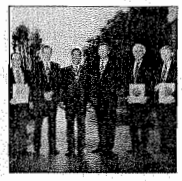
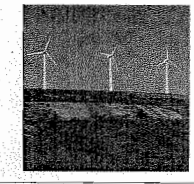
CSIRO AUSTRALIA

CoResearch

CSIRO'S STAFF NEWSPAPER

No. 373 February 1998





What Australians think of CSIRO

Middle aged, male and interesting, that's what some members of the public think is the "personality" of CSIRO.

As part of the first-ever qualitative market research done for CSIRO on what the public and key industry and opinion leaders think and expect of us, people were asked to visualise CSIRO as a person.

"I see CSIRO as being middle aged. They would be conservative but also lateral thinking in regards to introducing new horizons," said one employed person.

"CSIRO to me would be middle aged, male, methodical, serious, innovative, reliable, dependable, flexible and a lateral thinker but conservative and revered," said a family person.

Maybe not quite so conservative...?

"CSIRO seems to be a middle-aged male or female with a wide range of thinking and knowledge. It is an adventurous person with an outgoing personality," said a younger person.

"CSIRO is enquiring. Most of their achievements are innovative. They are not conservative as they take risks," said an employed person.

How about the middle aged bit?

A young woman thinks "CSIRO appears to be young, educated and hard working. It has a personality which is caring, understanding and intuitive."

"CSIRO to me appears young, intellectual, enquiring and methodical," agrees an employed man.

However, the majority of people interviewed plumped for the middle aged, male and intelligent persona.

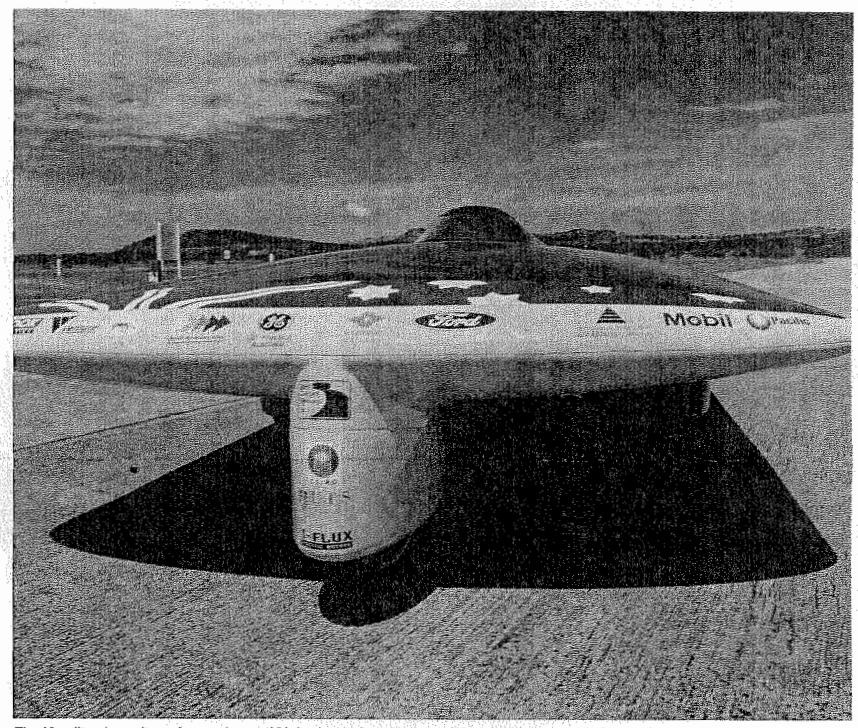
These opinions - and more on public perceptions of CSIRO - will be reported fully in the May *CoResearch*. The key findings are:

- although CSIRO is well known, very few people know much about what CSIRO does;
- perceptions about CSIRO were positive despite lack of knowledge about us;
- many people find it difficult to remember recent research advances by CSIRO;
- the public and key opinion leaders strongly support CSIRO's existence.

Meanwhile, *CoResearch* would like to ask readers "how do YOU see CSIRO as a person?" Old, young, male, female, serious, lively, trustworthy, devious, eccentric??

You can write to us at *CoResearch*, PO Box 225, Dickson, ACT 2602 or email Jane.Kahler@cc.csiro.au and we'll publish the best responses. cont

Aurora 101 takes line honours



The $3 million Australian solar car, Aurora 101, finished in first place in the 'CitiPower SunRace '98', from Sydney to Melbourne, in January. The wheel motors on the car were designed by scientists from CSIRO Telecommunications and Industrial Physics, working with colleagues from the University of Technology, Sydney, UK's Newcastle University and the Aurora team. *Photo: David Fewchuk*

$20 million granted to special projects

With the goal of building a better future for Australia, Dr Malcolm McIntosh announced several projects to receive special funding for the next triennium.

The CSIRO Executive Committee selected the most promising projects, based on their scientific potential, the benefit to Australia and the ability to deliver results in a relatively short time, and allocated $20 million overall.

CoResearch spoke to some of the Project Leaders involved to find out how their special project will benefit from this extra funding.

Jim Edwards, from the Division of Coal and Energy Technology, is heading up the project on 'towards sustainable energy', which is designed to develop a concept for the production of distributed electric power - a solar/fossil fuel hybrid system that runs with up to double the efficiency of today's coal-fired electricity generators.

"For the first six months," said Mr Edwards, "we will be undertaking a feasibility study to look at the systems design of the whole process, and we will need to fully define the engineering concepts." *(See full article page 6)*

In an attempt to sterilize feral animals, the 'sterile feral' joint project aims to develop generic molecular approaches, which will prevent exotic animals imported into Australia from establishing feral populations.

Joint leader of the project, Dr Ron Thresher of the Division of Marine Research, says "This funding gives us an exciting opportunity to explore a high risk, but potentially high payoff, area of research.

"We hope that with this technology we will be able to reduce the impact of existing pests, such as the European carp, the cane toad, and the Northern Pacific seastar."

Three complementary genetic engineering technologies were successful in the competitive bid for funding. The first was research on genomics and gene discovery, which focuses on isolating and identifying genes associated with specific quality traits in Australian agricultural plants and animals.

The project combines studies utilising cutting-edge technology with participation in international collaborative programs.

According to Dr Rudi Appels, Project Leader at the Division of Plant Industry, "This new research initiative could not have happened without this key funding being provided."

"It sends a clear message, both nationally and internationally, that CSIRO has taken a significant position in the area of genomics and gene technology," he said.

The second genetic engineering project to receive funding support was bioinformatics, which will provide secure access to databases of genomic and biodiversity information.

Leader of the biodiversity informatics group at the Division of Entomology, Dr Steve Shattuck told *CoResearch* that "The injection of the additional funds will provide a major boost for work on biodiversity information management systems, an area where Australia already has a competitive edge."

Dr Shattuck said the project will benefit genetic research in all Sectors of the Agribusiness Alliance, the discovery of biologically important molecules within the Chemicals and Plastics and Pharmaceuticals and Human Health Sectors and research on Australia's unique flora and fauna in the Biodiversity Sector.

Leader of the bioactive molecules project, the third genetic engineering project to receive special funding, is Dr Phil Jennings at the Division of Tropical Agriculture.

Dr Jennings is involved in research being done to discover bioactive molecules for making better medicines, foods, industrial products and for the safe control of pests and diseases.

"The key concept," Dr Jennings says, "is to bring together new biology and new chemistry with collections of biota in an integrated approach focussed on the discovery and exploitation of new bioactives."

"It is not just about collections, nor just about chemistry and biotechnology, nor just science, nor just commercialisation, it is about all these things," he said.

Details of all the projects which were considered for special funding can be found on the world wide web at http://www.csiro.au/services/planeval/espp/index.html (CSIRO access only). The selected projects can be found in Media Release 97/262 or in an email to all staff (CSIRO access only) from Dr McIntosh on 15 December, 1997. cont

Chairman's Medal to poultry vaccine technology

The 1997 CSIRO Chairman's Medal has been won by a research team of fourteen, for their development of a prototype vaccine against the infectious bursal disease virus, (IBDV) which affects the world's poultry industry.

The IBDV team, led by Drs Ahmed Azad and Colin Ward of CSIRO Molecular Science, and Dr Kevin Fahey, formerly of CSIRO Animal Health, was awarded a gold medal and a cheque for $25,000 for outstanding research achievement.

The award was presented by Mr Charles Allen, AO, Chairman, CSIRO in the Lehany Theatre at the National Measurement Laboratory in Lindfield on 9 December, 1997.

"The IBDV research team developed the first prototype vaccine of this sort in the world for veterinary purposes," said Mr Allen.

"The control of IBDV infection is a major priority for the poultry industry, with losses caused by IBDV estimated to be high as a billion dollars a year worldwide."

Mr Allen said that the Australian poultry industry provides the country's second most popular meat, with Australians consuming on average twenty-eight kilograms per person per year.

At the same ceremony, three CSIRO Medals were also presented.

Dr Jim Davidson from the Division of Plant Industry was awarded a CSIRO Medal for his contributions to wheat breeding and agronomy. Dr Davidson developed wheat varieties (Lawson, Paterson, Gordon) which have transformed agricultural and economic prospects of the high-rainfall zone of Eastern Australia, and led to the creation of a new national feed wheat industry.

In an entirely different field, Mr Paul Gottlieb of CSIRO Minerals won his CSIRO Medal for his development of the QEM*SEM system for mineral analysis. Quantitative Evaluation of Minerals by Scanning Electron Microscopy has long been recognised as the world's leading image analysis system for mineral samples. Mr Gottlieb has been the driving force in the development of QEM*SEM, and has now planned and completed the 'Next Generation' QEM*SEM system.

The third CSIRO Medal went to Dr Raymond Smith of the Division of Exploration and Mining for his contributions to mineral exploration. Dr Smith is an internationally recognised leader in the development of geological and geochemical exploration methods for base metals, rare metals and gold. His methods have been instrumental in such major discoveries as the Plutonic and Bronzewing gold deposits. CSIRO

CSIRO Chairman and Medal winners from left to right: Mr Paul Gottlieb (medal winner), Mr Charles Allen, AO, (Chairman), Dr Ahmed Azad (team leader, IBDV Vaccine Research Team), Dr Malcolm McIntosh (Chief Executive), Dr Jim Davidson (medal winner) and Dr Raymond Smith (medal winner). *Photo: Stewart Duff*

Media spotlight falls on CSIRO staff

by Rosie Schmedding*

In the last year, more than 7,200 newspaper articles, radio and TV reports appeared in the Australian media about the activities of CSIRO, its scientists and our industry partners.

Of these, the vast majority were favourable or neutral mentions, with a handful of unfavourable reports.

As media interest in CSIRO's scientific work builds, the organisation has just released new, clearer guidelines on public comment.

"Our claim to be the nation's leading provider of excellent science will only be convincing if we continue to provide Australia with examples of what we are achieving," says Chief Executive Dr Malcolm McIntosh in the introduction.

The growing focus on the media as a means of delivering the scientific message to policymakers, industry and the public has also led to an upsurge of interest in attending media skills courses.

Dr John Rankin, Market Development Manager at CSIRO Minerals, said the media skills training gave him greater insights into how the media works, how it can be used to benefit CSIRO science, and tips on the best way to formulate a message and get it across.

"The course was very practical. We were given several opportunities to practice how to make use of the media to say what you want to say, and how to achieve some measure of control over the message," he says.

Dr Nigel Preston from CSIRO Marine Research had scores of media encounters under his belt prior to taking the course, but still believes it honed and expanded his skills.

"I'd strongly recommend other scientists to consider doing both the media skills and presentation skills course. I think that they teach essential practical skills that scientists should have," Dr Preston says.

Livestock scientist with CSIRO Animal Production, Dr Sandra Eady says she found the course excellent. No newcomer to media exposure, she nevertheless feels the course still gave her a better feel for handling different media, how to make the message clear and simple and what to do if the media turns hostile.

"The role playing we did was a real eye opener. It is not until you are confronted with hostile questions that you realise how ill-equipped you are! The experience gave me practical skills to deal with such situations," she says.

Several companies now offer courses, so interested scientists have more choice about the kind of course they can do. The courses range from introductory level which explains how the media work, to more advanced instruction in how to get the message across.

CSIRO National Awareness is in the process of developing a register of these. If you require information on courses, ring Rosie Schmedding on (02) 6276 6520. If you have recently done a course we are also keen to get feedback.

**Rosie Schmedding is a Journalist with CSIRO National Awareness.* CSIRO

MANUfesto '98

MANUfesto, a CSIRO event held in Melbourne during 1997, so captured the imagination of industry and representatives of the Victorian Government that the Government has become the major external sponsor of a more extensive event to be held during 1998.

Whilst the 1997 event represented only CSIRO achievement, MANUfesto '98 is being planned and managed by representatives of Australia's scientific and technological research communities with advice from investor and industry associations. The event will provide a unified platform to demonstrate successful achievements and foster new commercial opportunities from science research.

A second innovation for the 1998 event is that there will be a conference on technology transfer running at the exhibition venue, the Melbourne Exhibition Centre, concurrent with the exhibition. It is expected that the conference program will be attractive to a range of people within CSIRO - business managers, research managers, and planners - as well as people from universities, industry and the finance sector.

The dates to be marked in your diaries are 23-25 September. More information can be obtained from Julian White, Tel: (02) 9490 8201, email: julian.white@exec.csiro.au CSIRO

Have your say!

The CSIRO Staff Opinion Poll for 1998 is underway. Here's the opportunity to give your opinions on life in CSIRO — your teams, work areas, Divisions, the Organisation.

An independent company will make sure your individual responses are **strictly confidential**.

Your poll form should arrive in February, so keep a look out!

Staff from CSIRO and Afisc help cut the 'wedding' cake. *Photo: Chris Taylor*

Announcing Food Science Australia

by Judy Marcure*

Food Science Australia is a new joint venture designed to allow CSIRO's Division of Food Science and Technology (DFST) and the Australian Food Industry Science Centre (Afisc), a Victorian government organisation, to work together effectively to meet the needs of the Australian food industry.

Like R&D organisations in many other countries, CSIRO has responded to challenges to work more closely with industry to help make technological innovation a driver of national prosperity. Food Science Australia is one example of how CSIRO is responding to these challenges, in this instance by stepping outside its traditional Divisional structure to form a relationship with another organisation to serve its client industries better.

Food Science Australia is a national food research and development organisation with more than 320 staff in laboratories in Melbourne, Sydney and Brisbane and is headed by former DFST Chief, Dr Michael Eyles.

Dr Eyles does not underestimate the challenges of bringing together staff of two organisations which have had different histories and cultures, but he also sees the merger as a rich source of opportunities.

"The joint venture increases our ability to work on problems important to the food processing industry. By bringing together the resources of DFST and Afisc, we have the opportunity to capture substantial synergies in scientific expertise and infrastructure," said Dr Eyles.

"The strengths that the joint venture can draw on include a proud history of internationally recognised research spanning more than fifty years plus business acumen and methods of doing business that are relevant to the nineties."

The joint venture will also receive better information about problems industry want to solve, and whether or not the ability exists to convert those solutions into commercial successes.

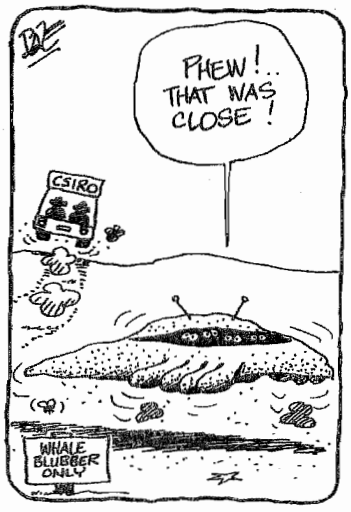
Dr Eyles comments: "There are some perceptions, I believe, that a partnership of the type we have initiated might compromise our ability to perform longer term research. We believe that the joint venture increases our ability to provide the services and solutions to problems that industry demands now, while continuing to invest in longer term research."

**Judy Marcure is Sector Marketing Manager at Food Science Australia.* CSIRO

Monster mania hits CSIRO

by Craig Macaulay*

For Barry Bruce, a marine biologist at CSIRO Marine Research, Hobart, Thursday 8 January began harmlessly enough.



Reprinted with permission of the artist Graeme Dazeley. Published in *The Examiner*, January 13, 1998.

The only clue to what was about to erupt came in an invitation to inspect photographs at a nearby newspaper office; photographs of a mass of animal matter that could not be clearly identified as belonging to any particular species. Could we identify it? Was it the left foot of an alien, or the right foot? How hairy was it? How big was it? How long had it been there? What do we really know about what's out there?

In the space of a few short days, the 'hairy' thing found by a fisherman six or seven weeks earlier post-humously grew in stature, attracting almost as many wild guesses as to what it could be, as it did media calls.

With breakfast chat shows, evening 'drive' programs, Australia-wide radio and television news, newspaper columns, the BBC and ITN, and a German film crew - all before the world wide web kicked in - this monster was developing a life all of its own. What people wanted to know though was what sort of a life it used to have - and as what?

The suspense having mounted far enough, it was time for Barry to go to Tasmania's West Coast, courtesy of a German film crew also interested in samples. Within 24 hours, and in consultation with Tasmanian Parks and Wildlife officer Dr Irynej Skira, they killed off the mystery.

Whale blubber! Nothing more, nothing less. But what sort of whale, the media asked?

Now, there's a question for science, and one Barry and other investigators at the Division of Marine Research believe they can safely answer and contribute in a valid way to the international log of whale beachings and reports.

After all, it is the International Year of the Ocean and certainly, education is going to be a big part of it.

**Craig Macaulay is Communication Officer at Marine Research.* Cont

$16 million success on the world wide web

by Rob Nixon*

For a number of years the internet has been a source of information, as well as distraction, for the computer literate. Times and the audience have changed, and if anyone doubts the power of the web for developing opportunities for CSIRO, the experiences of Building, Construction and Engineering (BCE) should make you think again.

The Division has developed a site aimed at easy access and simple navigation. Short on gimmicks, but high on user-friendly access to information, the site attracts over 6,000 hits per month. The success of a site, however, is not based on how many people visit, but what the outcome is.

A single case has proven the BCE web investment good value for money and the planned ease of access to information has led to $300,000 of research projects and a licence agreement that will bring up to $16 million in royalties into CSIRO over the next ten years.

A US company wishing to develop a new building product was stalled by a single defect in the material they wanted to use. In depth research and US university investigations had not succeeded in identifying a solution and the product was all but shelved when a magazine article mentioned that CSIRO was working in this area.

The manager responsible for product development had spoken to many of the world's leading researchers without success and was sceptical of finding any better results in Australia. He probably would not have progressed his investigations any further if he had not been able to find the web site, obtain additional information and identify the key contact, Dr Voytek Gutowski.

The Divisional site has recently been revised into a sector site for the Built Environment.

**Rob Nixon is Marketing & Communications Manager at BCE.* Cont

Little creatures CD launched

by Malcolm Robertson*

On 27 November last year, against the panoramic background of the City of Melbourne seen from the 46th floor of 55 Collins St, CSIRO Entomology launched its new CD *Insects - Little Creatures in a Big World* in a special evening ceremony chaired by the CSIRO Chairman, Mr Charles Allen, AO.

The result of an extensive revision of an earlier all-Australian version of the CD, the new CD features the insect fauna from six continents in an informative and entertaining package. It utilises the sound, graphic and video capabilities of multimedia technology.

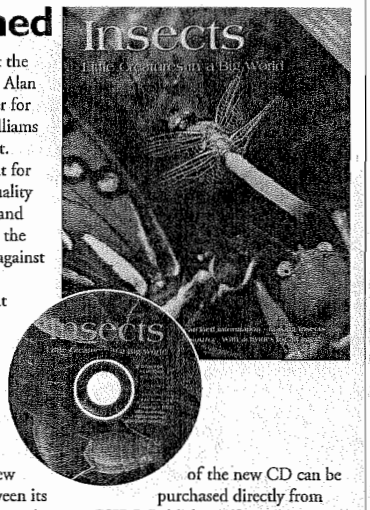
The CD was developed by CSIRO Publishing (Nick Pitsas - Executive Producer) and the research team at the Australian National Insect Collection where Dr Dave Rentz pulled together and presented the scientific content from his own work and that of his many colleagues.

Special guest speakers at the ceremony included the Hon Alan Stockdale, Victoria's Minister for Multimedia, and Robyn Williams from the ABC's Science Unit.

"It is critically important for Australia to produce high quality products with authoritative and educational content, such as the *Insects* CD, to hold the line against a marketplace increasingly swamped with entertainment products with no inherent value," said Mr Stockdale.

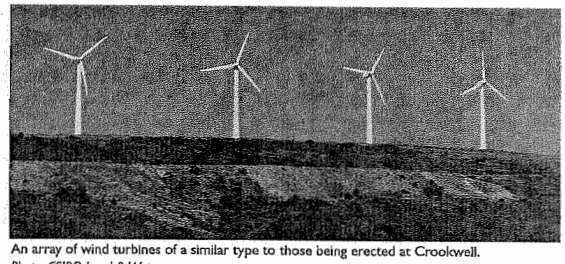
Robyn Williams held the audience captive with an entertaining keynote address, which not only extolled the scientific and educational virtues of the new CD, but drew parallels between its insect orders and certain personality types and professions in our society.

The ceremony was attended by over 100 invited guests from the business, government and education communities in Melbourne. Copies



of the new CD can be purchased directly from CSIRO Publishing (freecall 1800 645 051) for $69-95.

**Malcolm Robertson is Communication and Planning Manager at Entomology.* Cont



An array of wind turbines of a similar type to those being erected at Crookwell. *Photo: CSIRO Land & Water*

Wind works wonders

Scientists at CSIRO Land and Water, working with NSW energy supplier Pacific Power, have developed a sophisticated suite of methods to improve the harnessing of the most promising among the renewable energy sources - wind harvesting.

They have used sophisticated methods to find areas rich in potential energy, in terms of landscape and prevailing winds.

Dr Peter Coppin, of CSIRO Land and Water, is a 'wind prospector.' "In fact, wind prospecting has become so competitive that something of a 'wind rush' has developed, as energy producers race to identify and secure the best sites," says Dr Coppin.

The key to success is not so much the power of the wind, as the need for consistency at medium strength, he says. Dr Coppin has developed a modelling technique which is winning international recognition as a leader in the field.

A major wind 'hot spot' has been identified near Crookwell in the Southern Tablelands, and is to be the home of Australia's largest and first grid-connected wind farm by mid 1998.

"With a good wind, the Crookwell farm will pump out a steady 5 megawatts from eight 600 kilowatt propellor turbines, enough to meet the average electricity demand of at least 3,500 homes and will reduce greenhouse gas emissions by 8,000 tonnes per year through the replacement of fossil fuel power," says Dr Coppin.

"Finding a rich wind prospect is a good deal more complex than many people might think. It involves a subtle blend of fluid dynamics, topography, meteorology, demography, numerical modelling and statistics."

"The new modelling techniques enable us to find wind where few people would expect there to be worthwhile resources."

At Crookwell, there is a large expanse of flat, open country that allows the wind strength to build up, and then a series of ridges, which act almost like huge aircraft wings, kicking the wind upwards and increasing its energy as it passes over the top.

The cost of wind energy, and whether it can compete with coal-fired or other forms of electricity, depends on positioning the turbines correctly where they can draw the most power year-round.

Wind farms are coming into their own worldwide. Denmark, the world leader, now draws 7 per cent of its total electricity needs from the wind and plans to move to 40 per cent in the next few decades, exporting its surpluses to the rest of Europe.

Dr Coppin believes that the new methodology for finding wind resources will help make it the most competitive form of renewable energy in Australia. Cont

Marathon challenge for CSIRO team

by Duncan Constable*

On New Years Eve 1997, after successfully completing every stage in the world's longest canoe/kayak marathon, a team from CSIRO was celebrating. They had travelled 404 kilometres over five days in a two-person kayak on the Murray River. If ever there was a team building exercise, this had to be it!

Known as the "CSIRO Bankhuggers", the team's t-shirts and kayak emblazoned with the CSIRO logo and the words "Australian Science, Australia's Future" ensured spectators and national TV had no doubts as to their allegiance.

The CSIRO Bankhuggers finished in eighteenth place - not bad for a novice entry. Would they do it again? Absolutely - training has already started for the 1998 event!

**Duncan Constable is a Senior Experimental Scientist at CSIRO Minerals.* Cont

The CSIRO Bankhuggers Murray Marathon team. L to R: Duncan Constable, David Nairn (GKW CRC), Christian Doblin, Andrea Boothroyd, Todd Frazer (AMIRA), Ron Karpen, Ken Carey and Peter Witt.

Friends indeed...an adult spotted handfish in a brood tank at Hobart, under observation by CSIRO Marine Research biologist, Mark Green. *Photo: Bruce Miller*

Spotted handfish avoids extinction

The first Australian marine fish to be listed as endangered under the Federal Endangered Species Protection Act, the spotted handfish, may avoid extinction due to the efforts of a CSIRO research team led by biologist, Barry Bruce, at the Division of Marine Research in Hobart.

The tiny spotted handfish, which grows to only 150 millimetres in length, and is noted for its superb colouring, has been part of a successful breeding trial and research program into its biology.

"We believe we now have the techniques to proceed with developing a larger-scale breeding program for this and other related handfish species if required," says Mr Bruce.

Funding the project are Environment Australia and CSIRO, with support coming from the Tasmanian Departments of Primary Industry and Fisheries, Environment and Land Management, Tasmanian Conservation Trust, the University of Tasmania and the Hobart Ports Corporation.

The spotted handfish is found only in the lower Derwent Estuary and adjoining bays and channels, and is noted for its tendency to "walk" over the bottom on leg-like fins rather than swim.

The causes for the decline are not understood, although one of the contributing factors being investigated is the spread of the introduced northern Pacific Seastar throughout the Derwent Estuary. Spotted handfish have a low breeding capacity, the female laying only 80-100 very large eggs which are held together by threads and generally attached to the seafloor.

Mr Bruce said the research team had, for the first time, been able to produce the right conditions for spawning and rearing of juveniles in artificial tanks.

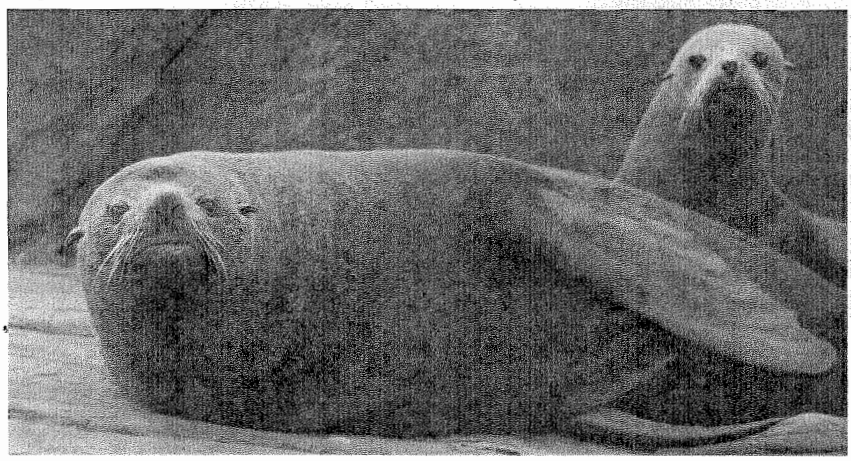
"Although there are still many gaps in our understanding of the species and what affects them, the information we now have gives us a firmer basis to develop a plan for the recovery of the species," he said. CoR

Seal population thrives

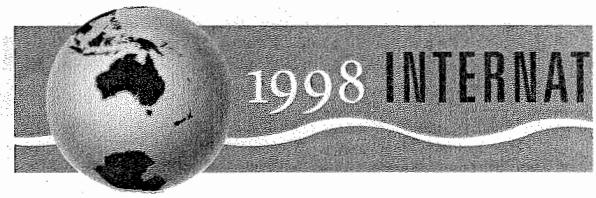
For a number of years Dr Peter Shaughnessy of CSIRO Wildlife and Ecology has been monitoring population levels of seals along the Australian coast. Some of what he's found is very positive because the numbers of two fur seals are increasing.

