 1937, Jerry took up a position on the staff of the John Innes Horticultural Institution, an eminent plant genetics research centre in London.

After being awarded a Rockefeller Fellowship in 1939, he planned to go to the USA but the outbreak of war caused plans to be changed everywhere. He decided to stay in Britain to help with the war effort.

In 1941 Jerry was directed by the Ministry of Supply to take a position as a Chemical Inspector for a group of munitions factories in southwest Scotland.

Following his appointment as a Research Officer in CSIRO, Jerry and his family sailed home in July 1945.

In 1946 he joined the Royal Australian Chemical Institute and eventually became its president from 1962–1964.

At CSIRO Jerry set up the program of research on Australian Native Flora and he recognised that this major project would be ideal for establishing close collaboration with Universities.

The investigation developed into a major national programme known as the Australian Phytochemical Survey. It was probably the largest cooperative research programme in the country at that time.

His next undertaking was extension of the Survey to Papua New Guinea, then under an Australian administration. Over 2,500 species were collected for screening and study.

An outline history of the Survey and a book summarising the pharmacological and anticancer test results on some 4,500 species was produced. With those results was a bibliography of nearly 2,000 papers published by Australian chemists since 1940 on the chemistry of native plants.

In 1960 Jerry became Officer-in-Charge of the Organic Chemistry Section, which was created a Division the following year with Jerry as inaugural Chief. In a move that was to have enormous consequences for the Division, Jerry cancelled all programs except the plant work.

New projects were initiated based on heteroatom chemistry, in particular organophosphorus chemistry, as well as the organic chemistry of metals of economic importance to Australia, namely gold, aluminium, titanium, zirconium and hafnium.

It was exciting, new and innovative work and, coupled with the expansion of the plant extraction work, resulted in scores of papers on synthetic chemistry and natural products.

Jerry played a strong part in inducing CSIRO to produce the Australian Journal of Chemistry and similar journals so that its research results could be published locally.

Jerry left the Division in 1966 to join the Executive and later became Chairman of CSIRO from May 1970 to his retirement on 24 March 1977.

On Thursday 5th June 1975, the then Prime Minister—Gough Whitlam—announced in a Cabinet reshuffle that the Minister for Minerals and Energy was to take over those areas of CSIRO covering research into minerals and solar energy. That is, that the personnel in these areas would be transferred to the Public Service.

It was felt that this move could be a prelude to similar takeovers by other government departments and instrumentalities, in other words, the beginning of the break up of CSIRO as a unified, multidisciplinary research organisation.

Jerry resolved that this takeover should not happen.

His conviction united not only the unanimous support of his colleagues at Head Office, but also of the Divisional staff and their unions from whom he was to enjoy unprecedented and universal approval, leading eventually to their public demonstrations of support.

This crisis ended in triumph when in January 1976, the government put the whole of CSIRO back into the portfolio of the Science Ministry.

This was unquestionably the most demanding and exhausting period of Jerry's term on the Executive. It reached its apogee when he took the final and courageous step to "go public". Jerry was in no doubt that, in so doing, he was putting his position on the line.

Jerry's courage in publicly resisting that decision and arguing for retention of CSIRO as a multi-disciplinary research organisation is well known and will always be respected.

Sir Robert 'Jerry' Price died on March 8, 1999.

Article produced from extracts of speeches given by family, Margaret Devlin and Donald Price and friends and colleagues John Swan, David Solomon, Peter Wailes, Claude Culvenor, Roy Jackson, Alan Pierce, Gratton Wilson, and Jack Coombe, at a memorial service held on 16 April at Monash Chapel, Clayton. CoR

Desert defender

Mr Graham Griffin loves the Australian desert. In fact he can't get enough of it, and at CSIRO Wildlife and Ecology in Alice Springs, works tirelessly to understand it more and ensure its protection.

CoResearch: How did you get to be in Alice Springs?

I grew up in Melbourne and studied geology at RMIT—it was the only work I thought I could do that would get me out of Melbourne. I always had a burning passion to be in the bush.

I started in exploration geology, working in the most far-flung corners of Australia. There I got a wide exposure to desert environments and to many of the problems associated with our use of them. The consequence was that I wanted to know about the living desert environment more than anything else.

I got a job as a park ranger in Finke Gorge National Park and was there for a couple of years.

I kept pestering the CSIRO people in Alice Springs for information about plants and animals and I think I wore them down.

One day Max Ross (the OIC of the Alice lab) asked me if I would come and work for CSIRO in Alice. I said 'let me think about it'.

Two weeks later, when I went into town, Max had arranged everything, including my resignation from the park, and we moved to Alice!

I started as a technician working for Max and progressed through the ranks. I undertook post-graduate studies in ecology and eventually moved to Research Scientist then Senior Research Scientist.

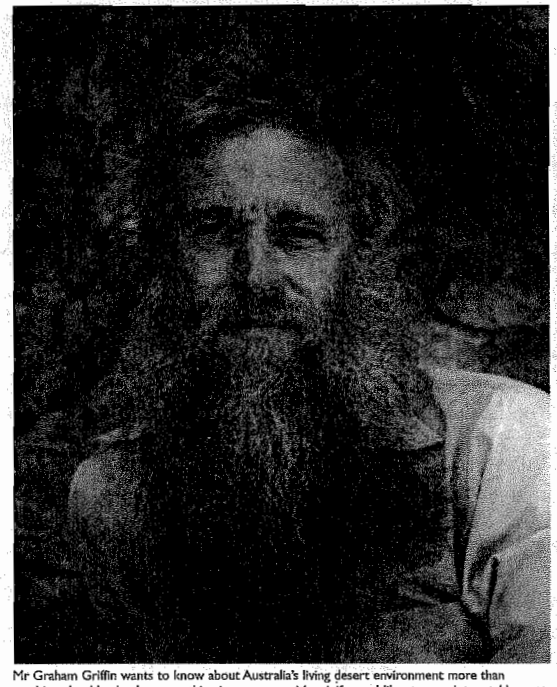
CoResearch: What do you do?

My work focuses on the ecology and functioning of arid lands. I have undertaken major projects on the role of fire in desert ecosystems.

It might seem odd to be using fire in deserts, but one of the unusual features of our deserts is the high cover of spinifex plants. They can support a huge biomass, burn even when they are bright green, and dominate the infertile soils that are so characteristic of our Australian environment.

I have come to be very fond of spinifex and its central role in shaping the character and biota of our desert and mountain ecosystems. Spinifex and I have at least one thing in common —we both love desert places.

The project I have just finished was on the arid mountain ecosystems in Central Australia. We built a massive database of environmental information into a Geographic Information System, along with systems for modelling the distribution of plants and animals in the mountains, and processes for measuring and monitoring change in the environments using satellite imagery.



Mr Graham Griffin wants to know about Australia's living desert environment more than anything else. He also has something in common with spinifex and likes to watch vegetables grow. Photo Sarah Dunlop

The fieldwork for my part in this project was the pleasure of backpacking 1,500 kilometres, with a small computer, across all of the mountains, recording environmental and plant features.

CoResearch: What's so good about living in Alice Springs?

While I reside in Alice, I don't think I really live there. I live in Central Australia, in the environment that surrounds Alice. That said, Alice is a great place in which to reside. It's a modest sized town with a great array of facilities, largely because it caters for a huge tourist population.

It's great to be able to live in and be a real part of the environment I study and work in. I feel it gives me a depth and understanding I couldn't have if I were here for a short time or just visited occasionally.

CoResearch: What's the most important thing to you about your work?

Being in and being part of the environment I study. Living and breathing it. It's not just a job, it's a life of being here, knowing it, and being it. Working with other people who enjoy it is also important.

CoResearch: How would you describe the desert you spend so much time in?

In a few words I'd describe the proper deserts as wild, vast, rich, dynamic, complex. It's probably alien and hostile to most people, but I find it familiar, comfortable and friendly.

CoResearch: Hairiest work moment?

Some of my colleagues would tell you that all my moments are hairy! My scariest moment was during my fieldwork in the mountains.

I was high on a plateau, on the western end of the Idirriki Range, trying to find a way down into a narrow gully to sample the plants along the creek. The gully was completely enclosed by cliffs, 50 or 60 metres high.

I kept walking along the edge to find a way down, but with no success. I stood on the edge of the cliff looking into the gully below when suddenly the Earth moved in a not very mysterious way.

I fell or jumped, and somehow managed to land on a bit of the cliff that wasn't tumbling into the gully.

Several tonnes of the cliff hit the rocky gully floor with a colossal explosion that sent me metres backwards and brought down lots of other smaller rocks.

I was fairly shaken, but the gully I was about to sample was devastated! I eventually found a way down and sampled a couple of kilometres further down the gully.

CoResearch: Favourite work project?

The project I'm working on now. Trying to find a way to assess and monitor biodiversity across the whole of the rangelands. Trying to accurately describe what the biodiversity is, where it is and how it changes over three quarters of the continent.

CoResearch: How do you unwind after a long, hard day in the Outback?

It's not hard. Find somewhere to camp. Light a fire, cook some dinner, eat it, and fall asleep. Usually the end of the day is near dark and the physical exhaustion level is high. Scraping together that last bit of energy to make some dinner is sometimes hard. No need to find a way to relax, it's finding the energy to stay awake long enough to eat and brush my teeth of course.

After work—I enjoy a lot of bushwalking and exploring mountain country in Central Australia with my wife; running after work; some sport. I like watching vegetables grow.

CoResearch: If there were one thing you'd like to achieve in your life, what would it be?

I'd really like to know and appreciate more of the desert environments to a stage where I have a broader knowledge about their evolution, biota, values and conservation.

The Australian arid environment is one of the few large unmodified areas on the planet. I'd like to think we could know it well enough to not damage it or turn it into something that can be found anywhere else on the planet.

It will take a lot more interest from Australians to appreciate its richness and variety. I'd like to see more of that interest soon. If I can encourage that interest by talking about it as much as I'm able then I'm happy with that. CoR

Absolutely Scientriffic!

Thanks to the support of a number of sponsors, the successful Helix magazine now has a younger sibling—Scientriffic.

Scientriffic is a 36-page, full-colour magazine that will appear every two months. The cost of subscription is $19.95 per annum and the first issue is available now.

CSIRO Education Programs Manager Mr Ross Kingsland said "We're pleased to be able to extend our encouragement of young scientists to a new group of students. I'm particularly pleased that we're also able to offer a Teachers Guide with each issue of Scientriffic to support its use in schools. We're producing this Guide in conjunction with the Australian Science Teachers Association.

"With the Teachers Guide and a special offer of bulk subscriptions for the remainder of 1999 available for as low as $8 each, we are trying to make Scientriffic attractive to teachers and a useful addition to the curriculum."

Young Australian of the Year, astronomer Brian Gaynsler launched Scientriffic at the Canberra Deep Space Communication Complex at Tidbinbilla near Canberra during National Science Week in May.

Scientriffic sponsors are CSIRO, Australian Greenhouse Office, ANSTO, S&T Awareness Program (DISR), Natural Heritage Trust, Bureau of Meteorology, Dow Corning Australia, National Chemistry Quizz, and the Royal Australian Chemical Institute (ACT Branch). CoR

More information at www.csiro.au/scientriffic.
If you would like a copy of the first issue of Scientriffic to send to a local school or to show others who may be interested in subscribing, contact Bianca Nogrady, on (02) 6276 6017 or bianca.nogrady@helix.csiro.au.

Bye Bye Barry

Mr Barry Hirst, a Communicator at the former CSIRO Wool Technology, retired recently after 35 years at the Division with more than 10 of those in communication.

Mr Hirst says he'll be out golfing, playing in his jazz band The Grovelanders, renovating his place and entertaining his dogs. He also plans to take his wife Carol on a cruise to the Whitsundays. We think this sounds very nice and would like to go too. All the best Barry from all of us at *CoResearch!* CoR

Offshore

CSIRO keys into Iran

CSIRO was a key player at the 7th Australia-Iran Joint Ministerial Commission (JMC) meeting held in Tehran in early March.

JMCs are bilateral trade meetings led by senior government ministers, and can include government departments and agencies as well as private firms, universities and other organisations.

The discussions move from trade to new investments, and mechanisms for exchange of expertise, which is where opportunities for CSIRO begin to open up.

CSIRO International Group coordinated CSIRO's submission from Land and Water, Minerals, Energy Technology, Animal Health, and Exploration and Mining.

Four CSIRO staff accompanied the delegation led by Minister for Trade Mr Tim Fisher. They were Exploration and Mining's Dr Cliff Mallett, Minerals' Dr Alan Manzoori and Dr David Sutherland and Energy Technology's Dr Abou Saghafi.

Discussions at JMCs are organised around committees and CSIRO had strong representation in the Mining, Energy and Industry Committee, which played a part in CSIRO being specifically mentioned in a draft agreement on cooperation in research, education and training in mining, energy and industrial development.

Other key developments included good prospects for sales of CSIRO's QEM*SEM, and links via BHP to smelter technology for the copper industry in the Sarcheshmeh region. SIROSMELT is already included in a new expansion there.

Areas where CSIRO expertise also had good prospects were bioleaching, CFD for thickeners, flotation chemistry and ore characterisation.

The National Iranian Steel Company discussed aspects of coal exploration, mining and processing with CSIRO. An exhibition planned for October is the next opportunity for CSIRO to raise its profile in this region. CoR

Farewell Alan

With the retirement of Alan Fletcher in February, CSIRO Minerals lost one of its longest-serving.

Alan joined CSIRO Applied Mineralogy (now CSIRO Minerals) in 1963 as a Technical Assistant working in the Secondary Industries Laboratory, assisting in "mineral research including analysis and sample preparation".

He retired 36 years later with such a wealth of knowledge that he could be approached to contribute to almost any project.

Alan's work and that of his co-researchers, has significantly improved our understanding of mineral formation and extraction processes.

Alan's research included the difficult synthesis of a range of sulphides, tellurides, yttrium-niobium compounds and phosphates, some phases being produced for the first time. Later Alan worked on iron ore, gold analysis and extraction from refractory ores, mineral sands and the extractive metallurgy of platinum minerals.

He will be very busy in his 'retirement' with his property near Margaret River and a major boat-building project in his backyard. CoR

Research Roundup

CSIRO research in the news compiled by Nick Goldie, CNA

Fishes that tipple in the deep

The famous 'living fossil' Coelacanth was discovered on a fishmonger's slab in East Africa. Not so ancient, but almost as surprising, was the re-discovery of the 'missing' giant roughy or giant sawbelly *(Hoplostethus gigas)*.

"Good news about a species that hasn't been seen in a long time," says Dr Peter Last of CSIRO Marine Research. "The very fish that Dannevig described in 1914."

Dr Last is co-author of the new Australian Seafood Handbook, and he was in Port Adelaide photographing and recording commercial species being offloaded by Great Australian Bight trawlers, when the giant roughy was rediscovered.

Harald Dannevig was Commonwealth Director of Fisheries, and in 1914 was actively investigating fisheries off the south coast of Australia. In that year, he and twenty others on Australia's first fisheries research vessel, the 335 ton steamer Endeavour, lost their lives in a gale while returning from Macquarie Island. CoR

The lizard's tail: a scientific story

Lizards drop their tails to save themselves. Now, they are dropping their tails for the good of the species. "I collect the squirming tail-tip, freeze it in liquid nitrogen, and take it back to the lab for genetic analysis," says Dr Don Driscoll of CSIRO Wildlife and Ecology.

The tail-tip collection is yielding important information about remnant habitats in the wheat and sheep producing areas of New South Wales, and will help farmers and land managers who are concerned about declining biodiversity.

"You can't expect to clear 90 per cent of the landscape and not have species drop out of the system," says Dr Driscoll. "The trick now is to manage and enhance what is left, so that species have the best chance of surviving, while maintaining agricultural production." CoR

Sirosmelt flash: getting better and better

Australian mining and mineral processing know-how is earning the nation as much foreign income as the products of the mines themselves.

SIROSMELT is described as 'a modern versatile bath smelting process', and is being used around the world. A recent improvement to the process has won the 1999 Clunies Ross National Science and Technology Award for Dr Frank Jorgensen of CSIRO Minerals and his team.

Dr Jorgensen has been working on the flash smelting process for thirty years, with the medal being awarded for improved design for flash furnace burners. CoR

Have a good blast!

Pity the old-time powder monkey, placing explosives by luck or intuition. Now, it can all be done by computer.

Using high-speed cameras and super-powerful computers, a team led by Dr Youzhi Wei of CSIRO Exploration and Mining has produced a dramatic 3D ultra-slow motion video of exploding rock, and shockwaves moving at 5,000 metres a second.

"The technology can save Australia millions of dollars a day, because blasting is one of the most important activities in modern mining," says Dr Wei. "The cost of a poorly designed blast can be very high."

Trials in Kalgoorlie's famous "super pit" enabled the researchers to model real life explosions. CoR

There's an intruder in the house!

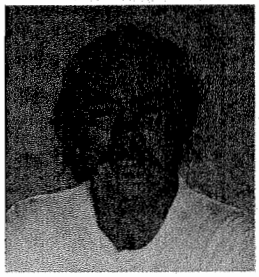
If you are a thrips (which is both singular and plural, like sheep) in the arid centre of Australia, you may have problems with hungry ants.

Thrips are small plant-sucking insects that have evolved some startling ways of defending their homes, according to Dr Lawrence Mound, Research Fellow with CSIRO Entomology.

Dactylothrips priscus has no compunction about farting in the face of an invading ant, when it pokes its head into the thrips' home. And the ant recoils like a shot.

"It's extremely pungent," says Dr Mound. "It took two tinnies to wash away the taste! It must contain some extraordinary chemicals that might be really useful as insect repellents or in other ways." CoR

Arthur calls it a day



Mr Arthur Pickering leaves CSIRO after 47 years service. Arthur's enthusiasm and contribution to the Organisation and the people he worked with is greatly appreciated.

Mr Arthur Pickering retired from CSIRO early this year after a continuous period of service of 47 years, 7 months and 11 days.

He joined CSIRO on June 18, 1951 and retired on 29 January 1999 after serving in five Divisions—Radiophysics, Physics, National Standards Laboratory, Applied Physics and Telecommunications and Industrial Physics (TIP)—and worked under nine different Chiefs, commencing with 'Taffy' Bowen at Radiophysics and ending with Dennis Cooper of TIP.