The New Zealand fur seal on Kangaroo Island has been increasing at 10 per cent per annum over the last 10 years. In Bass Strait, the Australian fur seal is also increasing, a good example being at Seal Rocks in Westernport, Victoria where numbers increased at 6 per cent per annum over the last six years.

The results of these studies are essential for the effective management of seals and sea lions, especially in light of a growing demand by tourists to visit these animals in their natural habitat. Dr Shaughnessy's work on New Zealand fur seals and Australian sea lions has been done in conjunction with the staff from South Australian National Parks and Wildlife Service. CoR



New Zealand fur seals at Kangaroo Island. Dr Shaughnessy's surveys are showing their population is increasing. *Photo: Liz Poon*



The United Nations has declared 1998 the Internatio actively. Australian activities during the year will aim t coast to the deep sea – and highlight the need for sust

Australia leads in

Australia is in a unique position to lead the world in ocean research and management, according to Dr Nan Bray, Chief of CSIRO Marine Research.

"The International Year of the Ocean is an opportunity to demonstrate how the oceans impact on our lives and on the planet and how international research cooperation can achieve better results than has in the past been achieved on land," said Dr Bray.

"There is a real lack of knowledge about our seas. People are aware of its resources such as fish and minerals, but they still don't realise how vital the oceans are to our climate and to our land management."

According to Dr Bray, the oceans play a crucial role in the onset and cessation of *El Nino*. They are also major producers and absorbers of carbon dioxide, the main greenhouse gas.

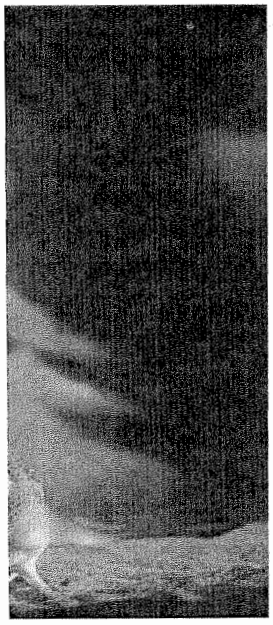
"Australia faces many challenges including achieving sustainable fisheries and aquaculture, making multiple use of the marine environment work, and protecting biodiversity," says Dr Bray.

Australia's Exclusive Economic Zone (EEZ) is more than twice the size of the continent, and in the past decade 800 new species of fish have been identified. Yet at ocean depths below 1,500 metres - more than 70 per cent of the entire Australian ocean jurisdiction - there is very little known.

According to Dr Bray, Australia is taking a leading role in ocean policy, putting together a national policy on issues relating to the oceans, their use and care, which is due for release mid 1998. CoR

CSIRO's Dr Nan Bray: The national oceans policy due out this year will put Australia at the forefront of international marine research. *Photo: Bruce Miller*

CSIRO's research vessel *RV Franklin* is operated as a National Facility by the Division of Marine Res



Marine Research biologist, Mark Green.

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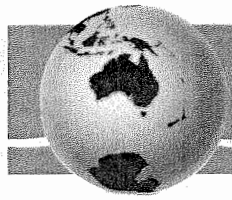
ment of seals and sea lions, especially in light of a growing demand by tourists to visit these animals in their natural habitat. Dr Shaughnessy's work on New Zealand fur seals and Australian sea lions has been done in conjunction with the staff from South Australian National Parks and Wildlife Service. Gelf

increasing. *Photo: Liz Poon*



1998 INTERNATIONAL YEAR OF THE OCEAN

The United Nations has declared 1998 the International Year of the Ocean (YOTO) and CSIRO is plunging in actively. Australian activities during the year will aim to create awareness of the marine environment – from the coast to the deep sea – and highlight the need for sustainable ocean management supported by marine research.

Australia leads in ocean research

Australia is in a unique position to lead the world in ocean research and management, according to Dr Nan Bray, Chief of CSIRO Marine Research.

"The International Year of the Ocean is an opportunity to demonstrate how the oceans impact on our lives and on the planet and how international research cooperation can achieve better results than has in the past been achieved on land," said Dr Bray.

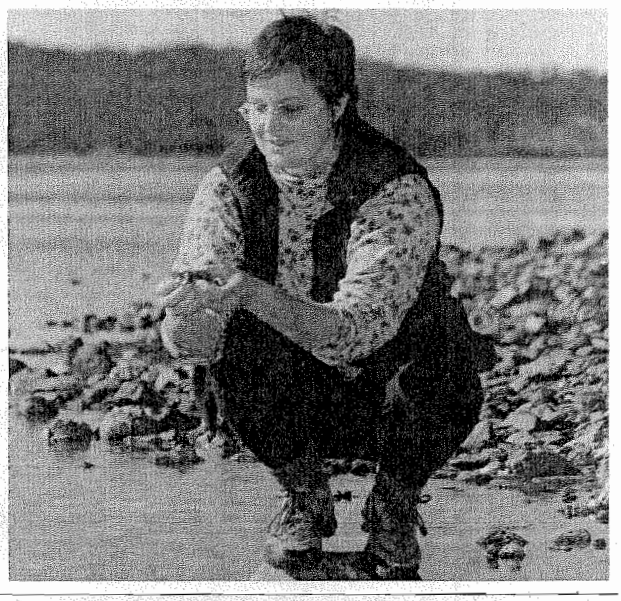
"There is a real lack of knowledge about our seas. People are aware of its resources such as fish and minerals, but they still don't realise how vital the oceans are to our climate and to our land management."

According to Dr Bray, the oceans play a crucial role in the onset and cessation of *El Nino*. They are also major producers and absorbers of carbon dioxide, the main greenhouse gas.

"Australia faces many challenges including achieving sustainable fisheries and aquaculture, making multiple use of the marine environment work, and protecting biodiversity," says Dr Bray.

Australia's Exclusive Economic Zone (EEZ) is more than twice the size of the continent, and in the past decade 800 new species of fish have been identified. Yet at ocean depths below 1,500 metres - more than 70 per cent of the entire Australian ocean jurisdiction - there is very little known.

According to Dr Bray, Australia is taking a leading role in ocean policy, putting together a national policy on issues relating to the oceans, their use and care, which is due for release mid 1998. Gelf



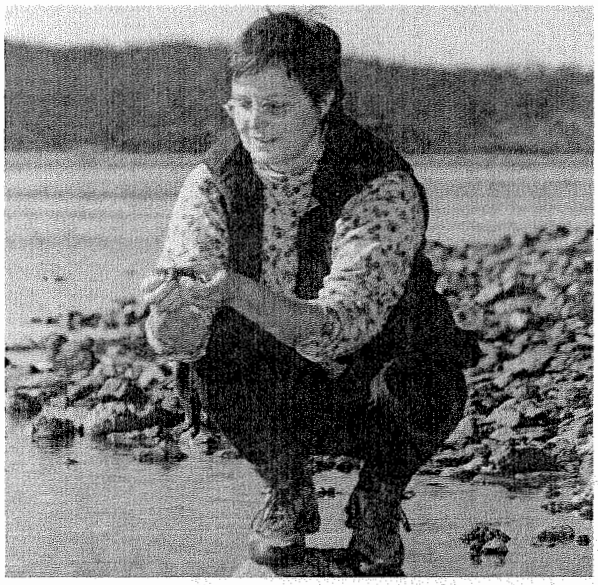
CSIRO's Dr Nan Bray: The national oceans policy due out this year will put Australia at the forefront of international marine research. *Photo: Bruce Miller*

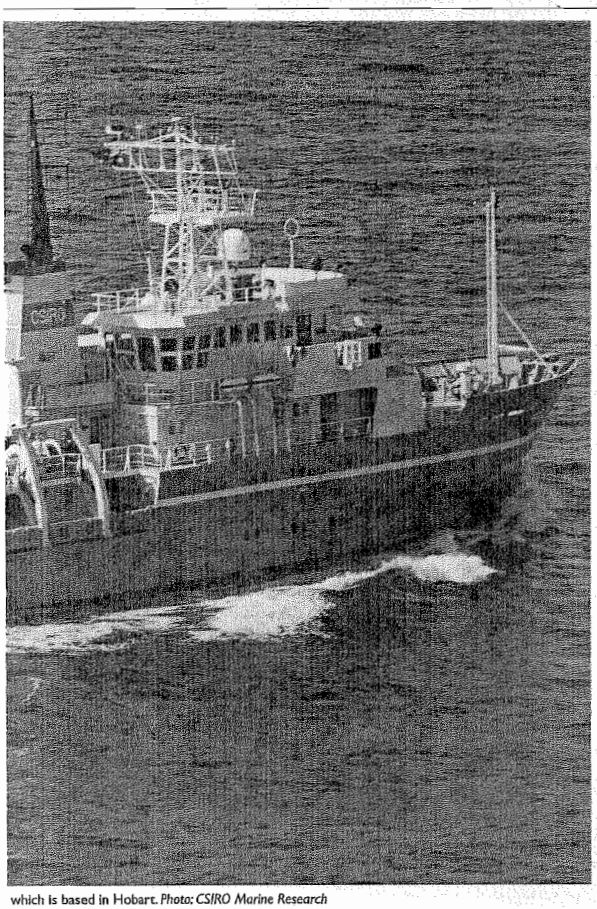
CSIRO's research vessel *RV Franklin* is operated as a National Facility by the Division of Marine Research, which is based in Hobart. *Photo: CSIRO Marine Research*

ONAL YEAR OF THE OCEAN

Year of the Ocean (YOTO) and CSIRO is plunging in create awareness of the marine environment – from the able ocean management supported by marine research.

ocean research





which is based in Hobart. *Photo: CSIRO Marine Research*

CSIRO strikes it rich

It's not often a CSIRO discovery makes the front page of the New York Times but a December announcement that an Australian company has been granted a licence to explore for undersea gold did just that.

Papua New Guinea authorities have granted Nautilus Mineral Corporation Pty Ltd two underwater exploration and development licences for what may be the world's richest undersea gold, silver, copper and zinc sulphide deposit.

The deposit was originally found in 1991 by an industry-sponsored team of CSIRO and international scientists in the Manus Basin, off Papua New Guinea.

The team, led by Dr Ray Binns of CSIRO Exploration and Mining, has now conducted four trips to the region on the CSIRO research vessel *RV Franklin*.

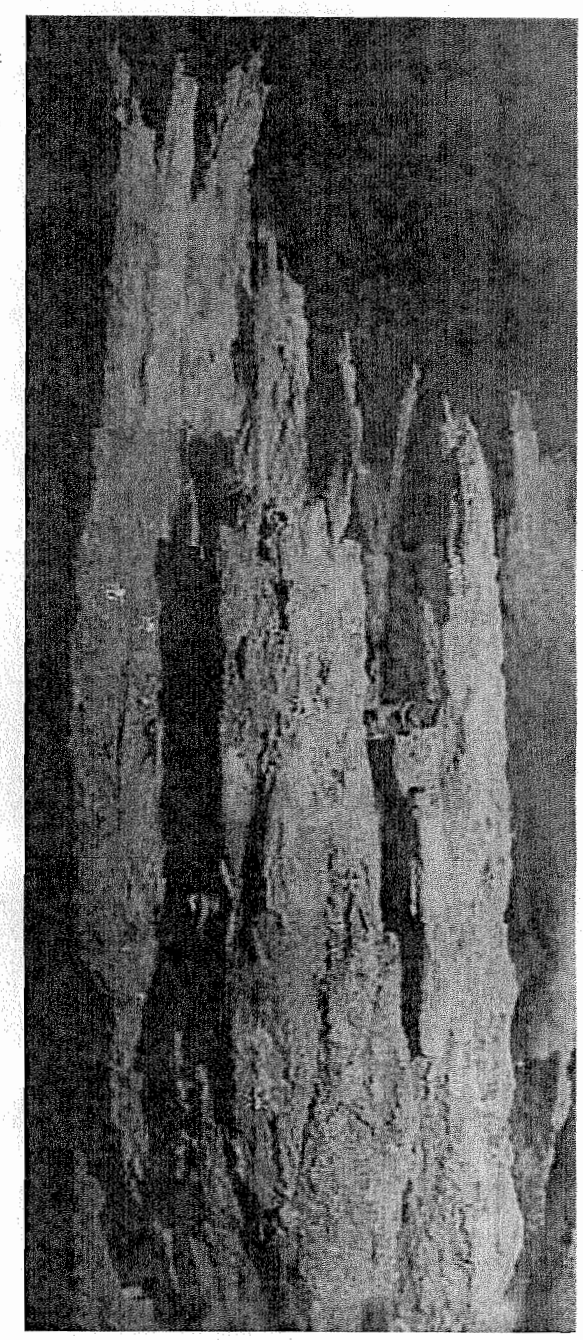
Two main sites of seafloor hydrothermal activity that produce the mineralisation are currently under investigation. Known as the PACMANUS site, (named after the international team responsible for its discovery), and the SuSu Knolls site, both are yielding important information on the controls on ore formation in these environments.

These seafloor deposits are associated with submarine volcanic activity. Hot, often acidic fluids below the ocean floor carrying dissolved metals mix with subsurface seawater and are vented as hot springs on the ocean floor.

The dissolved metals precipitate largely as sulfide minerals on contact with the cold seawater. This causes the formation of sulfide 'chimneys', which can reach heights of up to 30 metres. Plumes laden with metalliferous mineral particles vent from these chimneys and are dispersed throughout the water column over large distances.

During the cruises, the hydrothermal deposits are located by tracing these plumes back to their origin using water turbidity measurements, and also by towing a video camera system over known or suspected sites.

"Knowledge of underwater ore-forming environments will help in exploring for world-class mineral deposits on land," Dr Binns said. "We should have more large deposits in Australia, but we need to be smarter and use every clue possible when assessing prospective regions." CoR



A 3-metre high cluster of sulfide chimneys, composed of sulfide minerals rich in copper and gold, at the PACMANUS mineralisation site 1,700 metres deep in the Manus Basin, Papua New Guinea. A cloud of "black smoke" (hot fluid with fine mineral particles) is being vented from one side. *Photo: Dr Ray Binns*

Acoustic tools probe the seabed

by Katie Johnson*

A team of CSIRO scientists from Marine Research have been developing and using special acoustic tools that can probe beneath the ocean surface.

In the past there has been scant knowledge of what the seabed looks like, where fish and other marine life congregate and why.

This extensive underwater 'blind spot' has limited the broad-scale management of marine ecosystems.

But today, modern technology is showing scientists a very different picture of ecosystems. It is information that will be of great benefit not only to fisheries management, but to the multiple-use management of Australia's ocean territory in its entirety.

The explosion in computer power over the last decade has resulted in computers on research vessels becoming the researchers' eyes and ears. The computers are programmed to interpret acoustic 'pings' that are bounced off the seabed and return as high frequency echoes.

They record the shape of the seabed: how hard it is, whether there are attached animals, where the fish are gathering, and even the strength and direction of currents.

While acoustics show what is on the seafloor, the chemical composition of the plants and animals themselves reveals much about the food-web linkages in the ecosystem.

Ecosystem science is about learning enough about the system as a whole to ensure its effective management, rather than managing particular species in isolation.

**Katie Johnson is a Science Journalist at Marine Research.* CoR

Small business gets a boost

by Kate Brown*

CSIRO research has demonstrated it can improve business performance across a range of small and medium enterprises (SMEs) in Australia.

The CSIRO project is run by a small group of statisticians who specialise in statistics for management. They work with a company to clearly define what the company wants to achieve, then help them along the road to finding out how to measure better those things that will determine and influence business success.

The group contacted a number of SMEs who were interested in participating in the project — 18 businesses were accepted. Industries covered included pathology services, hospitals, home building, chemical manufacturing, coach services, apparel manufacturing, software engineering, local government, consulting services, food processing and distribution, health care outsourcing, legal services and a restaurant.

"Each business worked with two CSIRO consultants who visited the business regularly. They produced a preliminary report outlining the business's strengths and improvements they could make in the area of performance measurement," said Mr Stan Dransfield, Leader of the SME Project.

"We recommended ways in which they could address problem areas. We worked with the staff to resolve problems and improve particular aspects of the business."

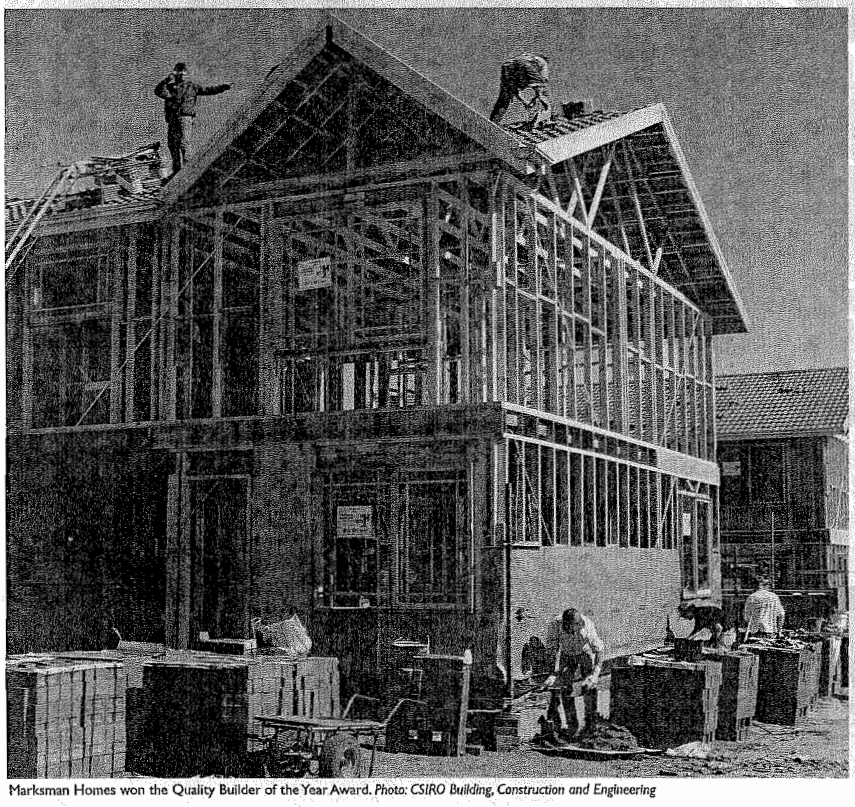
Common to many of the businesses was a need to develop their strategic thinking, identify key result areas, success measures and key performance indicators, improve communication, identify core processes, adopt better methods of data presentation and make effective use of specific techniques such as deployment flowcharting.

"Deciding on what components of the business to measure, finding the best ways to measure them and then working with the data collected to provide sound information are the core skills of the CSIRO team," said Mr Dransfield.

"Without our involvement in the program, we probably would not have won the NSW Quality Builder of the Year Award, worth around $100,000," says Mr John McKenna, Managing Director of Marksman Homes.

Mr Jeff Murray, Business Services Manager for Maitland-based Blue Ribbon Coaches and Travel said that the project has helped them to take a good look at how they identify and solve problems, thereby streamlining processes. One such area was the vehicle breakdown procedure.

**Kate Brown is a Communication Manager at Mathematical and Information Sciences.* CoR



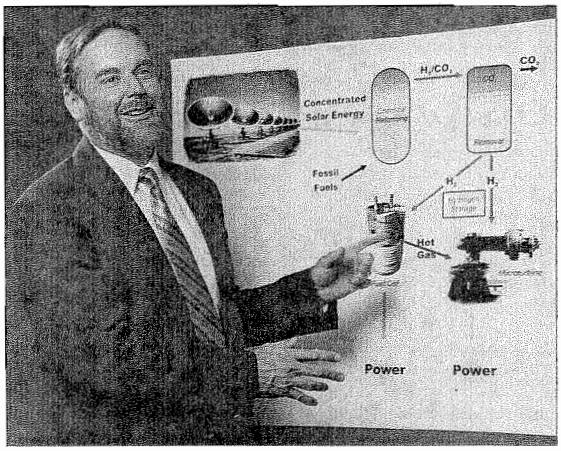
Marksman Homes won the Quality Builder of the Year Award. *Photo: CSIRO Building, Construction and Engineering*

Towards sustainable energy

by Chris Thompson*

The Coal and Energy Sector's special project grew from a need to meet the challenges of escalating international and Australian focus on sustainable energy and the need to reduce greenhouse gas emissions.

Australia has ample energy resources and the emphasis has to be on more efficient energy transformation. In some instances, the need is for accelerating the introduction of existing and emerging technologies, in others there is need for novel scientific solutions.



Dr John Wright, Coordinator, Coal and Energy Sector, indicating key elements in the new project. *Photo: Chris Taylor*

The CSIRO project will meet both needs. $4.8 million will be used to develop and demonstrate a revolutionary concept for the production of distributed electric power - a solar/fossil fuel hybrid system that runs with up to double the efficiency of today's coal-fired electricity generators.

"In essence, the project is about systems integration, and will combine available and emerging technologies, in an innovative way," says Dr John Wright, Coordinator of CSIRO's Coal and Energy Sector.

CSIRO's solid oxide fuel cell (SOFC) technology (being developed by Ceramic Fuel Cells Ltd), as well as other fuel cell systems will be used in the demonstration project. SOFCs, because of their high temperature of exhaust gases, allow cogeneration of electricity and heat and can be used in combination with microturbines to achieve efficiencies approaching 70 per cent.

"The project will be demonstrated at about the 20 kilowatt scale. The technology can be scaled up for application to distributed power systems and to large centralised generation facilities," said Dr Wright.

Fuel cells or fuel cell/micro-turbine systems can operate on hydrogen derived from natural gas or coal. The project uniquely claims to introduce solar thermal power into the equation. High temperature solar thermal energy can re-form gas (methane) to increase its energy content by some 20 to 30 per cent, with no increase in greenhouse emissions.

This process involves generating a fuel gas which is a combination of carbon dioxide and hydrogen. The hydrogen will be used to power a fuel cell or a fuel cell/microturbine combined cycle system, while the carbon dioxide will be recovered in concentrated form as a necessary step in any scheme for its ultimate use or disposal.

"We will only be able to assess the potential implications of the project on Australia's energy market once the project is well-advanced and we have some performance data available," says Dr Wright.

**Chris Thompson is Communication Manager at Coal and Energy Technology.*

Offshore

Laos

What has French perfume, Chinese medicine and the Division of Forestry and Forest Products got in common? No, it's not a love of small bottles. The answer is Laos. In particular, benzoin resin from the deciduous forest tree *Styrax tonkinensis* found in the northern provinces of Laos.

Working with the Food and Agriculture Organisation, local communities and government officials in the remote northern highlands of Laos, Canberra-based Division of Forestry and Forest Products (DFFP) scientist Khongsak Pinyopusarerk is looking at ways to safeguard the economic production of benzoin.

In recent years, population growth and migration are increasing the pressure on the forest resource base on which benzoin resin depends, mainly through a growing demand for more rice cultivation. Lower prices for the resin have not helped, and a shortening of the traditional 10-year slash and burn cycle to five years, too short for resin production, is undermining this important local commodity. This is also too short a fallow to restore soil fertility.

These difficulties all pointed to the need for new viable land use alternatives. Enter DFFP, and a project selecting high resin-yielding genotypes of *Styrax tonkinensis*. Just as important for the local communities, silvicultural trials have also been established to compare different combinations of Styrax and cash crops.

Khongsak Pinyopusarerk emphasises the value of the whole Styrax forest resource.

"The maintence of styrax forests is critical to the livelihood of these poor mountain communities. Apart from providing supplementary income from benzoin, Styrax forests have also been a major source of food subsistence for centuries," says Mr Pinyopusarerk.

Although it will take a few more years to achieve conclusive results, Mr Pinyopusarerk feels the strong local support he is receiving augurs well for the success of the project.

Postcript: Whilst Laos is a high priority for the Australian aid program, opportunities for CSIRO to work there remain limited. Nevertheless, several Divisions are active in Laos apart from DFFP, notably the Division of Animal Health whose Dr Harvey Westbury is working on livestock disease.

Peter Martin, CSIRO International Scientific Liaison, Canberra.

Research roundup

CSIRO research in the news, compiled by Nick Goldie, CNA

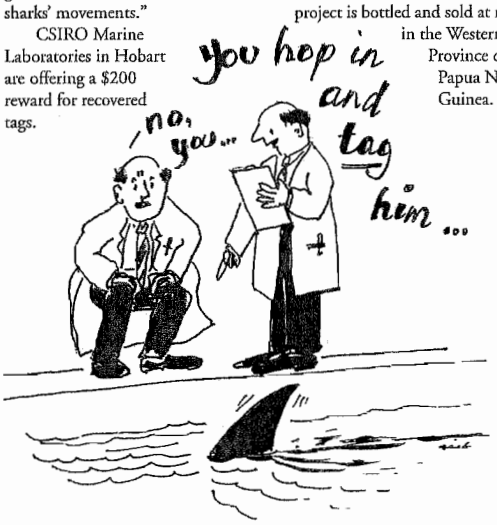
Tagged sharks tell all

Thirty sharks have so far been caught, tagged, and released in South Australian waters. The electronic archival tags record data on swimming depth, water temperature and light levels every four minutes, and can store up to a megabyte of information.

Project leaders Dr John Stevens and Grant West of CSIRO Marine Research are hoping to learn more about the school sharks or 'flake' behaviour beyond the continental shelf.

"Two sharks tagged in November have been recaptured, more than a hundred nautical miles from where they were released," says Dr Stevens. "Computer analysis of the tags will give us detailed information on the sharks' movements."

CSIRO Marine Laboratories in Hobart are offering a $200 reward for recovered tags.



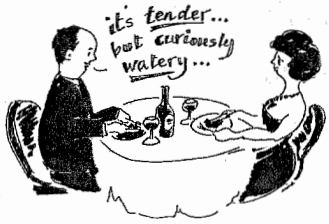
Don't worry: Waria-Waria cures (almost) all

An oil distilled from the leaves of the Waria-Waria tree by villagers in Papua New Guinea is claimed as a sovereign remedy. The villagers use the oil for treating coughs and colds, aches and pains, and even as a hair restorer.

"Leaf oil distillation brings cash income to the villagers," says Dr John Doran of CSIRO's Australian Tree Seed Centre. "It's a sustainable community-based industry, using a small portable still, and depending on a tree species (*Asteromyrtus symphocarpa*) which re-shoots profusely and can be harvested annually."

Waria-Waria oil from the pilot project is bottled and sold at markets in the Western Province of Papua New Guinea.

Environmental eating



How much water does it take to produce a kilo of steak? Or a plate of mashed potatoes?

Dr Wayne Meyer of CSIRO Land and Water suggests that food should be rated according to the efficiency of its water usage.

"There's not much water left to harvest in south east Australia," he says. "We need to be more judicious about what foods we produce from limited water."

Dr Meyer says that meat and wool are the biggest users of water: to produce a kilo of beef requires 50,000 to 100,000 litres, while a kilo of clean wool takes 170,000 litres.

A kilo of dry wheat needs about 750 litres of water; for maize the figure is around 600 litres, and rice around 2,000 litres.

"We simply can't afford to waste water," says Dr Meyer.

Mapping and catching the raw prawn

Brisbane researchers from CSIRO Tropical Agriculture have produced the world's first prawn gene map, which will be used to identify the genes for growth rate and other valuable characteristics.

Project leader, Dr Steve Moore believes that using the map as a guide, large increases in the rate of genetic improvement of farmed prawns will be possible.

Meanwhile researchers from CSIRO Marine Research have been monitoring the red-legged banana prawn in the far North West of Australia.

According to research leader Dr Neil Loneragan, the red-legged prawn has been little understood until lately. But with the help of northern prawn fishers, marine biologists are building up a stock of knowledge which will be essential in future management of the prawn stock.

Dark matter, dwarf galaxies

"Tiny dwarf galaxies may dominate the Universe," says Dr Lister Stavely-Smith of the Australia Telescope National Facility.

After a preliminary analysis of a new survey by the Parkes radio telescope, astronomers are astonished by the number and distribution of the dwarf galaxies, which are only 1/100 of the size of our Galaxy.

"Galaxies like our own, the so-called 'normal' galaxies, aren't normal at all," says Dr Stavely-Smith. "They are vastly outnumbered by the dwarfs."

Dwarf galaxies are faint and hard to find, but they may contain most of the 'dark matter' which astronomers believe makes up ninety per cent of the stuff of the Universe. Dr Stavely-Smith suggests that the dwarf galaxies could be the crumbs left over when the bigger galaxies formed.

"Adieu" Albert

After 41 years on the job, Albert Williams, Operations Manager for CSIRO Wildlife and Ecology, in Canberra, is hanging up his work hat. He gave *CoResearch* these parting reflections:

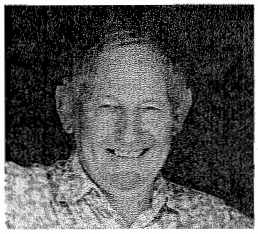
"I started work with CSIRO Division of Entomology in December 1955 at the age of 16, as an Assistant Grade 1.

I worked in the termite section for nearly two years, and spent most of my time looking after colonies of termites, which were kept in glass jars in a hot house. I had to frequently count the termites at the end of each study, no easy task!

When I first came out to Gungahlin in 1957 as a driver, the only buildings on site were the Homestead, the social rooms with a barn opposite, and the old laundry.

Two buildings, 2 and 10, both 30 years old, were built and demolished during my career, which indicates I have been on site far too long!

I recall the events following cyclone 'Tracy' which devastated Darwin in 1974 and was involved in having the bulk of our Darwin staff being relocated to Gungahlin while



the city was being cleaned up.

I was successful in gaining the newly created position of Purchasing Officer in 1964 and worked my way up to Divisional Administrative Officer in the 1980s.

I feel that I have contributed to the operations of all our regional laboratories in a number of ways, but in particular through my involvement with the buildings and site facilities.

They say that there is life after CSIRO, and I intend to make the most of it. I am proposing to switch off and relax a bit, go on a holiday somewhere, try not to interfere with my wife's activities at home (she is already threatening to get me another job!) and see more of our grandkids.

Best wishes and good luck to you all for the future."

Holidays in Hell

In the December issue of *CoResearch* (No 372), we asked if you would like to send us photographs and stories of environmental, social and economic impacts of tourism, for our 'Holidays in Hell' competition.

You must all be busy 'enjoying' these holidays because we haven't received any entries. So we are extending the competition until 9 April. Remember a prize will be awarded to the best 'impacts of tourism' photograph and caption. Bad planning, bad taste, bad service and other bad experiences are all eligible. With the festive season behind us, and holidays in full swing, get clicking those cameras!

Send photos and captions to Holidays in Hell, *CoResearch*, PO Box 225, Dickson ACT 2602.

Apology

Apologies to Dr Willem Bouma, Atmospheric Research, whose name was left out of the list of people at the end of the story on "CSIRO has energy for a better future", in the December issue.

Enterprise bargaining update

Negotiations have commenced between CSIRO, the CPSU and other relevant unions in an attempt to agree on a package of CSIRO-specific items for inclusion in an Enterprise Agreement.

"All CSIRO staff will be invited to vote on the package, but it is unlikely that any agreed package will emerge before February," said Mr Gary Knobel, Deputy General Manager, Corporate Human Resources.

Negotiations are centering around a set of proposals put together by the slice group of staff who comprised the Enterprise Bargaining Reference Group.

Clarification

Last issue in an article 'Strategic Research Plan released', *CoResearch* referred to its author, Andrew Pik, as Manager, Corporate Activities, Canberra. Andrew is actually General Manager, Strategic Planning and Evaluation, Canberra. *CoResearch* apologises for any confusion this may have caused.

Mailbox

Dear Editor

One can't help but notice the ever increasing work pressure being applied to CSIRO staff.

When I joined CSIRO some years ago, the Chief of our Division often had time to spend a few minutes with staff at tea breaks, discussing house renovating or the three-week bushwalking holiday. This time gradually diminished as the Division grew and he took on other responsibilities.

Nowdays, Chiefs seem to have to be away from base more often than they are there. When they are in residence, they have to make a conscious effort to find the time to take a canteen break and chat with staff. Program leaders don't fare much better. A sub-program leader mentioned to me that he was starting at 8.00am and sometimes leaving at 8.00pm. Come past the labs at any time on the weekend, and there'll always be cars in the carpark.

And the pressures are extending to the 'lower ranks'. It used to be said that one of the advantages of being in the 'lower ranks' was that you didn't have to get involved in the management stuff. You could walk out of the place at the end of the day and switch your attention to your family, or whatever it is that occupies you in your non-working hours.

This is no longer strictly true. Home is now often the only place you can find the peace and time to read to keep abreast of new techniques. It can be difficult switching off away from work. It's not pleasant to be taking a morning shower, in the middle of a bad week, and to feel the adrenaline and stress levels rise as you start thinking of the problems to be tackled in the day ahead.

Personally, I still find that work is mostly fun, and an enjoyable challenge, but you can't help but wonder where it is all leading.

Bob Beattie
Marine Research

Dear Editor

A pleasant feeling of nostalgia is sometimes induced by reading *CoResearch*. Thus Diane Beruldsen writes (*CoResearch* Dec '97) of the Australian Medical Sheepskin as 'this new product'. I remember being impressed by the medical sheepskins produced for the relief of bedsores by the Division of Protein Chemistry in 1956 when I spent a year there. They were produced by Tom Pressley of the Division and were, as I remember, a great success.

Michael Tracey
Hughes, ACT

CSIRO around the nation

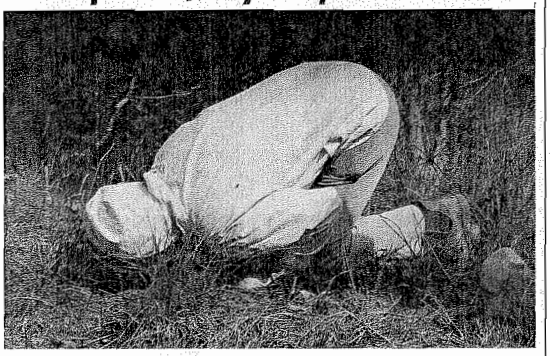
Commercial networking

The CSIRO Commercial Network has been established as an attempt to share and build on the expertise in commercial matters that we have in the Organisation.

At a recent meeting of the Network, working groups were formed to facilitate sharing of knowledge and joint action to improve performance in contract management, business development, marketing, client management, and professional standards.

Anyone who is interested in participating is asked to contact David Symington on tel: (03) 9662 7413, email: david.symington@exec.csiro.au. Information about the Network activities is being shared through an e-mail list, managed by Mike Kenyon.

O caption, my caption!



Another bumper crop of entries for the caption competition! Here are some of the best:

Dennis Murray from Plant Industry offered: "Research into lowering the water-table of salt affected soils begins a new phase."

Karl Armstrong at CSIRO Enquiries sent: "I can JUST see my golfball down this hole."

David Courage of Human Nutrition also had his mind on golf with this entry: "I never should have used the driver off that tee."

Simon Torok at CSIRO Education Programs suggested: "To simultaneously solve two CSIRO problems — the dwindling effectiveness of the rabbit calicivirus and the dwindling amount of public funding of science — armed scientists are now being deployed to keep watch at every rabbit burrow in Australia."

Hans Griesser of Molecular Science sent: "Ve have ways to silence those who resist mergers!"

Both Gaye Weller from Entomology and Ross Hansen from Tropical Agriculture had an ant theme. Gaye sent: "Shhh! I'm listening to water running through the chambers of an ants nest!" While Ross sent: "These new ant varieties should satisfy any discerning echidna."

And finally this from Richard Verrall from the CSIROSec in Hobart: "Preferred position for minimising radiation damage to the nose."

And the winner is Tim Kennedy from the Paul Wild Observatory with: "When my redundancy comes through I'll try for a job at the Vatican."

Tim wins a CSIRO Double Helix cap, well done!

Have a go at this next photo, sent by CNA's Nick Goldie and you could win a CSIRO crystal radio kit.

Send captions and photos to *CoResearch* Caption Competition, PO Box 225, Dickson, ACT 2602, or email Jane.Kahler@cc.csiro.au

New Minerals labs

In October 1997, the Minister for Industry, Science and Tourism, the Hon John Moore, joined forces with the President of the Academy of Technological Sciences and Engineering, Sir Arvi Parbo, to formally open CSIRO's new minerals research laboratory complex at Clayton in Victoria.

Australia Day Honours

Three CSIRO people have been honoured in this year's Australia Day honours list.

Dr John Philip (Honorary Research Fellow, Land and Water) became an Officer in the General Division of the Order of Australia (AO) for science (hydrology), scientific communication and Australian culture.

Mr Alan Brown (Honorary Research Fellow, Forestry and Forest Products) became a Member in the General Division of the Order of Australia (AM) for his contributions to the forestry industry.

Mr David Salt (Wildlife and Ecology) was awarded a Public Service Medal for producing 'The Helix' magazine, whilst with Education Programs, and promoting science awareness in school students.

Marra award

Dr Greg Foliente of CSIRO's Building, Construction and Engineering has been honoured with the Society of Wood Science and Technology George Marra Award.

The award is given to the best two or three papers published in the international journal *Wood and Fiber Science* for excellence in technical writing and research.

Clunies Ross biography

It is surprising to learn that Ian Clunies Ross, Chairman of CSIRO in the 1950s, used to personally vet the cover design of the CSIRO magazine *Rural Research*. This fact, along with much other fascinating information, has come to light in the recently released biography *Ian Clunies Ross.*

It was his idea to start the magazine. He considered it important that a simplified but accurate account of CSIRO's agricultural research be written for Agricultural Extension Officers, thus forming a bridge between CSIRO and the State Departments of Agriculture. Clunies Ross was indeed a fascinating man. He was held in extraordinarily high esteem both by the public and by government.

When Clunies Ross died in 1959, the Prime Minister of the day, Bob Menzies, declared him the greatest public relations man Australian science ever had. Eulogies were written, public buildings and streets were dedicated to his memory, and his image was chosen to appear on Australia's first $50 note.

Copies of *Ian Clunies Ross,* written by Marjorie Collard O'Dea are available from CSIRO Publishing for $34.95. A 15% staff discount applies. Phone: (03) 9662 7666 to order your copy.

Backpage

Two awards for TIP

Dr Chris Walsh, Discipline Leader of Optics and Surface Science at CSIRO Telecommunications and Industrial Physics, is a recipient of a Fulbright Senior Award. Dr Walsh will be spending three months at the Optical Sciences Centre in Arizona, USA, where he will be researching the characteristics of surface roughness on super-smooth polished optical components.

Chris Freund also from CSIRO Telecommunications and Industrial Physics has won the Australian Optical Society's Technical Optics Award. Mr Freund won the Award for his significant achievements in optical instrumentation, in particular his work on etalon and ellipsometer developments involving complex optical, mechanical and electronic systems.

Diamond award

Mr Kurt Cremer, an honorary research fellow at CSIRO Forestry and Forest Products, was recently awarded a RiverCare 2000 Diamond Award in NSW for his work on willows.

Kurt has almost single handedly changed the way people in the south-east of Australia think about the willow - a tree which creates significant problems along riverbanks.

Achievement award

The Avon Spirit of Achievement Award has been presented to Dr Liz Dennis of CSIRO Plant Industry. A leading plant molecular biologist, Dr Dennis won the award for her work in plant development, plant gene regulation and the response of plants to environmental stress.

Boas medal

This year's Boas Medal has been awarded to Professor Keith Nugent of the University of Melbourne and Dr Stephen Wilkins of CSIRO Manufacturing Science and Technology for their contributions to x-ray and light optics.

Obituary: Dr Bill Vogt

Colleagues and friends of Bill Vogt were shocked by his sudden death two weeks before Christmas. A former Assistant Chief of Entomology, Bill retired early only a year ago after 26 years in CSIRO and was enjoying his new found freedom, albeit still making a solid contribution to research in population ecology in his spare time.

Bill joined Entomology in 1971 via Sydney and Adelaide Universities, ostensibly to work on aphids. However, he was immediately transferred to the new project on genetic control of sheep blowfly and in this field established a formidable reputation for the quality of his science and his analytical skills. Bill's work on the quantitative ecology of sheep blowfly and in particular, his estimation of field population densities laid the basis for the evaluation of the subequent field trials of this project. His rigorous ecological approach was later applied to bushflies and dung beetles, and also briefly to screw worm fly.

Bill hailed originally from Tumut, NSW and never quite threw off the tag of the boy from the bush, mainly because of his honest and straightforward approach to his life and work. He never really had any enemies and his innate ability to get on well with people and manage them effectively resulted in him being a Program Leader and then Assistant Chief for five years. However, apart from a good red wine, Bill's real love was his science and he relished the opportunity to get back to the bench and then to retire and pursue his work at will.

Bill's contribution to quantitative ecological science will be remembered and his good humour and generosity sorely missed by many. We have lost a real friend and colleague.

Dr Jim Cullen
Chief, CSIRO Entomology

CoResearch is published by CSIRO National Awareness (CNA) for CSIRO staff and interested outsiders.
Editor: Jane Kahler
Assistant to Editor: Karen Robinson
Design and art production: *design* ONE SOLUTIONS, Canberra
Printed by: Pirie Printers, Canberra

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.
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CSIRO

CoResearch

CSIRO's staff newspaper No. 374 May 1998

'Flu drug in home straight

The world's first anti-viral drug, GG167, has entered a regulatory and commercial phase that could see it available to the public by next winter.

The obstacle course of scientific and clinical development was completed in April with application by Biota Holdings Limited for regulatory approval for the drug's clinical use.

Called Relenza™, the drug is the culmination of 20 years of Australian research and development.

"Influenza has always been a problem because of its rapid rate of mutation, resulting in the continuous development of new strains like the virulent strain that hit Hong Kong recently," explained CSIRO's Dr Tom Spurling, who now heads the laboratory where the drug development program was initiated.

"This makes the development of new vaccines difficult and keeps 'flu one step ahead."

In 1978, a team led by Dr Peter Colman and his CSIRO colleague, Dr Jose Varghese, set out to determine the structure of part of the virus to try to explain this variation in influenza.

> "It is a tribute to the tenacity of Peter Colman and Jose Varghese"

Dr Colman now heads Melbourne's Biomolecular Research Institute. He explained that the 'flu virus is characterised by the variability of two proteins, haemagglutinin and neuraminidase, which make up the envelope of the virus particle.

"The virus uses this variation to disguise itself, and our immune system and any vaccines we have developed just can't get a good hold on each new variant," he said.

"New pandemics of 'flu, such as Asian, Spanish or the various outbreaks in Hong Kong, arise from major changes in one or other of these proteins.

"Often the changes are from cross-overs from other species, such as pigs or poultry, which makes it even more difficult to predict and counter new strains."

Using a technique called X-ray crystallography to reveal the atomic structure of these complex molecules, the research team succeeded in accurately placing every one of the more than twenty thousand atoms that make up each neuraminidase molecule.

Their work showed neuraminidase was shaped like little mushrooms, spread all over the surface of the virus.

Each 'mushroom' had four small pockets that were the same for all strains of influenza. These pockets are vital in viral replication, and the research team realised that if it could plug them with a drug, it might have a cure.

Professor von Itzstein's team of organic chemists made a molecule that tightly plugged the pocket.

The drug interacts with all strains of neuraminidase tested to date, and so the team are optimistic that resistance to Relenza™ will not occur readily.

Relenza™ is inhaled twice daily for five days so that it goes directly into the lungs—the site of the 'flu infection.

The team, led by Dr Peter Colman, and collaborating with Professor Mark von Itzstein's group at the Victorian College of Pharmacy, now part of Monash University, received commercial backing from Biota.

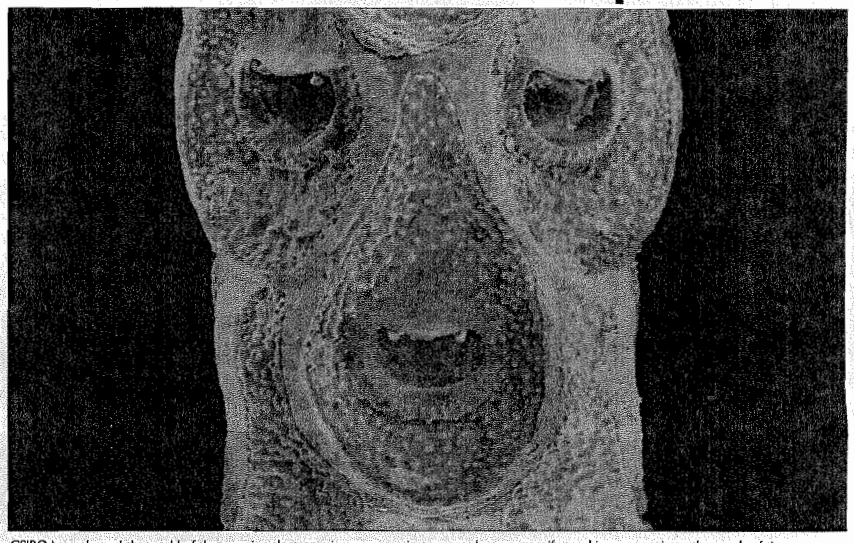
In 1989, Biota formed a partnership with Glaxo Australia Pty Ltd to develop and market the research internationally.

Dr Spurling said that initially there had been a degree of scepticism about CSIRO's approach.

"It is a tribute to the tenacity of Peter Colman and his colleague Dr Jose Varghese that the drug has reached this stage," he said.

Dr Colman, along with Professor von Itzstein and Dr Graeme Laver, who was involved in the early stages of the research, shared the 1996 Australia Prize for their contributions to this project. CoR

CSIRO colours microscopic world



CSIRO has coloured the world of the scanning electron microscope, an instrument that can magnify an object or specimen thousands of times. Developed with Australian company, Dindima, the colour technology will reveal even more about the microscope's tiny subjects. The picture above is not an alien, but a Bryozoa, a marine invertebrate that lives in colonies attached to shells, rocks and even algae. Bryozoa are filter feeders and thrive in waters rich in microplankton. *CoResearch* is celebrating this scientific advance with a special colour issue. More on page 3.

Enterprise agreement goes to vote

Negotiations between CSIRO and unions over the Organisation's latest enterprise bargaining agreement have ended with CSIRO and the Community and Public Sector Union (CPSU) accepting the package.

The Australian Manufacturing Workers Union (AMWU) rejected the package over the inclusion of Australian Workplace Agreements (AWAs).

The Agreement will now enter the next step in the bargaining process, and be put to CSIRO staff this month to vote on whether to accept or reject the agreement.

A 'yes' vote will see the agreement forwarded to the Industrial Relations Commission for ratification before it comes into play.

A 'no' vote will see CSIRO and unions back at the drawing board to work out another agreement, a process that could take several months, and delay salary increases even further.

"It is important that people vote," said CSIRO's Workplace Relations Manager, Mr Warren Smith. "If they don't, they're essentially saying they don't have a view and that they're happy to have other people determine their working conditions."

Voting is a formal process said Mr Smith, and will be conducted as a postal vote by the Australian Electoral Commission.

Two weeks before the vote, staff received a copy of the agreement and an explanation of changes that would take place on certification of the Agreement.

Mr Smith said information sessions have been held in Divisions to give staff the opportunity to ask questions and have the process and items explained.

CSIRO CE, Dr Malcolm McIntosh, visited sites to discuss the Agreement with staff.

CSIRO's current enterprise agreement was negotiated in 1995. If accepted, the latest agreement will carry the Organisation through to 2000.

The process has involved a round of negotiations with the CPSU, Media Entertainment and Arts Alliance and AMWU since December last year.

According to Mr Smith, agreement was reached in many of the items, but sticking points slowed negotiations. These included the CSOF3 bar, Clause 10d, changes to CSOF8 terms and inclusion of AWAs.

The delay has meant pay increases, which would bring CSIRO in line with similar organisations, have not occurred.

Dr McIntosh, approved an across the board increase of 2 per cent in February, to compensate for the delay. Under the proposed agreement pay increases of 10 per cent will be paid in three instalments. The 2 per cent already paid forms part of this.

Secretary of the CSIRO section of the CPSU, Mr Peter O'Donoghue, said that the union views the outcome as not totally satisfactory, but urges members to accept the total package because there are many things that are beneficial.

Mr O'Donoghue said the Union Council is offering to meet with members should they wish to hear an explanation of its perspective.

National Negotiator for the AMWU, Ms Anne Donnellan said the AMWU is recommending its members reject the package primarily because of the implementation of AWAs.

"AWAs are individual contracts outside the Award. Where individuals are employed outside the Award and the EBA, they are in a weaker position to negotiate any changes or pursue any disagreement with the employer regarding the operation of the contract," she said.

Ms Donnellan said other items not endorsed by the AMWU are salary outcomes, the extension of Clause 10d, abolition of the five year limit on term appointments, the CSOF3 bar, changes to CSOF2 technical employees appointments, one-off cash awards and incorporation of annual leave loading into salary rates.

Staff can find details of the Agreement at http://www.csiro.au/services/humanres/ea98explan.htm. CoR

CSIRO has a new logo

CSIRO launched its new logo on May 4. A decision to update the logo was made by the CSIRO Board in response to the Organisation's 1996 restructure.

The change celebrates CSIRO as a uniquely Australian institution. The highlighted inner part of the familiar blue-and-white symbol is now a stylised map of Australia.

The Organisation's trading name will remain 'CSIRO Australia'–and its legal name will stay the Commonwealth Scientific and Industrial Research Organisation.

Rich rewards from a month on the high seas

by Craig McCauley, CSIRO Marine Research

Australia's largest single marine research expedition during the International Year of the Ocean—a two-ship voyage to the Southern Ocean—has given scientists a detailed look at a region where wild conditions have often deterred deep ocean investigations.

The research area, west of Macquarie Island between 50 and 52 degrees south, sees little human activity apart from occasional legal and illegal fishing vessels, and the summer passing of around-the-world sailors.

Wind speeds of 70 knots and seas of 12 metres provided a challenge to day-to-day living as well as the research program.

"This is not the most comfortable part of the world to set up your office for a month," said oceanographer Dr Steve Rintoul, chief scientist aboard one of the vessels, CSIRO's Southern Surveyor. "But thankfully conditions moderated enough to allow us to collect a comprehensive set of observations that will take us a long way towards understanding how the Southern Ocean influences climate."

Focus of the research was the SubAntarctic Front, a 20,000 kilometre long boundary between warm, temperate waters to the north and cool, polar waters to the south.

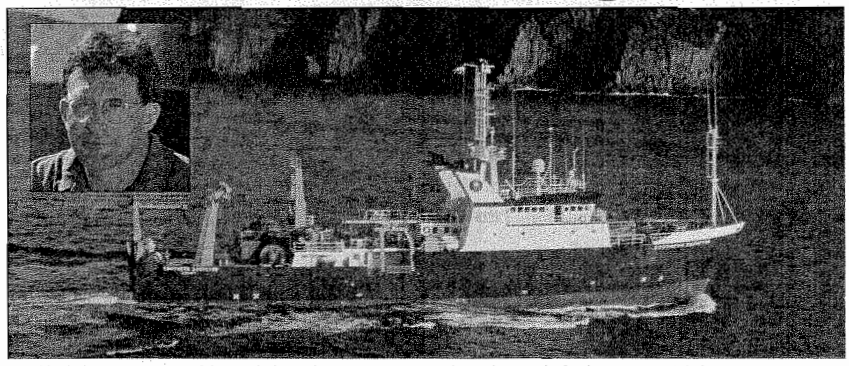
Dr Rintoul said the front is part of the largest system of ocean currents in the world, known as the Antarctic Circumpolar Current, and influences both climate and the ocean food chain.

"Mixing across this circumpolar front is an important, but poorly understood part of the global heat balance," according to Dr Rintoul. "Fronts are also often regions of enhanced biological productivity, but we don't really know why. Our observations will allow us to test the hypothesis that biological activity near the front is enhanced by strong vertical motion near the front."

One unique aspect of the expedition was the use of two research vessels, CSIRO's *Southern Surveyor* and the Australian Antarctic Division's *Aurora Australis*.

The *Southern Surveyor* carried out a detailed survey of a meander of the front, using acoustics to map upper ocean currents and lowering profiling instruments to measure temperature, salinity and oxygen between the sea surface and 1500 metres depth.

The unprecedented resolution of the survey provides new insights into the dynamics of the front.



CSIRO's Southern Surveyor, one of the vessels that took part in a major research expedition to the Southern Ocean to help figure out how this ocean influences climate. (inset) Dr Steve Rintoul, chief scientist of the expedition says the Southern Ocean is not the most comfortable part of the world to set up your office.

Scientists on *Aurora Australis* focused on unravelling the biological controls on the ocean carbon cycle in this region. Sediment traps were used to directly measure the flux of carbon sinking from the surface layers to the deep sea. A wide range of biological and chemical studies were carried out to characterise the different communities that live on either side of the front, the amount of carbon exported, and the controls on production.

"One of the interesting results was a clear demonstration that the addition of iron relieves ocean 'anaemia' and fertilises the growth of Southern Ocean phytoplankton, with a response rate two to three times greater north of the front than to the south," said Dr Tom Trull of the Antarctic CRC, chief scientist on *Aurora Australis*.

The SubAntarctic Zone is one of the biggest oceanic "sinks" of atmospheric carbon dioxide. Both physical and biogeochemical processes are likely to contribute to the ocean uptake of carbon dioxide, but the relative importance of the two is not known.

"The use of two ships, one carrying out a rapid survey and one occupying a number of 'process stations' in key sites, provides us with a powerful combination with which to address this question," said Dr Rintoul.

More than 30 scientists from Australia, France, Belgium, New Zealand and the United States participated in the Subantarctic Zone experiment. CoR

Sirocredit merger gets green light

History was created last month when members of Sirocredit, Outlook and Enterprise Credit Unions voted to merge.

The new entity is expected to come into being on 1 July 1998*, and will be known as Members Australia Credit Union.

"It will be one of the largest credit unions in Australia with national coverage," said Sirocredit Chief Executive, Mr Richard Cameron.

The Head Office of Members Australia will be the current Sirocredit Head Office at 102 Albert Road, South Melbourne, Victoria.

"Sirocredit members will not see a great change in the day to day dealings with the new credit union for a number of months," said Mr Cameron.

"But by the end of 1998 it is envisaged that the computer, telephone and phone banking systems of the three credit unions will be combined to offer a unified service to members."

According to Mr Cameron, a number of reasons were cited by the Sirocredit Board to support the merger.

These included enabling the continued delivery to members of low cost services in a friendly mutual environment, as competition intensifies in the financial services sector, as well as providing improved coverage to all members across Australia.

"Each credit union involved in the merger is an equal partner. This is evidenced by the even make-up of the new Board of Members Australia, that is, three Directors from each credit union," he said.

The three Directors of Sirocredit who will become Directors of Members Australia are Mr Howard Crozier, Mr John Baistow and Dr Tom Biegler.

Any queries regarding the merger should be directed to your nearest Sirocredit (soon to be Members Australia) branch. CoR

**Date subject to regulatory approval.*

Sir Ian McLennan Achievement for Industry Award 1998

Nominations are now called for the Sir Ian McLennan Achievement for Industry Award.