Prior to retirement he had the distinction of being the longest serving officer still on active service in CSIRO.

Arthur joined CSIRO in an era when appointees could still be described as "Natural Born British Subjects" and salaries were paid in pounds, shillings and pence. He commenced as an apprentice fitter and turner in the Division of Radiophysics, then located at Sydney University.

On completing his apprenticeship he secured a position in the mechanical workshop of the Division of Physics also at Sydney University at that time. He progressed through the ranks of the workshop staff to become shop supervisor and in the mid '80s joined the laboratory technical staff as a Senior Technical Officer, providing mechanical and design support to the Engineering Metrology group in the Division of Applied Physics.

For over ten years, Arthur put his heart and soul into the development of the UMIS 2000. This instrument was designed for an in-house research project aiming to improve the wear characteristics of machine tools by depositing ultra hard thin layers of material on the surface of the tool.

The instrument, which measures the hardness of this thin covering, came to the attention of users external to CSIRO through conference presentations and word of mouth recommendations and outside sales commenced. To date, over $2 million in revenue has been generated through sales to customers in Australia, Japan, Europe and the US. Manufacturing rights to the instrument have now been licensed to a company in the ACT.

For nearly ten years Arthur was a member of Divisional Industrial Participation Committees, where he provided a strong message to Divisional management on issues such as the need for maintaining support services—administrative as well as technical. He never flagged in reminding senior managers of the need to keep staff informed of the 'good things' the Division was doing, and of the need to communicate good news from CSIRO to the 'outside world'.

Nearly 200 friends and colleagues as well as his wife June and sons Wayne and Greg attended Arthur's retirement function, an afternoon tea in the TIP cafeteria.We wish Arthur a long and active retirement.—

Dr Chris Walsh, TIP. CoR

Out of the Archives

This letter from the 1920 archives of CSIRO's predecessor, the Institute of Science and Industry, demonstrates the long-standing interest Australians have in the application of science and technology to everyday situations. There are no records however to show that this interesting idea actually came to fruition.

Dear Sir

Seeing that the tropical climate of Northern Australia especially of the Northern Territory is too hot for white men to work out of doors during part of each day during summer, would it not be a good idea to invent a suit of clothes to keep out the heat of the sun.

My idea is to surround the body, head, feet etc with a vacuum enclosed in a double casing.

The way to do this is to construct a single garment suit of clothes on the principle of the thermos flask, consisting of two layers of air proof silk, one layer being separated from the other by a vacuum two or so inches wide.

In order to keep the separate layers of silk apart it would be necessary to mount each of them on a network of some kind of wire netting suitably braced from one network to the other.

I am

Yours Truly N.F.H.

Source: CSIRO Archives Series 1 File 68/208 Part 1—Compiled by Rodney Teakle—CSIRO Archivist CoR

Science quick quiz

CSIRO's DOUBLE HELIX SCIENCE CLUB

Test your encyclopaedic knowledge of science! Brought to you by CSIRO's Double Helix Science Club*, there's no prize for this quiz, but there is a prize for donating questions (see below).

Questions

1. How many elements have X in their symbols?
2. Beta radiation is made up of what particles?
3. Where is the biggest known volcano in the universe?
4. What's the common name of the explosive mixture of saltpetre, brimstone and charcoal?
5. The brain weighs about 2 per cent of an adult body's weight. What percentage of the body's food supply and oxygen does it use?

Answers

1. One, Xenon (Xe). 2. Electrons. 3. Mars (Olympus Mons). 4. Gunpowder. 5. The brain uses up about 20 per cent of the body's food and oxygen supply. As a baby, half of all you ate was used by your brain so the rest of the body had to work for your brain to grow before it had the chance to do a decent bit of growing itself.

Double Helix Club quiz question competition

If you can think of some tricky, yet solvable, quiz questions, send them to Simon Torok at Simon.Torok@helix.csiro.au. The best questions will win a $10 Double Helix merchandise voucher and the honour of having their questions published in the Double Helix quizzes running in *The Age*, *The Canberra Times*, *The Helix*, and *CoResearch*.

*To join CSIRO's Double Helix Science Club call (02) 6276 6643, email: education-programs@helix.csiro.au or see http://www.csiro.au/helix on the WWW. CoR

PA's share their day

CSIRO Chief Executive Dr Malcolm McIntosh joined CSIRO PAs at a lunch at the Canberra Park Royal on April 21—CSIRO Secretaries Day. Pictured with Dr McIntosh are (from left to right) Ms Penny Smyth, Ms Helen Peak, Ms Christine Cameron and Ms Catherine Merrifield.

CSIRO around the nation

O caption, my caption!

Last issues' pic (above) drew a great response from readers and we wish we could publish them all, but we ran out of room.

From Greg Doran at CSIRO Manufacturing, Science and Technology: "Itzy-bitzy Maria swam near the outfall spout, Someone flushed the dunny and knocked Maria out. In came the tide at the end of the day, So Itzy-bitzy Maria lies dead on the sand today". And "Scientists at CSIRO test environmentally friendly bike rack."

Steve Milroy from CSIRO's Cotton Research Unit: "It's quite a simple game really. Each team flies across at the same altitude and pushes the lawyer out of the plane. Then we measure the distance from the lawyer's navel, here, to the stake, there. The team that gets closest wins." Glen Higgs at Food Science Australia offered: "Leave him mate, Greenpeace are on the way!"

Steve McEvoy, CSIRO Energy Technology suggested: "New Research Initiative: CSIRO Scientists—are they mere primates, or a highly evolved relative of the Starfish?"

John Morrissey from CSIRO Information Technology Services sent: "No, no check for a pulse on his neck not his...."

Sandra Partridge at CSIRO Plant Industry: "Now you've learnt to train people you can move on to dogs." From Nicholas Corbet at CSIRO's Tropical Beef Centre: "I'm afraid CPR is useless...rigor mortis has set in".

Bill Winter at CSIRO Tropical Agriculture offered: "I told you what would happen if you don't swim between the flags!" Lyn Pulford of Education Programs sent: "Wouldn't you know it? Just when he was deflating his blow up friend on the beach, who should come along but the beach inspector!"

Imants Liepa at CSIRO Energy Technology sent: "Another CSIRO first—the ballet method of artificial respiration," while Stephen Pratt at CSIRO Entomology suggested: "Strewth mate, I can smell that burly from the other end of the beach."

From Graham Pearce at CSIRO's Wildlife and Ecology came: "Trust old helium legs to do it between the flags!"

David Brewer, Marine Science offered: "It looks too late for that one mate. The intertidal around here can be a dangerous place to doze off."

Rowland Cobbold at Food Science Australia sent: "The CSIRO Amateur Theatre's production of "Saving Private Ryan" cancelled due to poor audience interest." And "CSIRO Marine Research Unit puzzled by epidemic of Rolf Harris strandings."

And the winner is... Steve Milroy from CSIRO's Cotton Research Unit: "CSIRO scientists from the Division of Energy Technology explore the potential for harnessing tidal power as a means of personal locomotion. The flag indicates the position of the volunteer prior to yesterday's high tide."

Steve wins a Double Helix cap. Next issue's photo of Molecular Science Communicator Doug Gale in Hannover, was taken by his Chief Albert Mau, and arrived on our desk via a fairly tortuous route. Send captions and pics to *CoResearch* Caption Competition, PO Box 225 Dickson, ACT 2602 or email Karen.Robinson@cc.csiro.au. CoR

Forestry awarded

The Forest Technology Program has received one of the inaugural Business Higher Education Round Table Awards. The Forest Technology Program is a joint venture of CSIRO Forestry and Forest Products, University of Melbourne, ANU Department of Forestry and the Australian Logging Council. It aims to improve the commercial viability of forest operations while reducing their environmental impact and increasing their community acceptance. CoR

Union history

Unions in CSIRO—Part of the Equation is a new book about the history of the CSIRO Officers Association and CSIRO Technical Association. Historian, Ms Sally Wilde, wrote the history, which is a tribute to the many honorary officials and members that contributed during the fifty-five years both Associations existed before amalgamating in 1992.

Ms Barbara McGann pjodscc@iaccess.com.au (03) 92062288). Members $8.00 including postage, or $14.95 for institutions and others. CoR

Golden year

CSIRO Wildlife and Ecology is 50 this year. As part of its celebrations, the Division launched *Of beauty rich and rare*, a book that looks at the development of the Division's science, the personalities behind the achievements and the growth in our understanding of Australian ecology over the past 50 years. CoR

Ecology award

Drs Denis Saunders and Richard Hobbs from CSIRO Wildlife and Ecology have received an International Association for Landscape Ecology Distinguished Scholarship Award. The award recognises exceptional contributions to the development of landscape ecology as a science and a practice. CoR

Student packs

CSIRO Enquiries produce seven Student Information Packs. Landcare, Pollution/Waste Management, Plant Biotechnology, The Greenhouse Effect, Food Science, Animal/Pharmaceutical Biotechnology, and Energy: Renewable and Non-Renewable are packed with information, references, ideas, activities and pictures to develop a young mind's interest in and enjoyment of science and technology.

The packs are $10 each. (Postage and handling charge applies). CSIRO Enquiries 1300 363 400 or http://www.csiro.au/enquiries/educ.htm. CoR

Induction video wins

CSIRO's induction video, *CSIRO An Introduction* won a Silver Award in the 'Corporate–Under $15,000' category of the 1998 Australian Video Producers' Association national awards. The 14 minute video aims to give new staff a corporate overview and complement the induction material provided by Divisions. It came about through collaboration between Mr Jos van der Velde, Project Coordinator, Leadership, Career and Team Development in Canberra, Mr Nick Pitsas, Executive Producer, CSIRO Publishing, and the contracted director, Mr Eddie Moses.

Copies of the video from your personnel department, or preview the tape at http://www.csiro.au/services/induction/video.htm. CoR

Look younger for less

The Molecular Science (Sydney) social club has negotiated a 30 per cent discount off the normal market price of all ß (beta) Alistine skin care products for CSIRO staff and their families. The products were developed based on CSIRO research. Fax Fiona or Leah (02) 9490 5005. CoR

1999 QCAT awards

CSIRO Exploration and Mining's Mr Alan Scott and CSIRO Minerals' Dr John Clout each received one of two 1999 QCAT Awards.

The awards are presented annually to QCAT (Queensland Centre for Advanced Technologies) staff, whose work is outstanding or unique, and whose commitment to QCAT's objectives and staff is beyond the "normal call of duty".

Dr Clout received this year's Work Achievement award for his scientific contribution to the processing of iron ores, which generates substantial industry funding and support for CSIRO and QCAT.

Mr Scott received the award for Staff Service for his contribution to the continuing success of QCAT. Mr Scott's work has included Treasurer of the QLD Benevolent Fund, CSIRO Exploration and Mining's staff opinion poll coordinator, member of the Site Management Committee, and actively encouraging the environmental management and community awareness activities for QCAT and QCAT Stage 2. CoR

Union on line

The CSIRO Section of the CPSU has launched its new website—www.vicnet.au/~csiro.union/ The site has information about current union activity, entitlements arising from the Enterprise Agreement, grievance and appeal procedures, family friendly material, who to contact, and much more. CoR

New wool

CSIRO Wool Technology has undergone a name change to CSIRO Textile and Fibre Technology. CoR

Manins awarded

Dr Peter Manins from CSIRO Atmospheric Research has been elected to the Academy of Technological Sciences and Engineering for "Management innovation and outstanding application of science to practical problems in air quality assessment and planning". CoR

Winds of Change

by Paul Holper, DAR

CSIRO Atmospheric Research recently published *Winds of Change: Fifty years of achievements in the CSIRO Division of Atmospheric Research* to celebrate 50 years of science.

The Division began operations in the late 1940s in a small garage and an ex-army hut in Highett, at the site occupied today by CSIRO Building, Construction and Engineering.

In the early days scientists established programs to learn more about Australia's weather, to improve forecasts and to help farmers. Researchers in the 1950s studied sea breezes and other weather systems.

During the following decades Divisional scientists launched balloons to probe the atmosphere, they measured how much solar energy penetrates the atmosphere, and organised world-famous experiments in Mount Gambier, Hay and Rutherglen. In the 1970s, as concerns grew about global pollution, CSIRO and the Bureau of Meteorology built the Cape Grim Baseline Air Pollution Station in north-western Tasmania to monitor the composition of air.

Throughout the 1990s, scientists have probed the greenhouse effect, air pollution, ozone depletion and El Niño using analytical and remote sensing tools and computer-based models.

The book is available from CSIRO Publishing (03) 9662 7500. CoR

G'day mite

A world-first CD based product on mites takes these important, tiny organisms beyond the realm of the expert to the rest of us.

The CD-ROM An Interactive Glossary of Oribatid Mites and An Interactive Key to Oribatid Mites of Australia will allow all mite researchers, soil or forest ecologists, technicians, educators, and student non-specialists to identify over 380 species in 130 genera and 80 families from Australia," said CSIRO Entomology's Dr Ebbe Nielsen.

The keys run on CSIRO's DELTA software, the research necessary to collate the information was supported by a grant from the Australian Biological Resources Study (ABRS) and the CD and manual is published by CSIRO Publishing. Ph: (03) 9662 7500. CoR

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CSIRO's staff newspaper

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Aussie wool for football champions

By Jane Kahler, CNA

THE WORLD'S biggest and richest football club, Manchester United, will put on jerseys made from a fabric developed by CSIRO and The Woolmark Company.

The signing of a tri-party deal between The Woolmark Company, Manchester United and sportswear giant UMBRO International heralds a welcome boost to the Australian wool industry.

Under the deal, UMBRO International will design and manufacture a range of innovative products incorporating the revolutionary fabric Sportwool™.

The European champions will wear jerseys made using Sportwool™ technology from the beginning of the 2002 season.

But the real sales will come from the string of replica products, also made using Sportwool™ and sold around the world, in the huge markets in Singapore, Malaysia, Brunei, Indonesia, Thailand and China.

CSIRO Textile and Fibre Technology's Dr Barry Holcombe said: "Sportwool™ is a double-faced fabric with the inside layer made of very fine merino wool and the outside layer made of polyester, although other fabrics can be used.

"It wicks moisture away from a wearer's skin more efficiently than any other fabric and, unlike other sportswear fabrics, manages the humidity next to the wearer's skin, keeping athletes dry as well as comfortable in all conditions," Dr Holcombe said

The potential for this fabric has surprised its developers. "This deal launches Sportwool™ further into the international sporting arena while raising the profile of Australian wool and Australian technology," he said.

That's good news for the Australian wool industry which, in recent times, has felt the sting of the Asian economic crisis, the Australian Government's freeze on Wool International stockpile sales, and is expecting a dip in global wool production to an all-time low next year.

The Woolmark Company's Director, Operations, Mr David Conners said the deal would increase the demand for wool as well as change its image.

"Manchester United has around 18 million supporters globally and now makes over one million jerseys and around five million other replica garments a year.

"Under the deal, Sportwool™ will be incorporated into the majority of these garments.

"By breaking down traditional barriers to wool, the deal will reposition wool in the market to get it back into sport and leisure wear and into the youth market."

Mr Conners said the Manchester United deal is just the tip of the iceberg for Sportwool™.

The Woolmark Company continues to promote Sportwool™ on the international market with its most recent venture at the International Trade Fair for Sports Equipment and Apparel in Munich. "All the big names were there," Mr Conners said. "Their reaction to Sportwool™ was very positive and we have a whole lot of leads set up from there."

Sportwool™ has gone from product innovation to commercial production in the past 12 months and it will take at least another 12 months before it's available on shelves to the public, according to Mr Conners.

Manchester United Football Club is valued at around $1.8 billion and has more than 200 branches of its Supporters' Club around the world.

The original fabric developed for elite athletes is called Sportwool Pro™. The new Sportwool™ is an expansion of the original product to encompass a wider range of sporting and leisurewear products.

Sporting chance: CSIRO scientist on the Sportwool™ team Dr Ian Blanchonette inspects a jersey made from Sportwool™. Photo: Tony Kerrigan, Geelong Advertiser

Making a point: Dr Dong Yang Wu heads a group that has found a solution to mountains of tyres. Photo: (c) The Australian

Technology breakthrough puts new spin on old tyres

By Ken Anderson, CBCE

A BREAKTHROUGH by Australian scientists has produced a solution for the world's mountains of waste truck and car tyres.

More than 700 million new car and truck tyres are manufactured every year and there is not much use for them when they are replaced. Most are buried or burned.

Chief of CSIRO Building, Construction and Engineering Mr Larry Little said: "We have a fantastic technology that can turn old rubber tyres into a range of useful plastic and rubber composites that are suitable for many engineering applications throughout the rubber and plastics industry."

About 70 per cent of the estimated 11 million tyres discarded a year in Australia are still being dumped, used as landfill, or stockpiled.

Tyres can now be recycled and used in shoe soles, automotive components, building products, coatings and sealants and containers for hazardous waste.

"Our patented surface-treatment technology means we can offer the world a solution to its tyre mountain," Mr Little said.

The technology has already been proven through the development of rubber Acrylonitrile-Butadiene-Styrene composites for EcoRecycle Victoria.

The composite uses 50 per cent crumbed rubber to replace plastic, offering an economic alternative to Poly Vinyl Chloride plastics.

"These applications represent a huge global market for the new composite products that could potentially consume all the rubber available from tyre disposal in a way that is energy-efficient and environmentally clean," Mr Little said.

Despite environmental concerns, incineration of scrap tyre rubber as a fuel source is the most widely used disposal method.

One example is burning tyres to fire cement kilns.

Although burning a kilogram of tyre rubber generates about 28,600 British Thermal Units (BTUs) of energy, it requires much higher energy, about 21,000 BTUs, to produce a kilogram of raw rubber.

The use of crumb rubber in new products could offer considerable energy savings since most common tyre-recycling methods require less than 2,200 BTUs to process about a kilogram of scrap tyres into clean crumb rubber.

Perfecting the technology took six years' work by a team of eight scientists, now led by CSIRO's Dr Dong Yang Wu.

Dr Wu said: "We recognised that rubber has many excellent mechanical properties in comparison to other materials. These include impact resistance, flexibility, abrasion resistance, and resistance to degradation, properties that point to crumbed rubber, produced from discarded tyres, having the potential to be a great engineering material.