The Award goes to CSIRO scientists and engineers whose achievements have been of benefit to Australian industry.

Winners receive a grant of up to $15,000 for an overseas study tour related to their achievement. They are also presented with the Sir Ian McLennan Medal at a ceremony in Melbourne.

Closing date for nominations is 30 June 1998. The winner will be announced in November.

You can find the application form on the WWW at: http://www.csiro.au/doco/infocirc/simapp01.htm

A brochure with details about the Award is also available at: http://www.csiro.au/doco/infocirc/ic98007.html

Further enquiries to Ms Karen Robinson, CSIRO National Awareness, PO Box 225, Dickson, ACT 2602. Phone 02 6276 6108 or fax 02 6276 6273.

CSIRO success in Hannover

The CSIRO display at Germany's massive Hannover Fair last month was a huge success according to Deputy Chief Executive Dr Bob Frater.

CSIRO exhibited 20 technologies at the show. In the process the Organisation helped bring to Hannover eight Australian companies using CSIRO technologies in their products.

"We made 600 important contacts that we would never have made in a million years without coming here," says Dr Frater. "We had people come to the stand keen to sign confidentiality agreements and distributorships virtually on the spot."

Dr Frater said the purpose of exhibiting at the fair was to raise the profile of Australian R&D for CSIRO and its collaborating companies, both in Australia and overseas.

"By going to Hannover, we were able to demonstrate that CSIRO has technology in the manufacturing area equal to or better than any around the world. These really are our CSIRO gold medal technologies," he said.

Spread over 23 halls and 315 000 square metres, the Hannover Fair attracted 7000 exhibitors from 60 countries, 4000 journalists and a third of a million visitors over six gruelling days.

Dr Fischer, Minister for Science, Economics and Transport for the state of Lower Saxony in Germany's industrial heartland, spent over half an hour at the CSIRO stand, visiting many of the exhibits individually and talking at length to Australian scientists and business people.

CSIRO and its industry partners also discovered new applications for every one of the technologies exhibited.

One industry visitor to the stand suggested the idea of using CSIRO's rapid prototyping and simulation software package, FASTFLO, in the finance industry.

CSIRO's SQUID magnetometer, used for detecting orebodies, attracted attention from potential clients keen to use it for detecting substances like drugs and explosives at airports.

Other winners at the Fair were CSIRO's light metal casting skills drawing attention from two European and one US automotive manufacturer, and the Gas Tungsten Arc Welding technology, which could see a deal struck between CSIRO's advanced welding facilities in Adelaide and a Danish company.

Other technologies on display were the Plascon toxic waste disposal system, digital cameras for traffic monitoring, face recognition equipment for airports, road crack monitoring equipment, melanoma detection technology and the solar wheel motors from the car that won this year's solar car challenge.

Divisions that exhibited at Hannover were Telecommunications and Industrial Physics, Mathematical and Information Sciences, Manufacturing Science and Technology, and Molecular Science.

Companies that collaborated with CSIRO to display at Hannover were Australian Scientific Instruments, SRL Plasma, Note Printing Australia, Action Laser, Polartechnics, Harrison, Avantra MM Cables and the overseas companies, NAG and Italian company, Milestan MLS. CoR

Coal lecture honours

Professor Dalway Swaine, an Honourary Research Fellow at CSIRO Energy Technology, Sydney, will deliver the Eighth Annual Peter H Given Lectureship in Coal Science at PennState University, this month.

The prestigious award is international recognition of Professor Swaine's leading role in the field of trace elements in coal especially environmental aspects.

Professor Swaine will deliver three lectures—Where are the trace elements in coal? The fate of trace elements in coal during combustion at a modern power station and Future aspects of trace elements in coal. CoR

Double Helix Family Deal!

special offer

CSIRO staff and families can receive a Double Helix Transistor Kit when someone from their family joins CSIRO's Double Helix Science Club!

This fascinating kit includes an LED, resistors, a transistor and wire-all you need to build your own circuits and explore how electronic devices work. You'll also receive a back copy of *The Helix* with instructions and articles.

There are special membership rates for 2nd and additional members in the family. Join or renew one member for $25 and other immediate family members can join or renew for just $14.95 each. That's a saving of over $10!

If you're after a bit of fun or some more serious learning for a young scientist, a catalogue packed with intriguing science items is also available.

To take advantage of the CSIRO membership offer just write "CSIRO staff" on your application. Check out our new web page at www.csiro.au/helix for an application form or contact us on Tel: (02) 6276 6643 Fax: (02) 6276 6641.

CSIRO colours microscopic world

CSIRO has developed a software system that colours the striking images made by scanning electron microscopes in a joint project with Australian technology company, Dindima.

Conventional imaging by the scanning electron microscope is black and white, and according to one of the system's developers, Mr John Ward from CSIRO Forestry and Forest Products, producing an efficient, economic and meaningful way of colouring these images has eluded researchers for a long time.

Mr Ward said the advantage of using colour is that it can increase the information content of an image by allowing very minute details to become visible and enhance the interpretation of results.

The system will have a major impact on how scanning electron micrographs (SEMs) are used, and will have as a market thousands of electron microscopes around the world.

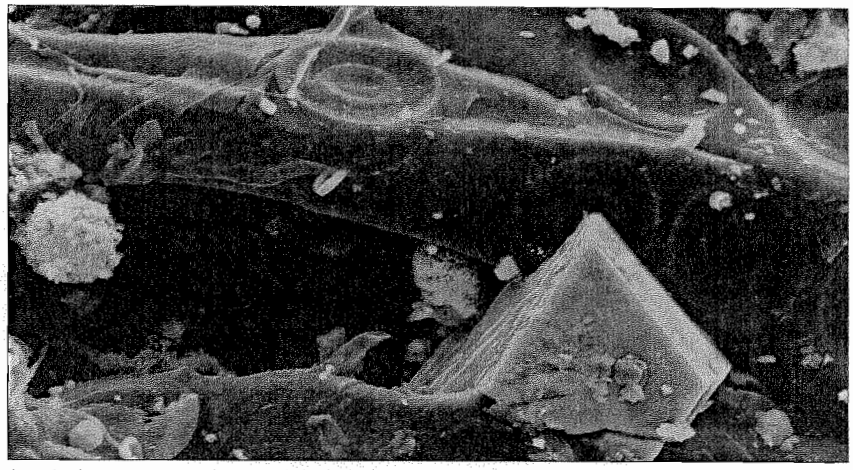
Since its launch in March, Dindima has sold two systems—one locally, the second to Slovenia. The technology has received wide media attention nationally and internationally with enquiries from *The Times* in London, *Natur & Vitenskab* in Denmark, *Science* in Washington and *National Scientific Pte Ltd (SIN)* in Malaysia.

Mr Ward said there have been other colouring methods used in the past, but most used analogue technology, which didn't give very high resolution and also required an expensive extra piece of hardware to be attached to the machine.

The new system is digital and can deliver far better picture quality. It lets the operator manipulate colours together with the means to combine information from two images into a single more informative colour image.

Mr Ward added that because it is software based, rather than hardware, the system will be cheaper for people to buy and run on the average home PC.

Mr Ward collaborated with Mr Graham Rundell at Dindima to develop the software. CoR



A scanning electron microscope produces images by bombarding an object with a focussed beam of electrons. Some of these electrons are reflected and others are knocked out of the object. They are detected and collected to produce an image on a standard computer screen. The image above shows crystals that formed in a wooden beam. The beam formed part of a warehouse built over 50 years ago. Over time, the crystals grew to a size that weakened the beam, causing it to split and crash to the ground. Fortunately no one was there at the time. Colour SEM images were provided by John Ward, Francis Corrigan, and Mark Greaves.

May is Festival time!

The Sixth Australian Science Festival, part of National Science Week, was held from May 2-10, with CSIRO showcasing a major exhibit at the National Convention Centre in Canberra.

The hands-on exhibit included research on animals, plants and insects, how to explore for nickel and gold, medical imaging, water systems of the future and information on radioastronomy and meteors.

The booth had lots of fun science and things to buy from CSIRO's Double Helix Science Club.

Marine Research also featured at the Centre with patrons guessing the age of a tuna by examining under a microscope the growth rings of the otolith—the tuna's earbone!

Other aspects of the display drew attention to the size and scope of Australia's vast ocean territories—twice the size and scope of Australia's landmass—and the need for marine research.

According to Mary-Anne Waldren, Executive Director of the Australian Science Festival Limited, 'something for everyone' has become a bit of a festival motto.

"The festival aims to expose the excitement, challenges and relevance of science and technology to the general public and to encourage students to consider careers in science and technology," she said.

This year's festival, the largest yet, involved more than 181 events for people of all ages, and attracted around 155 000 people.

Other events for National Science Week included the Great Australian Science Show in Melbourne. CSIRO's exhibit 'Bats and emerging diseases', showed how State and Federal Government bodies used their expertise and resources to investigate the Bat Lyssavirus.

A special edition of CSIRO's new nationally broadcast radio program *The Sci Files* went to air.

CSIRO Science Sunday at Clayton in Victoria, had a great open day with interactive demonstrations of science for enthusiasts of all ages.

3RRR broadcast live from the site, the Aurora 101 solar car was on display, and they had mystery science trails with some great prizes.

Plant Industry's Horticulture Unit was involved in a series of public tours and talks for science week, and the Parkes Radiotelescope had sky viewing through small telescopes, and an evening lecture by a professional astronomer. CSIRO Land and Water organised a lecture by Mary White, author of *The Greening of Gondwana* and *Listen...Our Land is Crying* at its Black Mountain site in Canberra.

In Western Australia a breakfast for key executives and industry stakeholders was held focussing on salinity nationally. CoR

Sci Files are on the air

The Sci Files is a regular radio series produced on CD. Each one has fifteen or twenty short science stories based on current CSIRO and CRC research designed to appeal to a wide audience.

The CDs, produced by Pegasus Media in Melbourne, are mailed to radio stations around Australia. A questionnaire to program managers and presenters asked for their comments on form, content, style and timing of the new series.

"Reaction so far has been very positive," says Mr Nick Goldie, Executive Producer of the series and part of CSIRO's National Awareness team. "Radio producers and presenters have called asking for more stories because they want to use them as a regular feature—like once a day or once a week.

"If you're a research scientist, and someone from Pegasus Media rings you up and wants to interview you, you may be about to become a star of *The Sci Files*.

"There's a real curiosity out in the community about what scientists do for a living. *The Sci Files* should answer some questions and stimulate a lot more!"

If you'd like to be on *The Sci Files* or just want more information, call Nick Goldie on (02) 6276 6478. CoR

Chiswick's back on track

CSIRO Animal Production's Chiswick site will be home to a new $25 million dollar satellite tracking station set up by US company Lockheed Martin.

Since the site's downsizing during the Division's restructure in 1996, Chiswick has looked to attract business enterprise or other research projects to help maintain the site's viability.

Chiswick, near Armidale in NSW, was one of 30 sites considered by Lockheed Martin. Others included Hawaii, the Philippines and Queensland's Rockhampton.

"When CSIRO restructured we produced a brochure to let people know that the site was available and the type of facilities it had," said Dr Roland Bernett, Laboratory Manager at Chiswick.

"The Armidale Development Corporation heard through the State and Regional Development Corporation (NSW) that Lockheed Martin was looking for a suitable site and put the company in touch with us.

"Chiswick had exactly what Lockheed wanted—a site that faced north, was within the correct longitude for tracking satellites immediately after launch, top communication links, close to a university and the right climate.

"Apparently the company had had problems before with cyclones causing damage to the antenna dishes."

"In one incident a shipping container was hurled against the base of an antenna support, although no major damage was done—we're away from the sea so corrosion from salt won't happen and we're certainly not in a cyclone zone."

Work has started on the new tracking station and is expected to be complete by October this year.

"Being able to provide a suitable site is a seed that will help the local community, and with CSIRO's wealth of expertise in space communication, who knows what opportunities will arise down the track," said Dr Bernett.

"What we would dearly love is for other CSIRO projects to see this site as ideal for their work. If not, related technologies and businesses are a welcome path and with Lockheed Martin's presence, we're off to a great start." CoR

Minister launches Beyond Science

It's the people behind some of CSIRO's ground-breaking achievements who are the real subject of *Beyond Science: Managing Projects for Success* launched recently in Brisbane by Minister for Industry, Science and Tourism, Mr John Moore.

Beyond Science contains nine case studies showcasing CSIRO's multidisciplinary approach to research, and its expertise in dealing with complex management issues, both scientific and commercial.

Attending the launch were CSIRO Deputy Chief Executive, Dr Colin Adam, CSIRO Board Member, Mr Norbury Rogers, CSIRO staff and industry representatives.

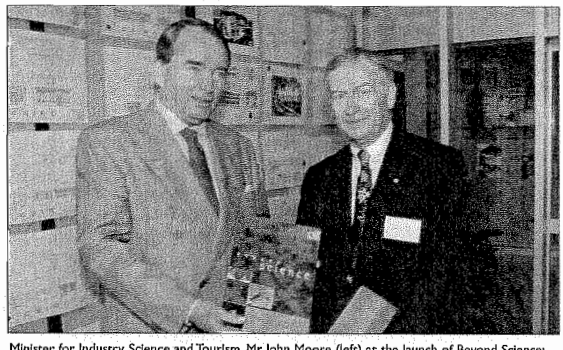
Also there was one of the book's subjects, Dr Ray Smith from CSIRO Exploration and Mining and Director of the CRC for Land Evolution and Mineral Exploration.

"Certainly the nine stories chosen have billion dollar outputs," said Dr Colin Adam. "But more importantly, they are very human stories—about the people; about people's commitment. For those outside CSIRO it gives insight to the nature and character of our staff."

Mr Moore said he would like to see more good news stories, such as those in *Beyond Science*, coming out of CSIRO. "It's good for funding, both public and private," said the Minister, and praised CSIRO scientists for their "enormous enthusiasm and commitment to the job."

Case studies in the book include Dr Smith's work in mineral exploration that has led to new gold discoveries estimated to be worth $2.8 billion; Australia's $1.7 billion cotton industry, 93 per cent of which is based on CSIRO developed cotton; solid oxide fuel cells; the anti-flu drug; stored grain research; the Australian Animal Health Laboratory; the Australia Telescope; the Port Phillip Bay environmental study; and the Magnesium Metal Project, which could make Australia a world leader in the component industry.

Beyond Science: Managing Projects for Success was launched at the Queensland Centre for Advanced Technologies, Pinjarra Hills, Brisbane. More information: david.symington@exec.csiro.au CoR



Minister for Industry, Science and Tourism, Mr John Moore (left) at the launch of Beyond Science: Managing Projects for Success with Dr Ray Smith, one of the CSIRO scientists in the publication.

CSIRO—the 'silent achiever'

Australians and our stakeholders think CSIRO is far too quiet about its achievements—the "silent achiever" was a description used by many in the latest public opinion research.

But they strongly support the principle of a national publicly funded science agency such as CSIRO.

These are key findings from CSIRO's first-ever qualitative survey of Australian public opinion, carried out from November 1997 to January 1998.

The study tested some of the attitudes behind the basic figures we have been collecting over the past six years in our omnibus surveys. These are the ones that say over 80 per cent of the population interviewed had heard of CSIRO and over 60 per cent think we give value for taxpayers' dollars. But these omnibus surveys do not tell us why people think that way, what they know about us, or what they expect of us.

The purpose of this new research was to answer questions in two main areas:

- Is CSIRO valuable to people and why? If not, why not?
  - is the view of CSIRO based on current information, historical information or mythology?
  - where do people get their information about CSIRO?
- What do people expect from CSIRO in the future as a contribution to national benefit?

What is CSIRO?

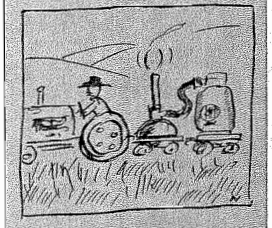
What does it do?

The focus group discussions with the Australian community confirmed the high level of awareness of CSIRO that earlier numerical surveys had shown. However the new research reveals few people know what CSIRO actually does. Some people think that CSIRO is a private company. Very few can say what the letters CSIRO stand for.

Young adults (aged 25 years or less) have a significantly weaker level of knowledge and awareness of CSIRO. Older people (50 years and over) know most about CSIRO.

Most focus group participants vaguely remember seeing, hearing or reading something about CSIRO, but apart from instances such as calicivirus, seldom recall what the CSIRO story was about. They are confused about what CSIRO does.

"I think the CSIRO is the government science organisation involved in agriculture."
(Person with non-English speaking background)



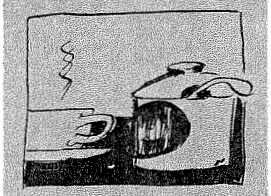
"Does CSIRO do research and marketing? Maybe test things? But I have no idea what."
(Female aged 18-25 years)

"I know a little about what they do. But the CSIRO just plays behind the scenes. No-one knows what they do or what happens."
(Male, aged 18-25)

"I think the CSIRO does research and tests on goods and products prior to these going into the marketplace, especially to ensure safe food and similar products."
(Person with non-English speaking background)

"The CSIRO undertakes scientific work for government and industry."
(Female aged 50-70)

"The CSIRO do scientific work. Isn't it something to do with sugar?"
(Male, aged 50-70)



"CSIRO are a scientific organisation which is very stable and respected for their findings. CSIRO has been around 35 years or more. They are almost a stereotype model for any scientific group."
(Female with dependent children)

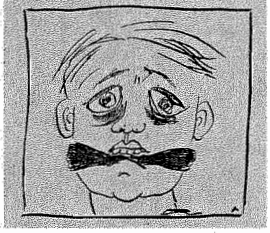
Interviews with opinion leaders and stakeholders reveal a similar lack of specific knowledge about CSIRO.

Many knew a bit about CSIRO and what the organisation does, based on a direct sector involvement with CSIRO, often many years ago and not connected with their current professional duties. Even the more knowledgeable key opinion leaders admitted that they had poor knowledge of CSIRO activities outside their own area of interest.

Many of the key opinion leaders believed that the scientific activities of CSIRO and the long-term economic and social benefits for Australia of its research were not well understood by their peers. These leaders gave strong support to CSIRO communicating its scientific achievements more widely.

"I have had no involvement with CSIRO. I don't know what they do. We at our company do our own R&D. Our aim is to keep building the next generation machine for our clients through re-tooling the machinery and stretching the limits. We are usually the first to introduce new ideas. Having an organisation that focuses on science would be a tremendous benefit for Australia. The aim should be to capitalise on the opportunity for Australia."
(Managing Director, medium sized company, plastics industry)

"Public communication by CSIRO is an area in need of improvement. Because CSIRO is a public body it is limited to not promoting itself too much. But the problem is the public don't know too much about what CSIRO are doing. Even I cannot remember any communication by CSIRO to the public. I know at technical conferences to industry that CSIRO do communicate well but this does not occur to the community."
(General Manager, waste water treatment)



Most of these people expressed strong levels of support for CSIRO. Many unprompted positive comments emerged that CSIRO was essential in ensuring long-term economic growth for Australia and the creation of national wealth.

"The CSIRO have done quite a lot of good things. They are respected in Australia and overseas, but the visibility of CSIRO may be dropping."
(Chief Executive, Chamber of Commerce)

"CSIRO is invaluable. It is an independent body doing important research. It helps Australia grow. But to be honest I don't know exactly what CSIRO do. People need to know what CSIRO achieves and the breakthroughs they do."
(Opinion leader in agriculture)

"Governments find it hard to justify CSIRO when large amounts of money are being spent and the returns are not obvious but this is the nature of science. But CSIRO research pays for itself over and over again. But this benefit is not put to the public many times over. CSIRO has to show what it is doing and the tremendous outcomes of fundamental science."
(Opinion leader in food industry)

Some interviewees were critical of aspects of CSIRO linkages and processes undertaken with industry. Areas of most concern were CSIRO's heavy workload, CSIRO charge out rates, and a perception that CSIRO is shifting too far away from fundamental research towards applied research. The latter concern was widespread among industry.

"There is a need for CSIRO to avoid just concentrating on specific short term research for industry. Fundamental, basic research is needed…50 per cent of CSIRO funds should be devoted to this."
(Chief Executive Officer, Chamber of Manufacturing)

"CSIRO should continue to focus on basic research as it leads to new discoveries. Overall fundamental basic research should be 40 per cent of CSIRO businesses. You have to have basic research this high as the development costs can be very high, but the return can also be very high."
(General Manager, Food Industry)

Why Australians think CSIRO is important

One hundred per cent of employed people, older people and those with non-English speaking background in the focus groups rated CSIRO as very important for Australia.

Of the younger people, 95 per cent thought CSIRO very important, 5 per cent important. Middle aged parents with dependent children voted 80 per cent for very important, 20 per cent important.

Most of the participants said they came to this conclusion (usually at a point mid-way through the focus group discussion) because on-going sustained public investment in science through CSIRO was necessary for Australia to maintain and ensure a high standard of living.

"It is important to have research and development. It gives security and stability to Australia. Without CSIRO there would be a huge negative impact. It would reduce Australia's independence and this would be a bad thing."
(Person with non-English speaking background)

"Having CSIRO is very important. CSIRO do a lot of good things for the environment and future generations. It helps improve our quality of life. The CSIRO is a national asset that should be maintained and it should publicise itself to the Australian public."
(50-70 year old)

The focus group discussion process itself led to strong demands for CSIRO to publicly present to the Australian community what the organisation does and the benefits to Australia.

"After listening to people talk in this session the impression is CSIRO is invisible and you take science and CSIRO for granted. At the start of this session no-one had heard of CSIRO or didn't want CSIRO. Now we do."
(18-24 year old)

"CSIRO should definitely increase its public profile and tell people what it is doing. If we don't know what they are doing how are we to gauge how useful they are? If CSIRO don't have a higher profile how can they lobby for resources and retain their skilled resources?"
(Person with dependent children)

Among the key opinion leaders there also emerged strong support for investing in science, especially through a co-ordinating agency like CSIRO.

"We have to compete internationally. We cannot compete with cheap labour. Australia has to compete intellectually. CSIRO helps preserve our intellectual capacity. It is important to invest in CSIRO to develop our intellectual capacity even if the pay-off is not for 30-50 years."
(Agricultural opinion leader)

"The large corporations in the world are the engine room for science and this is sad for Australia. But it is a good reason for the existence of CSIRO as private large corporations drive science rather than the government. In Australia's case it is important to have CSIRO as we lack the power that the multinational companies give to research and development."
(Manufacturing industry spokesperson)

"There is a need for a nationally funded research facility like CSIRO to underpin Australia's economy."
(Chief Executive, Environmental Management Authority)

"CSIRO is a legitimate area for Australian taxpayer expenditure because Australian industry and business are extremely short sighted and don't have a high commitment to R&D. I would be devastated if there was no CSIRO."
(Editor Major Metropolitan Daily Newspaper)

"Yes it is necessary to have CSIRO to provide scientific credibility to the nation. CSIRO gives R&D capabilities and innovation that is the basis for national wealth."
(Technical Director, Chamber of Manufacturing)

Expectations of CSIRO

The opinion research indicates that the public expects CSIRO and science to deliver the following benefits to Australia (listed in order of emphasis):

- a sustainable environment, particularly through the introduction of alternative energy sources
- safe food and drinking water
- production of high quality food, water and energy to meet Australia's needs
- production of food, mineral resources and high technology manufacturing products that ensure strong levels of export earnings for Australia.

There are subtle differences between these desires—sustainability in energy and food production outweighed high quality, as did safety. To manufacturers, high quality food may automatically mean it is safe and sustainably produced; the public does not assume all these qualities go together.

Key opinion leaders and stakeholders want CSIRO and science to continue to deliver advanced 'knowledge based' industries that help achieve a high standard of living. They also want more 'value added' exports.

Among leaders of the industry, agriculture, business and media sectors there also emerges a strong level of expectation that CSIRO must undertake basic science research to support its applied science efforts.

"Private companies are generally focused in the application of new technologies rather than new basic research methodologies which may require many years for implementation. Without CSIRO achieving basic research gains it would be difficult for Australia. Basic research could be undertaken through the Cooperative Research Centres but they are specialised and focused. If CSIRO don't do basic research that can be diffused readily through the Australian economy, then who else will? Also if CSIRO don't do fundamental basic research then they become a follower and less likely to allow fundamental leaps for Australian industry. Overall I feel that 65 per cent of CSIRO effort should be in fundamental basic research and 35 per cent applied research."
(General Manager, waste water treatment)

"I would want CSIRO to create a long term view of being leading edge. Australia has to become much more innovative through R&D and science. Pure research should also still be a key role for CSIRO as well as applied research. The expenditure on pure research should be greater than the amount spent on applied research. Pure research should also not be at the whim of individuals as applied research is and it should not be lost overseas."
(Managing Director, heavy bulk transport)

Science

When the concept of science generally was explored with the focus groups, they rated science as very important to everyday life, even though most of them said they did not normally think about science and the role it plays in their lives.

"Yes! Science is important. We wouldn't have a lot of things we have now...science is basic. We live in it, you are surrounded by it."
(18-25 year old)

"Science has a huge impact on our daily lives like the food we eat, things we do. There is a lot of science around. Even simple things like traffic light connection."
(Young adult, city resident)

"Science and technology are what saves lives, it is what makes our lives easier and this increases life expectancy. As long as science and technology are used positively it can make a huge difference to our lives."
(Young adult female, city resident)

Fears and concerns about science were also expressed, especially about cloning and genetic engineering (topics that had been in the news at the time of the survey).

"Yes. People are scared of science especially cloning. We may outsmart ourselves. It could be dangerous."
(Male employed person)

"Cloning and genetic control shows corruption and the average person is concerned. This also makes people angry if science doesn't give benefits all the time or does things we don't like such as cloning and testing on animals. People also don't like too much money being spent on futuristic things that have no current benefit. For me, science is about progress. But it has to be progress that we want. Science really has to address the bad things it creates."
(Female employed person)

Key business and industry opinion leaders also correctly predicted that the average person was concerned about cloning and genetic engineering.

Survey method

Members of the general public were interviewed in 18 focus groups of seven to ten people. These were conducted in metropolitan (Sydney eastern and western suburbs, Brisbane, Melbourne, Perth), provincial (Wollongong, NSW) and rural areas (Lismore/Ballina in NSW, Toowoomba in Qld, Bunbury in WA, Albury-Wodonga on NSW/Vic border).

The public answered advertisements in newspapers asking for volunteers to come and talk. They did not know CSIRO was the topic until the discussion started.

The volunteers accepted fell into five particular segments of the population we were interested in:

- young people 18-25
- 30-50 year olds with dependent children under 16
- 50-70 year olds
- employed people 25-49
- people from non-English speaking backgrounds who had been resident in Australia for more than five years.

These groups also matched some of the segments used for our earlier omnibus public opinion surveys.

Sixty key opinion leaders were interviewed individually in the locations across Australia where the focus groups were conducted. Interviewees were selected from the following areas:

- agricultural (key executives of farming organisations)
- manufacturing and mining (key executives in manufacturing, mining, mineral processing, transport or construction enterprises
- political (local MPs or their advising staff)
- media (newspaper or television editors or journalists) CoR

The survey was carried out by Market Attitude Research Services Pty Ltd.

CSIRO staff willing to reach schools

by Stephen Speer, CSIRO Plant Industry

Would you accept an invitation to address a group of high school students about your research at CSIRO or visit a local high school to talk about careers in science?

Findings from a survey conducted in Canberra indicate that more CSIRO staff are willing to participate in such activities than are given the opportunity. For example, 39 per cent of CSIRO staff stated they had addressed student groups about their research in the past two years, while 76 per cent stated they would be willing to do so.

These results are findings from a CSIRO Student Research Scheme project, conducted by Maria Loyman (St. Clares College, Canberra), Debbie Irwin (Lake Tuggeranong College) and Stephen Speer (CSIRO Plant Industry), which, in part, investigated opportunities for improving interactions between CSIRO staff and secondary science teachers and students.

Scientific staff at four CSIRO Divisions and science teachers at 20 local high schools and colleges were surveyed with 236 responses from CSIRO scientists (54 per cent return rate) and 77 from science teachers (45 per cent return rate).

Key findings from CSIRO staff are:

- addressing students on-site about their research, visiting a local high school to discuss a specific science topic and presenting an information session for teachers on science topics related to their research were the most popular programs selected by research scientific staff
- assisting at general public open day, hosting a work experience or CSIRO Student Research Scheme student and addressing students on-site about their research were the most popular programs selected by research support staff
- a reluctance to visit local high schools to discuss careers in science, especially among post-doc staff, with many commenting they believed career opportunities in science were limited
- lack of time was indicated as the main restriction to participating in programs discussing science with teachers, students, peers and the general public.

Key findings from secondary science teachers are:

- encouraging students to participate in CSIRO Student Research Scheme or science related work experience and an internet service that provides notes and activities relating to current scientific news items are the two most popular programs selected by teachers
- scientists visiting classrooms to demonstrate specific science activity or science topic were preferred to discussing careers in science
- seminars specifically for teachers on current scientific news items were preferred to seminars on general aspects of science
- cost, curriculum pressure and timetabling problems were the main restrictions to conducting science related excursions.

The survey highlights that many scientists are willing to be involved in education programs related to their research, with research support staff indicating a stronger willingness to participate in student related activities than teacher related activities.

Teachers too indicated a desire for interactions with scientists with three areas of interaction identified. First, programs, such as an internet service and teacher in-services that deliver current information on scientific achievement teachers can use in the curriculum.

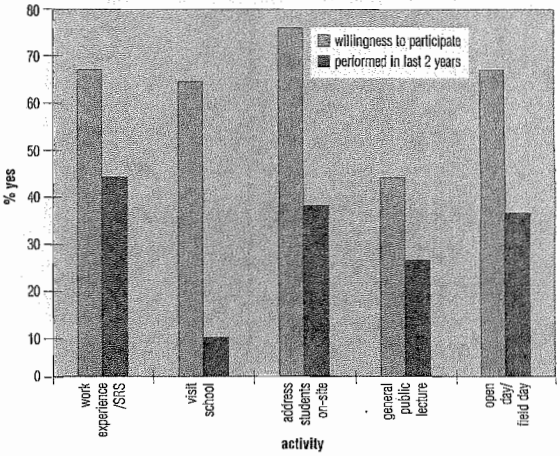
Second, class visits to laboratories/science organisations and SRS programs that allow students to get a feel for 'the real world'.

Third, classroom visits by scientists to demonstrate specific science topics, especially those that require resources the school does not have.

Other identified advantages of this style of program are less classroom disruptions and minimum cost to schools.

Further details available from Stephen Speer, email: S.Speer@pi.csiro.au CoR

Scientists involvement in education/communication activities



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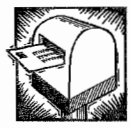


Dear Editor,

"How do you see CSIRO as a person?

This question was put to us by *CoResearch* 373, February 1998.

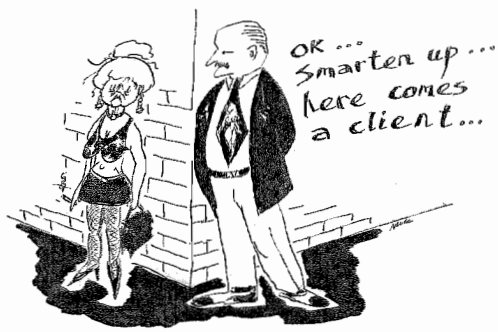
"the public and key industry and opinion leaders" opted for middle aged, male and interesting. To those of us who are close enough to see the warts, particularly if they have been around long enough to remember times past, the answer is bleedin' obvious mate.

CSIRO is definitely female. In her youth she was bright, if not brilliant, a great conversationalist/communicator, sometimes provocative but usually respected and sought after. She did interesting, rather than commonplace things. Her performance and achievements in her field were praised worldwide. She was well provided for by a kindly uncle who gave her a great deal of freedom as long as she reported home regularly with something interesting to say. There were even occasional sugar daddies (non-family members) that presented her with substantial, largely no-strings, gifts that increased her independence.

Unfortunately, youth cannot last forever. Her kindly uncle has mismanaged his own affairs and has all but cut off her allowance. The sugar daddies have problems of their own and there are ropes rather than strings attached to their "gifts". Her uncle has turned nasty—"support yourself or leave my house", and has taken to charging her a substantial rent.

Sadly, since she possesses nothing of her own except her own body and mind, she is reduced to selling or renting various bits to meet the ever increasing demands of her uncle. Suitors who were once grateful if she could find the time to give them some attention are contemptuous of her plight and feel free, since they are paying customers, to demand that she perform acts of their choosing, however distasteful.

In her youth she had a close friend, slim and unobtrusive, who had much the same goals and interests, protected her from unwelcome outsiders, and managed her uncle's allowance for a small percentage. This freed her mind so



that she could spend all her time on her interesting and rewarding pursuits. That friend has become more and more distant, is grossly overweight with his percentage vastly increased, and is now her uncle's agent rather than hers. He forces her into more and more frequent liaisons with, and solicits new clients, insisting that their contributions justify their unspeakable demands.

As a final indignity, if her 'performance' is judged by her protector to be merely "meeting requirements", that is if she does not excel at those tasks she formerly regarded as degrading, he may withhold or even reduce her allowance.

Yes, CSIRO is middle aged and was once interesting, but although female, is certainly no lady.

Leigh Miller
CSIRO Entomology, ACT.
Leigh adds that he chose "female" as gender for no other reason than it opposes the example given by CoResearch. Any reader is invited to substitute "male", "it" or "indeterminate" throughout.

Leaks at fault in petroleum escape

One of the nation's biggest potential oil and gas producing areas, the Greater Northwest Shelf, is the subject of a research consortium set up by CSIRO scientists in an effort to reduce petroleum exploration costs.

According to researchers, more than half of suspected oil and gas accumulations have leaked over recent geological time—around 5 million years—and it is difficult without expensive drilling, to distinguish potential traps still worth exploring from those that are not.

Initiated by Dr Najwa Yassir of CSIRO Petroleum Resources and Dr Claus Otto of CSIRO Land and Water, with the Australian Geological Survey Organisation (AGSO) the consortium will study fluid flow and oil leakage in sediments of the Shelf.

Over the past nine months, the consortium has attracted backing from 12 petroleum operators in the Northwest Shelf, and the Western Australian Government (MERIWA).

The Northwest Shelf is becoming an increasingly important exploration area in Australia, with a large part of the nation's petroleum reserves estimated to lie in its offshore sediments.

"The main cause of petroleum leakage is believed to be faults—displacements in the rock formations that can act as conduits or seals to fluid flow within the sediments," says Dr Yassir.

"Identifying these areas of leakage would aid in reducing exploration costs."

Drs Otto and Yassir have developed a method of assessing whether certain faults are sealing or non-sealing by using the same principles applied by hydrogeologists to monitor groundwater.

They have found that the pressure variations around a fault can give a good indication of its sealing properties.

Their findings will assist the petroleum industry in locating not only leaky faults, but also potential oil and gas accumulations.

The CSIRO advance, which is helping in exploration risk reduction of major new oil resources in Australia, also enables oil companies to estimate with much greater accuracy the size and characteristics of the fields they are exploiting, thus making a better prediction of their productive life.

The first annual meeting of the consortium, held in March in Canberra, drew 14 delegates from ten of the participating companies.

"Initial findings on hydrodynamics in the Carnarvon Basin have been very well-received and the consortium is expected to extend until June 2000," says Dr Otto.

The team plans to produce a major hydrodynamic database for the Greater Northwest Shelf of Australia, including the main producing areas—the Carnarvon basin and Timor Sea. The database will be available for companies exploring for or producing oil and gas in the region. CoR

CoResearch—have your say

1998 is shaping up to be the year of the survey and *CoResearch* is entering the melee. The new format has been up for over a year, and to keep improving the newspaper we'd like to hear from you. There are six questions below we'd like you to answer. Mail responses to *CoResearch* Survey, PO Box 225, Dickson, ACT 2602 or fax (02) 6276 6273. Thank you for your time.

1. *CoResearch* provides me with information I want to know about CSIRO. (Please tick (✓) one).
   - ❑ agree
   - ❑ disagree
   - ❑ don't know
2. *CoResearch* is an entertaining read (Please tick (✓) one).
   - ❑ agree
   - ❑ disagree
   - ❑ don't know
3. What articles do you read in *CoResearch*?
   (Please (circle) your response, according to the following scale).
   1= Always read 2= Read most of the time 3= Occasionally read
   4=Rarely read 5=Never read

• research news	1	2	3	4	5
• feature articles	1	2	3	4	5
• people news	1	2	3	4	5
• current issues in CSIRO	1	2	3	4	5

   • other (please specify) .....
4. What articles would you like to see more of?
   (Please (circle) your response, according to the following scale).
   1= Definitely more of 2= Probably more of 3 = OK as it is
   4= Probably less of 5 = Definitely less of

• research news	1	2	3	4	5
• feature articles	1	2	3	4	5
• people news	1	2	3	4	5
• current issues in CSIRO	1	2	3	4	5

   • other (please specify) .....
5. I would read *CoResearch* more if it was produced electronically on the WWW. (Please tick (✓) one).
   - ❑ agree
   - ❑ disagree
   - ❑ don't know
6. I still wish to receive regular issues of *CoResearch*. (Please tick (✓) one).
   - ❑ agree
   - ❑ disagree
   - ❑ don't know

Further comments .....

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Recollecting early days at Entomology

by Jenny Goldie, CSIRO Entomology

A history of the first 65 years of CSIRO Entomology and the Australian National Insect Collection has been captured in a new book by Dr Murray Upton entitled *A Rich and Diverse Fauna*.

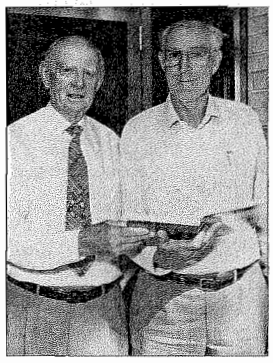
The Australian National Insect Collection (ANIC) located within CSIRO Entomology in Canberra, is the largest and most comprehensive research collection of Australian insects in the world. It houses over eleven million specimens.

Launched in March, the book describes the difficulties facing the establishment of entomological research in Australia because of the scarcity of adequately trained staff. It was not until 1921, with the appointment of Dr A J Nicholson, to Sydney University as a lecturer, that Australia witnessed the birth of entomology as a science. Dr Nicholson later became the Division's second Chief, taking over from Dr R J Tillyard.

The Entomology laboratories were opened in 1930 and housed the insect collection for half a century until three major collection halls for ANIC were built in the 1980s.

Present at the launch of Murray Upton's book was the Chief of the Division at the time, Dr Doug Waterhouse. Dr Waterhouse joined the Division back in 1938 and has remained with it for over 60 years. Also present was Dr Ken Key, who was involved in having ANIC gazetted as a national collection in 1962.

Dr Waterhouse was appointed Chief in 1960 and retired in 1981. While he was Chief, the definitive study of Australian insect fauna, *Insects of Australia*, was produced.



Chief of CSIRO's Division of Entomology from 1960 to 1981, Dr Doug Waterhouse (left) with Mr Murray Upton, author of *A Rich and Diverse Fauna*. Photo CSIRO Entomology.

"*Insects of Australia* has helped greatly to bring together the scattered information on our enormous range of insects." At one stage it was thought there were 800,000 species of insects in the world. Now we know there are at least five and possibly ten times that number," says Dr Waterhouse.

"Insects have great environmental importance, not least by recycling things back into the soil. Not only are there massive amounts of insects in this environment, but they are an essential part of the food chain serving as food for other invertebrates and vertebrates. Many plants would never set seed were it not for insects. From an environmental point of view they're of great significance." CoR

Offshore

CSIRO busy in Vietnam

CSIRO's experience in Vietnam offers Australian business a pool of scientific and technical expertise with first-hand knowledge of local conditions, resources and the potential for science-related enterprise, says Mr Peter Martin of CSIRO's International Group.

With 32 current or recently completed activities, Vietnam is in CSIRO's top ten when it comes to country research partners.

Vietnam is also one of the half dozen countries with whom CSIRO has signed a Memorandum of Understanding (MOU) at corporate level with a national science agency. The Australian Government also has an MOU on science and technology cooperation with the Government of Vietnam. Mr Martin says that at this stage it appears Australia's aid program will continue to provide the bulk of funding behind CSIRO R&D in Vietnam. But with over 120 Australian companies now active there, and Australian business projects worth $1 billion, CSIRO is well placed to successfully market its products and services to existing and new businesses.

CSIRO-Vietnam highlights include: Integrated water management in pumped irrigation schemes in the Red River Delta of Vietnam; improved diagnostic methods and vaccination for duck plague; integrated pest management of rats; improving selection and productivity of indigenous and Australian tree species; development of Vietnam's beef industry; the economic and environmental sustainability of Mekong Delta rice/shrimp farming; Asia/Pacific Metrology Programme (APMP) and the Asia Pacific Laboratory Accreditation Cooperation (APLAC) program. CoR

Fellows carry on at Land and Water

More than forty years of research in environmental physics were celebrated recently at a dinner to mark the formal retirement from CSIRO of Chief Research Scientist Dr Tom Denmead.

The dinner was held in the FC Pye Field Environment Laboratory at Black Mountain, Canberra, formerly Environmental Mechanics, now a unit of CSIRO Land and Water.

Dr Denmead joined CSIRO's Division of Plant Industry in Brisbane in 1955 and transferred to Agricultural Physics in Canberra in 1961 after completing a PhD in Agricultural Climatology at Iowa State University.

His research into micrometeorology, evaporation from plants and soils, and sources and sinks of trace gases in the biosphere, has taken him to Asia, Europe and North America and in Australia, from Shark Bay to Innisfail.

He is an elected fellow of the Australian Academy of Technological Sciences and Engineering, the American Society of Agronomy and the Soil Science Society of America, and is a recipient of the Australian Society of Soil Science's JA Prescott Medal of Soil Science.

In April this year he was awarded the John K Taylor, OBE, Gold Medal in Soil Science by the Australian Society of Soil Science "for the most meritorious research publication in any form (paper, book, map, video, film or other) acceptable to the award committee on the basis of a soil scientist's own work in the field of soil science since 1 January 1996".

This award was for a group of papers on the general theme of "The Soil as a Source and Sink for Atmospheric Gases".

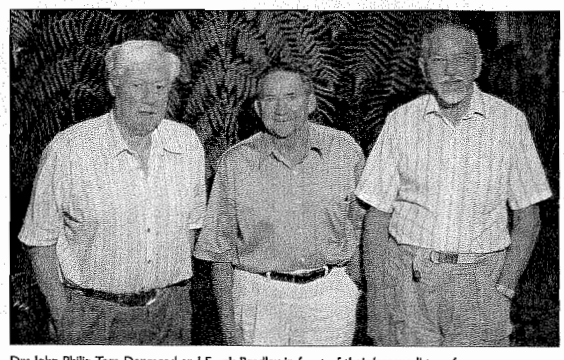
Dr Denmead is one of three foundation members of the Division of Environmental Mechanics still resident in the Pye Laboratory.

The others are Dr John Philip, the foundation Chief of the Division and now a CSIRO Fellow Emeritus, and Dr Frank Bradley, now an honorary fellow in CSIRO Land and Water.

Between them, they represent over 120 years of research into the physics of the natural environment and have published more than 500 papers.

The three are also noted for the tree ferns planted in the courtyard of the Pye Laboratory, which they gathered from a rainforest being cleared at Coffs Harbour before the Lab's opening in 1966.

All are still working in the Pye Laboratory. An international Symposium to mark Frank Bradley's and Tom Denmead's research into transfer processes in the natural environment will be held in Canberra in August. CoR

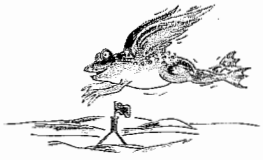


Drs John Philip, Tom Denmead and Frank Bradley in front of their 'rescued' tree ferns. Photo: Gregory Heath.

Research Roundup

CSIRO research in the news compiled by Nick Goldie, CNA

Mynas: accounting for 'flying cane toads'



The common myna could become a national problem, comparable to the cane toad, the rabbit or the European carp.

In 1968, a Canberra resident, reportedly nostalgic for the sounds of Asia, released twelve common mynas. In 1990, a survey showed there were about 1220 mynas in the ACT, ranging from one to 31 birds per square kilometre. By 1998 numbers had soared to more than five times the 1990 figure, and no suburb was free of the pest.

Originally from India, the myna is a pest in all of Australia's eastern States. CSIRO's Double Helix Science Club is conducting a continent-wide myna count as a prelude to controlling "the common thug of the bird world".

Ancient energy to power world

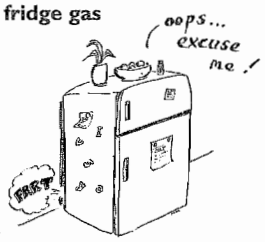
Biomass today supplies 14 per cent of the world's primary energy needs according to a Bioenergy Workshop held in Canberra in March.

"Many of the new plantations that will be planted in Australia in the 'Plantations 2020' program could be used for energy production," says Dr Glen Kile, Chief of CSIRO Forestry and Forest Products, who hosted the meeting. "Not only does the planting of trees help to rehabilitate degraded agricultural land, but the trees can also act as an energy source for rural communities."

'Bioenergy'—energy derived from burning or conversion of woody crops, biomass residues and wastes—can be cost effective, sustainable and meet an increasing part of the world's energy needs in the next century, reported the group.

"Bioenergy is a source of energy that is often overlooked by the public in developed countries, but in Africa and India it comprises over 55 per cent of energy use," said Norway's Dr Olag Gislerud of the International Energy Association. "Biomass is a significant source for electricity generation—more electricity is generated from biomass than any renewable resource except hydro-power."

Air quality, Olympic air, fridge gas



Air quality has received much attention in recent months. Dr Steve Brown of CSIRO Building Construction and Engineering said in mid-March that poor air quality in Australia's homes, offices, and factories may be costing the nation as much as twelve billion dollars a year.

Despite our outdoorsy image, Australians spend 90 per cent of their time indoors—and could be exposed to a cocktail of volatile organic compounds from building materials, paints, carpets, furnishings and office equipment.

In collaboration with the Olympic Co-ordination Authority, CSIRO has developed *Indoor Air Quality Guidelines* with the aim of achieving world's best standards for all Games facilities; public, commercial and residential. "We see the Olympics as a great opportunity...for healthier indoor air for everyone in a way that complements the objective of an environmentally friendly Games," says Dr Brown.

Meanwhile, the issue of refrigerant gases has had an airing at the *International Conference of the Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH)* held in early April. Dr Paul Fraser of the Division of Atmospheric Research says that it's out of the ozone depleting frying pan and into the climate change fire, as the new ozone-benign refrigerants can have unwelcome global warming side-effects.

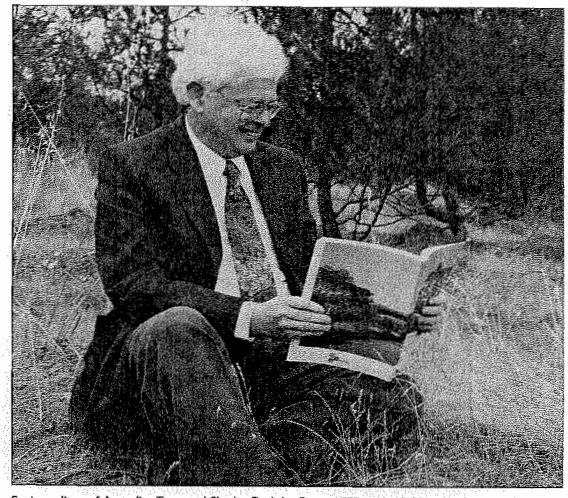
However Dr Fraser says refrigerants contribute only a very small component, about four per cent, of the total warming of all greenhouse gases released into the atmosphere.

"New technology enables us to track the new ozone-benign refrigerant gases from their infancy rather than well after their release into the atmosphere, as was the case with ozone-depleting CFCs," says Dr Fraser.

Abalone cocktail, and make it quick!

Haliotis asinia is the fastest growing abalone in the world, which makes it ideal for aquaculture.

CSIRO Marine Research and University of Queensland (UQ) are collaborating on a project to develop efficient cultivation techniques for the 'cocktail abalone' along Australia's coasts. UQ's Dr Bernie Degnan believes the cocktail abalone could prove a real boon to Australia's existing abalone market in Asia, which currently brings in more than $150 million each year.



Senior editor of *Australian Trees and Shrubs*, Dr John Doran, FFP, in the field - a trial acacia plantation near Canberra. Photo Nick Goldie, CNA.

The universal tree

Australia offers many things to the world community: perhaps none as useful as the multipurpose tree. No one species is exactly right for all situations, but the aim is for the tree to be hardy, well adapted to difficult conditions, and able to supply a variety of human needs such as fodder, shade, building materials, fuel, fencing, and even soil remediation. In 1986 a book on this essential tree was published by ACIAR; in March this year a new edition was launched, under the title *Australian Trees and Shrubs: Species for Land Rehabilitation and Farm Planting in the Tropics*. Scientists from the Division of Forestry and Forest Products did much of the research, and seed for trials in Australia and overseas was provided by the Australian Tree Seed Centre.

More for the bookshelf

"*Fungi of Southern Australia* is sure to become a classic, blending rigorous science with superb botanical illustrations," said Dr McIntosh, launching the new guide in Canberra.

Fungi of Southern Australia is the fruit of a partnership between CSIRO's Dr Neale Bougher and one of Australia's best botanical artists, Katrina Syme. A hundred and twenty five species of fungi are beautifully illustrated in colour, in their natural surroundings, complemented by a detailed text and scientific line drawings.

Know your fish! *South East Fishery Quota Species*—an Identification Guide, identifies more than 80 species of commercial fish from the South East Fishery.

It was launched recently in Hobart by CSIRO Marine Research and the Australian Fisheries Management Authority (AFMA).

"Identification of fish can be difficult—this book will assist the seafood industry with identification, which will in turn boost consumer confidence in knowing fish being purchased are displayed under their correct name," says CSIRO's Dr Bob Ward.

Please contact Divisions for more information. Co

Australian trees migrate to south east Asia

by Dr Penny Butcher, CSIRO Forestry and Forest Products

Australia's tropical acacias are important commercial species in south east Asia for the production of pulp and paper. Over half a million hectares of *Acacia mangium* have been planted in Indonesia alone.

Thanks to a Diners Club Overseas Travel Award and ACIAR funding I attended the Third International Acacia Workshop in October 1997 in Hanoi, Vietnam.

My interest is in the use of molecular markers to improve the efficiency of breeding programs for acacias. With DNA markers we can determine the genetic identity of individual trees.

Where breeding programs have been based on cross-pollination between select trees, we can check the level of contamination from foreign pollen and determine whether any plants have been produced by self-fertilisation. Removal of such plants from the breeding program will ensure that gains are maximised from each generation of breeding.

We can also use DNA markers to reduce the generation time in tree breeding programs by locating markers that are linked to traits such as disease resistance, wood quality and growth. If, for example, a marker is found that is linked to disease resistance, seedlings can be screened for the presence of that marker so that only disease resistant plants are included in breeding programs.

Some other topics at the Workshop included selecting species and provenances of acacia for different sites, social and technical considerations when setting up large scale plantations and the use of acacia fibre in wood-wool composites for building construction.

After the Workshop, I visited field trials at Ba Vi, 60 kilometres west of Hanoi, where *A. mangium x A. auriculiformis* hybrids are being produced. These hybrids out-perform the parent species in northern Vietnam and their commercial development has become the focus of research by the Forest Science Institute of Vietnam.

Travelling through the rural areas of northern Vietnam showed the widespread use of Australian trees. As well as the tropical acacias, *Eucalyptus camaldulensis* is a common feature of the landscape, with single rows of trees separating rice paddies and grown wherever space permits in the villages. Poles from these plantings are used for fuelwood and building, and are commonly seen as scaffolding on the many new buildings under construction in the countryside.

I left Vietnam with the impression of a very industrious people, still heavily dependent on manual labour and with little mechanisation, but who are making rapid advances as seen in their hybrid breeding program for tropical acacias.

Their land use system, based on small rural landholdings of around 700 square metres—about the size of the average suburban house block in Australia—demands that they maximise production per unit land area. Despite this, they manage to incorporate trees into their farming systems—often trees of Australian origin. Co

In Ba Vi, Northern Vietnam, locals prepare plant material for vegetative propagation of *Acacia mangium* x *A. auriculiformis* hybrids for pulp and paper plantations. Photo: Penny Butcher.

CSIRO around the nation

O caption, my caption!

We love the caption competition.

Andrew Bell from CSIRO Land and Water wrote: "Sorry, can't stop now. Got to get these plutonium fuel rods back into the reactor quick—before they turn my lab coat black and my hair grey."

Gillian Heintze, from the Division of Wool Technology suggests: "Right, well that's the visioning exercise completed. Now all we need is an executive summary."

David Lamb at the Australian Automotive Technology Centre sent: "Having this many degrees is a pain in the butt when you have to move office."

Dr Stephen Trueman from the University of Queensland Department of Botany offered: "Finally awarded my degrees! (But will I ever pay off the HECS debt?)"

From Kim Badcock at CSIRO Marine Research: "A few more of these and I'll have my own organ!"

Another musical entry from Diana Shaw also at CSIRO Marine Research: "If I blow hard enough, I can get a tune out of these."

Kim Pullen from CSIRO Entomology: "Specimens from the Australian National Snake Collection (ANSC) are available for loan to bona fide researchers in Australia and overseas. Apply to CSIRO Wildlife and Ecology."

"Admin has decided to start their own paper mill in order to reduce the costs of memos!" wrote Hank Oviatt from CSIRO Molecular Science.

From Karl Armstrong at CSIRO: "Good grief! I've got my hands full with these new logo changes."

Entomology's Mike Lacey offered: "When I asked you to fetch the Business Manager's Rolls, I didn't mean..."

Molecular Science's Tom Garrett sent: "Great Gippsland earthworm arrives in sections."

And the winner is—Food Science Australia's Rowland Cobbold for: "The head of Micro will be well pleased with me when he hears about this big order for *Clostridium botulinum* from this Mr. Hussein bloke." Rowland will soon be the proud owner of a CSIRO crystal radio kit.

The pic below, taken by Brad Collis, is the product of a photo shoot for a story appearing in the March 24 issue of *The Bulletin*.

The article reported on four CSIRO scientists, Drs Brian Walker, Glen Kile, Graham Harris and John Williams, and their vision for turning restoration of Australia's landscape into a global industry. This pic is the one *not* used by *The Bulletin*, but we thought it deserved a run. The winner will receive a copy of *Wolves of the Sea*.

Send captions and photos to *CoResearch* Caption Competition, PO Box 225, Dickson, ACT 2602 or email Jane.Kahler@cc.csiro.au. Have fun! CoR

Biologists honoured

Dr Graeme Caughley, who died in 1994, and Dr John Calaby have had new buildings named in their honour at CSIRO Wildlife and Ecology in Canberra.

Dr Caughley was a leader in the measurement and analysis of wild vertebrate populations. He won a Chairman's Medal in 1993. The new laboratory complex will be called the Graeme Caughley Building for Conservation Biology.

Dr Calaby is a renowned mammalogist and natural historian, who retired in 1987. Well known for his encyclopaedic knowledge of Australian fauna, CSIRO is naming their new library complex the John Calaby Resources Centre. CoR

Goodbye Ron!