"A major obstacle in the past has been the limited amount of crumbed rubber that can be mixed with virgin compounds, especially in car tyres, for example," she said. "Usually simple mixing produces a product with poor mechanical performance only fit for unsophisticated products like railroad-crossing pads, impact-absorbing mats, and garbage bins.

"The scientific challenge was to discover how to chemically modify the surface of crumb-rubber molecules to transform it into a reactive ingredient to effectively grab hold of and combine with rubber or polymers (plastics).

"We developed a simple way to build a molecular bridge using a suitable coupling molecule to make crumbed rubber successfully combine with other materials, which leads to significantly enhanced mechanical performance of the composites.

"In this way," she said, "the surface-treated rubber crumb may be used in a broad range of high-value applications.

"The actual process and surface treatments used are protected by an international patent with other patents pending," Dr Wu said.

Examples of applications are unlimited. They include shoe soles, automotive components, tyres, non-pneumatic tyres, wheels, building products such as roofing materials, insulating materials, and window gaskets, coatings and sealants, containers for hazardous waste, industrial products such as enclosures and conveyor belts.

Changing face: CSIRO Molecular Science's Dr San Thang reflects on electronic journals.
Photo: Mark Fergus

Electronic journals provide an answer

CSIRO staff are finding scientific journals are more numerous and faster to access than ever before.

In August, the CSIRO Library Network launched the Electronic Journal Collection, giving staff across the country an instant link to more than 1,200 titles from Elsevier, one of the world's leading publishers of scientific journals. This move triples the number of Elsevier titles previously available in paper form.

The Chief of CSIRO Land and Water, Dr Graham Harris, said: "We have been concerned by the decreasing number of research journals available in CSIRO and Australian libraries, but it has been too costly to increase subscriptions. An electronic solution was the perfect answer.

"For a reasonable cost, we have been able to vastly increase our holdings and access for our researchers and scientists."

Chief Executive Dr Malcolm McIntosh is also delighted by the initiative. "I commend the CSIRO Library Network for this innovative approach. We are the first site in Australia to adopt this technology, and we join prestigious overseas users such as the Los Alamos National Laboratories," he said.

However, he stressed this was only the beginning. "While the collection represents all scientific disciplines, it is important to further expand our holdings to include other publishers and an electronic-delivery system allows us to do just that."

CSIRO will negotiate to acquire journals from other prominent scientific publishers and the electronic versions will eventually replace their printed equivalents.

Users are finding the collection is quick and easy to use. All journals are loaded on a CSIRO web server, meaning instant access from work, home and even when travelling. The text of articles will be integrated with indexing tools such as the Web of Science, and data is fully archived locally. A five-year back file will be available.

It is simple to find an article that interests you, according to Jonathan Potter, the General Manager of IT Services. "The system uses intuitive and efficient search engines that allow you to search by keywords or topics. You can even create saved searches so you can be alerted to updates," he said.

All journals in the collection are available as pdf files, which means they look like their printed counterparts.

But the main bonus has been the breadth of information that is available so quickly. One user said: "It's wonderful to have so many topics available, and I particularly like not having to wait for a circulated journal to turn up on my desk."

So see your local library if you aren't already an authorised user or if you would like more information on how to use the collection. You can access the service at: https://ejournal.csiro.au

Open day marks anniversary of Clunies Ross

By Pat Wilson and Dave Masters, CAP

A SERIES of open days were held at CSIRO Animal Production in early May to celebrate the centenary of the birth of Sir Ian Clunies Ross.

It was the first time the division has staged an open day since 1976, and the event involved the entire division, including Ian Clunies Ross Laboratory staff at CSIRO Animal Production in Sydney.

The series, held at the Prospect, NSW, site, highlighted the division's research during visits by local high schools, a business forum and a public open day.

Representative staff from the Armidale and Perth Laboratories made special trips to Prospect, and brought displays from these labs with them.

Hands-on displays in four exhibition areas demonstrated research in fields such as molecular biology, parasite control, feeding technology, genetics and wool.

Vaccines to control methane production, earthworms, wool strength and aquaculture were other highlights. And live lambs, transgenic sheep, pigs and yabbies backed up the interactive laboratory displays.

The first day for high-school students was designed to help fine-tune the displays.

A few quick changes and additions were then made in time for the second day when a large group of guests attended the business forum opened by Chief Executive Dr Malcolm McIntosh. Successful commercial technologies produced by the division were highlighted and followed up by short presentations on future research-and-development opportunities.

On Saturday doors were opened to the public, and about 2,300 people visited.

After four months of planning, committee meetings and furious activity, staff and visitors were united in their view that the division should open its doors more often.

Welcoming committee: staff stand by for thousands of visitors.

New 'flu drug gets FDA approval

The US Food and Drug Administration approved the Australian-made 'flu drug, Relenza™, in July for treating some cases of the 'flu.

The drug is being marketed by Glaxo Wellcome and is inhaled through the mouth with a plastic device the company calls a Diskhaler.

Australian company Biota Holdings Pty Ltd funded the research and development of Relenza™ by CSIRO, Monash University and Australian National University scientists.

Relenza™ is the first drug approved for treatment of the 'flu since Rimantadine in 1993.

Glaxo Wellcome plans to seek FDA approval to use the medication for 'flu prevention by the end of the year.

An FDA advisory committee had voted against Relenza™ in February, and said the drug was not effective enough.

Relenza™ is expected to be on pharmacy shelves by autumn in the US. It is already marketed in Australia and New Zealand, and in all 15 European Union countries and Switzerland.

Portraits of leading lights

A COLLECTION of portraits of CSIRO leading light, Dr Ian Clunies Ross, is part of an exhibition at the National Portrait Gallery at Old Parliament House in Canberra.

Dr Ian Clunies Ross was Executive Officer of CSIR, CSIRO's predecessor, from 1946 to 1949 and Chairman of CSIRO from 1949 to 1959.

The exhibition, A Broader Vision: Frank MacFarlane Burnet, Jean Macnamara, Ian Clunies Ross, runs from September 2 to October 24, and celebrates the centenary of the births of its three subjects.

Cultural exchange: biological and biodiversity informatics were on the agenda when a European Union delegation visited CSIRO Entomology. The group visited after a meeting of the Joint Science and Technology Co-operation Committee between Australia and the EU in February. J Tuckwell, left, Mr Nicholas Newman and Professor Jorma Routti were briefed on CSIRO's Biolink software by CSIRO scientists Dr Steve Shattuck and Mr Ian Reid (seated) while Director of the Australian National Insect Collection Dr Ebbe Nielsen looks on.

Gene-technology rules close to formulation

Malcolm McIntosh, CE

Directions

THERE has been a lot happening in the past few months, and the next few will prove to be just as interesting for the Organisation.

As will now be evident, news reports of my joining the Department of Defence as its Secretary have been greatly exaggerated, but until I was clear on the situation, it was difficult to inform staff what was happening. What was clear was that I had no intention of leaving CSIRO. I have a five-year contract that I will do my best to fulfil.

I am extremely proud to be a part of CSIRO and enjoy the job immensely. Because of my background, however, I would have been prepared to be seconded to defence for a short, fixed period, and I would still be prepared to advise occasion-ally.

Gene technology is possibly the biggest issue affecting CSIRO and, in the past few months, it has been coming to a head. There are three aspects of gene technology that CSIRO is involved in. The first is, obviously, doing it. The second is following up the complete or holistic effect of possible risks, for which we have provided extra money to Wildlife and Ecology, and, third, is to be an objective advisor to Government on this issue.

CSIRO has recently come into question in some media as to how it can perform the function of objective advisor generally, not just in gene technology, because of its links with industry and the requirement that it brings in 30 per cent of its budget from such sources. That is fair comment and one we will have to watch carefully.

We will have to make sure that our research is carefully segregated and we do not get into the position of a group that is doing work for a company and also leading in advising on that work.

The potential risks of gene technology need proper examination to oversee and control the work, and CSIRO has been a most vigorous proponent of a proper statutory body.

Australia needs to have a set of rules about what can and can't be done coming from a statutory body, like the Genetic Manipulation Advisory Committee, but with the full body of the law behind it.

And it is coming. It will be in the health portfolio where the focus will naturally be on public health and safety.

We then need to make sure CSIRO always obeys these laws. If we have a rogue scientist somewhere in CSIRO, he or she won't last five seconds. It's just not on.

CSIRO has also set up a Gene Technology Committee comprised of chiefs from the divisions involved in gene technology. It's led by Professor Richard Head of CSIRO Health Sciences and Nutrition, and is working for a holistic approach to CSIRO's gene-technology research.

For instance, if a plant has been genetically modified, we need to know the ramifications of that modification, not just on the plant, but on soil biota, on other plants, the birds and insects and the like in the environment where the modified plant might be grown. The CSIRO Wildlife and Ecology project I mentioned earlier came out of this committee.

So I think CSIRO can keep its good reputation in all aspects of its research. The fact that some of our work is for big multinationals is a fact of life, but I don't think it captures us.

CSIRO makes very careful arrangements to ensure the benefits or products of its research go out directly to Australian producers or manufacturers. We have no intention of doing deals that would leave CSIRO or Australia disadvantaged because then CSIRO would be failing in its duty.

And there are other events ahead for CSIRO.

We are now in the next stage of our enterprise bargaining and the agreement will still be one between unions and CSIRO, on behalf of the work force, but I think it's incumbent on us to get a much wider representation than union officials give.

There are a lot of people in CSIRO, who are mostly the silent majority, but they still have views and they're still members of CSIRO just as much as anybody else is. So we're quite keen to make sure we get a diverse group.

We want representatives from all the way across the Organisation so everybody feels as though they have a say in the process. And it looks as though we're getting a good group.

The Ralph Review of tax, being discussed in Cabinet at the time of writing, could change arrangements like capital gains tax, which could massively improve the rate of inflow of overseas capital, including venture capital into Australia. It means doing deals with overseas organisations, but it does mean there would be a lot more venture capital for projects, like spin-offs.

Later this year and possibly spilling over into next year, the Government will hold an Innovation Summit. I think there will be a huge opportunity on the back of this to get a number of serious policy issues in place that we have wanted for a long time, including development funds and more money for science generally.

The University Green Paper is out and when it's final, as a white paper, it's hoped it will result in the same sort of growth for other areas of science that we saw for medical science in the last Budget.

The Chief Scientist, Robin Batterham, is reviewing the country's science base to see if Australia has lost track of basic research. I think CSIRO has slightly, but because we never have had more than 30 per cent external earnings, if we have allowed too much of our appropriation to be captured into applied research it's our own fault. Most divisions have balanced well the applied and basic research, but some need to be much more robust about not letting the appropriation dollar be captured by external earnings. If we do that CSIRO's strategic base should be in good shape.

Research facility's a gas

THE QUEENSLAND Centre for Advanced Technologies hosted the opening of the $2.7 million advanced-gasification research facility on July 14.

The research facility is a joint Cooperative Research Centre (CRC) for Black Coal Utilisation and CSIRO projects. Advanced-power-generating facilities provide major gains in efficiencies, which means substantial cuts in the amount of greenhouse gas emissions from coal-power generation.

As advanced power-generating systems are being demonstrated in Europe, Japan and the US, it is important that Australian coal producers know how our coals will perform in these new-generation power stations. The facility will provide Australian coal producers and their customers with this performance data.

The gasifier was officially opened by the Queensland Minister for Mines and Energy, Tony McGrady, and Department of Industry, Science and Resources representative Mr Tim Mackey. CSIRO Energy Technology Chief Dr John Wright and Group Manager Dr David Harris then led the guests on a tour of the facility.

Mr Harris said: "It was a great day and I think it did CSIRO a lot of good. It was especially good to see staff from other divisions working together as a team to make the day a success."

Plan to get edge on millennium

By Jane Kahler, CNA

CSIRO is in the final stages of formulating its latest triennium plan, which promises to see the Organisation reinvent itself.

Dr Andrew Pik, the Manager of CSIRO's Strategic Planning and Evaluation, said the Organisation's 2000 to 2003 plan is shaping up to make it a sharper, more investment-focussed one as it enters the next millennium.

In the making for a year, the plan has involved Divisions, Sector Advisory Committees (SACs) and the CSIRO Executive.

The final stage of the plan is expected to be complete in November.

Under the new plan CSIRO will operate as a Sector Investment Portfolio, with levels of investment determined by performance and demand.

Reduced investment will be felt by divisions in the Meat, Dairy and Aquaculture Sector of $2 million over three years, as well as in the Forestry, Wood and Paper Industries of $4 million, over the same period.

Other Sectors to have reduced investment are Built Environment – by $1.5 million over three years – and, possibly, Biodiversity by $4.86 million over the same time.

Dr Pik said: "The decision on Biodiversity will be reviewed in November."

Sectors to receive increased funding include Marine, up by $3 million, Mineral Exploration and Mining, up by $4.1 million for the Glass Earth Project, Mineral Processing and Metal Production up by $3.6 million for its bio-processing research.

Radio Astronomy will receive an extra $1.5 million for its work on the Square Kilometre Array.

"These decisions were made on a zero-based analysis," Dr Pik said.

"We had to examine with our SACs what we were doing, what we've achieved and what was the outlook for each of the Sectors.

"We found that the Organisation had come a long way since its 1996 restructure to strengthen its customer focus and achieving outcomes, that is we were seeing more of our work adopted by industry.

"But it also revealed areas where our investments were not making a sufficient impact to justify their current level."

He stressed, however, that strategic research will still be very much a part of CSIRO's work although, according to the plan, it will also be influenced by demand.

According to Dr Pik, initial analysis for the plan was completed at a Divisional level with relevant SACs before being taken to the CSIRO Executive for further examination.

"As part of that process we challenged our current and prospective customers to find out how prepared they were to co-invest with us, and based on their response, we had to make decisions that may have led to reduced investment in some Sectors.

"The hardest part of the plan and for all the Divisions involved is the possibility of job losses and there have been some in those Sectors affected by cuts."

But Dr Pik says the new plan provides Divisions and Sectors opportunities to redirect themselves and says many already are.

"The whole textile, clothing and footwear industry is in restructure, as is the Meat, Dairy and Aquaculture Sector.

"CSIRO is trying to help these industry Sectors by changing the focus of its research to help reposition and re-establish these industries."

Dr Pik said external reactions to the plan have been very positive because CSIRO is talking in terms of investment.

"People are sitting up and taking notice because CSIRO is reinventing itself in the way it does its business and works with customers."

Internally Dr Pik says there are mixed reactions with some feeling "planning fatigue" and others seeing exciting opportunities ahead.

Scientist goes back to school

By Jane Kahler, CNA

YEAR 10 Students at Geelong's Newcomb Secondary College are getting the low-down on careers in science under a new Victorian Government initiative to increase the profile of science in schools.

CSIRO Animal Health's Dr David Boyle was one of the scientists who took part in a science forum at the school, as part of a Scientists in Schools' Project.

Dr Boyle became involved in the forum through his connections with the school. His two children attend the school and he is on the council.

"The school successfully applied for funding from the Victorian Government to run the Scientists in Schools' program, which aimed to show Year 10 students that science and engineering are good career choices with more opportunities than most people expect," he said. To demonstrate his point, Dr Boyle showed the students slides of CSIRO scientists at work.

"Rather than me tell them, I ran a slide show of scientists from all over the Organisation, and asked them to tell me what science was being done in each of the slides.

"I wanted to get away from the stereotype of the scientist in a white lab coat tucked away from the world in a laboratory, so I had slides of people doing things like tagging tuna, scuba diving or sampling soil.

"I also talked to the students about how science is revolutionising the way we live, especially in some biological and computer sciences and how this would create new jobs.

"The interaction was great and the kids responded positively," he said.

Backing his claim about opportunities in science were representatives from Geelong Radiology Clinic and locally based paint company Rohm & Haas.

Territorial visit

A DINNER party in a creek bed was a highlight of a recent visit to the Northern Territory by CSIRO's Board and Deputy Chief Executives (DCEs).

The group visited the Centre for Arid Zone Research at Alice Springs and the Tropical Ecosystems Research Centre in Darwin.

They attended scientific presentations, went on a field trip to the West Macdonnells where they ate dinner in a creek bed, and visited Kakadu National Park. All reported that the trip was worthwhile and were impressed with the research they were able to see and hear about.

On display: the Ragless collection has found a new home. Photos: CSIRO Wildlife & Ecology

Australian eggs head for the one basket

By Jane Kahler, CNA

A COLLECTION of Australian birds' eggs regarded as one of best in the country has been handed over to the expert care of the Australian National Wildlife Collection (ANWC) at CSIRO Wildlife and Ecology in Canberra.

The priceless collection was donated by amateur collector Mr Gordon Ragless, who spent more than 50 years gathering eggs from all over Australia, particularly in South Australia where he lives.

His interest in egg collecting started after World War II during which Mr Ragless spent long hours indoors working as a radio operator. He craved an outdoor hobby to compensate, he said.

With no formal training in science, Mr Ragless, who is now 90, collected almost 5,000 clutches from around 90 per cent of Australia's bird species. He also collected an invaluable amount of data on the behaviour and ecology of the species whose eggs he collected.

ANWC Curator Dr Richard Schodde said: "The entire collection, eggs and data, is one of the most comprehensive collections of Australian birds' eggs around.

"The collection provides a record of the eggs of Australian birds for the national heritage and, because Gordon focussed on particular species, there is now a wealth of information on those species that hasn't been gathered before."

One of Mr Ragless' favourite species was the wedge-tailed eagle, which he spent 30 years studying.

We now know, thanks to Mr Ragless, that different eagles may use the same nest for laying eggs in different years, and that eagles in their middle years lay eggs that hatch healthier young than younger or older birds.

"Information like this has tremendous implications for the eagle's conservation," Dr Schodde said.

Mr Ragless found out about the ANWC through its extensive networking activities with ornithological groups around the country.

"Gordon had known about the ANWC for around 30 years and it was his intention to donate his collection to it because he wanted the collection to form the basis for a national collection of Australian birds' eggs," Dr Schodde said.

"But he also had a personal goal to put together a comprehensive egg collection of as many species as possible with reliably sourced information.

"Gordon only stopped collecting last year and he was still out collecting in the bush when he was 88."

Dr Schodde and his team spent two-and-a-half months working around the clock to transport the eggs from Adelaide and fully mount and label them in their custom-built cabinets at ANWC.