After 40 years service Ron Knowlton said goodbye to staff at the Tropical Forest Research Centre in Atherton. In a farewell message the Chief Executive, Dr Malcolm McIntosh paid tribute to Ron, thanking him "sincerely for his loyalty and all the contributions made to the organisation during a long career."

The longest serving member at the Division of Wildlife and Ecology, Ron started his career with the Tobacco Institute because of his agricultural interests. While opportunity has led him further afield, he returns to farming pursuits on leaving CSIRO.

He is very active in the Atherton Tableland's farming community, is involved in a number of horticultural advisory boards and foresees a busy time ahead. *CoResearch* wishes you all the very best. CoR

Atmospheric winner

Dr Peter Bains from CSIRO Atmospheric Research is the winner of the 1997 Priestley Medal. Dr Bains was honoured for his extensive contributions during the past 25 years to the science of geophysical fluid dynamics and its applications. The Priestley Medal is named in honour of the founding Chief of Atmospheric Research and is awarded by the Australian Meteorological and Oceanographic Society. CoR

$16 million licence agreement

CSIRO Building, Construction and Engineering have negotiated a $16 million licence agreement with a US building products company. While the company and the application must remain confidential, the use of the Division's technology will allow introduction of a new product into the US market.

SICOR engineers the surface of inert polymers and polymeric composites to improve adhesion and replace environmentally damaging processes. CoR

Chief Executive's Study Awards 1998-99

These Awards are provided on an annual basis to allow staff to gain training and experience relating to their careers. We are grateful to CSIRO's air travel contractor, Ansett Australia, for their financial support. Congratulations to:

Ms Michelle Burford, Marine Research, to visit the USA to learn methods to characterise dissolved organic nitrogen (DON) and measure DON fluxes.

Mr Roger King, Human Nutrition, to visit the UK to assess conventional and novel techniques for the assay and identification of dietary flavonoids.

Ms Jeannie-Marie Le Roi, Marine Research, to visit Italy to attend the IOC Advanced Phytoplankton Course (Taxonomy and Systematics).

Ms Kim Nguyen, Telecommunications & Industrial Physics, to visit the USA to develop an understanding of the National Institute of Standards & Technology's ITS-90 realisation techniques, and techniques for high temperature PRTs.

Mr Christopher O'Neill, Tropical Agriculture, to visit the USA, Brazil and the Republic of South Africa to undertake research into many facets of animal breeding and genetics.

Mr Phillip Paevere, Building, Construction & Engineering, to visit the USA to undertake training in techniques of stochastic structural dynamics and associated disciplines.

Ms Christine Thompson, Energy Technology, to visit the UK to participate in marketing/technology transfer projects of the Energy Science and Technology Unit.

Dr Simon Torok, Education Programs, to visit Asia, UK, USA and Canada to establish links between CSIRO Education Programs and science centres for increased awareness of Australian science and increased funding support of education projects. To carry out communication and education activities and learning new ways to communicate science to young audiences.

Ms Gaye Weller, Entomology, to visit China to look at grain storage facilities, and discuss current research with Chinese counterparts. To discuss quarantine details of both imports and exports of grain and other commodities. To visit the local grain storage institute and to observe their fumigation technology and practices. CoR

Backpage

Obituary: Dr Trevor Pearcey 5 March 1919–27 January 1998

Dr Trevor Pearcey, who initiated and developed the design of Australia's first indigenous computer, CSIRAC died on 27 January, 1998 aged 78.

The early part of his career was spent with the British Ministry of Supply, and the CSIRO. CSIRAC was the fourth stored-program electronic computer in the world, and was used for industry, and government departments such as the Snowy Mountains Authority. (This computer is presently stored at the Science Works Museum in Melbourne and will be installed at the new Museum of Victoria from 1999, a focal exhibit as the world's oldest surviving computer.)

Dr Pearcey also established the first research computing service within CSIRO, and was responsible for the development of Australia's first computer network—CSIRONET.

Dr Pearcey worked hard to encourage and develop the Information Technology profession. CoR

Radcliffe to CABI

CSIRO Deputy Chief Executive, Dr John Radcliffe, OAM, was recently elected by the 40 nation membership of CAB International to serve a second term as Chairman of CABI's Executive Council. CABI, based in the UK, is well known for its abstracting information and publishing services. CoR

Holmes award

Dr Ralph Holmes from CSIRO Minerals was recently awarded the 1998 Clunies Ross National Science and Technology Award.

Dr Holmes has saved the Australian minerals industry millions of dollars by developing better ore sampling methods and standards that have gained international acceptance. CoR

CoResearch is published by CSIRO National Awareness (CNA) for CSIRO staff and interested outsiders.
Editor: Jane Kahler
Assistant to Editor: Karen Robinson
Design and art production: *Flying Fox Typography & Design*
Printed by: *Pirie Printers*
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Readers are encouraged to contribute or offer suggestions for articles.
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CSIRO's staff newspaper

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Business cuts back R&D surge

by Jane Kahler, CNA

Australian business spending on R&D fell for the first time since the 1970s according to figures released recently by the Australian Bureau of Statistics (ABS).

During 1996–97, Business Expenditure on R&D (BERD) was $4.1 billion, a 5 per cent decrease on 1995–96.

In 1997–98, Australian businesses expect research expenditure to fall a further 8 per cent.

The analysis identified three trends in business spending that led to the change:

- 2,800 businesses investing in R&D in both years spent 2.5 per cent less in 1996–1997;
- 850 businesses investing in R&D activity in 1995–96 did not conduct any the following year; and
- 600 businesses started R&D in 1996–97, but spent less than businesses starting in previous years.

Mining and manufacturing industries were least affected by the decrease in BERD, with the mining industry recording a 4 per cent increase in expenditure and the manufacturing industry only a 1 per cent decrease.

Photographic and scientific equipment industries suffered a large decrease in R&D expenditure, down 32 per cent, followed by the finance and insurance industries, down 22 per cent, and the property and business services industry, down 17 per cent.

Significantly for CSIRO, expenditure by the food and beverages industry fell by 21 per cent, petroleum coal and chemicals by 8 per cent and automotive by 2 per cent.

The decrease in industry research investment has caused alarm in the scientific and industrial community, with many pointing to the Government's 1996 Budget decision to cut the R&D tax concession from 150 per cent to 125 per cent.

Federation of Australian Scientific and Technological Societies (FASTS) described the ABS figures as another gloomy sign for Australia's economic outlook, and a bad sign as Australia entered a millennium that would place increasing emphasis on industries that are sophisticated, intelligent and sustainable.

FASTS President, Professor Peter Cullen, said the figures show that Australian industry does not have the confidence or conviction to invest in R&D under the present financial settings and economic climate, and urged the Government to overhaul Australia's taxation system.

President of the Australian Industrial Research Group, Mr Leo Hyde, says the decrease in BERD paints a grim picture for Australian R&D, and links it directly to the cut in the R&D tax concession.

"The cut is at the root cause of the drop off," says Mr Hyde. "It's made companies take a whole new look at how they conduct R&D.

"What that means for Australia is that we'll have to import technology or lose our competitive edge."

CSIRO Chief Executive, Dr Malcolm McIntosh, says the survey results are particularly disappointing, but believes the decline is because of a combination of factors, not just the cut to the R&D tax concession.

The increase in the number of countries setting up schemes to attract the R&D dollar, and now the Asian economic crash, are bound to affect business expenditure in Australia, he says.

"What the statistics really show is that companies have not stopped doing R&D, but that they've taken it out of Australia and that's the scary bit."

Dr McIntosh says that Australia will continue collaborative research with multinational companies, but the development and production phases, where the big money is, will go back offshore to countries that are cheaper to operate in and have tax schemes in place.

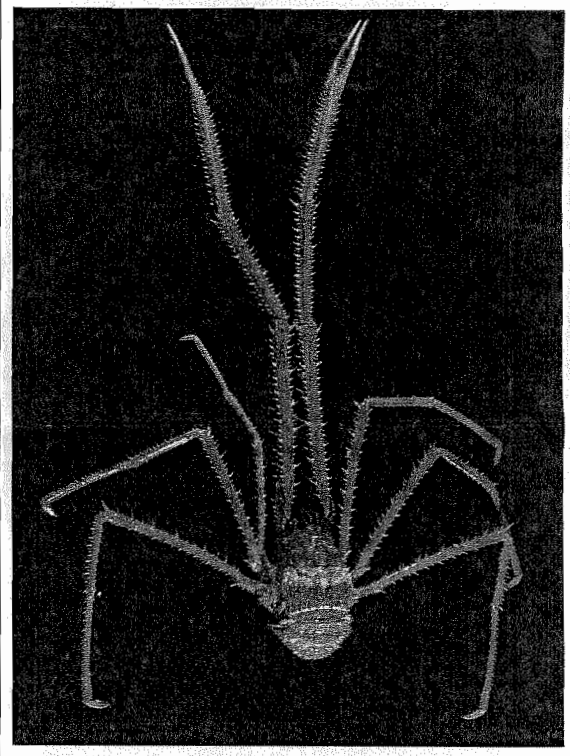
For CSIRO, Dr McIntosh says the decline in business expenditure will make external earnings harder to get.

"It will certainly make it that much harder for us to get the economic benefits of our research into Australian industry and the economy at large."

Dr McIntosh says he would like to see the R&D tax concession reinstated at 175 per cent for five years "to get these development projects back into Australia", before returning it to 150 per cent.

"We want to make sure we don't just have the research, but that it leads to development and production in Australia because that's what generates the jobs, and generates the big investment programs," he says. CoR

It's a squat lobster!



Which squat lobster scientists just can't say. So far, this long-legged specimen is known only as *Gastroptychus* sp, but it's not alone in its mystery. The squat lobsters are a group known to have many undescribed species living in deep water. This one was collected by CSIRO's *Southern Surveyor* on a recent voyage exploring undersea mountains south of Tasmania. Only one of the ten species collected could be identified—all the rest are new to science. More on page 2. Photo: Karen Gowlett-Holmes, CSIRO

Toads escape viral clutches

A two year project to find a virus that would control the relentless march of the cane toad has come to a disappointing conclusion, reports Dr Alex Hyatt of CSIRO's Australian Animal Health Laboratory (AAHL).

Introduced creatures have predators in their native environments. In the case of the cane toad, a virus from its homeland, Venezuela, looked like a promising form of toad biocontrol.

Biocontrol suggests that finding an appropriate natural enemy 'over there', and releasing it here, is the best solution.

The project involved isolating the viruses in their native habitat, and then testing them on Australian frog species in the secure biocontainment facilities at AAHL in Geelong.

Alas, the native frogs succumbed as readily as the cane toads.

Dr Hyatt says that some good did come out of the project, as it has increased knowledge about cane toads and their viruses, and the researchers identified two fungal pathogens that are lethal to cane toads and other amphibians. One fungus is thought to be responsible for frog fatalities in Australia and Panama.

Cane toads were introduced into Queensland in 1935 as a biocontrol agent against beetle grubs, which were damaging sugar cane crops. The toads did not control the grubs, and have been on the rampage ever since.

Cane toads were not introduced to Australia by CSIRO. CoR

Biological informatics: science of the future

by Nick Goldie, CNA

Scientists from around the world met for the first international conference on biological informatics and bioinformatics at The Australian Academy of Science, Canberra in July.

Inviting journalists to attend the conference resulted in glazed eyes and dropped jaws. "Biological what?" But to the cognoscenti, the word is no more alarming than "biodiversity" or "biotechnology".

Chief Scientist and former CSIRO Chief Executive, Dr John Stocker explained "It's an important and exciting new area of science. It's where the biological sciences meet the computer—a meeting of computing, networking, environmental, sociological and information technologies."

Dr Stocker commented that any gathering that includes people like Dr Tom Lovejoy of the Smithsonian Institute, Dr Bob Robbins of the Fred Hutchinson Cancer Research Institute, Dr James Edwards of the OECD Megascience Forum, Australian astronomer Dr Ray Norris, and Dr Peter Bridgewater, Chief Scientist of Environment Australia, is clearly "an extraordinary event."

"Endeavours such as the Human Genome Project need enormous computing capability," said Dr Stocker. "There will be increasing demand for the ability to use databases in conjunction with one another, for example the melding of biodiversity datasets with gene sequencing."

Special care is needed in the interpretation of large datasets, as CSIRO Wildlife and Ecology's Dr Chris Margules pointed out during his presentation. Take a step back from one comprehensive map of the distribution of Elapid snakes in Australia and you find not a map of snake distribution, but a map of Australian roads.

The OECD Megascience Forum, which deals with scientific projects so large they demand international funding and expertise, has formed a special Working Group to deal with biological informatics.

Chair of the Conference Organising Committee was Dr Ebbe Nielsen, Director of the Australian National Insect Collection (CSIRO Entomology). CoR

Ocean promotion boosts marine research

Marine science scored a lift during May and June with an intensive International Year of the Ocean promotion.

In a bid to acquaint more clients, collaborators and journalists with Australia's marine research effort, the oceanographic research vessel, *Franklin*, embarked on a rigorous schedule of port calls starting in Adelaide before heading to Melbourne, then Hobart this month and Sydney in October.

During *Franklin's* Adelaide stop, the ship was the platform for a media focus on multiple-use management of the Great Australian Bight, with unanimous support from fishing and environmental authorities for a management plan in the Bight.

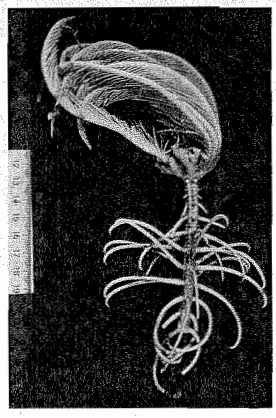
During the next three days potential clients and collaborators for South Australian offshore and coastal work were introduced to the ship.

A run of media releases for the ABC's Ocean week coincided with *Franklin's* next port call in Melbourne, where the focus was on climate involving a new joint research facility between CSIRO and the Bureau of Meteorology Research Centre.

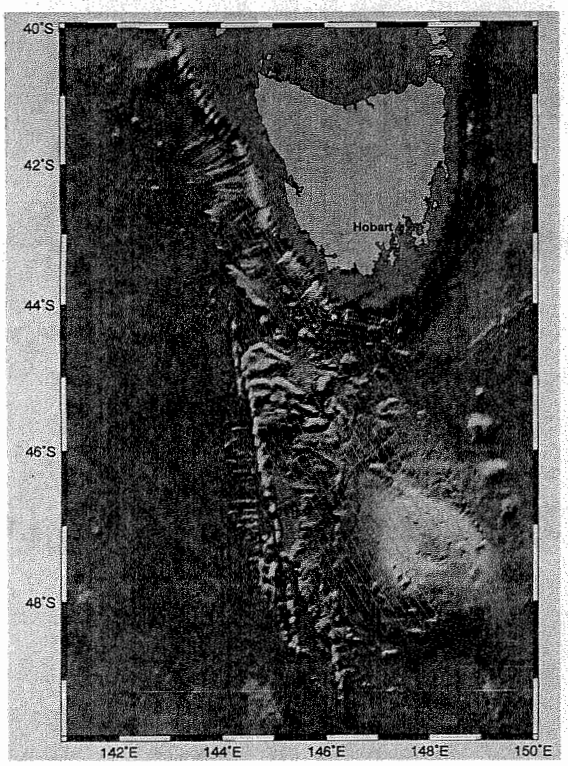
In an ABC broadcast from the ship through Victoria and Southern New South Wales, the ship's bridge was converted to a studio for the 11–1 pm 3LO program, and then a later half hour Radio National rural segment.

Among marine issues to receive national coverage during the ABC Ocean Week were the potential of microalgae—tiny ocean plants—for future medical breakthroughs and the release of a CSIRO Marine Research report recommending the protection of unique marine life forms on undersea mountains south of Tasmania.

Australian microalgae are genetically and biochemically different from microalgae found in oceans elsewhere, says Dr Susan Blackburn of CSIRO's Collection for Living Microalgae.



A stalked crinoid or sea lily (*Diplocrinus sibogae*). Stalked crinoids are an ancient group that used to be common, but disappeared from shallow waters in the same extinction that wiped out the dinosaurs. This is the first record of this species from Australian waters—it was previously known only from deep water near New Caledonia. Photo: Karen Gowlett-Holmes, CSIRO.



The deep-sea mountains covered by the CSIRO survey are 100 kilometres south of Tasmania. The seamounts support a diversity of life forms, many of which are new to science and are highly vulnerable to trawling.

"That means that while our microalgae may look the same, it does contain unique compounds with the potential to solve future needs for drugs, including anti-cancer agents and urgently-needed antibiotics," says Dr Blackburn.

Meanwhile, CSIRO's report on protecting marine life forms on undersea mountains south of Tasmania, may lead to Australia's first deep-sea marine protected area.

The research showed the seamounts—remnants of extinct undersea volcanoes rising 200–500 metres above the seafloor at depths of 1000–2000 metres—contain a diversity of life forms, many of which are new to science and are highly vulnerable to trawling.

In a single research cruise by the *RV Southern Surveyor*, 259 species of invertebrates such as corals, squat lobsters, seastars and crabs, and 37 species of fish were found indicating the number of species living on the seamounts is high in global terms, says research leader Dr Tony Koslow.

A voluntary fishing moratorium in the area let CSIRO investigate and provide Government with the information required to assess future management options.

The CSIRO report recommends the interim protected area, which includes 15 of the 70 seamounts in the region, be protected from all fishing and other activities that could disturb the marine life associated with the seamounts. CoR

Silence is golden

At a Climate and Atmosphere Sector forum 20 CSIRO scientists sat in silence while 40 leaders of industry, government and community groups told them their views on issues relevant to the Sector and explained their research needs.

Held in Melbourne earlier this year, the forum was designed to be very much a listening event for CSIRO.

"We even hired an external facilitator to prevent CSIRO influencing outcomes from the day," said CSIRO Atmospheric Research Communicator, Mr Paul Holper. "It turned out to be a really effective forum, from which we learned a great deal.

"The silence of our staff was very effective, allowing debate to flow and remain focussed on the opinions we were seeking. People were able to voice their ideas and feelings without fear of being criticised or being told, 'Oh, CSIRO already does that'.

"It took pressure off CSIRO as well because we were allowed to just keep listening, rather than having to continually come up with responses."

Mr Holper said feedback forms showed that most participants regarded the forum as a day well spent. Almost all said that they would be keen to attend another, similar meeting during the next year or two.

"We are now carefully compiling and examining suggestions and issues arising from the meeting and looking at how CSIRO can best meet the needs of the organisations represented. The Climate and Atmosphere Sector Advisory Committee, who suggested the forum in the first place, will play an important role in our response," he said.

More about the forum from Brian Sawford, Willem Bouma or Paul Holper at CSIRO Atmospheric Research on (03) 9239 4400. CoR

Policy sets CSIRO's environmental standard

Last year the CSIRO Board approved in principle an Environment Policy that states CSIRO's principles and goals for environmental performance. It also defines the standard of environmental performance to which CSIRO aspires.

To implement this policy, CSIRO is developing an Environmental Management System based on the international standard for environmental management, ISO 14001.

An EMS is that part of an organisation's overall management system that helps staff meet the commitments of its environment policy.

CSIRO needs an EMS to ensure its commitment to research on the environment is matched with clean environmental standards and practices and that it complies with its environmental legal obligations of reduced risk to the environment from its activities.

An EMS will ensure CSIRO gradually improves its environmental performance including reduced operating costs through resource use and waste minimisation, recycling and reuse. It will provide a basis for establishing due diligence—if an environmental problem does arise, CSIRO can demonstrate it has a quality system in place that could lessen liability.

An Environmental Management Committee, chaired by Dr Graeme Pearman and with representatives across CSIRO (see http://www.csiro.au/services/humanres/safely/emc.htm on the intranet), is developing an EMS for CSIRO and keeping the Executive Committee and the CSIRO Board informed on progress and performance.

CSIRO's Health Safety and Environment Advisers are preparing detailed guidelines, procedures and instructions to help Divisions set up and implement elements of the EMS. As much as possible, the EMS will piggyback on existing management systems in CSIRO.

The EMS will be implemented using a staged approach beginning with a pilot at Atmospheric Research, Aspendale and Molecular Science, Parkville in August/September 1998. It will then be progressively rolled out to all other Divisions/sites over the next few years.

A copy of the draft Policy is on the Web at http://www.csiro.au/services/humanres/safely/emcpolicy.htm. Comments are welcome. CoR

Staff vote "Yes" to EBG

CSIRO staff voted to accept the Organisation's latest Enterprise Bargaining Agreement.

In the May poll, 6,747 voting papers were issued of which 70 per cent were returned. Out of this 70 per cent, 3,526 voted "Yes"(75 per cent), 1,165 voted "No"(25 per cent) and 36 voted informal.

The Agreement was certified by the Australian Industrial Relations Commission before the end of June to bring into action proposed salary increases for the new financial year. CoR

Good, better, best practice

by Paul Holper, CSIRO Atmospheric Research

As part of his annual Divisional reviews, Deputy Chief Executive (DCE), Dr John Radcliffe, has requested that each Division within his cluster provide some examples of particularly effective and innovative research support activities.

Such an activity might involve a streamlined financial planning system or a new, consultative way of identifying communication opportunities.

Input from Divisions outside Dr Radcliff's cluster is also welcome.

Dr Radcliffe has established a small committee to collect and promulgate activities that might be described as 'best practice', so they can be shared more widely.

The committee plans to run a workshop later this year for senior research support staff of Dr Radcliffe's cluster of Divisions, showcasing effective ideas and practices.

The committee comprises Mr Michael Brown, from the DCE's office; Mr Brian Jackson, from Wildlife and Ecology; Ms Toni Moate from Marine Research and Mr Paul Holper at Atmospheric Research.

Contact a committee member for more information. CoR

Office hours the same 75 years ago

In July 1923 Sir George Knibbs, Director of the Institute of Science and Industry (CSIRO's predecessor bar one) informed staff that the revised hours of attendance would be "...9am to 4.45pm with an interval of one hour for luncheon, except on Saturdays, when the hours of attendance will be from 9am to 12noon."

It apparently went without saying that this excluded Sunday. So the standard day, Monday to Friday, was 6 hours 45 minutes with a Saturday morning of 3 hours. The total hours were 36 hours 45 minutes—the same as today. But now that we work those hours in only five days, we have that odd figure of seven hours 21 minutes per day. (*National Archives of Australia CRS A8510/1 29A/35*)—**Rodney Teakle, CSIRO Archivist.** CoR

Discovery is on target

The new *Discovery* centre at CSIRO's Black Mountain site in Canberra is well underway with construction of the $19 million science centre several weeks ahead of schedule.

A 6,000 square metre complex containing an exhibition hall, education facility, lecture theatre, conference centre, cafeteria, shop and biotechnology laboratories, *Discovery* is expected to be open to the public by late October 1999.

Discovery's Development and Marketing Manager, Ms Christine Cansfield-Smith, says she is now working with communications staff from all over CSIRO planning, designing and producing exciting interactive exhibits.

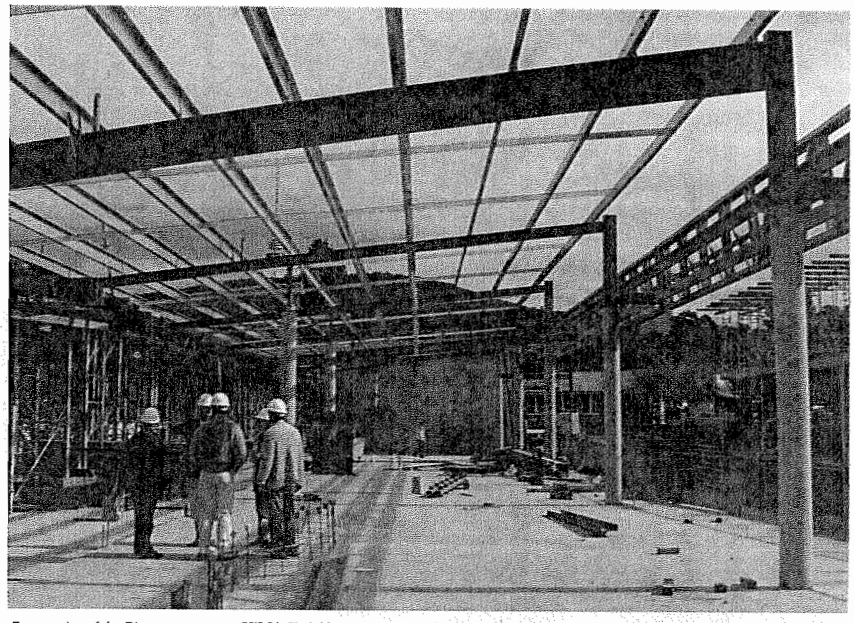
"These exhibits form the major component of the public area of *Discovery*, and will be designed to highlight CSIRO's achievements in working with industry collaborators on a range of issues relevant to all Australians," she says.

"Many Divisions have put forward their best research ideas, which are already forming into diverse and interesting exhibition plans."

Ms Cansfield-Smith says the *Discovery* project has successfully obtained funds from the Ian Potter Foundation for a biodiversity exhibit that highlights CSIRO's achievements in managing Australia's most immediate environmental concerns. Other major sponsorship has been provided by Optus and the ACT Government.

"We have also received very positive feedback about *Discovery* from Inbound Tour Operators representing tour groups from the United States, UK, South Africa, Europe and Southeast Asia. Tourists visiting the ACT will soon have plans to visit *Discovery* as part of their itinerary," says Christine.

If you would like to know more about *Discovery* or arrange a visit to the site, call Christine Cansfield-Smith on (02) 6246 5476. CoR



Construction of the Discovery centre at CSIRO's Black Mountain site in Canberra is ahead of schedule. Photo David Salt, CSIRO Wildlife and Ecology.

Going public has its benefits

Increased funding, new scientific contacts and industry partnerships are just some of the outcomes reported by CSIRO scientists who have been involved in media releases about their work according to a survey by CSIRO National Awareness (CNA).

"Overall, the survey indicated that most of our stakeholders—scientists and related staff—found that the resulting raised awareness of their work often led to scientific or industry contacts that could add to their project or help in areas like technology transfer," said CNA Senior Communicator, Ms Jenifer North.

"In fact one stakeholder reported a $US3.3 million contract as a result."

CNA surveyed 106 staff listed as contacts on CSIRO media releases issued between January 1997 and April 1998.

The survey excluded releases dealing with non-science activities like structural changes, event alerts, and building openings, or whose contacts had since left CSIRO or were non-CSIRO people.

"We were after feedback from scientists on the type of outcomes, if any, from CSIRO's media releases. We needed to know that the media releases we were producing were helping scientists and their research," said Ms North.

"Industry contacts were generated for over half the respondents and some also reported that the interest generated by the media release helped them get further funding for their research from government, funding bodies or industry," said Ms North.

"New contacts that might turn into industry partners or who are generating new directions in the research, new research contracts with industry, increased sales of their product and a change in State government regulations based on their research findings were reported as other outcomes of media publicity.

"There were some concerns about talking to the media, namely the raising of false expectations about research and negative reactions from other people like scientists, industry partners and the public, but respondents indicated that these were not major concerns.

"They felt that in these circumstances, the benefits outweighed the cost." CoR

Briefings are in a state

South Australian State and Commonwealth parliamentarians took part in the inaugural (State) Science Briefing at Parliament House, Adelaide, in July.

The Adelaide Briefing is planned as the first of many, with all State Parliaments eventually becoming part of the network.

"In Canberra, where the series started in 1996, the Briefings have covered an extraordinary range of topics: from the future of Australia to the future of the Universe; from living to 100 to the promise of gene technology; from sea monsters to the car of the future," says National Awareness senior communicator, Ms Wendy Parsons who organises the Briefings.

"The Adelaide Briefing talked about how science and technology will help the wine industry in the new millennium, and future Briefings will address issues topical to South Australia as well as nationally significant issues."

CSIRO National Awareness launched the National Science Briefings at Federal Parliament House in Canberra because it does not just house the decision-makers—politicians and their staff. It also houses a "megadiversity" of more than 120 media organisations who make up the Press Gallery, says Ms Parsons.

Politicians, staffers, and journalists are invited to listen to a panel of two or three speakers—over a light lunch in one of the Committee Rooms—and join the discussion. The Adelaide Briefings will follow the same format.

While the Briefings are organised by CSIRO, they have the backing of the Australian Academy of Science, the National Health and Medical Research Council, the Federation of Australian Scientific and Technological Societies, and the Academy of the Social Sciences in Australia. Speakers come from across CSIRO, universities, leading companies and organisations and CRCs.

Ms Parsons is confident the Briefings are hitting the mark. "The feedback we are getting from the pollies, and the journos is that they find the Briefings really useful," she says. "And the scientists like the opportunity to shine the light of science along the corridors of power!" CoR

Manufesto is back

Since bursting onto the scene last year Manufesto is set to become a leading force in the effort to bring Australian research and industry together under one roof.

"Manufesto '98 promises to be even bigger and better than its highly successful predecessor with an expanded conference and exhibition line up," says CSIRO Deputy Chief Executive and Manufesto founder, Dr Bob Frater.

To be held at the Melbourne Convention Centre from 23-25 September, Manufesto '98 is designed to link suppliers and buyers, creators and users while demonstrating the value of public sector R&D, says Dr Frater.

"It's a real opportunity for those involved in manufacturing technology research, development and commercialisation to exchange information and ideas and study models of international best practice.

"We're expecting to exhibit around 100 of the best new technologies from Cooperative Research Centres, universities and CSIRO sites around the country, and create a forum where participants can identify potential new business opportunities and strengthen links between the research community and industry decision-makers."

Dr Frater says the Manufesto '98 conference will focus on challenges facing Australian industries and researchers bringing new technologies to the international marketplace.

Invited speakers from Australia and overseas will discuss the challenges and opportunities of collaborative R&D, technology management, regional development through R&D, and accessing and managing venture capital investments.

Manufesto '98 is supported by Business Victoria, the Department of Industry, Science and Tourism and CSIRO. More information about Manufesto '98 from Julian White email julian.white@exec.csiro.au (02) 9490 8201 or you can visit the web site at http://www.manufesto.csiro.au CoR

Scientist walks out on invention

by Karen Robinson, CNA

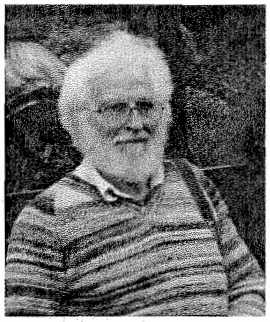
Former CSIRO scientist Mr Bob Stringer, walked out of hospital in May fitted with a hip replacement made partly of magnesia/zirconia ceramic, a material he helped develop 20 years ago.

Mr Stringer, now in his late 70's, joined CSIRO in 1962 at the then Division of Applied Mineralogy.

He and his colleagues worked on an oxide material called zirconia. The team had to find a solution to make zirconia a strong stable ceramic, and it was only after many failures and many trials, that they discovered magnesia, at the right concentration, could be used quite effectively.

The result was a high strength ceramic that had the properties of high carbon steels without the corrosion and wear problems. The ceramic was found highly suitable for prosthetics and many other uses.

Mr Stringer remembers once that Mr Barry Jones, then the Minister for Science, came to visit the site during early trials of calcia zirconia.



Mr Bob Stringer standing on his own invention. Photo courtesy of Bob Stringer

"He was given a souvenir piece of the wonder material, and promptly dropped it on the concrete floor—ironically it broke in two," said Mr Stringer.

Mr Stringer's hip replacement consists of a titanium part capped with a highly polished sphere of magnesia zirconia. The steel is fitted into the femur and cemented there with perspex. The zirconia ball fits closely into a cup of high density polyethylene and this is fitted against the pelvic bone, which gradually grows into recesses in the cup.

"The zirconia is totally resistant to attack by body fluids so retains the polished surface and has very low frictional resistance against other materials," said Mr Stringer.

Just weeks after the operation Mr Stringer says he has been able to walk, albeit a little painfully, without crutches, but has confidence in the zirconia despite the experience of Barry Jones!

"The progress of the strong zirconia development was a tortuous rocky road," he said, but he is finally reaping the benefits of his own research. Still keeping active, Mr Stringer currently runs a flower farm at Toolangi in Victoria. CoR

At the bench

Malcolm McIntosh says that one of the most satisfying aspects of being Chief Executive is the opportunity to meet scientists at the bench and discuss their work. At a recent visit to Human Nutrition in Adelaide, Dr McIntosh (right) spoke with Dr Mahinda Abeywardena (rear) and Mr Michael Adams (left) about their work on vascular dysfunction in hypertension and ageing, and the ways specific diet constituents could promote more healthy blood vessels. CoR

Opinion seeker has his opinion

During the past month Jeof Falls of Falls Corporate Research—the company that conducted CSIRO's recent staff opinion poll—has been travelling to CSIRO sites providing feedback on the Poll and working with Divisional management to understand the messages communicated to them through it.

But Jeof has his own opinions of the Poll and what it revealed, and agreed to put pen to paper for CoResearch. Here's what he has to say.

I believe the essential importance of participating in a Staff Poll—or employee survey—is to provide staff with an opportunity to communicate to their senior management.

However, over the five years I have been conducting employee surveys, I have never met a group of employees who are not sceptical and cynical about participating in such surveys. In fact, it is not a question of whether employees are or are not sceptical and cynical, it is a question of the *degree* to which employees are!

The extent to which people are sceptical is derived from the extent to which they believe that their senior management will listen to them through the process. This drives to the heart of the perceived 'value' of the process.

From feedback received from staff participating in the focus groups Falls facilitated during the survey design stage, and the many phone calls from staff during the conduct of the survey, supported by a lower than expected response rate to the survey (60 per cent), I have no doubt that staff within CSIRO are very sceptical and cynical about the extent to which CSIRO senior management will listen to them through this process.

But I have been very encouraged by the positive reaction from the Chief Executive, Deputy Chief Executives and Divisional Chiefs to the messages communicated through the survey. From my personal interaction with many senior managers during the past couple of months I have no doubt that the Organisation is committed to at least attempting to seriously deal with a number of the key issues that were identified.

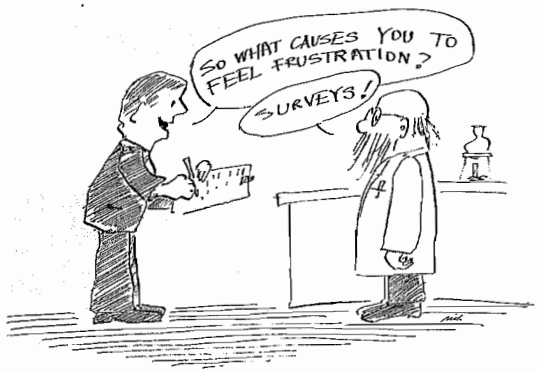
The challenge will be to maintain a disciplined commitment to continuing the dialogue that has been initiated through conducting the Poll.

"The continuing challenge for senior management is to appropriately involve their staff in the changes within their Divisions."

Detailed results of the Poll are available on CSIRO's intranet, so I will not go over them here. Instead, I will take the opportunity to emphasise some aspects of the results.

Overall, the results of the survey indicate that CSIRO is a relatively high performer compared to 130 other Australian organisations in our database.

It is not surprising that a very strong, consistent culture exists within CSIRO. Staff are very committed to, and derive relatively high levels of intrinsic job satisfaction from the work



of producing or supporting the conduct of, world class scientific research.

By its very nature, this focus is essentially 'internal', with staff communicating much higher importance about the needs of the 'individual' in conducting 'good science', as distinct from delivering 'external customer' satisfaction. This is not to suggest that staff believe that external customers are not important, but that the priority of meeting customer expectations falls behind that of the Organisation supporting the individual's focus on the 'the science itself'.

Balancing the needs and expectations of the individual scientist with those of understanding and satisfying 'external customers' is causing significant tension within the Organisation—which is of no surprise to anyone.

What may be surprising, at least to senior management, is the extent to which staff have questioned the relevancy of the recent sector changes.

I understand that these changes were made to assist the Organisation in being more efficient in managing the Organisation and more effective in working with 'external customers'.

Staff, however, indicated through the Poll significantly lower perceived importance about the recent sector changes helping their work areas to be more effective—indeed, this factor was consistently scored across all Divisions as the least important factor of all factors asked in the survey.

While staff perceive that customer satisfaction is secondary to the science itself, the recent sector changes are not only perceived not to be working very well, but are also perceived not to be aligned with the overall objective of delivering 'external customer satisfaction'.

Indeed, the argument that the recent sector changes have, or will, benefit the delivery of world class scientific research or the delivery of customer satisfaction is still very much up in the air—at least as far as staff are concerned.

Arising out of these tensions within the Organisation, staff have communicated concerns about leadership of their Divisions generally, but in particular their perception that Division Chiefs are not being transparent enough in their decision making.

This lack of perceived openness is exacerbated by a strong sense of lack of trust between staff and senior management. This is unusual in that we do not normally observe such concerns in relatively high performing organisations such as CSIRO.

While staff are very satisfied with the work itself and the ability to conduct excellent research, they are very concerned that they are not being fully involved in the decisions, or fully informed about the reasons for the recent changes that have been imposed.

The continuing challenge for senior management is to appropriately involve their staff in the changes within their Divisions. The Opinion Poll provides Division Chiefs with an excellent opportunity to engage staff openly and honestly in a continuing dialogue about the messages being conveyed through the Poll.

To the extent that staff observe actioned responses to their messages, this Poll will be perceived to be valuable and the current level of scepticism and mistrust will begin, albeit slowly, to reduce. CoR

Conference a stable influence

Diners Club OVERSEAS TRAVEL Awards

Joint support from a Diners Club Overseas Travel Award and CSIRO's Marine Research let Ms Stevie Davenport take part in a conference on stable isotope techniques in ecological studies held in Saskatoon, Saskatchewan, Canada earlier this year.

Stable isotopes of elements like carbon, hydrogen and nitrogen are found in all living systems. By measuring changes in the ratios of stable isotopes in a particular system, scientists can determine how natural processes influence distribution of the isotopes and build a picture of their source and history.

"The potential for these techniques to pose many new questions and answer others is expanding exponentially," said Ms Davenport. "It has been described as a 'renaissance'—this branch of science is on the brink of finding new methods and many more applications.

"The keynote speaker, Dr Marilyn Fogel of the Carnegie Institution of Washington, described the need for compound specific isotope studies and urged stable isotope workers to be aware of processes at a molecular level. She explained how different components of plants—the base of most food chains—show different stable isotope signals.

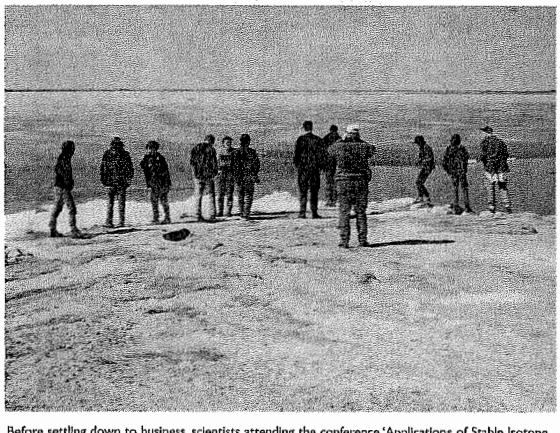
"An organism feeding on plants has a stable isotope signature that reflects the part of the plant or plants it has assimilated, but we don't know yet how far back in time the isotopic signature of an animal's tissue faithfully records the *in vivo* signal."

Conference sessions looked at the use of stable isotope techniques in studies of animal ecology and migration, the foodweb, pollutant and natural tracers in aquatic ecosystems, as well as new methods and developments in stable isotope ecology, large scale and ecosystem processes; and paleoecology and forensics, Ms Davenport said.

"I learned of several studies where stable carbon was used to identify marine and terrestrial components in the diets of animals. Deuterium, an isotope of hydrogen, was used in other studies of wildlife such as songbirds and butterflies to figure out migration patterns.

"There was a lot of interest in the work at CSIRO Marine Research on the continental shelf off south eastern Australia and the regional scale of the South East Fishery Ecosystem project.

"In this project we're using stable isotopes of carbon and nitrogen, stomach contents analysis, fish ecomorphology—the study of the morphology of fish as it relates to their ecology— and pigments in water column and sediments to look at food web relationships and productivity. CoR



Before settling down to business, scientists attending the conference 'Applications of Stable Isotope Techniques to Ecological Studies' in Saskatoon, Canada, visit Last Mountain Lake. The Lake is the first federal bird sanctuary reserved in North America, and is an important migratory stopover for hundreds of thousands of birds travelling across the Great Plains. Photo Stevie Davenport

NZ visit bears fruit

A Diners Club Overseas Travel Award helped send Dr Craig Hardner of CSIRO Plant Industry to New Zealand to attend a conference—The Genetics of Radiata Pine—and take a look at New Zealand's kiwi fruit and apple breeding programs.

Dr Hardner is developing a breeding program for Australia's most significant endemic horticulture crop—the macadamia nut—and the trip let him compare methods used over there and see the progress made in the breeding of other perennial crop species.

"The opportunity to participate in discussion of new and different breeding concepts with a large and varied audience greatly expanded the horizons of how progress can be maximised in CSIRO's macadamia breeding program," he said.

Ninety per cent of the New Zealand kiwi fruit industry is based on one cultivar—the 'Haywood'. But a breeding program introduced new characteristics such as large fruit size, colour variation and 'easy peel'. Using germplasm from China was an important step in this program, said Dr Hardner.

He noted that the New Zealand apple-breeding program has built a large germplasm base, important for breeding new apple varieties.

"I think the main messages from this trip were that germplasm conservation is an important component of the breeding programs in all three crops.

"And that while a quantitative breeding strategy is being developed for all of the crops, there needs to be efficient testing designs for the success of breeding programs of horticultural tree crops such as macadamias and apples.

"Finally, it was interesting to assess the application of molecular marker assisted selection (MAS) in these three crops. MAS is being used in apple for pyramiding of major insect resistance genes and for sex determination in kiwi fruit.

"But the potential for success in radiata pine was less clear, so the take-home message was that using MAS in macadamias needs to be carefully targeted to particular characteristics." CoR

CNA on line

NEW

At the CSIRO National Awareness web site you can find out about the services CNA offers, who's who in communication at CSIRO plus a range of communication resources!

Check it out now at: http//www.csiro.au/services/ CNAResources/CNA home.html

Bush tucker dreaming

White teeth, wide eyes, attentive silence in the library of a small school on the edge of the Tanami Desert.

"My name is Chris Harwood. I am a scientist from Canberra."

He faced a small sea of upturned black faces: "And I've come to learn ... to learn from Rosie and Kay here, about bush tucker ... your bush tucker."

CSIRO forester Dr Chris Harwood spoke with an almost evangelical fervour as he told the children of Yuendumu, 300 kilometres west of Alice Springs of what he had learned and what he still hoped to learn. And he urged them to listen when Rosie and Kay, two of the community's women elders, talked about their land and its vast array of foods so unknown to most Australians. "It's so important, this knowledge," he said.

Harwood afterwards explained that from a scientist's perspective, the research needed to gain the same degree of knowledge possessed by Aboriginal elders about Australia's edible plants would take countless years and millions of dollars. And from the perspective of simply being Australian, perhaps there was a moral obligation too to learn more about the natural bounty of the land we call home.

Ironically his words were filmed for a documentary to be screened in Japan and Europe, not Australia, on the trip he did with another CSIRO scientist Dr Jock Morse, to Niger with Ms Rosie Nangala and Ms Kay Napaljarri. The two Aboriginal women had travelled to the other side of the world to pass on their knowledge of acacia seeds to the Hausa people, subsistence farmers living perpetually in the shadow of drought on the edge of the Sahara desert.

Rosie Nangala lived as a traditional Tanami nomad, well into her adult years, so has a rare and almost encyclopaedic understanding of Australia's desert foods.

The trees, mainly *Acacia colei* (kanalarampi in Rosie's first language) had been planted in Niger during the 1970s and '80s to ease fuelwood shortages and create windbreaks against the blasting sandstorms that sweep in from the Sahara. The trees were chosen at the time for their fast-growth and drought tolerance.

But in 1989 another CSIRO forester, Dr Lex Thomson, took to Niger the idea of growing wattles as a sustainable food source and it was embraced enthusiastically. The hard-coated seeds can be stored a long time before grinding, allowing rural villagers to build up a food store.

Nutrition trials by the Obafemi Awolowo University in Nigeria showed that village people, particularly women, quickly gained weight when acacia flour was added to their traditional millet and sorghum-based recipes. *Acacia colei* seeds contain 23 per cent crude protein, 53 per cent carbohydrate (half of this being dietary fibre), and 11 per cent fat.

But extending the new-found food to village use in famine-prone Niger hit a snag. The scientists knew how to grow the trees, but not much more—like how to maximise yields, how best to 'process' the seeds, and which of the 1,000 or so acacia species are toxic and to be avoided.

Dr Chris Harwood talks to children at Yuendumu. A film crew making a documentary for Japanese and French television was there to capture the moment. Photo Brad Collis.

At this point, Morse had begun working with central Australian Aborigines to help develop a 'bush tucker' industry. In October 1993, Morse went to Yuendumu on the Tanami Track, looking for the knowledge that would save them years of research. Within hours, a small group of elder women, including Rosie Nangala and Kay Napaljarri were leading him into Australia's vast untapped supermarket.

Both Morse and Harwood have since become passionate advocates of the potential for a bush-tucker industry to add a new, sustainable economic dimension to remote Aboriginal communities. Morse is now on secondment to the Central Land Council to help drive this quest: "There's a real opportunity to provide a new economic plank and improve Aboriginal health—all by the people utilising their own skills and knowledge," he says.

"It's also important that the Aboriginal people remain involved in the development of the bush foods industry."

This was the rationale behind Harwood and Morse wanting the women to share their knowledge direct with the Hausa people in Niger and be recognised as the owners of the knowledge. The African villagers were already calling the new acacias "white man's beans" so the arrival of Rosie and Kay, as dark-skinned as the Hausa's, to show them how to prepare the flour and to explain it was one of their main traditional foods, was a defining moment for the cultural exchange.

(Their trip and the Niger project are being funded by AusAID, the Australian Centre for International Agricultural Research [ACIAR], and Department of Primary Industry and Energy.)

Harwood says that if the West Africa project succeeds, a similar opportunity exists in arid parts of India where acacias have also been planted for firewood.

"But what we now need to do is get into some serious 'white coat stuff' ... develop the agronomy to maximise seed yields and improve growing techniques. We're essentially in the same position today with acacias as people in northern Iraq were 10,000 years ago when they began domesticating wheat."

Both Morse and Harwood believe Australia's bush foods and Aboriginal knowledge will eventually have an impact around the world as declining land and water resources put increasing pressure on the need to find more climatically robust crops.

"In many ways the knowledge we've gained from the Aborigines ... from people like Rosie and Kay ... is giving us the purpose that every scientist dreams of, but rarely gets the chance of doing—stopping people from starving," says Harwood. —Brad Collis CoR

Beyond 2000—what will there be?

The Year 2000 is going to be a big one—not because of the Olympic Games, but because it's the year when the world could in an instant, step out of its warm, microchip-controlled safety zone into a form of chaos not seen since the Stockmarket Crash of the 1920s.

Telephones, faxes, bar code readers, laboratory equipment, air conditioning systems, lifts, airline services, credit card readers, security systems, your car and home VCR are just some of the technologies that could fall foul of the Year 2000 Bug.

In its simplest form, the Bug, Y2K or Year 2000 Problem as it is more aptly named, is the result of a decision made by hardware and software manufacturers to use two digits instead of four to represent a year. By cutting back on the number of digits to represent the date, manufacturers saved a lot of money on computer memory and disk space.

But its simplest form belies the actual seriousness of the Year 2000 Problem and how insidious it is.

"When we reach 1/1/2000 some computers will think it's Year 0. Some may keep running, some may reject the date because it's not real, others may think it's now 1900," explains CSIRO Year 2000 Coordinator, Ms Lesley Hanzlik. "Any electronic equipment run by computerised calendars in what are known as embedded systems or microprocessor chips could also grind to a halt or behave in unexpected ways."

Over thirty years ago, when computers were first developed and electronic equipment as we now know didn't exist, the Year 2000 must have seemed an eternity away creating an assumption that there was plenty of time to fix things later.

But with just over a year to go, there is a global race to identify and modify computer hardware and software and all other electronic equipment that is not Year 2000 compliant.

"If we don't make this deadline, individuals and organisations could be facing communication systems breaking down, loss of valuable information like years of scientific data or the status of their bank accounts, loss of business and all kinds of potential legal implications," says Lesley.

> ***"...the Year 2000 Problem is not merely a technical glitch for IT people to fix closer to the date..."***

In short, the Year 2000 Problem is not merely a technical glitch for IT people to fix closer to the date, but an issue that must be addressed by anyone and any organisation using, selling or manufacturing technology that has date, timing, or sequence control software.

Many are now suggesting that the Year 2000 Problem is going to be as big for lawyers as it is for general business.

"Already insurance companies are notifying policy holders that they may not cover damage resulting from Year 2000 non-compliance. The policy holders are expected to find out about and fix any potential problems," says Ms Lorraine Hall, CSIRO's Legal Counsel.

CSIRO is investigating all of its systems such as Finance, Payroll and Human Resources, data communications, voicemail and security as well as building facilities, laboratory and computing equipment to make sure that the Organisation is ready for the Year 2000, says Lesley.

In particular CSIRO is ensuring there is no threat to public health and safety as a result of failure of one of its systems.

The Organisation is also investigating the Year 2000 readiness of software and equipment that has been sold.

"Most Divisions have started to consolidate inventories of equipment and external systems with a view to pinpointing the critical processes for further Year 2000 investigation," says Lesley.

"We're also liaising with Cooperative Research Centres to ensure their readiness, and investigating external systems like power and telecommunications.

"People should be doing this at home too as the Year 2000 problem will not only affect them at work."

How might the Year 2000 Problem affect you?

Personal computers (PCs) is one example of where the Year 2000 Problem could hit hard for many.

"286, 386 and 486 processors are particularly vulnerable," says Lesley. "But not all Pentiums are ready and not all PCs of the same brand and processor size will be ready.

"Microsoft Office 97 is generally considered to be Year 2000 ready, but earlier versions aren't, and if you're using one of these older products, especially for home accounting, you may have difficulty sorting on date fields and with date based calculations because 1/1/2000 may be presumed to be 99 years earlier than 31/12/1999.

"You're not likely to lose data stored on PCs, but you may not be able to readily find your files using older file search products."

Microsoft has also admitted that there are problems with Windows 95, NT and Internet Explorer, says Lesley. Many CSIRO Divisions are creating inventories of all software on PCs as a starting point to checking the readiness of PC software.

But all is not lost in this electronic calendar debacle. "There are many things that can be done to minimise its impact," assures Lorraine.

"If you act now you'll probably have choices, but if you leave it for another twelve months you will find you've run out of time."

Lorraine says there are a few rules to follow at home and at work that will make your transition to the next century more comfortable.

"If you hold company directorships or have business partnerships, investigate your potential liability immediately. Ask organisations you have invested money with whether they are Year 2000 ready.

"Don't presume that because you've bought something recently it's OK. Nor can you presume that because the previous version was OK the new version will be.

"Don't buy new equipment without checking whether it's Year 2000 ready, and don't accept a less than well documented statement of compliance from the manufacturer.

"If a system is critical to you ask the supplier what Year 2000 testing has been done and seek help to have the system tested.

"Never presume that because you cannot see a clock or calendar that an electronic device with a computer chip does not use a calendar. Ask yourself whether a device uses a calendar to schedule events. The person with either the most operating knowledge or technical knowledge of the machine can best answer this question. You might need to contact the manufacturer, distributor, or service agent to find out."

More information—http://www.csiro.au/computing/year2000. CoR

Exposed on the Hill

The CSIRO Head Office in Canberra is often viewed as enigmatic—after all, there are no laboratories there. *CoResearch* met with Marie Keir, Marilyn DeVere and Pam Dovey for some insight into corporate goings-on.

CoResearch: What do you do at CSIRO Head Office?

Keir: We look after CSIRO's Ministerial and Parliamentary Liaison.

CoResearch: How long have you worked in the Ministerial and Parliamentary Liaison (MPL) office?

Keir: I began in early 1991, Pam in 1993 and Marilyn in 1996.

CoResearch: Where did you work before joining the MPL?

Keir: I worked in Parliament House as a consultant on R&D policy for John Kerin when he was Minister for Primary Industries and Energy. I also worked in the Australian Science and Technology Council writing reports on technological change, and in New Zealand's former DSIR as section leader for the Social Science Unit.

De Vere: I worked in both the CSIRO Board Office and Corporate Human Resources. Before CSIRO, I was, at different times, a secondary teacher, a special education worker and a union official.

Dovey: I came from the Office of the Chief Executive after working in various sections of Limestone Avenue, before that raising children and even before that doing "training" in the then Department of Customs and Excise and the Tariff Board.

CoResearch: What does your work involve?

Keir: As the bulk of CSIRO's funding comes from the Government through our Minister we regard him and his staff as major stakeholders and aim to provide his office with an excellent service.

The main part of the job involves working with other people in CSIRO to write briefs and contract approvals for the Minister and to prepare replies to letters that people write to him about CSIRO.

We organise briefs for Question Time when Parliament is sitting, coordinate answers to questions that Parliamentarians request in writing, and look after the Minister's visits to CSIRO sites by being the contact point for the arrangements, briefing and speeches.

We brief Minister's staff, Shadow Ministers and other interested politicians on CSIRO so they have a context in which they can work more effectively on research-related matters. We coordinate briefs for the Chief Executive's appearances before Senate hearings on CSIRO and provide information to the Executive on what's happening in Parliament that relates to CSIRO.

We advise CSIRO staff on political protocol and parliamentary processes. As well as this we take part in more general Government business activities such as organising liaison meetings with Primary Industries and Energy and the Defence Science and Technology Organisation and coordinating the overall CSIRO applications for the Cooperative Research Centres Program.

CoResearch: What's it like working with people in Parliament?

Keir: Controlled panic! We come to work never really knowing what will come up during the day or how busy it will turn out to be. The deadlines are often very short—from five minutes to three hours, depending on how close Question Time is. We also have to be close to 100 per cent accurate in what we provide, as we must not place the Minister in the position of misleading Parliament.

CoResearch: What's the most important thing you need to do your job?

Keir: Where to find accurate information quickly—and a sense of humour.

CoResearch: What would you rate as the top five things about your job?

Keir: It gives a wonderful bird's eye view of what's going on in CSIRO. It gives opportunities every day to talk to people in Divisions and other corporate groups about fascinating and important issues. There is a real satisfaction in contributing to promoting CSIRO among important political decision-makers and the public, through answers to Ministerial correspondence. We all find Australian politics fascinating and we get to read, talk and think it as part of our job.

CoResearch: When you're not at work, what do you enjoy doing?

Keir: I read a lot—good detective novels, no doubt as catharsis for any violent tendencies I have to repress during the day, and history.

De Vere: I'd like to sing in a choir, eat in good restaurants and travel extensively—maybe next year!

Dovey: I like the movies, eating out, travel, softball and a good laugh. CoR

Keeping Parliament in touch with CSIRO are (left to right) Marilyn DeVere, Marie Keir and Pam Dovey. Photo: Bronwen Healy

Enquiries stint pays off

Diane Bennett is a scientist at CSIRO Molecular Science in Melbourne. Perceiving a declining interest in science, Diane set about finding out how she could help turn the tide.