"We didn't lose a single clutch on the trip back to Canberra," he said.

The eggs, like other collections held at the ANWC, will be stored under optimal conditions in perpetuity, and will be used in research as a baseline source of data for determining the characteristics of the eggs of Australian birds, and the evolutionary relationships of Australian bird species and their breeding biology. This will have spin-offs for conservation needs, according to Dr Schodde.

The Ragless donation enhances the reputation of the ANWC and is the first step in building what he calls icon collections.

"An icon collection is one of outstanding national value," Dr Schodde explained.

"There are still a number of such collections held privately around the country. Honouring a collection with icon status will, we hope, encourage those other collections to be lodged in the public domain, in institutions like the ANWC.

Mr Ragless' son, John, will continue his father's work under the guidance of the ANWC.

Outstanding pioneers gather in the ACT

By Jane Kahler, CNA

MORE than two dozen of Australia's most outstanding scientists gathered in Canberra in early September to attend a forum marking The International Year of Older Persons.

The scientists, all women, were aged between 74 and 91, and the two-day forum was to acknowledge the contribution they and others like them had made to Australia.

Among them, the diversity of expertise included geology, physics, entomology, plant pathology, pharmacology, marine science, chemistry, botany, biochemistry, agricultural science, pollution technology, environmental science, nutrition and scientific illustration.

Four of the women, Mrs Valerie May Jones, Mrs Nancye Kent Perry, Emeritus Professor Nancy Millis and Dr Patricia Mather had worked at CSIRO and, like their colleagues, battled the hurdles of being mavericks in what was then a very male-dominated profession.

Some of the obstacles they faced were less pay than their male colleagues, and a marriage bar that, until the late 1960s when it was lifted, prevented married women working for CSIRO or holding any position in the public service.

Dr Mather (nee Kott) worked at CSIRO Fisheries from 1948 to 1949, before going to Britain for two years on an overseas studentship. She came back to CSIRO and left three years later when she married.

Mrs Jones worked for CSIR during the war, establishing an industry in Australia for producing agar. Japan had produced 95 per cent of the world's agar supply, which dried up because of the advent of WWII. Mrs Jones left CSIR after the war because she was married.

Mrs Perry's stint as an entomologist at CSIRO lasted 10 months because she was married. Her last paid job was in 1957.

But none of these women let this stop them from succeeding in their chosen fields. Dr Mather is regarded as a world authority on Ascidiacea, sea squirts, and became Curator of Higher Invertebrates at Queensland Museum until 1990 when she retired. She still works at the Museum as an Honorary Associate.

The forum was organised by Australian science and technology historians Dr Ann Moyal and Dr Rumaine Rutnam, with funding from the Science and Technology Awareness Program of the Department of Industry Science and Resources. Science minister Senator Nick Minchin attended part of the forum and described the women as inspirational role models for young Australian women scientists of the future.

Politicians and the ideas economy

Michelle Grattan, political correspondent from the Sydney Morning Herald, was one of three speakers at a National Science Briefing titled Jobs For The Future: Where Will They Come From? on September 23. Here are the points she made:

"I want today, in taking up the theme of the ideas economy, to ask a question that seems to me often overlooked. If we are to further modernise and diversify our economic system, what about our political one?

"Everyone keeps talking about micro-economic reform, and we've done a lot of it over the last 20 years. But what about some political reform?

"Is the political system, broadly defined, in the sort of shape it needs to be to help generate the ideas economy we say we want in the 21st Century?

"I am talking here beyond the constitutional change represented by the republic referendum, although I think it would be absurd if - as seems quite likely on present polling - Australia on the eve of the millennium reaffirmed its attachment to the Queen.

"Rather, I am talking about whether our adversarial, conflict-dominated system needs some rethinking by its participants. We are perhaps seeing a taste of this in the recent deals between the Government and the Australian Democrats.

"We end this century with Australians probably as disillusioned with politicians as at any period during the past 100 years.

"Thanks to modern media technology, the public these days get the full upfront-and-personal view of politics and politicians.

"And they don't like what they see. Too often the grabs on nightly TV are of politicians shouting at each other, in displays of rhetoric over substance.

"Out in the loungerooms of the nations, this comes across as an assault and an insult.

"Who in the community would tolerate such behaviour from their next door neighbour?

"Too frequently, also, the publicity is about politicians breaking some promise or other. We've never had such managed, manipulated, image-driven politics. In much of it form has become dominant, and the public are rebelling against what they see as something phoney.

"Cynical politicians and political parties have increased – in spades – the cynicism of the electorate.

"As we enter the new millennium I think people are attracted to a more consensus style, and a less-artificial brand of politics in which control has become the catchcry.

"The sort of politics that will encourage the ideas-based economy is not the sort that's simply driven by the latest public opinion polls or that insists on a bureaucracy whose catchcry is 'Yes minister'.

"Politics has got such a dirty name that it will inevitably fail to attract top-quality people, just when the country needs them most.

"And, anyway, why would the best people bother when, unless they are frontbenchers, MPs are treated by their parties as overgrown adolescents, best seen but only heard sprouting the narrowest party line, and regarded by the media as not worth reporting unless they kick over the traces.

"Listen to the Government backbench Dorothy Dixers to ministers at question time and cringe. How could men and women who have got themselves into Parliament be willing to mouth such platitudinous questions that have been handed to them by the Executive?

"At least in the past the Dorothy Dixers were only a proportion of the questions asked by Government MHRs, not *all* the questions. And the political masters are making life so difficult for the bureaucrats that quality people will increasingly use a public service career as simply a stepping stone to somewhere else.

"Let me dwell for a moment on this issue of the bureaucracy. I think the country's future is being seriously ill-served by the progressive emasculation of the federal public service. Indeed, this is one of the big untold stories of Canberra.

"The upper levels of the public service are both thin and disillusioned because this government and its Labor predecessor decided it was more comfortable to have bureaucratic advisers who not only didn't bite but didn't bark too loudly either.

"Much more comfortable to surround yourself with those who reflect your own predispositions rather than, on occasion, telling you what you don't want to hear.

"The problem of this is the danger - paradoxically in this age of information excess - that a government can narrow band the advice coming to it, and so its capacity to generate quality ideas.

"Innovative ideas don't just come from your mates. The wider the circle of advice the more chance of sound policy.

"Before I finish let me add a few words on the role of the media in the ideas economy.

"The media inevitably will be attracted to the coverage of personalities, political tactics and conflict. And it would be a dull coverage without all this.

"But the media will not only be failing in their duties but will, I believe, lose further credibility – and they're about as distrusted as the politicians – if they do not play their part in promoting serious policy debate. This means stimulating and encouraging the exploration of issues. It means bringing through the ranks specialist reporters and writers who are as expert in their subjects as their counterparts in industry and government.

"It means, on occasions, contributing to the positives rather than just relishing the negatives. There is a real risk of the upmarket media dumbing down just when the public wants, and the country needs, them to go in the other direction.

"Now I am very aware that I haven't outlined to you any specifics for what the future ideas-based Australian economy would look like.

"What I am saying is that we won't be able to develop such an economy without the right institutions and processes for doing so. And these include a political system that has more community respect than now, which can attract rather than repel some of the best and the brightest, and then make sure they have an opportunity to contribute strongly rather than simply being herded and penned by an army of political minders.

"They include a public service that has an ethos of giving independent innovative advice and the calibre of people who can do so.

"And, finally, they include a media which can intelligently reflect and contribute to the debate about where the society is going, and should be going."

Other speakers at this briefing were CSIRO Acting Chief Executive Dr Colin Adam and VentureBank Ltd Chief Executive Officer Ms Lindley Edwards.

Survey high of gender

By Brad Collis

CSIRO's women scientists equal, if not exceed, the scientific achievement of their male colleagues, but are much less likely to be formally recognised for their achievements and are poorly represented in senior management.

These findings are from a 1998 study of gender balance in CSIRO by Dr Sandra Eady, a geneticist with Animal Production.

Dr Eady found 34 per cent of PhD science graduates, and 30 per cent of CSIRO postdoctoral fellows are women, but women hold only 10 per cent of the research-scientist and 5 per cent of the research-management positions.

"In part these figures may reflect the available pool of women in the past, but even now we are seeing a far smaller proportion of women post-docs progress to research-scientist positions, especially indefinite appointments," she said.

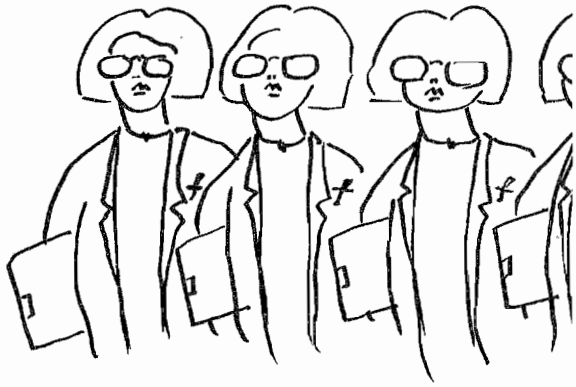
"Women continue to be discriminated against when it comes to tenure of employment. Twice as many female scientists, 25 per cent, are employed on a term basis compared to 12 per cent of men."

Yet the proportion of women promoted, using performance-based evaluation and the speed at which women are promoted, shows a high level of achievement among women scientists. "In the functional area of research scientist/engineer men and women are promoted at a similar rate and have a similar dwell time at the maximum CSOF step," Dr Eady's study finds.

"In the research projects area 46 per cent more women than men are promoted and their average dwell time is 22 per cent shorter than that for men. This is despite the fact that both women scientists and support staff spend less hours at work than men."

Women show a willingness to undertake more senior-management roles in CSIRO if given the opportunity.

However, CSIRO is losing many of its best women as they opt for different careers just at the stage of being able to signifi-cantly contribute to senior management.



At levels of CSOF5 and above there is higher turnover in female staff. At some CSOF levels it is twice that observed with male counterparts.

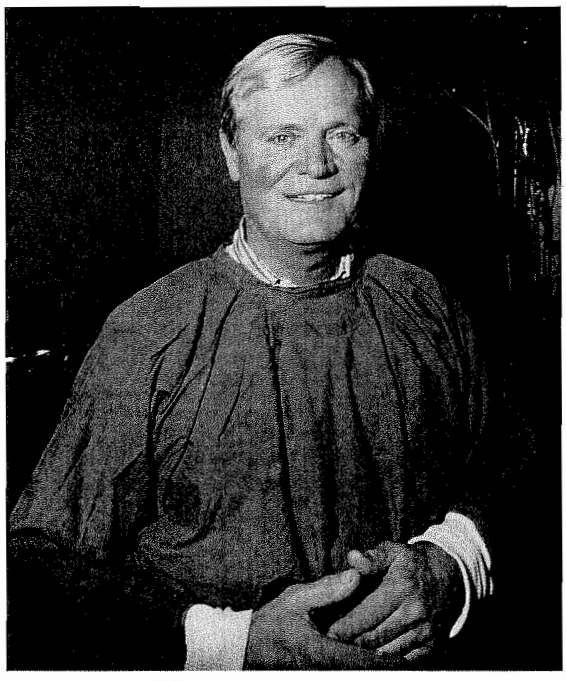
Of those people who have completed the Leadership Development Program, 82 per cent of men still work for CSIRO, but only 25 per cent of women.

In June 1997 CSIRO employed just over 6,700 people, of which 33.2 per cent were women. But when the figures are studie more closely, 83 per cent of those wome work in research-support roles such a administration, general and technical ser ices and research projects.

Here are some of the comments pro fered in the 1998 staff poll:

"There still seems to be an old-boy network in the upper levels. People need be promoted/employed on their merits, n on who they know."

"Can't see it happening with curre generation of management ... newest ma



New direction: Wolf Herrman, from CSIRO Animal Production, turned a surgery into a world-class facility. Photo: Brad Collis

No p

By Brad Collis

Like many researchers working in ag culture, Wolf Herrmann suddenly fou himself having to justify his existence 1983 as CSIRO's focus was redirected pulling Australian manufacturing fro the rust belt.

Wolf was working at Prospect ruminant physiology and was also charge of the small operating theat where surgical procedures were carri out on livestock.

He was told, in a nutshell, to find way to use the facility commercially a cover at least part of the cost of employment.

Many scientists caught by the chan in focus from primary to seconda industry, plus a new commercial emph sis, found themselves painfully redu dant, but Wolf was determined not to one of them.

He had an operating theatre.

Wolf contacted the Westme Hospital near Sydney and invited the to use his facility if they needed to any animal modelling for testing n surgical techniques or for training s geons on new equipment.

The result 16 years later Sirosurgery, one of Australia's m sought-after surgical training faciliti and one that has played a significa

CSIRO web site reaches the finals

CSIRO's web site was one of three finalists in the science-and-technology category of the 1999 Australian Financial Review/Telstra Australian Internet Awards.

Finalists from 36 nominations in the category were CSIRO, http://www.csiro.au, Questacon, http://www.questacon.edu.au/, and the ABC's The Lab, http://www.abc.net.au/science/ The winner, announced on August 31, was The Lab.

lights issues imbalance

we have

igement position has been referred to as a 'he' before job even advertised. Mentality oo entrenched."

"Change the culture of CSIRO from very-man-for-himself competitiveness to promoting and rewarding co-operation and teamwork when delivering worthwhile goals."

And from the opposite perspective:

"There are fewer women because they choose to interrupt their careers by having kids. Their choice."

"I don't believe that in senior positions within CSIRO that women can do the job as well as a man because women are too emotional and not hard enough."

"It does not concern me in the least. In fact, CSIRO is probably better off without them."

Perhaps such comments partially explained why women are also reporting an increase in sexual harassment in CSIRO, although often more subtly disguised than 10 years ago.

Regardless of why there are fewer women in science, Dr Eady argues that half of the potential talent for science excellence, effective management and leadership lies within the female population, and she has penned a number of notes for the Chief Executive. They include:

- On average the women we have are very good
- Women want to progress through the full path of career opportunities in CSIRO
- There is clear under-representation of women in CSIRO, especially in senior positions
- Women have lower job security and report a higher level of gender discrimination and sexual harassment than men
- Proportionately more good women than men opt to leave CSIRO
- There is a strong business case for improving the representation of women in the organisation

Her recommendations include:

- Provide clear and positive statements from the Chief Executive and Executive that the under-representation of women is recognised as an important issue and action will be taken to address the imbalance
- Increase awareness of family-friendly initiatives that are available within CSIRO such as salary averaging and nanny service
- Provide appropriate training for women on how to communicate and work effectively in a male-dominated culture. For instance, send a pilot group of women to the Potential, Performance and Progress Program, a professional-development program specifically for women, being offered by the University of Adelaide
- Remove gender bias in employment status, the number of women holding term appointments, for research scientists/engineers and research-projects' staff
- Implement mandatory exit interviews for all staff, including post-doctoral fellows, so reasons for leaving can be identified and change implemented if warranted
- Provide resources for women scientists and managers, especially those working in isolation from other women, to meet and establish informal support networks and identify role models. Establish a mentoring program for women scientists or young scientists in general.

Dr Eady undertook the study during her 18-month secondment to head office as executive-officer to Dr Malcolm McIntosh.

"At the time I took up the position a staff survey had just been done in which a number of workplace-equality issues were raised. I asked Malcolm if I could examine this more closely and he agreed," she said.

Staff can find full details of the study on the staff services web site at http://www.csiro.au/services/signifdocs/wis/womeninscience.html

**Brad Collis is a Melbourne-based writer who has been commissioned to write the history of CSIRO.*

in is all gain for Wolf

role in the development and implementation of new surgical procedures, and the training of Australian doctors in new fields, such as laparoscopy or keyhole surgery.

A private company, Telectronics has used it in the development of cardiac pacemakers and the Australian army also uses the facility, now a fully equipped surgery with three operating rooms, to train paramedics in basic field surgery.

The patients are mainly pigs, which have a similar anatomy to humans, and, consistent with today's animal ethics and welfare considerations, are cared for under a strict pre- and post-operative protocol, almost matching that of human hospitals.

Part of the reason for this standard of care is Wolf's own work.

He was one of the first scientists to measure the amount of pain that animals like sheep feel when subjected to experiments.

Wolf was able to demonstrate an animal's endocrine response to tissue trauma, which led to a code of ethics among most animal researchers that requires the use of analgesics for any procedure likely to cause pain.

He said: "It was one of my objectives when I left the bench to run the surgery ... to improve animal welfare by developing an adequate analgesic protocol. I was able to demonstrate that there is post-operative pain as signalled by the elevation of hormones and behaviour changes that indicate stress."

> ‘ It was one of my objectives ... to improve animal welfare by developing an adequate analgesic protocol. I was able to demonstrate that there is post-operative pain. ’

Some of the facility's biggest successes have been in obstetrics. It was used to develop a method for studying blood flow to the placenta in human pregnancy, using non-invasive Doppler ultrasound techniques.

This study of uterine and umbilical circulation was crucial in finding ways to avoid oxygen deprivation by a foetus, which is one of the main causes of brain damage, congenital deformities and prenatal deaths.

Blood flow to the foetus is often compromised in humans by the mother smoking, drinking alcohol or having a significant nutrition deficiency.

The blood flow to the foetus was monitored by ultrasound in a pregnant sheep.

Doctors' observations led to the discovery of a simple remedy for impaired blood flow, aspirin.

With a pig model, doctors from the Royal Alexandra Hospital for Children at Westmead, New South Wales, were also able to develop a laparoscopic technique to correct vesico-ureteral reflux, a common problem among children with recurrent urinary-tract infections.

Conventional treatment requires major surgery, considerable post-operative discomfort and a lengthy stay in hospital.

The facility is today recognised in Australia and overseas as a modern training and research facility for medical, veterinary and industrial research and development.

But it has strict rules prohibiting the use of primates or companion animals, and enforces high and constantly monitored bioethical standards.

OBITUARY

John Robert Philip, AO, FRS, FAA 1927-1999

Science mourns loss of great art connector

DR JOHN Philip, physicist, mathematician and poet, was Australia's most distinguished environmental physicist.

His innovative work on the movement of water, energy, solutes and gases in the natural environment won him an international reputation.

John was born in Ballarat, Victoria, and educated at Maldon State School, Scotch College and the University of Melbourne.

It was at Scotch that his precocious intellect became apparent. Although his favourite subjects were maths and science, he also excelled in the humanities. He wrote poetry and kept abreast of modern literature.

Through his artist friend Frances Long, who later became his wife, he met the Boyd family while still at school and began a passionate involvement in art and architecture.

Incredibly, he matriculated at the age of 13. The university would not accept him until he was 16 so he completed two further years of leaving-certificate honours.

He graduated as a bachelor of engineering at 19, the youngest engineering student to do so, having spent four years in residence at Queens College.

In 1946, the annual salary of a newly graduated engineer was £330, and John was considered too young to be earning that sort of money. He was rescued by his university and employed as a graduate assistant in agriculture engineering, at a salary of £300, with no mention of his age.

The scientific community was quick to deploy the astonishing talents of this tyro and John was co-opted by the CSIR, the precursor to the CSIRO, and dispatched to its research station at Griffith, NSW, to solve complex problems involving hydraulics in furrow irrigation. It was then that he became fascinated with the processes in which substances moved through soil and the atmosphere, and environmental concerns became the focus of his academic life.

John's next appointment was to the Queensland Water Commission, based in Brisbane. His friends tended to be artists rather than scientists. He allied himself to the writers centred around the literary magazine, Barjai, and these friendships lasted all his life. They included poet and editor Barrett Reid, expatriate poet Peter Porter, artist Charles Blackman and writer Barbara Blackman.

A poet, librarian and member of the Barjai group, Vida Horn remembers John as "possessing a maturing at age 20 most of us lacked. It was as if his life was precisely laid out and he was in charge. I know of no other poet who could transmute the language of science to that of poetry with such simplicity and elegance."

In 1953, the CSIRO contracted John to run its irrigation-research station at Deniliquin, NSW. He had married Frances, but so severe was the postwar housing shortage that the couple initially lived in a tent on the banks of the Edward River.

During John's six years at Deniliquin, he wrote a series of papers that resulted in a sea change in the understanding of ways unsaturated water and heat flow in porous media. As a result of these findings he was awarded a DSc(Physics) from Melbourne University.

On a practical level, John's work was so radical it was to take 40 years before his research reached fruition.

Sir Otto Frankel, who headed the CSIRO, was disconcerted by a certain brashness in the personality of young John, and he was uneasy with his mathematical and physical approach to environmental problems. John's staunch supporters included Professor Pat Moran and John Jaeger at the Australian National University School of Earth Sciences, and these august gentlemen persuaded Sir Otto to give John the freedom of his creative instincts. Frankel's forebearance was justified by John's pioneering work on a synergy of mathematics and physical insights.

John Robert Phillip

John's reward was his appointment as head of the Division of Environmental Mechanics, which became a world centre for studies of energy and mass transfer in the biosphere. He held this post for 20 years.

In 1975, the Whitlam government established a royal commission into government administration and preliminary submissions indicated considerable dissatisfaction within science departments of the public service. John chaired a taskforce that delivered its findings the day the government was dismissed. He and his team argued for curiosity rather than market-led research and called for the abolition of the Department of Science.

John formally retired in 1992, but continued to collaborate with his peers around the world. He was on one such trip to Amsterdam when he was killed by a speeding car near the central railway station.

During his professional life, John published 300 or so papers and received an incredible 4,500 citations. He was an abrasive man and - justly - opinionated. He was charming, boyish and generous to a fault. There was a playful, Einstein-like quality about him. Colleagues found working with him enthralling and terrifying. He nurtured his friends and loved his wife.

John's poetry is represented in anthologies edited by Judith Wright and in Charles Osborne's UK-published The Oxford Book Of Australian Verse. He was a fellow of the Australian Academy of Science and the Royal Society of London, and was the first non-American recipient of the Robert E Horton Medal, the highest award for hydrology by the American Geophysical Union.

Dr Philip was a rare creature of two cultures. Yet it is interesting to note in his poem, Theorems and Metaphors, his suggestion of the ascendancy of art over science. "Theorems enlarge but metaphors connect," he wrote. John himself was a great connecter.

He is survived by his wife Frances (Faye); his children, Candida, Peregrine and Julian; and four grandchildren.Dr Philip's funeral was held on Friday, July 9, at Franklinford Cemetery, Franklinford, Victoria. A Commemorative Gathering was held on Sunday July 18 at the Australian Academy of Science in Canberra.

– PHILLIP JONES

** Philip Jones is a Melbourne-based writer*

Blow-by-blow account

Profile

MILD-MANNERED Mike Carter would be the last person to blow his own trumpet, but CoResearch spies have alerted us that he is CSIRO's only scientific glass-blower.

Tucked away in the Lindfield laboratories of Telecommunications and Industrial Physics works this man whose operation is as smooth as glass.

Q. What is scientific glass blowing?

A. Scientific glass-blowing really took off in the 19th Century, especially in Germany where many experiments were done to discover new glasses, mainly for optical instruments. The new glasses were strong, withstood heating and were resistant to acids and alkalis. The earliest piece of glass bearing a date is in the Ashmolean museum, Oxford, and is dated 1551 to 1527 BC. In early times it was mainly used for jewellery. Glass-blowing started in Persia around 500 BC. The Persians made bowls, jars, windows, mosaic pavements and glass-covered walls.

Glass manufacture expanded greatly during the Roman Empire era and again in Venice around the 12th and 13th Centuries.

Q. How did you get into scientific glass blowing?

A. My old Dad always said, "Get yourself a trade, son." I finally realised he may be right when I was 18. So a friend and myself decided to learn a trade. My friend heard about scientific glass-blowing and we thought that sounded like fun, so that's what we did. On finishing my apprenticeship I decided to see the world and arrived in Australia in 1973. I joined CSIRO in 1989.

Q. How rare is glass-blowing these days?

A. Scientific glass-blowing is rare in Australia, but there are some large scientific glass-blowing companies in America and Europe. There is an Australian scientific glass-blowers society with around 30 members, and I would estimate there to be 50 to 60 glass-blowers in the country.

Q. What are the best things about glass?

A. The best thing about glass is its versatility. It has been utilised from its first use for jewellery and ornaments to optic fibres, laser tubes and lenses. It also has good insulating properties for heat and electricity. On top of this, it will not rot or rust, it is pure, will not contaminate and it is beautiful to look at.

Q. What are the sorts of projects you get asked to do?

A. My work is varied as I work for six divisions of CSIRO. I deal with distillation equipment, high-vacuum systems, quartz reactors, dewars for cryogenic work, in fact, anything the scientist may ask for.

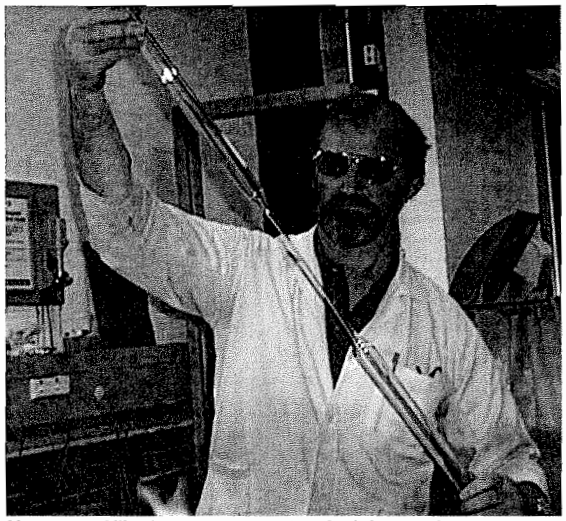
Q. What is the oddest project you have had to do?

A. I had to make tubes used for chicken sexing. When chickens first hatch an internal inspection is the only way to determine what sex they are. A device with a specially shaped glass tube is used. It was quite a difficult job, as the tube was small and the tolerances, if you will pardon the expression, were tight.

Q. What piece are you most proud of?

A. A piece I did for the division of food technology called a Likens and Nikkerson apparatus, is the piece I remember. It required so many glass-blowing skills in the one job, and it was so unforgiving.

If every stage was not perfect it would crack. I found this out by finishing up two days' work in the bin. I have now made five of these apparatus, and I still have a private celebration when it is finished and in one piece.



Hot pursuit: Mike Carter warms to his task of glass-blowing

Q. What are some glass blowing hazards?

A. The hazards of glass-blowing, come from the gases I use, natural gas and hydrogen. Obviously there is a risk of burns and cuts. Also, when asked to do repairs I have to check that nothing toxic or explosive has been in the apparatus. If it has then it is not advisable to heat or blow into the equipment until it has been thoroughly cleaned.

Q. Do you only do scientific glass blowing? What non-scientific pieces have you made?

A. All scientific glass-blowers fancy them selves as artists. I do some for my own pleasure and some have been requested by friends and family. The latter are usually such things as glass kangaroos for overseas visitors.

I can't wait for the Olympics, and all those tourists wanting glass kangaroos at $12 each. I did once make a model Harley Davidson for a friend's birthday.

Q. How do you like to spend your time when away from the office?

A. I play tennis two or three times a week, only social not competition, so Pat Rafter has nothing to fear. Scuba diving is my main weekend activity. And following Arsenal football club in the English soccer is my main armchair activity.

Q. What is your favourite food?

A. Unfortunately, for my waist, I like most food. But I am particularly partial to Thai food.

Off shore

Southern hemisphere summit

SOME of this hemisphere's leaders of industrial research organisations met rec-ently for the first time.

Dr Colin Adam, DCE, said: "Many useful contacts and linkages were established during the summit.

"They are likely to lead to future collaboration in areas of common interest such as minerals' technology, building materials for the South American countries, timber and other industrial standards within all these countries."

Dr Adam was the CSIRO's representative at the Inaugural Summit of the Southern Hemisphere Industrial Technology Organisations (ITOs) in Montevideo, Uruguay.

Dr Adam said: "It was a very productive meeting, especially the discussions with other heads of ITOs, on a personal basis and comparing experience on management issues."

The event, from July 29 to 30, involved leaders from seven countries representing organisations such as Argentina's INTI, Paraguay's INTN and South Africa's CSIR.

Topics discussed included management; future co-operation between ITOs; the role of ITOs, including interaction between the scientific community and the private sector; and issues facing all Southern Hemisphere countries.

The summit was organised by the President of Laboratorio Technologico del Uruguay, Eng Ruperto Long.

– **TA-YAN LEONG,** CILO

When art meets science

On show: Ron Hilton, left, Bernadette Waugh and Shirley Winstanley put some art into Library Week. Photo: Bill Van Aken

TWO DOZEN budding Picassos and Warhols from CSIRO unveiled their works of art recently.

Western Australian Laboratories Librarian Bernadette Waugh and her team organised the CSIRO WA Art and Science Exhibition for Library Week in May.

More than 50 pieces were exhibited by 22 staff members. It was an eclectic selection. Shirley Winstanley's Pop Art painting of an old Studebaker's grill and headlights had an aggressive feeling in contrast to Trish Lambert's intricately woven American tribal dance belt, which was draped across Mike Thornber's rustic timber chair.

Bernadette said: "We were delighted with the response to the idea, both from the artists and their colleagues.

"We are proud of the fact that we can showcase such a spectrum of artistic talent, quite different from the scientific talent normally demonstrated through seminars and workshops here."

The afternoon exhibition opening, on the Floreat Mezzanine Floor, was accompanied by catalogues, wine and cheese, an enthusiastic hum of conversation and the gentle clink of glasses. The launch of a CD by internationally recognised musicians, Steve and Rosalind Barnes, added ambience.

Science Quick Quiz

CSIRO'S DOUBLE HELIX SCIENCE CLUB

Test your encyclopaedic knowledge of science! Brought to you by CSIRO's Double Helix Science Club*. There is no prize for this quiz except a warm fuzzy feeling generated by getting all the right answers, but there is a prize for donating questions (see below).

Questions

1. Which component of our atmosphere traps heat from the Sun best?
2. Lichens are a symbiotic relationship between what two life forms?
3. Which sub-atomic particles are classified by their flavour, colour, spin, charm and strangeness?
4. Who was the genus Banksia named after?
5. How many complete orbits of the Sun has Pluto made since it was discovered?

Answers

1. Water vapour (Carbon dioxide is the most significant gas in relation to the enhanced Greenhouse effect)

2. Fungi and algae

3. Quarks

4. Sir Joseph Banks

5. None. An orbit takes 240 years, and Pluto was discovered in 1930. Distant Pluto and its companion, Charon, the only known planetary bodies not yet studied by probes, are now under astronomy's spotlight. A mission is being planned for launch in 2002 and arrival in about 2010. The Pluto-Kuiper express will orbit the twins and then continue beyond them to study what is thought to be a cloud of small planetoids left over from the formation of the solar system.

Double Helix Club quiz question competition

The competition is still open for people who have the questions rather than the answers. If you can think of some tricky, yet solvable quiz questions, send then to Simon.Torok@helix.csiro.au for a chance to win a $10 Double Helix merchandise voucher and the honour of having your questions in the Double Helix quizzes running in The Age, The Canberra Times, The Helix and CoResearch.

*To join CSIRO'S Double Helix Science Club call (02) 6276 6643 email: education-programs@helix.csiro.au or see http://www.csiro.au/helix on the WWW

The question is women

Nick Goldie

Research roundup

DR RAGBIR Bhathal teaches a course in extraterrestrial intelligence at the University of Western Sydney, Macarthur.

He enjoys asking students with religious beliefs uncomfortable questions about the place of Man in a variously inhabited universe. "Were there multiple crucifixions? One for each planet?" for instance.

He is also the author/editor of Profiles: Australian Women Scientists, a compilation of interviews with 16 prominent Australians, published this year as part of an oral history series by the National Library of Australia.

Are woman scientists different to women (or men) in science? Is truth inalienable and universal, or does secret women's business underlie the work of researchers who happen to be female?

If you ask scientific questions differently, you may end up with quite a different set of answers.

Dr Bhathal emphasises that he sees no difference in innate ability between men and women scientists, and he quotes Mary O'Kane approvingly when she demolishes the myth of female co-operativeness compared to male competitiveness.

Why are there more women in his book in the medical and biological sciences?

That, he says, is a result of social conditioning, and especially the lack of a good grounding in maths, which precludes a career in the physical sciences.

Not surprisingly, many of Dr Bhathal's subjects have a CSIRO connection, past or present. For instance plant biochemist Jan Anderson, marine scientist Shirley Jeffrey, quantitative geneticist Mary Rose, and plant biologist Adrienne Clarke feature.

While reading Profiles I was struck by odd sidelights, such as Dr Bhathal's notion that women have been involved in science in Australia for thousands of years.

"The whole of the nineteenth century was concerned with gathering and collecting the flora and fauna of Australia. Long before Sir Joseph Banks or Daniel Solander, if you go back 40,000 years, the first scientists would have been Aboriginal women, who were doing the same thing, collecting and classifying."

And again and again, as interviewer, Dr Bhathal returns to the question, "Are things changing?"

Cheryl Praeger answers: "As soon as there's a greater number of women [working in science] there'll be a wider variety of what's classed as normal, normal in the way you do science, normal in the way you teach it and learn it, and I think that's very much to be wished for. I see myself and numbers of other women in these areas as path makers, and, once the path has been made, I think it's easier for the next people coming in."

Fishy stories

EVERY angler should have one, along with every cook, every shopper, and everyone who eats out. And probably every pet owner as well.

It's a handsome book. Marine Research graphic designer Antonia Hodgman has done the division proud. The Australian Seafood Handbook will be quite at home on my bookshelves with some up-market bird books and a tome on native trees.

That's an implied criticism. I'm not, as a cook, going to risk getting oil and batter over my copy, nor, as a fisherman, am I going to drop it into my fishing bag for a day on the river. It's a quibble, but this slightly defeats the purpose of the handbook, which not only has excellent colour photographs of bright-eyed freshly caught fish, but equally useful photos of fillets of the same fish.

Never again need you accept a slab of ling as an alleged fillet of barramundi. At a more technical level, the protein fingerprints given for each species will provide an important tool for fishing authorities and the fishing industry to regulate the marketing of fish, and eliminate the practice of substitution of one species for another.

The handbook should also become the standard for fishy names, and end any argument about the difference between a sole and a flounder, and all those various mullets, perches, and cods.

I look forward to an affordable spiral-bound waterproof edition and, in the meantime, warmly recommend the Australian Seafood Handbook to your attention.

There's a panel of expert writers, with editors Gus Yearsley, Peter Last and Bob Ward, all from CSIRO Marine Research, which published the handbook. Funding came from the Fisheries Research and Development Corporation.

Our yellow-brick road

NOT a CSIRO book, but full of CSIRO scientists. Peter Spinks was science writer for The Age, and before that the BBC, The Observer, and The Guardian, until he retired recently to write books. Wizards of Oz is an enthusiastic look at present-day research and researchers in Australia.

Peter's book is divided into 10 chapters, the southern stargazers, the biotech Bolsheviks, the rainbow warriors, and so on. He has a weakness for alliteration and snappy sub-headers like "The Distant Dazzler", "Dwarf Discovery", and "Reincarnating the Carnation".

The message is loud and clear. We Australians do it very well indeed.

In this connection, it's interesting to read Julian Cribb's recent piece in The Walkley magazine, the journalists' trade paper, which accuses editors of creating a black hole in the reporting of Australian science; and the recent survey that suggested that Australians would, in fact, rather read about science than sport.

Anyone with an interest in science will find Wizards of Oz a stimulating read, and Peter sees science as far more than merely research in isolation.

Wizards of Oz is published as part of the Frontiers of Science series by Allen and Unwin.

Rodney Teakle

Out of the archives

Museum, CSIRO share a history

THE NATIONAL Museum of Australia is planned to open to the public in 2001.

One of its curators is preparing an exhibition on the history of food and approached me for some assistance on CSIRO's efforts in that field.

This reminded me of our association with the museum over the past few years. CSIRO Wildlife and Ecology helped the museum, for instance, with a collection of equipment connected with the early myxomatosis research and CSIRO Archives helped with some exhibits for a related travelling exhibition.

But CSIRO's involvement with an Australian national museum goes back even further.

In 1928 Cabinet decided that it needed to consider the issue of a national museum. And whom did it turn to? None other than to us, then known as the Council for Scientific and Industrial Research (CSIR). Cabinet specifically turned to the then head of CSIR, Sir David Rivett.

Sir David headed a committee that considered the issue of a national museum.

The submissions and the committee's report show there has been a huge change in ideas in the past 70 years about the role of museums.

For example, they saw a close connection with science and recommended the site be near research institutions and that CSIR be represented on the museum's board.

But one submission still resonates today. The Australian National Research Council wrote:

"Much of the material illustrating features of plant and animal life in the Commonwealth and its territories is of a vanishing nature. Specimens of great scientific value, which could have been readily obtained when the Commonwealth was founded, are almost unobtainable today."

The current museum dates from a resurgence of interest in a national museum in the 1970s.

After a stop-start history, the museum's public galleries are being built a kilometre away from our Black Mountain Laboratories.

Sir David would be pleased since it is close to where his committee recommended the museum buildings be built," at the foot of Black Mountain, overlooking Sullivan's Creek and the University site and lying south-west of the CSIR Reserve".

Survey gives CoResearch thumbs up

MOST CSIRO staff enjoy reading CoResearch and would like to continue receiving it, according to a recent study conducted by CSIRO National Awareness.

The telephone survey of 94 out of 100 randomly selected staff revealed that most thought the newspaper provided them with information they wanted to know about the Organisation.

Staff reacted strongly to the suggestion that CoResearch be produced electronically. About 78 per cent said they would not read it more if it was on the www. Those who wanted it on the www either worked in isolated locations that never saw hard copies or thought it would be a useful archival source.

More than 75 per cent of respondents said they would like to continue receiving regular issues, but that distribution was an issue. Some said they had never seen a copy or hadn't received one in years. While the mix of stories was generally regarded as balanced, some staff said the publication tended to focus on some divisions over others, and on more "spectacular" research or staff.

Editor Ms Jane Kahler said the survey results will be used to help give staff more of what they want in the newspaper.

Molecules to mayhem

By Warrick Glynn, CMS

DR DARREN Cundy, of CSIRO Molecular Science, has been selected to take over the position of Executive Officer in Dr Malcolm McIntosh's office.

This role has been held by Dr Sandra Eady for the past 18 months. Dr Cundy will assist Dr McIntosh with the co-ordination and preparation of briefs on current issues, liaising on his behalf with senior CSIRO managers and government organisations, and managing the flow of correspondence through the office of the Chief Executive.

Darren completed an honours degree in Science at the University of Queensland, majoring in organic chemistry with biochemistry as a secondary field. He began his PhD studies in 1989, focussing his research on the synthesis of new nucleosides as potential anti-viral agents against HIV. In the second year of his PhD he was accepted as a participant in the British-Australian Vocational Exchange program, which provided the opportunity to work within a research team at the British facilities of Ciba-Geigy.

After completing his PhD he was accepted as a post-doctoral fellow at the University of Florida, under the direction of Professor Alan Katritzky, one of the world's premier heterocyclic chemists.

Dr Darren Cundy Photo: Wendy Easton

The diversity of the group's research interests also facilitated his work with the Warheads Division of the US Army.

In 1994 Darren was offered a post-doctoral fellowship at CSIRO Division of Chemicals and Polymers in Melbourne. He began his CSIRO career within the joint-venture company Dunlena, and used his skills to design and synthesise agrichemicals. A year later he became involved in a project that developed a commercially viable synthetic process for the production of a compound normally isolated from a species of shark. This material, marketed as Isolutrol, is a powerful regulator of the human sebaceous gland and has a large market in anti-acne formulations and cosmetics.

In 1997 Darren became project leader for the Contracted Research Group. In this role the client base has grown to include a large number of organisations such as NuFarm Limited, the Australian Membrane Biotechnology Research Institute, Procter & Gamble in Britain and Dupont Specialty Chemicals in the US.

Darren believes his experience in working directly with a wide variety of external organisations, ranging in size from small to multi-national enterprises, both on a business level as well as a scientific one, has provided a useful insight into the interactions between CSIRO and its clients.

He sees this position, which will run for two years, as a great opportunity to develop his career in new directions.

"I'm looking forward to obtaining a real understanding of how CSIRO functions and being involved in its on-going evolution," he said.

Dr Annabelle Duncan, the Chief of Molecular Science, said: "Darren's effervescent personality, his competence and his common sense have been greatly appreciated in the division."

Energised good sport

BATTERY specialist Dr Russell Newnham, of Energy Technology, has won the Winter Classic for the fourth time.

This two-day event, also known as the Australian MultiSport Championship, involves cross-country skiing, running, cycling and white-water paddling. The race consists of an 18km cross-country ski down Mt Hotham to the snow line, an 18km orienteering cross-country run, a 50km cycle to the Mitta Mitta River and then a 15km white-water paddle. On the second day, there's another 15km white-water paddle, a 15km cross-country mountain run and a 23km mountain-bike ride.

Russell has won this event four times, and still manages to be a project leader in the Novel Battery group.

Changing conditions for leading researcher

DR BARRIE Pittock from CSIRO Atmospheric Research has retired after more than 30 years with the organisation.

Dr Pittock's first scientific activities after joining the division in 1965 involved assessments of stratospheric ozone and examination of the likely environmental effects of nuclear war.

Then, long before it became a public issue, Dr Pittock began to investigate the possibility that rising atmospheric levels of carbon dioxide might change global climate. He established the division's climate-impact group in the 1980s, which has performed detailed investigations of the likely impact of climate change on Australian states and territories, and on countries in South-East Asia and the Pacific.

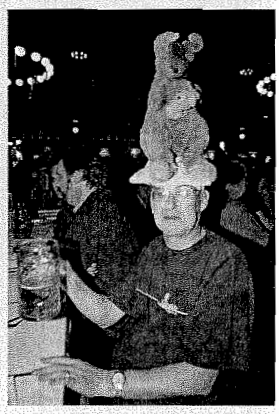
Dr Pittock's scientific contributions were recognised earlier this year when he received a Public Service Medal in the Queen's Birthday honours list for "outstanding public service through his leadership and visionary approach to identifying, researching and communicating a range of global climate science issues".

Dr Pittock has been a major contributor to the Intergovernmental Panel on Climate Change. He has accepted a fellowship and will continue to contribute to the panel.

CSIRO around the nation

O caption, my caption

Pimples on kangaroos' bums were a common response to last issue's photo (right) of Doug Gale and his 'roo.



Simon Torok from Education Programs: That's a funny looking creature you've got there. "Yes," replied the kangaroo, "It started out as a pimple on my bum".

Ron Johnson from Materials Science and Technology: When Albert entered the room he noticed Doug sitting at the table. "Where did you get that?" he asked. Quick as a flash the kangaroo replied, "It started off as a pimple on my bum".

Lloyd Graham from Molecular Science: I reckon I'm the unluckiest 'roo in history. One morning there was this pimple on my bum, and things just deteriorated from there.

Pat Rohan from Materials Science and Technology: CSIRO's achievements in the field of genetic engineering will provide huge potential benefits for our economy. In this particular instance three different and distinctly Australian species have been combined into one life form. The use of this instantly recognisable tourism symbol in international advertising will attract millions to our nation."

Kylie Smith from Molecular Science: Gee, Skip, that is the worst case of haemorrhoids I've ever seen.

Dirk Richards from Plant Industry: Okay, so dats one drink for me, and ... dah ... one for Skippy and ... hic ... one for Joey.

Greg Doran from Manufacturing Science and Technology: How Doug Gale handled those long and lonely nights at Hannover.

Heather Vile from Mathematical and Information Sciences: Would you like to try my 'roo - oops - sorry, brew?

Maggie Goodwin from Telecommunications & Industrial Physics: Doug shows the Germans a preview of the hats the Australian Olympic team will be wearing.

David Lamb from the Australian Automotive Technology Centre (two entries): New approach to marketing CSIRO in Europe;

One more glash of thish European cordial and the local industry will be falling over themselves to do collaborative research with ush.

Lawry McArthy from Molecular Science: The manager wants to check if you guys have had too much to drink. Now, first, does anyone see anything odd about my hat?

Yeah sure. And I have a ferret up my nose too;

Ha. And the Customs' guy thought he was stuffed.

Warrick Glynn from Molecular Science: This is NOT a tumour.

Lynn Pulford from Education Programs: The Australian visitors were fairly conspicuous.

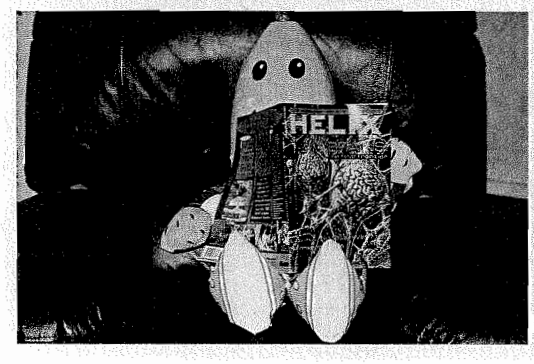
And the winner is ...

Lawry McArthy from Molecular Science: And I said to my wife, "I would like to have a kangaroo-skin hat, but she didn't have the heart to skin it, so..."

Lawry wins a wooden giant swallowtail butterfly model.

Our latest picture (below) is from Simon Torok, the Editor of The Helix.

Send captions and photos to **CoResearch Caption Competition, PO Box 225, Dickson, ACT 2602, or email Karen.Robinson@cc.csiro.au.**



Net lands spot for student

A FRENCH veterinarian university student used the Internet to line up work experience with CSIRO, in Sydney.

Alix Martin used the Internet to track down suitable Australian laboratories for her training. She had positive replies from the Veterinary Department at the University of Melbourne, and from Pat Wilson of CSIRO Animal Production's communications group. Pat and Yvette Beshara in Human Resources helped organise a seven-week training period for Alix who worked with five different groups and followed their research.

Alix said: "The experience was a total success, thanks to the welcoming of all the staff of CSIRO and their help in assisting me to understand their research. But not only the work, the social life was really pleasant and I want to thank all for their nice attentions to me."

Electronic tax relief

R&D TAX Concession applicants are now able to submit their completed forms over the Internet, thanks to a Federal Government move. The lodgement forms are available on the Business Entry Point web site, www.business.gov.au

Hot award

DR CHRIS Strauss has won the first Royal Australian Chemical Institute Green Chemistry Award for his work in developing an alternative to conventional heating. Dr Strauss, the Program Manager of Applied Chemistry and Polymer Science at CSIRO Molecular Science, developed and patented technology for chemical reactions that uses microwaves.

New head of the flock

DR ROB Kelly, a scientist from Agriculture Western Australia, will start work as the manager for research in sustainable livestock production at CSIRO Animal Production on October 11.

Dr Kelly has been involved in the development and implementation of sheep and wool research, and is responsible for the Wool Program of Agriculture Western Australia. He has a wide range of experience, as a scientist and research manager with AGWEST for 16 years and as a research scientist with New Zealand's Ministry of Agriculture and Fisheries for 10 years.

Tropical tales

MORE than 30 scientists from around the world converged on Darwin recently for a workshop on global change and terrestrial ecosystems.

The workshop, in mid-July, aimed to develop collaborative research, identify gaps in knowledge and produce publications on the potential impacts of global change in land use, climate and atmospheric composition. A highlight of the event, hosted by CSIRO Wildlife & Ecology, was a first-hand view of CSIRO and Tropical Savannas CRC research down a 1,500km transect from Darwin to Alice Springs.

Prize researcher

STEVE Brown has won the Grimwade Prize in Industrial Chemistry for 1998 for his research into indoor air pollutants.

The award recognises scientific ability, originality, and importance to industrial chemistry of Victorian research over the last five years. Mr Brown, of CSIRO Building, Construction and Engineering, has also been nominated to join the International Academy of Indoor Air Sciences, a restricted group of 72 scientists from around the world who influence and promote the science of indoor air quality internationally.

$15,000 fellowship

CSIRO Minerals' Dr Colin Nexhip was presented with a $15,000 Victoria Fellowship in May. Dr Nexhip will use the grant to travel to Europe and North America to advance his knowledge in the applications of surface chemistry in metallurgical processing. The fellowship was presented by the Minister for Science, Engineering and Technology, Mark Birrell, at an Institute of Engineers Luncheon.

Sweet reward

DR RUSSELL Muchow has been awarded the prestigious SRDC Sugar Industry Research Award for 1999 for his outstanding contribution to the industry. His work is aimed at applying fundamental knowledge on yield accumulation in sugarcane to develop optimal crop schedules to maximise the profitability of the entire sugar industry. Dr Muchow is a crop physiologist and systems agronomist at CSIRO Tropical Agriculture, and Program Leader with CRC Sugar.

Full steam to retirement

DAVID Allan has retired from CSIRO Minerals after 33 years of service.

He has a keen interest in model trains, and in travelling on major railways of the world, interests he plans to pursue in retirement. Dave joined CSIRO at Fisherman's Bend, and transferred to the Clayton site in 1970 where he spent a lot of time helping establish Minerals' research projects.

Healthy combination

THE Parkville site of CSIRO Molecular Science and CSIRO Human Nutrition have merged to form a Division of Health Sciences and Nutrition. Professor Richard Head will lead the division.

Molecular chief

DR ANNABELLE Duncan has been appointed the Chief of a modified Division of Molecular Science comprising the Clayton and North Ryde sites of Molecular Science.

Biologist Dr Duncan has been a Program Leader of the Division of Molecular Science for the past three years, and the main scientific adviser to the Department of Foreign Affairs and Trade for the past eight years. She has served on three inspections with the United Nations Special Commission on Iraq, finally as Deputy Chief Inspector, and was awarded the Public Service Medal in 1996 for this work. Dr Albert Mau, who has been acting Chief of Molecular Science, has been made CSIRO Fellow in recognition of his exemplary contributions to polymer chemistry.

Wood-fired praise

A SYSTEM that turns low-value wood into carbon products and energy has won a British award. It is believed to be unique in producing, rather than consuming, energy in making charcoal.

CSIRO/Enecon won the Cremer and Warner Award Editor's Choice in The Chemical Engineer's Excellence in Safety and Environment Awards 1999 for work done by CSIRO Forestry and Forest Products' Dr Paul Fung.

The technology is licensed to Enecon and produces charcoal, activated carbon and energy from wood.

Regal atmosphere

QUEEN'S Birthday Honours were given to two CSIRO Atmospheric Research staff this year.

Dr Graeme Pearman received a Member in the Order of Australia (AM) for service to science and the community through promoting education on climate-change issues. Dr Barrie Pittock received a Public Service medal for outstanding public service through his leadership and visionary approach to identifying, researching and communicating a range of climate science issues.

Recognition flows

CSIRO Land and Water's Dr Jon Olley and three colleagues won the ACT 1999-2000 BHP Lancer Research Award for their work on determining the source of sediment and phosphorus to Australia's inland rivers. The other winners were Dr Barry Starr from University of Canberra, Dr Robert Wasson from CRES, and Dr Andrew Murray from Risoe National Laboratory in Denmark.

Study awards

FORNICATING wolves and breeding eucalypts are some of the projects this year's Chief Executive's Study Awards will support.

Stephen Henry, Wildlife & Ecology, will visit Canada to study bait-delivery systems for fertility control of wolves.

Raymond Langenfelds, Atmospheric Research, will visit Germany to explore improved techniques for high-precision measurement of atmospheric oxygen and develop compatible calibration strategies for trace-gas measurements.

Craig Macaulay, Marine Research, will visit the US to review opportunities in electronic news communication and dissemination of marine-science news from leading research facilities Woods Hole and Scripps.

Garry Miller, Land & Water, will visit Britain to gain experience in newly developed water-quality instrumentation at Southampton University, and with the instrument manufacturers.

Aaron Neufeld, Building, Construction & Engineering, will visit Germany to study electrochemical interface phenomena of polymer/metal interfaces.

Paul Pasic, Molecular Science, will visit the US to broaden his skills in synthesis and characterisation of coatings, and approaches in industrial R&D.

Edward Preston, Telecommunications & Industrial Physics, will visit Germany, Britain and Canada to study optical and hard-coating deposition techniques.

Russell Varley, Molecular Science, will visit France to monitor cure and phase separation of novel CSIRO polyamides modified with epoxy resins.

Grant West, Marine Research, will participate in an archival tag geo-location workshop and a fish telemetry conference in Britain.

Sarah Whitfeld, Forestry & Forest Products, will attend a 12-day course in South Africa on Specialist Eucalypt Breeding Techniques and do a two-day field tour of eucalypt-breeding activities.

CoResearch

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Send contributions to:
CSIRO National Awareness,
PO Box 225, Dickson ACT 2602
Tel: (02) 6276 6589
Fax: (02) 6276 6273
email: Jane.Kahler@cc.csiro.au or Karen.Robinson@cc.csiro.au

CSIRO

CoResearch

CSIRO's staff newspaper | *Season's greetings to all our readers.* | No.380 Summer 1999

Record high profile for organisation

By Megan Bird

AUSTRALIA'S awareness of CSIRO is at its highest recorded level at 86 per cent, according to a recent ACNielsen survey.

This represents a 1 per cent increase over the last survey of its kind conducted two years ago.

And the Australian public's view of CSIRO doing a very good job has improved by 5 per cent.

Knowledge of CSIRO achievements, however, remains uneven.

School children, women and people aged over 55 have become slightly more aware of CSIRO.

The survey summarised: "It is pleasing to note small improvements in awareness for school children and females in the light of special efforts to promote science and technology to schools and to emphasise the role of women in science."

It recorded significant increases in awareness of CSIRO in Sydney, Adelaide and rural areas and decreases in Brisbane and Tasmania.

The worst awareness rating was recorded in Brisbane.

Residents there have become 8 per cent less aware of CSIRO, according to the survey. And there has been a 16 per cent decline in awareness in Brisbane since 1994.

A large increase, 8 per cent, in Internet access to information about the organisation was recorded in 14-to-24 year olds, but in the 18-to-24 and 25-to-39 age groups overall awareness of CSIRO dropped slightly.

The age group most aware of CSIRO work in most sectors was the 40-to-54 age group.

And a general stamp of approval for the quality of CSIRO research was recorded.

The highest rating, up by 5 per cent to 40 per cent, was marked in 14-to-25 year olds in Sydney, NSW and the ACT, Perth, Queensland and Tasmania.

Respondents, once again, most wanted CSIRO research to improve the environment and health in Australia.

On the gene-technology front, perceptions of risks were greatest in Tasmania, 69 per cent, Western Australia, 62 per cent, and Queensland, 54 per cent. The greatest benefits were perceived in Adelaide, 54 per cent, South Australia and the Northern Territory, 51 per cent, and Melbourne, 49 per cent.

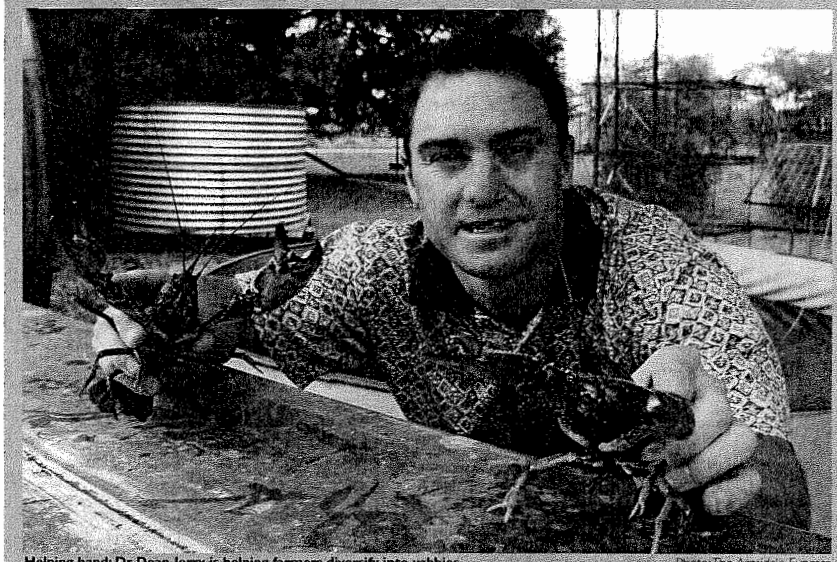
More men thought there were benefits, while women overall thought risks outweighed benefits.

Perceptions of risks involved dropped slightly with greater educational levels, and city people were more in favour of gene technology and saw less risks than country-dwellers.

And while school children aged between 14 and 17 were enthusiastic about gene technology, this optimism was reversed in the 18-to-24 year olds.

The face-to-face survey of 1,019 people covered city and regional areas of every Australian state and territory.

Rabbits and yabbies set to make menu



Helping hand: Dr Dean Jerry is helping farmers diversify into yabbies. Photo: The Armidale Express

By Megan Bird

AKUBRA hats made from rabbit pelts and catching yabbies from dams have been part of Australia's landscape for decades, but farmed rabbits and yabbies are about to make their way on to gourmet tables around the country.

CSIRO researcher Dr Sandra Eady is embarking on a major research program to make rabbit farming as efficient, productive and competitive as any other livestock industry.

There are already 115 commercial rabbit farms with a farm-gate value of more than half a million dollars.

CSIRO will also work with rabbit producers to develop a breeder's manual and management software.

Dr Eady said: "Rabbit farming is a great opportunity for rural Australia. Essentially what we are doing is applying the knowledge we have gathered from sheep, cattle and other livestock industries and applying it to give the rabbit industry a flying start."

The yabbie market is also well-established.

Researcher Dr Dean Jerry said: "The biggest problem in terms of market is that there's not enough supply. There's a huge demand.

"There a huge potential for farmers to diversify and supplement their farm income with yabbie farming."

He said most farm dams already have yabbie populations that can easily be farmed. A more intensive option was purpose-building aerated ponds to feed the animals and make them ready for market quicker.

"The main markets are the restaurants and other places like fish markets and stores. All the under-sized ones can be sold as bait," he said.

Four young unemployed people will work with CSIRO scientists at Chiswick research station to help build these livestock industries.

CSIRO won the contract to provide work experience for the four people for six months as part of the Federal Government's Work-for-the-Dole scheme.

Program leader Dr Sandra Eady said: "Many young people from regional Australia like working outdoors or with animals, and this arrangement offers both opportunities."

Participants, based at the station near Armidale, NSW, will meet potential employers, including farmers, local business people, government officers and non-CSIRO scientists and be given help to find a job, to prepare CVs and for job interviews.

Marine Research in landmark win

By Katherine Johnson, CMR

CSIRO input has been critical in the recent decision to stop Japan's experimental fishing program for southern bluefin tuna.

The UN International Tribunal on the Law of the Sea has granted Australia provisional measures to stop Japan's program in a landmark decision on the management of internationally shared fisheries. This is the first legal case of its kind under the UN Convention on the Law of the Sea (UNCLOS).

Central to the case were the efforts of two CSIRO scientists, Marine Research's Dr Tom Polacheck and Ms Ann Preece who prepared Australia's scientific input against Japan's unilateral decision to increase its catch of tuna by as much as 30 to 40 per cent.

Dr Polacheck said: "CSIRO has been studying the species for over 40 years. We were asked to summarise our analysis of the status of the stock, and to give the scientific reasons why Australia was unwilling to support Japan's experimental fishing program.

"[The decision] is a precedent for international management of high-seas' fisheries. It upholds the requirement for precaution when exploiting living marine resource, and sends a strong message to fishing nations on what they can do unilaterally in the name of science.

Australia and New Zealand's case maintained that the species was significantly overfished, below commonly accepted thresholds for a biologically safe population, and Japan's program represented a failure to conserve, and to cooperate in the conservation of the stock.

Dr Polacheck went to Germany in August for the case, led by the Federal Attorney General's Department in collaboration with legal representatives from New Zealand. The tribunal handed down its decision in late August, granting the bulk of the provisional measures sought by Australia and New Zealand.

The decision means all fish caught by Japan under its experimental fishing program must be included in its 5,065-tonne quota. The temporary injunction, however, only stops Japan from fishing above its quota until a full legal case is heard or an agreement is made outside the court.

Big catch: CSIRO Marine Research scientists prepared crucial input into the first international legal case of its kind. Photo: CSIRO Marine Research

Wagga effluent-study team collects the Chairman's Medal

CONGRATULATIONS to the Wagga Wagga Effluent Plantation Project research team, winners of the 1999 CSIRO Chairman's Medal and $25,000.

The team of 18, led by Mr Brian Myers, is from CSIRO Forestry and Forest Products, CSIRO Land and Water and the University of Melbourne.

The awards were presented by Sir Robert May, AC, Chief Scientist, UK, at a lunchtime ceremony in Parliament House, Canberra, on November 25.

Politicians present included science minister Nick Minchin, education minister David Kemp and Democrats' science spokeswoman Natasha Stott-Despoja.

Up to three Medals are awarded annually, with one External Medal.

Dr John Farrow and team from CSIRO Minerals, CSIRO Building Construction and Engineering, and the AJ Parker CRC for Hydrometallurgy were recognised for the development of new thickener technology for mineral processing.

Dr Matt Ballard and team from CSIRO Molecular Science, Orica Australia Pty Ltd and South Australian Water received a Medal for the MIEX® project for purifying water.

Dr Mark Berman and team from CSIRO Manufacturing Science and Technology, CSIRO Mathematical and Information Sciences, CSIRO Telecommunications and Industrial Physics, Proteome Systems Ltd and the NSW Road Traffic Authority were recognised for the development of the RoadCrack system.

Professor Joe Monaghan from Monash University, Melbourne, was awarded the External Medal for his work on smoothed particle hydrodynamics.

- KAREN ROBINSON, CNA

Hybrid power ready for test

By Jane Kahler, CNA

A REVOLUTIONARY method of producing energy without greenhouse gas emissions is up and ready to go at its test site at Sydney's Lucas Heights.

The solar thermal/fossil energy-hybrid power project is the brainchild of CSIRO Energy Technology's Mr Jim Edwards and his team. It combines solar energy and fossil fuel in a system to produce hydrogen, which is then used in new high-efficiency energy generators like fuel cells to produce electricity.

The system gives Australia the potential to become a world leader in the production of cleaner energy. Australia is an energy-intensive economy and it has large reserves of fossil fuels and of renewable energy in the form of solar energy, according to Mr Edwards.

This technology takes a fossil fuel like natural gas, which contains carbon, and reacts it with water using solar energy to produce carbon dioxide and hydrogen in a concentrated form.

Unlike more traditional forms of power generation where carbon dioxide, a greenhouse gas, is released in low concentrations to the atmosphere, this new technology allows separation of the carbon dioxide and disposal of it so that it doesn't enter the atmosphere.

The system's 15-metre high solar dish measures 12 metres in diameter and has 107 panels that are each one square metre in size. The dish tracks the sun from dawn until dusk, and at high noon on a sunny day, according to Mr Edwards, can pump almost 100 kilowatts into the CSIRO-designed receiver, where the reaction happens.

The $4.8 million project received funding under the Chief Executive's Special Projects Scheme in December, 1997. Construction of the dish is the second stage of the project.

"The first stage was to show that the concept was actually feasible. We did that in a paper study during the first six months of the project," Mr Edwards said.

The next stage is to build the pilot-scale facility to produce the hydrogen that will be used in a variety of new power-generating technologies.

The dish was constructed by Melbourne company Solar Systems Ltd to CSIRO's specifications.

The last word

"In a bizarre twist the CSIRO, the same mob which developed miximatosis and rabbit calcicivirus, is now sponsoring the development of rabbit breeding in Australia."

- Inside Melbourne, October 10

"The CSIRO's decision to relocate its energy division from Sydney to the new Steel River industrial site also shows a recognition of the expertise that exists in this field in Newcastle."

– Editorial by The Newcastle Herald, September 30, on the day the remaining 1,500 Newcastle Steelworks' employees finished work after BHP's 1997 decision to stop producing steel in Newcastle

"A shortage of skilled people, not a lack of venture capital or technology, is holding back innovation and business growth in Australia, the head of the CSIRO said last week."

– The Age, October 4, paraphrasing acting chief executive Dr Colin Adam addressing an international conference in Melbourne on technology transfer and innovation organised by the Strategic Industry Research Foundation

"Time after time we read of the marvellous scientific breakthroughs coming out of the CSIRO only to see them go overseas for lack of vision here."

- The Australian, October 2, letter to the editor in response to an article on the Snowy Mountains Scheme by Peter Hudson from Lauderdale, Tasmania

"What can Australia learn from this fiasco? The most obvious lesson is that all aspects of this research – the design, funding, supervision and publication of results – must be conducted by organisations that are truly independent and clearly separated from government, regulator and industry influences. So-called arms-length is not good enough. We need an organisation like the CSIRO doing the key work."

- Stewart Fist, The Australian, November 16, in a story about cellphone litigation in the United States, government and business handling.

"... interview with Christ [sic] Mallet"

– Sydney radio station 2GB, 4.45pm, October 15, as recorded by Rehame Monitoring

OBITUARY

Clyde Garrow, OAM, 1922-1999

An astute mentor to many

CLYDE Garrow was a mentor to many.

One of his most enduring legacies is the way his personal charm, time and effort influenced his colleagues.

He had the knack of seeing potential in people, and encouraging them to realise it. And in lots of small and subtle ways he helped make things happen.

Clyde joined CSIRO at the age of 18 as a junior clerk in Head Office in 1940. Apart from four wartime years in which he served as a Lieutenant with the RANVR, his subsequent career was wholly devoted to CSIRO and its associated activities, and he retired in 1986.

Clyde was educated at Melbourne High School and University. His qualifications at the latter were obtained part-time, and consisted of a diploma of public administration and a degree in commerce. He also acquired an associateship of the Australian Society of Accountants. His is an unusual background for a CSIRO luminary, but he found the scientific environment stimulating and mingled well within it.

In 1950 he was appointed Secretary of the Wool Textile Research Laboratories, which became the Division of Protein Chemistry in 1958. He involved himself in the research work of the division, in addition to his administrative duties. This included the search for new uses for wool in medical (surgical masks, nursing blankets) and industrial areas (teflon-coated shearing combs, air-conditioning filters and car seat covers), and in wool-processing techniques. He was awarded a Masters of Agricultural Science by Melbourne University in 1964 for his development of a novel vacuum-pressing technique for baling wool. In 1964 he was seconded to the International Wool Secretariat in London for 18 months. During this time he visited a wide range of people in Europe and the United States about wool applications (tobacco and fibre manufacturers, acoustic engineers, sheep farmers).

He followed this visit with a three-year posting as Scientific Attache at the Australian Embassy in Washington, from 1969 to 1972.

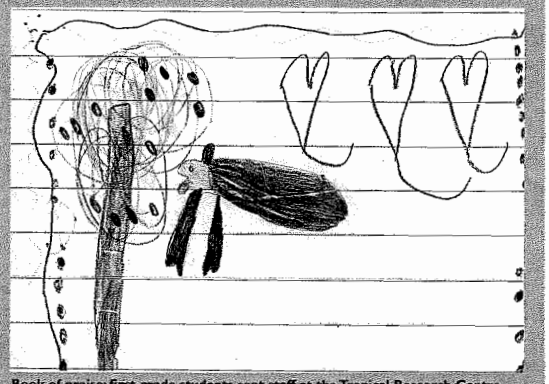
On his return to Australia in August 1972 he joined the Central Library, and a year later was appointed Manager of the then new Information Service.

Clyde built up the services and reputation of the Information Service to international standards, and his efforts were recognised by his appointment as Chairman of the Academy of Science's National Committee on Information, an uncommon honour for one who is not a Fellow of the Academy. Clyde was awarded an Order of Australia Medal in 1992, for services to the wool industry.

His wide range of extra-curricular interests included being a member of the Board of Management of the local hospital, an elder of his local church, a counsellor of the Royal Society of Victoria and involvement with Community Aid Abroad.

Clyde died from a brain tumour on September 26 and is survived by his wife, Jean, three daughters, two sons and 13 grandchildren.

- PETER G. BAINES, Chief Research Scientist, CSIRO Atmospheric Research, Aspendale



Book of praise: first-grade students sent staff at the Tropical Research Centre icons of their appreciation.

Children walk on the wild side

A JOURNAL packed full of unusually spelt and punctuated sentiments has been put in a special place at the Tropical Forest Research Centre (TFRC) library in Atherton.

The 20 first-grade students from St Joseph's Primary School in Atherton, North Queensland, put together the book and sent it to the TFRC after their recent visit there.

Their comments, all addressed to "Dear CSIRO" include:

"I like the casseuory. I really liked it. It was good there. From Fred"

"I rile lict the casowary food it wos grat and I rile lict the posm and I rile lict the rannfrosst It wos fun and I wihs I cood cum a nothe day. Love from Brett"

"Thank you for taking us throught The Rainforest. We enjoyed it. I think my class liked everyiting because they had fun because my teachers like it too and the mums very much too. The end. From Tasman"

"Thank you for Letting us vsiting your plase and looking at the stuffed animals and thank you magret for letting us look at the sript posum From Henry"

"Thank you for showing us the rainforest and for showing us the leaves and for showing us the stuffed animals and the striped possum and the day. From Nathan"

The centre's Matt Bradford said: "We don't generally do these educational tours, but we should."

- MEGAN BIRD

OBITUARY

Les Edye 1931-1999

Father of Stylos

MR LES Edye, the first OIC for the Davies Laboratory in Townsville, died on October 10, aged 68.

Les began with CSIRO in May 1955 as acting OIC at Cooper Laboratory, Laws, and left in October 1962 to take up his appointment in Townsville. He was appointed OIC of Tropical Pastures, Davies Laboratory, in 1962 and remained as OIC until 1976 when he returned to his research on pastures until his retirement in April 1996.

During his employment with CSIRO he became known as the "Father of Stylos" and was responsible for the release of a number of cultivars such as Seca, Verano, and Amiga, and more recently, a stylos for clay soils, Primar and Unica. He was awarded the Sir Ian McLennan Award in 1992 for his contribution to agricultural research.

Correction

It requires 121,000 British Thermal Units of energy to produce a kilogram of raw rubber, not 21,000, as reported in the last issue of CoResearch in a story about a solution for the world's mountains of waste truck and car tyres.

Electric car puts Australia behind the wheel

A $30 million hybrid electric car being developed by CSIRO with the help of about 80 Australian car-component companies will be on the road by May.

On-road testing of the car, the work of CSIRO's Australian Automotive Technology Centre, is about to begin.

The car will run on a combination of petrol and electric power.

Relatively low technology lead-acid batteries will keep costs down, and make the car more commercially viable.

Explosive work

DEFLATING exploding sheep and cows is the aim of a joint research venture between the CSIRO and genetic company Pioneer Hi-Bred International and Meat and Livestock Australia.

The problem of blot, which rapidly causes internal crushing of organs and death of the animal, costs Australia's livestock industry an estimated $100 million a year.

The phenomenon is caused when animals feed on high-protein pastures.

Research will develop ways to modify lucerne genes, and stop the problem.

Other research aimed at improving the level of water-soluable carbohydrates in plants will also be conducted under the agreement.

Research roundup

Scientists join medicos

A LEADING team of Australian scientists has joined forces with vascular surgeons and public-health researchers to perfect a new-generation life-saving prosthesis. The team from CSIRO Thermal & Fluid Engineering, the West Australian Centre for Health Services Research and Royal Perth Hospital will work towards improving surgical implants used for non-invasive surgery of the abdominal aorta.

Revenge of the insects

ENZYMES produced by insects could shortly be used to clean up residues of chemical pesticides.

British researcher Professor Alan Devonshire has joined CSIRO Entomology for 12 months to work with the division's bioremediation project, the biological cleaning up of environmental contamination. Insects have developed the ability to break down harmful chemicals in insecticide sprays, and work by the division and Professor Devonshire have isolated some of the enzymes these insects produce.

"If we can produce larger quantities of these enzymes in a form that can be sprayed or applied in the field, residues of the harmful chemicals can also be broken down," he said.

Cutting-edge surgeons

DEVELOPING world-leading expertise for a centre where surgical trainees would practice on virtual patients with virtual surgical instruments is the aim of a CSIRO research team.

The goal is to simulate procedures such as cutting and sewing tissue and joining blood vessels in a realistic environment. The Mathematical and Information Sciences Division has developed prototype software and expertise to combine graphic and haptics, sense of touch, needed to create virtual-reality scenarios. The Royal Australasian College of Surgeons is investigating setting up such a centre, and drawing on CSIRO expertise in haptic virtual environments to do so.

Internet phone system

CSIRO is pioneering an Internet-based phone system that can cut long-distance calls by up to 70 per cent.

The system, Voice over Internet Protocol (VoIP), enables calls to be made between capital cities for the cost of a local call.

The system, supplied by Cisco Systems, has been implemented by CSIRO Information Technology Services on the Australian Academic Research Network (AARNet).

The service will shortly become available to all of Australia's 37 universities and other science agencies using AARNet, and link all CSIRO sites across Australia.

Crest of a wave

MORE is becoming known about a wave that might sound like a surfer's dream, but isn't.

The Antarctic Circumpolar Wave consists of four masses of water in the Southern Ocean, two slightly cooler and two slightly warmer than the surrounding water. The alternating cooler and warmer water masses, each of which is as big as Australia, endlessly circle Antarctica, and take eight to nine years to complete a clockwise rotation.

The wave is likely to be affecting the weather in southern parts of Australia, South America, South Africa, New Zealand and the Pacific.

CSIRO researcher Wenju Cai said: "This may be comparable to El Nino."

CSIRO is taking the lead in monitoring the wave after its discovery three years ago.

- MEGAN BIRD

Scientists develop lifeline for miners

CSIRO scientists have invented a world-class communication system to locate trapped miners and monitor their vital signs after disaster.

The system, developed after a recommendation of the inquiry into the 1994 Moura coal-mine disaster in central Queensland, is based on a series of radio beacons along mine walls that monitor miners wearing miniature transponders embedded in their cap-lamp kits.

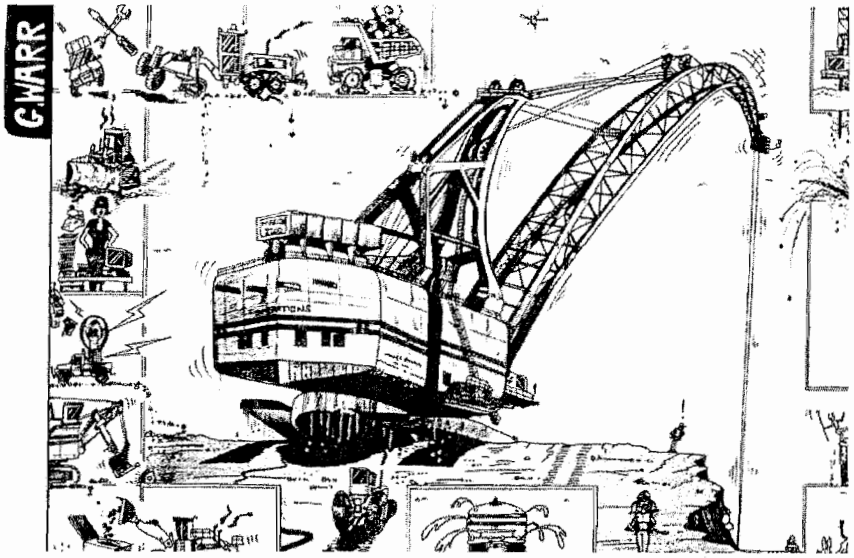
The beacons relay the position of staff and their vital signs, such as respiration and heartbeats, through a network to the surface every 100 seconds.

■ Mining-Vehicle accidents look set to fall and save companies millions of dollars a year, thanks to recent technology being referred to as "Eye in the backside".

CSIRO researcher Mr Rusty Mark said: "The technology acts like another pair of eyes for the huge trucks found on open-cut mining sites."

The system, developed by CSIRO and Advanced Mining Technologies, uses a miniature, high-resolution video camera and radio-frequency tagging equipment.

It eliminates a large blind spot for vehicles and alerts other nearby vehicles and people of any reversing machinery.



Mine of information: CSIRO researchers have dug deep to develop new technology.

Cartoon: Singleton Argus

■ New CSIRO technology means thatcoal mines can now extract fine coal particles 10 times faster than conventional methods and at a quarter of the cost. CSIRO researcher Dr Bruce Firth said the installed price of TurboFlotation will be up to half the cost of existing coal-treatment plants.

– MEGAN BIRD

Cartoon: Steven Axelsen, ABC Books

Wow! trivial pursuit ends in fun book

A HEALTHY adult farts an average 14 times a day and the earth is hit by lightning 100 times every second, according to a new book by a pair of CSIRO trivia kings.

Mr Paul Holper from Melbourne and Dr Simon Torok from Canberra spent evenings and weekends working on Wow! Amazing Science Facts & Trivia. Mr Holper, communication manager at CSIRO Atmospheric Research, and Dr Simon Torok, editor of The Helix magazine, launched the book at the Australian National University in Canberra on October 1.

Dr Torok said: "There's a real need for fun science to be out there.

"And the anecdotal evidence is that the book is going very well. We have both done a bit of spying and observed it selling."

The 96-page book, illustrated by cartoonist Mr Stephen Axelsen, is published by ABC Books and is selling for $10.95 at ABC shops and other bookstores.

The writers have signed up to publish another book in May aimed at children aged between 10 and 15. It will concentrate on puzzles.

Racing 'roaches breed enjoyment

By Malcolm Robertson, CE

WHERE else but at CSIRO Entomology would you expect to find people enjoying themselves with cockroaches?

The fourth annual Cockroach Derby was held at the division's Canberra laboratories on Melbourne Cup day where staff enjoyed an afternoon at the races.

Using a specially designed track to keep the roaches contained and separated, a full card of eight races, each with eight cockroaches, and a final.

The cockroaches were standard American cockroaches, Periplaneta americana, and were especially bred from the winners of previous derbys for auctioning to staff on the day.

This year's Derby winner was Arribba, owned and trained by Paul Dobson from the division's Biotechnology Program.

Did I hear someone mention genetic modification?

Mad hatters: punter Paul Dobson had the biggest smile as he watched his six-legged winner, Arribba.

Scientists hose down the garden market

A REVOLUTIONARY answer to leaky garden hoses has been refined, thanks to CSIRO input.

The Yates Hoselink system, invented in Australia, has withstood up to 500 psi in CSIRO tests.

A hose fitted with the system was used by one four-wheel-drive to tow another. The hose broke, but the link remained intact.

Yates quality-assurance manager Steve Elliott, said: "If it isn't the best hose-connecting system in the world I would like to see what is. It's a totally new system that nobody has thought about for a long time.

"CSIRO scientists from the Division of Building, Construction and Engineering tested it for us and gave us some product-engineering advice, which they're very good at. We refined the system accordingly and adjusted tolerances."

The system uses bayonet-type connections, and has already been accepted by some of the largest retailers in the United States.

Yates surveyed Australian home gardeners before releasing the product in late October, and found that more than 90 per cent of home gardeners reported that their existing hose fittings did not work properly.

- MEGAN BIRD

Sir Ian McLennan Award goes to Minerals

By Karen Robinson, CNA

THE DRIVING force in the development of the world's leading image-analysis system, Mr Paul Gottlieb, has won this year's Sir Ian McLennan Achievement for Industry Award.

Mr Gottlieb, from CSIRO Minerals, has planned and completed the Next Generation Quantitative Evaluation of Minerals by Scanning Electron Microscopy (QEM*SEM) system, which has enhanced capability and flexibility.

Mr Gottlieb joined the newly formed team led by QEM*SEM's inventor Dr Alan Reid in 1981. He initially concentrated on design and operation, and extended his work by applying the measurement techniques to problems of the Australian minerals' industry and by the promotion of sales of these units in Australia and overseas.

The medal and $15,000 to undertake an overseas study visit were presented in Sydney on October 26 by chairman of the Commonwealth Bank of Australia Mr Tim Besley, AO.

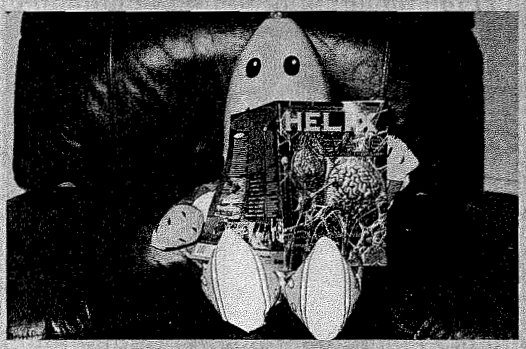
Mr Besley spoke about the decline of science teaching in schools and how this will lead to critical skill shortages in the workforce. He stressed how the Australian mining industry had supported Mr Gottlieb's research and is benefiting greatly from its application.

The award was established in 1985 by CSIRO's Advisory Council. It commemorates Sir Ian McLennan, a former Chairman of BHP and later Chairman of the ANZ Banking Group and Chairman of Elders IXL.

Dr Gary Fitt received a special commendation for his contribution to Australia's cotton industry, at the annual presentation. Dr Jim Cullen, Chief of CSIRO Entomology, said: "[He] has not only saved Australia's cotton industry huge amounts of money, but he has contributed enormously to our understanding of insect pests."

CSIRO around the nation

O caption, my caption



CSIRO's lounge lizards lined up to write a caption for last issue's photograph. And there were no cracks about banana lounges.

Heather Vile from Mathematical and Information Sciences: Bananas in pyjamas are reading Helix in big black leather chairs and I've graduated from Neurological Science for dummies.

Leanne White from Brisbane CSIRO Science Education Centre: B1 discovers that the Helix has a-peel.

Nina Ta from Animal Production: When B1 saw that I liked science, he did a banana split.

Steve Barnes from Exploration and Mining: The Chief of the newly formed Division of Tropical Fruit asks, "Are you reading what I'm reading, B2?"

Richard Sakurovs from Energy Technology: Inside your Helix magazine this issue: a free child-friendly air bag. Use caution when opening magazine.

Krista Black from CSIRO Manufacturing Science and Technology: B1 hopes science can help him realise his secret dream – to become a real banana.

And the winner is a real banana smoothie ...

Adam Liedloff from Tropical Ecosystems Research Centre: To be or B2? That is the real question for science!

Adam wins an Italian-designed nature-lover's Optic Wonder. It has built-in binoculars, an observation tray, magnifying glass, signal mirror, compass and stereoscopic viewer.

Our latest picture (below) is a group of punters looking at the 3D image of molecular models at Biotechnica in Hannover, Germany, in October.

Send captions and photos to **CoResearch Caption Competition, PO Box 225, Dickson, ACT, 2602 or email Karen.Robinson@cc.csiro.au**

Bright gathering in Canberra

A GROUP of 276 of the brightest high-school students in Australia will gather in Canberra in January for the National Youth Science Forum that CSIRO has helped organise.

CSIRO's Ross Kingsland said: "It is a powerful experience, and a major undertaking.

"CSIRO is pleased to contribute because it is encouraging young people to enter careers in science. We present them with rewarding career options other than what's popular at the moment.

"It is a gifted group.

"The students have an absolute ball and make lifelong friends out of it. And in its 15-year history there have been a number of marriages between students as a result of the event."

Participants will visit CSIRO laboratories and the Green Machine Science Education Centre.

The event, organised by Rotary Clubs, is hosted by the Australian National University and the University of Canberra. The first group arrives on January 3, and the second on January 17 for the intensive fortnights.

President of the forum Dr Malcolm McIntosh will speak at the opening ceremonies.

- MEGAN BIRD

Seed of excellence planted

CSIRO Plant Industry has won a Prime Minister's Employer of the Year Award.

The division's ACT site was recognised for employing 410 people, 15 of whom have a disability and work in areas ranging from lab technicians through to administration, trades and maintenance. CSIRO Plant Industry won the commonwealth-agency category and was noted during the awards as "one of the world's leading research organisations in plant-industry science".

Atmosphere of praise

THE FIRST audit of the surface ozone monitoring system established by CSIRO in West Sumatra has given the project its highest praise.

The report, commissioned by the World Meteorological Organisation, mentions the success of the twinning arrangement where CSIRO designed, constructed and installed the system, trained the Indonesian operators and oversaw its first three years of running. Mick Meyer and Russell Hoden from CSIRO Atmospheric Research installed the system.

Women double efforts

DOUBLE the number expected attended the first National Conference on Women in Science, Technology and Engineering, and people had to be turned away.

More than 220 people went to the conference on November 12 at the Royal Melbourne Institute of Technology.

Participant Dr Rosemary Sutton, from Animal Production, said: "It was a great experience to see so many prominent women there."

Participants included NASA's Dr Miriam Baltuck, Director of the Australian Nuclear Science and Technology Organisation Ann Henderson-Sellers, President of the Federation of the Australian Science and Technological Societies Professor Sue Serjeantson and two CSIRO chiefs Dr Annabelle Duncan and Dr Nan Bray.

Dr Sutton said: "In the '80s things really moved for women in science, but they have been pretty flat for some time.

"In CSIRO, for instance, 30 per cent of post-docs are women, but only 10 per cent of scientists are women.

"Talking over these issues at events like this are going to help us break through that next barrier."

Food for thought

DR MARTIN Playne, the program leader of Food Science Australia's Probiotics' Program, retired on November 5 after almost 35 years with CSIRO.

His retirement coincides with the closure of the Probiotics' Program. The program's 1,500 to 2,000 cultures used in processes such as cheese-making and yoghurt-production will be relocated.

Dr Payne commented before his retirement: "I get concerned about science funding generally.

"I think CSIRO should be fighting for about 10 per cent increases in funding each year and not be happy with the status quo.

"We throw away too much stuff, and we're not thinking it through for Australia's sake."

Model scientists

ABOUT 75 people from 19 divisions recently attended CSIRO's first workshop on mathematical modelling in the organisation.

The two-day event at Macquarie University, Sydney, was so popular another one is planned for 2001. A web site and mailing-list data base will be running by the end of the year because of the interest in maintaining contacts and collaboration generated by the workshop. The event was run by Dr David Jenkins from Mathematical and Information Sciences.

Chief stands down

BRIAN Walker will stand down as Chief of CSIRO Wildlife & Ecology on December 31, 1999, a post he has occupied for more than 14 years.

Brian successfully combined his role as Chief of the division with his role as Director of the Global Change and Terrestrial Ecosystems Project of the International Geosphere-Biosphere Program. He brought to both roles an astute knowledge of ecology in its broadest sense and, on a global scale, he combined enthusiasm with unbounding energy that simply swept staff, colleagues and participants along in the bow-wave of getting on with the job.

Brian will continue in CSIRO on a half-time basis in his role as Chair of the Biodiversity Sector of CSIRO. The other half of his time will be as Executive Director of the Resilience Alliance, a research program funded by the Rockefeller Organisation.

- DAVE SPRATT, CWE

Feathered friends

TWO senior CSIRO Animal Health scientists have been recognised for their contributions to the poultry industry. Animal Health's Dr Jagoda Ignjatovic has won the Dr Bart Rispens Memorial Award for a research paper on infectious bronchitis viruses of chickens. And Dr Harvey Westbury, Diagnostic Sciences Program Manager, was presented with the 1999 Australian Poultry Award.

■ CSIRO's Dr Denis Saunders and Dr Richard Hobbs were recently given inaugural Distinguished Scholarship Awards of the International Association for Landscape Ecology.

■ Research at Land and Water in Griffith has won a national competition with a project dealing with drainage of water from irrigation areas. The Sequential Biological Concentration Project, run by John Blackwell and his team, was judged the best entry in its section of the Australian National Council for Irrigation and Drainage Awards.

■ CSIRO Marine Research's Dr Andre Punt has received The K Radway Allen Award for Excellence in Science Related to Fish or Fisheries. The award recognises Dr Punt's work in fisheries stock assessment science.

Conservative places

TWO recent workshops in Balancing Conservation and Production were so popular a third one was held.

The event, organised by the Grazed Landscapes Management Group at Tropical Agriculture, had space for 50 people, but 120 wanted to attend.

One highlight was a connectivity board game that used different organisms, a restricted (parasitic plant), an intermediate (wolf spider) and a mobile (grey crowned babbler), and different levels of habitat cover that underpin the thresholds for sustainable property management. The workshops, in Toowoomba and Bundaberg, Queensland, covered principles for the sustainable management of soils, pastures, trees, wildlife and watercourses.

Top researcher retires

PRINCIPAL Experimental Scientist Mr John Ronalds has retired from Plant Industry at North Ryde after a 41-year career with CSIRO.

Mr Ronalds' research has largely been in field evaluation of grain quality in a broad range of agriculture. His contributions to the Cereal Chemistry Division of the Royal Australian Chemical Institute were acknowledged in 1998 by the division's Founders Award.

Aussie biotechnology

AUSTRALIA had the most exhibitors, 39, at Biotechnica in Hannover, Germany, in October.

The international trade fair was the largest in its 14-year history with 10,000 visitors, 811 companies and 26 countries represented. CSIRO occupied a large section of the Australian stand and was represented in all of the Biotechnica categories: Food Industry, Agriculture, Pharmaceuticals/Medicine and the Environment. The Australian stand, coordinated by Ernst and Young, made an impact. A visitor from Portugal summed up the Aussies' prominence when he said: "You are the largest stand here. Everybody is talking about it."

The success of CSIRO's participation at Biotechnica will be followed up in March next year with a coordinated CSIRO presence at Bio 2000 in Boston.

For more information contact Julian White, Office of the DCE, Commercial, (02)94905551, or visit www.messe.de/bio99/index_e.html for Biotechnica information or www.bio.org/events/2000/bio2000.html for details on Bio 2000.

-- WARRICK GLYNN, CHSN

Record crowd in WA

WESTERN Australia's first State Science Briefing attracted the largest state-based science-briefing audience.

The event, Seeking Solutions to the Salinity Crisis, was attended by 36 Members of Parliament and 15 official invited guests on October 21, at Parliament House, Perth.

Dr Tom Hatton from CSIRO Land and Water warned during the briefing that failure to act would mean the loss of one-third of the wheat belt for primary producers, the likely extinction of hundreds of species of native flora and fauna and increased flooding.

Global push

A COMMERCIAL Committee working group has been formed to raise international business and industry awareness of CSIRO. The Hannover 2000 trade show and Bio 2000 are marketing, public-strategy and networking priorities for the group to help position CSIRO in the global marketplace. For more information contact Julian White on (02)9490 5551.

CoResearch

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Readers are encouraged to contribute or offer suggestions for articles.

Send contributions to:
CSIRO National Awareness,
PO Box 225, Dickson ACT 2602
Tel: (02) 6276 6589
Fax: (02) 6276 6273
email: Wendy.Parsons@cc.csiro.au
hiho@dynamite.com.au
(to contact Megan Bird)
or Karen.Robinson@cc.csiro.au

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