I began my career with CSIRO Molecular Science in 1997, working for Dr David Dixon and Dr Rob Eldridge on the Polyelectrolytes in Drinking Water project.

Like a lot of other scientists I know, I'm concerned about the declining number of students enrolled in science courses.

After talking to Robyn Segrave, a Personnel Officer at Molecular Science, about the lack of interest in science these days, she suggested I pay Rae Robinson, the Manager of CSIRO Enquiries, a visit and tell her about my concerns. Little did I know that a whinge would lead to a three-month part-time position at Enquiries!

I learnt a great deal about CSIRO during my time there and improved my communication skills. People expect you to know everything about the company you work for, and although I may not know everything, I now have a much better idea of the research being done throughout CSIRO. I even learnt more about the work in my own Division!

Working at CSIRO Enquiries made me realise what an essential service they provide. Without them, Divisional receptionists would be pulling their hair out having to deal with so many calls, and the public would find it very frustrating too. I was surprised just how many calls came into the Enquiries office each day.

I think it would be useful for others in CSIRO to spend some time at Enquiries, or at least visit, and see what goes on behind the scenes. As I settle back down to being a scientist full time, I find that my time at Enquiries has helped me become more confident about communicating science to people with differing scientific knowledge levels. It also made clearer to me exactly where I fit into the big picture that is CSIRO. CoR

Diane Bennett, a scientist at CSIRO Molecular Science, recommends a stint at CSIRO Enquiries to experience first-hand the essential service it provides.

PA system loud and clear

The second National Conference of CSIRO Personal Assistants will be held between 15–17 November this year at the Melbourne Convention Centre.

"The duties performed by PAs are very diverse, and many people don't know just how versatile a good PA needs to be," says Ms Valerie Blackley, Executive Secretary to CSIRO Chief Executive, Dr Malcolm McIntosh.

"PAs are skilled at secretarial tasks, but they're also organisers, diplomats, and counsellors, thoroughly understand the workings of an organisation and operate at its front line."

CSIRO has more than 100 PAs with different levels of experience. Although in regular contact through their jobs, the PAs often never meet face-to-face, even after many years of 'working together', says Valerie.

"The conference is going to be a great opportunity for PAs to network and establish future links with each other, especially for those working as the only PA for a site.

"Recently appointed PAs will gain insights into how more experienced PAs operate and possibly form links with a mentor.

"How to develop career paths in CSIRO is another issue we plan to tackle."

PAs across the Organisation and anyone performing the duties of a PA are encouraged to attend the conference, which has the full support of Dr McIntosh who will address participants.

CSIRO Chairman, Mr Charles Allen, AO, will open the conference and Ms Jane Lowther, from Corporate Human Resources' Leadership, Career and Team Development will facilitate the first day of proceedings.

Keynote speakers include CNA Director Mr Julian Cribb, Biomolecular Research Institute Director, Dr Peter Colman, and Rehabilitation Consultant, Ms Eleanor Oyston.

"Because PAs need to appreciate the different Divisions and sites, we've organised visits for the second day of the conference, this time to Wool Technology and Animal Health in Geelong."

"Apart from the conference, there's already an email forum for all CSIRO PAs set up by Beverlie Johnstone at Entomology."

More information from Valerie Blackley on (02) 6276 6132. More on the email forum from Beverlie Johnstone (02) 6246 4027. CoR

Queen's Birthday Honours

Dr Elwood Zimmerman ('Zimmie') of Entomology was made a Member of the General Division (AM) in the Queen's Birthday honours for "service to entomology through scientific research in Australia and the Pacific and philanthropic support of this research". Dr Zimmerman is one of the world's most distinguished and best known entomologists. He has devoted his entire life to scientific research on insects, in particular Pacific and Australian weevils.

His eight volume monumental work Australian Weevils is the culmination of more than 60 years research.

Meanwhile, Mrs Catherine Money of the Leather Research Centre was awarded a Public Service Medal for outstanding service to the Australian Leather Industry in the development of technology and processes. CoR

Science quick quiz

CSIRO's DOUBLE HELIX SCIENCE CLUB

Here's a chance to 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.

Questions

1. What animal holds the record for killing the most humans?
2. What is a *Helix aspersa*?
3. Pick the odd one out: snow, water, dry ice, steam, hail?
4. What's the main source of chlorine for the manufacturing industry?
5. What's the most common fish in Australia's inland rivers?

Answers

1. Mosquitoes.
2. Garden snail.
3. Dry ice (CO_2). The rest are H_2O.
4. Common salt (sodium chloride) from seawater.
5. Carp.

Double Helix Club quiz question competition

Can you think of some tricky, yet solvable, quiz questions? We'd like to hear from you! Send questions to Simon Torok at simon.torok@helix.csiro.au. The best questions will win a $10 Double Helix merchandise voucher and could be published in the Double Helix Club's quizzes running in *The Age*, *Canberra Times*, *The Helix*, a host of suburban newspapers as well as *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

Offshore

Stars in Thailand

CSIRO has 34 current or recently completed CSIRO projects in Thailand. Some star performers include corrosion-resistant materials for building, plastics and timber that are resistant to termites, legume-based pastures for beef production and the prawn viral disease project.

CSIRO signed a Memorandum of Understanding with the Thailand Institute of Scientific and Technological Research (TISTR) in 1993. In support of the agreement CSIRO funds up to two exchange visits per year by researchers between the two organisations.

The Australian Government has a formal agreement with Thailand on Science and Technology Cooperation (1987). This bilateral arrangement may assist groups wishing to undertake work in collaboration with Thai colleagues when the Department of Industry Science and Tourism announces details of its Technology Alliances scheme, which has now replaced the previous International Science and Technology Program.

DIST is funding an exhibition of Australian science and technology at the ASEAN Science and Technology Week in Hanoi, Vietnam in October, and CSIRO has been asked to participate. Talk to CSIRO International or your Communication Manager for details. CoR

CSIRO around the nation

Backpage

O caption, my caption!

We were deluged with responses to last issue's pic (above), but only have room to publish a few:

Richard Sakurovs from Energy Technology sent: "Sirohat. A new way of protecting boat users from lightning strikes."

From Lawry McCarthy at Molecular Science: "Look at the size of that culex pipiens quinquefasciatus on Joe's hat! Don't worry Joe I'll swat it with the oar!"

Helen Barry also at Molecular Science sent: "See-if I hit the fish on the head with this thing, we could possibly do away with lines," and "Rub a dub dub, four men in a tub, all but one had a vision, to change the world was their mission, except one, alas, alone who just thought he'd gone fishin."

Entomology's Judith Hull offered: "Should we move on to the 'walking on water' option now that we have demonstrated the 'onward and upward' method?"

From Lewis Hewertson in Canberra: "Been at the top too long. You forget how to do these things."

Bryan Elmes from Molecular Science suggested: "If we can just get the wind right we should be able to get a tune out of this!"

On a medieval note, Darryl Crowe from Animal Health sent: "Beyond here there be dragons."

CSIRO Chairman, Charles Allen penned a little ditty: "The scientists came in four by four. Hurrah! Hurrah! The scientists came in four by four. Hurrah! Hurrah! The Williams, the Wright, the Harris and Kile, In panama hats and a great big smile, They all piled into the boat, Just to get in on the act."

Bronwen Healy at the Corporate Centre offered: ".... champion pole-vaulter my foot! Bet she can't pole vault out of a tinny like I can!"

From CRC Leme, Mal Jones sent: "... and I wave my magic wand like this ... and our outboard will float back up to the surface!"

This one's from Bill Barendse of Tropical Agriculture: "Q. How many CSIRO scientists does it take to row a boat in a circle? A. Four. One to wield the oar, one to take a bearing on the sun, one to keep visual track on progress and one to make imitations of Skippy to keep the others amused."

Bob Johnston at Manufacturing Science and Technology suggests: "The Awesome Foursome-30 years on"

Land and Water's, Andrew Bell wrote: "Wow, these new plasma-jet oars are terrific ... you just point them in the direction you want to go and ... wait, stop! Not down, not down!"

Graham Pearce of Wildlife and Ecology offered: "Top scientists prove that you can put all your eggheads in one punt, but you can't make them row."

Entomology's Patrick Gleeson sent: "Quick! Stop that rat from leaving!"

Lyn Davidson of Land and Water wrote: "The four 'orsemen of the apocalypse?"

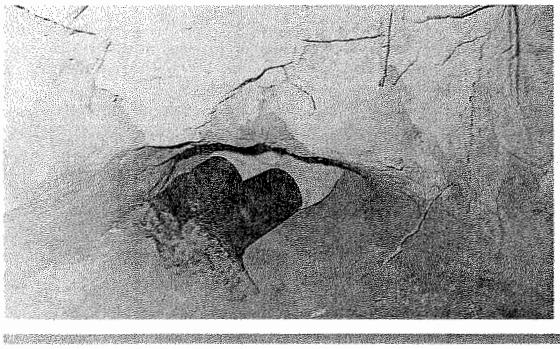
Lynn Pulford of Education programs sent: "CSIRO scientists stepped up research into the Loch Ness monster after the blade from one of their oars disappeared under mysterious circumstances."

"I realise the new CSIRO research vessel is not quite what we wanted but surely someone knows how to row!" wrote Mike Lacey of Entomology.

Nicholas Corbet from the Tropical Beef Centre sent: "Hold still Glen, there is a large specimen of *Aedes alternans* on your hat!"

And the winner is—John Pengelly from Land and Water for: "So their work was done here and the Gnomes moved on to restore another neglected garden." John wins a copy of *Wolves of the Sea*, a book about what it's like to be a killer whale.

Wolf Hermann from Animal Production sent the latest pic (below). Thank you Wolf (that's him in the pic). We'll wait 'til next issue to tell you what he's really doing. In the meantime we look forward to your interpretations and this time the winner will receive a special mystery prize, which means we're still thinking of one. Enjoy! CoR



Obituary: Dr C H B (Bill) Priestley, AO
8 July 1915–18 May 1998

Photo David Whillas

The founding Chief of CSIRO Atmospheric Research, Dr Bill Priestley died on 18 May, 1998 aged 82.

After graduating in applied mathematics at Cambridge University in 1937, Dr Priestley joined the British Meteorological Office. In 1944, he was a member of the team of British and American meteorologists who provided the successful D-day weather forecast for the allied amphibious assault on Normandy, France.

Dr Priestley arrived in Melbourne in 1946 to head a new CSIR research program in meteorological physics. Within two decades, the CSIRO Division of Meteorological Physics became one of the leading atmospheric research units in the world.

Scientifically, Dr Priestley's primary interests lay in turbulent processes and the links between small-scale and large-scale dynamics in the atmosphere. He won many awards for his contributions to science, including Fellow of the Royal Society, and was awarded the Order of Australia in 1976.

His contributions to the Australian atmospheric sciences were many. In the early 1970s he chaired two significant enquiries commissioned by the Australian Academy of Science. The first was into the atmospheric effects of supersonic aircraft; the second was on climate change, two topics that are still major environmental issues today.

In 1972, with Dr Bill Gibbs, Director of the Bureau of Meteorology, Dr Priestley proposed establishment of an Australian observatory to measure 'background' composition of the atmosphere. This resulted in the Cape Grim Baseline Air Pollution Station in north-western Tasmania, which has provided so much vital information on greenhouse gases, ozone depleting gases and other pollutants.

Following his retirement from CSIRO in 1977, Dr Priestley spent three years as a part-time professor at Monash University, then chaired the Latrobe Valley Airshed Study, a decade-long examination of air quality in Victoria's power generating region. CoR

Entomologist honoured

CSIRO entomologist Dr Ebbe Nielsen has been elected a Foreign Fellow of the Royal Danish Academy of Science and Letters. Dr Nielsen is Director of the Australian National Insect Collection in Canberra.

The Academy recognised Dr Nielsen's ground-breaking international work in the important field of biological informatics and evolution of Lepidoptera (moths and butterflies). The Academy cited his significant scientific publications, which have increased understanding of the evolution of primitive Lepidoptera and the origin of the Ditrysia, the most successful group of Lepidoptera, and one of the most species-rich group of living organisms. CoR

Excellence Awards

Three of the five 1998 Australian Coal Association Research Program Awards for Excellence have been won by CSIRO.

Dr Mike Kelly, Dr Chris Veal and Dr Richard Sakurovs were presented with awards by the Chairman of the Australian Coal Association, Mr Bob Cameron, for their contribution to R&D in coal mining, preparation and utilisation. CoR

Editor cited

Dr John Zdysiewicz (John Z to a generation of chemists) managing editor of the Australian Journal of Chemistry, was presented with a citation for outstanding service to chemistry in Australia at the Royal Australian Chemical Institute (RACI) 16th National Organic Chemistry conference held in Leura in July.

The Australian Journal of Chemistry is one of 14 journals available from CSIRO Publishing.

The citation recognised Dr Zdysiewicz's efforts as a promoter of chemistry in Australia and his promotion of Australian chemistry overseas. John has instigated significant changes in the Australian Journal of Chemistry that have been well received. John has also served on various International Union of Pure and Applied Chemistry (IUPAC) committees. CoR

40 years of science

After more than 40 years of science with CSIRO Wildlife and Ecology, Mr Wayne Braithwaite is retiring, and his presence will be missed by his many colleagues.

Wayne first had paid employment with CSIRO in 1958 as a temporary assistant working for Dr Harry Frith (who later became Chief) in what was then the CSIRO Wildlife Survey Section. Before that, Wayne worked for several years as a volunteer on Harry's various projects: ducks, mallee fowl and kangaroos. Wayne is the last serving scientist in the Division to have worked with all of Wildlife and Ecology's Chiefs.

Wayne's research largely focussed on the ecology and management of waterfowl. Then, in 1977, he turned his attention to the forests of eastern Australia, in an advisory and consultancy role to State and Federal governments, and to industry and conservation groups. Publications include some 100 research and technical papers, advisory and consultancy reports relating to the conservation management of Australian fauna. CoR

He's a jolly good Fellow

Dr Ray Smith, Director of the Cooperative Research Centre for Landscape Evolution and Mineral Exploration (CRC LEME), has been appointed a CSIRO Fellow, a prestigious award for excellence in research achievement.

Dr Smith is only the third person to be made a Fellow since the inception of the award in 1990.

The techniques developed by Dr Smith and his team have slashed exploration costs in lateritic terrain and dramatically sped up the process of mineral discovery. CoR

Conservation honour

Deputy Chief of Wildlife and Ecology, Dr Denis Saunders, received the 1998 Individual in Government Award of the International Society for Conservation Biology. The award acknowledges Dr Saunders' contribution to conservation biology and was presented to him at the Annual Meeting of the Society for Conservation Biology in Sydney last month. CoR

Temperature Measurement Course

The CSIRO National Measurement Laboratory (NML) is again offering its intensive short course in the theory and practice of temperature measurement. The three-day course, from October 12–14, will be held at the NML, West Lindfield in Sydney. Cost is $750.

The course is of value to technicians, engineers, scientists and others involved in or responsible for work in which the measurement of temperature is important.

For further information contact Mr Robin Bentley on (02) 9413 7764, fax (02) 9413 7474 or email robin@tip.csiro.au CoR

CoResearch is published by CSIRO National Awareness (CNA) for CSIRO staff and interested outsiders.
Editor: Jane Kahler
Assistant to Editor: Karen Robinson
Design and art production: *Flying Fox Typography & Design*
Printed by: *Pirie Printers*

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 Jane.Kahler@cc.csiro.au or Karen.Robinson@cc.csiro.au

100% recycled paper

Research Roundup

CSIRO research in the news compiled by Nick Goldie, CNA

Faster Flo

CSIRO's medal winning software, Fastflo released in July a new look UNIX graphical interface to make the software easier to use. Fastflo was launched on to the world market in 1997, and according to Dr Noel Barton of CMIS, there have been many enquiries from users who need the UNIX platform. Fastflo is a mathematical software package with many industrial applications; it predicts the behaviour of fluids such as molten metals, flames, or gas flows.

Say cheese!

Blessed are the cheesemakers. Cheese scientists and cheesemakers from around the world met in Melbourne in early July to compare notes on such practical matters as the behaviour of mozzarella on a good pizza, and the best diet for milking cows. *Cheese Science '98* was organised by the University of Melbourne, the Australian Starter Culture Research Centre, and Food Science Australia (which is a joint venture between CSIRO Food Science and Technology, and the Australian Food Industry Science Centre).

Short baa and sides

Minister for Science and Industry Mr John Moore announced (June 26) the commercialisation of Bioclip, the non-mechanical harvesting of wool. Bioclip, which has been twenty years in development, uses a naturally occurring protein to cause sheep to shed their fleece. It was demonstrated at an open day held by 'Roseville Park', a stud farm near Dubbo NSW.

The manager of *Bioclip Pty Ltd* says that the process has now been tested on some fifteen thousand sheep, and results in cleaner, more even wool with less incidental damage to the sheep. Each sheep is given a single injection of the protein, and fitted with a hair-net to retain the fleece. The nets are manufactured in Lithgow, by workers recently retrenched by the Berlei lingerie factory.

These boots are made for fightin'

Old soldiers never die...they just take their boots off.

Army boots don't have the kindest of reputations; gnarled toes, blisters, tropical sores. But this is all about to change.

Dr Louis Kyratzis of CSIRO Leather Research Centre in Melbourne has come up with a revolutionary new boot made of the best traditional materials—cow hide and kangaroo leather. The Army's Rob Darby says that Australia will have the most advanced combat boot in the world; calf-length, water-repellent, tough and comfortable.

Now that CSIRO and the Army have developed the boot, other customers could include farmers and outback workers, firefighters, police, and bushwalkers. "There's also great potential for the Australian footwear industry to become a major supplier for the Asia-Pacific," says Dr Kyratzis.

Clean up with carbon

Another development that has recently acquired a commercial partner is the activated carbon process of Dr Paul Fung and his team from Forestry and Forest Products.

Activated carbon is one of the great industrial purifying agents, with uses ranging from calming upset stomachs to the recovery of gold during ore processing. The world market is estimated at eight hundred million dollars a year. The CSIRO process uses waste from the sawmilling industry to produce carbon, and helps get rid of sawdust and offcuts, smoke and other air pollutants, while creating its own heat.

Bring back the frogs

Frogs are disappearing, and there have been many explanations offered—climate change, polluted water, more (efficient) predators, a mystery frog disease. Now researchers from the Australian Animal Health Laboratory in Geelong and James Cook University in Townsville have found a fungus, deadly to laboratory frogs, in ten frog species. A similar fungus was found in Panama last year. Investigations are continuing to establish why the fungus has become such a threat, and how it is carried. Frog deaths could well be caused by a combination of factors—perhaps they just don't like the 20th century.

All in a day's work

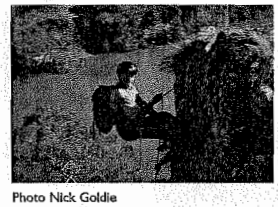


Photo Nick Goldie

Sixty metres above the River Murrumbidgee, Dr Gary Caitcheon (Land and Water) is on his way to examine sediments trapped in rock overhangs and caves. With Professor Bob Wasson (ANU) and project leader Dr Jon Olley (Land and Water), the team is using grains of quartz to provide accurate dating for material found in ancient flood deposits. "The record of the past is fascinating—but it also has important messages for how we plan the future," says Dr Olley. CoR

New era for Townsville's Davies Laboratory

by Grant McDuling, Tropical Agriculture

Dr Christian Roth, CSIRO's Davies Laboratory new Officer in Charge, has a vision for the Lab to become a major centre of expertise on tropical issues, working in Queensland, the north-west of Western Australia and the Northern Territory.

Dr Roth's appointment was announced during a formal ceremony at the laboratory in late May, and follows the retirement of Dr Raymond Jones earlier this year.

At the ceremony were laboratory staff, CSIRO Deputy Chief Executive Dr John Radcliffe, Chief, Land and Water Dr Graham Harris, and Chief, Tropical Agriculture Dr Elizabeth Heij.

"Raymond Jones' retirement left a significant gap at the lab," said Dr Heij. "But Christian has agreed to fulfil the research leadership role."

Dr Roth has extensive experience in soil erosion, agroforestry, catchment management, and assessing impacts from land use. He sees northern Australia as representing one of the last scientific frontiers.

"A window of opportunity exists for us to avoid creating similar problems that exist in the Murray-Darling Basin," says Dr Roth.

"We need to develop new land resource assessment, modelling and prediction tools to assist with important decisions. We will also be tackling issues such as what impacts are being made to our wetlands and our marine systems such as the Great Barrier Reef lagoon.

"We are also being challenged scientifically to make large scale risk assessments on things like sediment or nutrient export in an extremely data-sparse environment. The increasing conflict between land for cane use or urbanisation is another key area we will be studying.

"An important asset we can offer is the ability to combine a range of research disciplines to work collaboratively to arrive at solutions. Through our efforts at the Davies Lab, we are able to marshal skills in hydrology, soil science, groundwater, tropical agronomy, horticulture, catchment management, and socio-economics." CoR

At a ceremony to mark Dr Christian Roth's appointment to Officer in Charge of CSIRO's Davies Laboratory in Townsville are (left to right) CSIRO Deputy Chief Executive Dr John Radcliffe, Dr Christian Roth, Chief, Land and Water Dr Graham Harris, and Chief, Tropical Agriculture Dr Elizabeth Heij. Photo CSIRO Tropical Agriculture.

Australia Advances to series 2

Australia Advances videos (Series 2) have now been released. Episodes include A Fat Lot of Good, Magic Maps, Sea Sex, Turbocharged Plants, Plastic Wood, Woolly Life Savers, Gold in Them Thar Hills and Pest Zappers.

Eleven broadcast quality masters have been sent to TV stations and networks around Australia as well as to AAV, who do the Ansett In-flight videos.

Fourteen TV networks broadcast the first AA series, including Ansett inflight video, from two to three times a week to three times a month.

Total screenings for the eight stories was 1,730, with a total audience reach of 3.46 million.

To view the scripts and download the videos go to http://ozadvances.csiro.au/

VHS copies of Series 2 are available at $20 each for one to five copies, or $14 for six or more, $8 postage applies. CoR

Great idea gets an airing

A really good way to get on radio is to bring the radio station to you and monopolise its airwaves for a few hours. That's exactly what a group of CSIRO Divisions did as part of their Science Sunday line up held during National Science Week earlier this year.

Melbourne's Three Triple R jumped at the chance to broadcast live from CSIRO's Clayton site, and scientists from CSIRO Manufacturing Science and Technology, Minerals, and Leather Research Centre were just as keen to go to air.

According to Ms Michele Gaca from CSIRO Manufacturing Science and Technology and one of Science Sunday's organisers, Three Triple R's audience loved the program and the radio station would relish the opportunity to do it again.

A great idea that worked well! If you've got an event coming up and think a live radio broadcast would add that little bit more, talk to Michele (03) 9545 2806 or Emma Booth (03) 9545 8878 about how they made it happen. CoR

Photo Mark Fergus.

Search now automatic

CSIRO Information Technology Services and Libraries SIM Databases now offer automatic saved searching for a range of its scientific databases.

Launched in June, this new feature can be accessed through SIM via the web.

Searches are run automatically every time new data is added. New information relevant to a search is delivered electronically for users to browse, add to a personal database like Pro-cite, or print out to follow up in a library for the full text.

Automatic saved searching is now available for Current Contents, CABI (CABI Abstracts), Australian Earth Sciences Information System (AESIS), METADEX, for information on metals and alloys, and SCANFILE, a CSIRO produced national database of science and technology policy, R&D management, social and economic issues of R&D.

SIM can be accessed through the web http://www.cis.csiro.au/im/sim/sim.htm or by a PC software package, available from the CSIRO Toolkit.

For more information contact your local library or see http://www.csiro.au/im/sim/sim.htm on the CSIRO intranet. CoR

Publishing in CoResearch

CoResearch serves to inform *all* staff of news or issues in CSIRO, and highlights different types of research carried out by the Organisation. It is also circulated externally to Government, industry and the media.

It's an eight page, two-colour tabloid produced four times a year in February, May, August and December. Material needs to be submitted by the first week of each preceding month, and should be sent via email to Jane.Kahler@cc.csiro.au or Karen.Robinson@cc.csiro.au or on disk to *CoResearch*, PO Box 225 Dickson, ACT 2602. Don't format material too much—Times New Roman, 12pt, single spaced, saved as a Word document is all that is needed.

Keep articles short and newsy. Keep people news, awards, retirements etc to 100 words or less. Research and other (non-scientific) news to around 400 words or less. Feature articles around 1,000 words max.

Keep language and sentences simple. Always include a person's first name as well as their title eg Dr Mary Smith. When sending photographs or images or graphs and diagrams, always include a full caption and the name of the photographer/Division each is to be attributed to. Stick to submission deadlines and word limits.

Good newsy photographs are always needed. Pics can be sent electronically, as colour transparencies or as colour or B&W prints. Only use acronyms when necessary, and let us know what they stand for.

More information at http://www.csiro.au/services/CNAResources/coresearch.htm CoR

CSIRO

CoResearch

Season's Greetings

CSIRO's staff newspaper

No. 376 Summer 1998

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CSIRO crucial to trial HIV vaccine

A technique developed for veterinary vaccine applications by CSIRO Animal Health scientists is playing an important role in a project with the Australian National University (ANU) and the MacFarlane Burnet Centre (MBC) to develop a vaccine against HIV.

CSIRO Animal Health scientist Dr David Boyle developed a fowl pox virus that can be used as a vector or 'taxi' to carry a vaccine into other animals, including humans. While it was originally developed for poultry vaccination, the technology was found to have applications in other species.

"The fowl pox virus is itself harmless to humans and other animals, but acts as a 'taxi' that can carry part of the HIV virus as a 'passenger' into the animal. This alerts the animal's killer T-cells, an important part of the immune system, to recognise and kill HIV virus infected cells, by first becoming familiar with just the HIV internal proteins," says Dr Boyle.

The HIV epidemic is estimated to affect over 30 million people worldwide and continues to spread with 16,000 new infections each day.

The vaccine, developed at the John Curtin School of Medical Research (JCSMR) located within the ANU, works in two stages—first priming the immune system before dramatically boosting the immune response against the virus.

The CSIRO Animal Health fowl pox virus vector technology is one of the important enabling technologies for this promising collaborative project on HIV vaccines.

Research has shown that the vaccine is effective in monkeys and gives them tremendous immunity to HIV according to Professor Ian Ramshaw and Dr Alistair Ramsay of the JCSMR, who with Dr Stephen Kent of MBC and Dr Boyle have refined and tested the vaccine.

There are two types of vaccines that can be made to boost the immune system against HIV—one using antibodies, the other using cytotoxic (cell toxic) T cells.

Vaccines based on antibodies have been unsuccessful because of a coating that prevents the virus being detected in the blood stream.

The JCSMR researchers produced a vaccine based on cytotoxic T cells. They succeeded by combining two immunisation methods, neither of which is effective individually. The first method the scientists use is "DNA immunisation", in which an HIV gene is inserted into skin cells. The cells produce a low level of HIV protein that "tickles" the immune system, preparing it for the second immunisation. In the second or "viral immunisation", the same gene is introduced to the patient through a harmless virus—CSIRO's fowl pox virus. Cells infected with this virus produce large amounts of the HIV protein.

According to the research team, the double immunisation produces an enormous increase in the level of cytotoxic T cells specific to HIV.

While the vaccine will be useful worldwide, the researchers say its greatest significance would be for developing countries where other treatments are not feasible. "The advantage of our system is that it is very cheap and does not require refrigeration, which can be a major difficulty in tropical countries," Professor Ramshaw said.

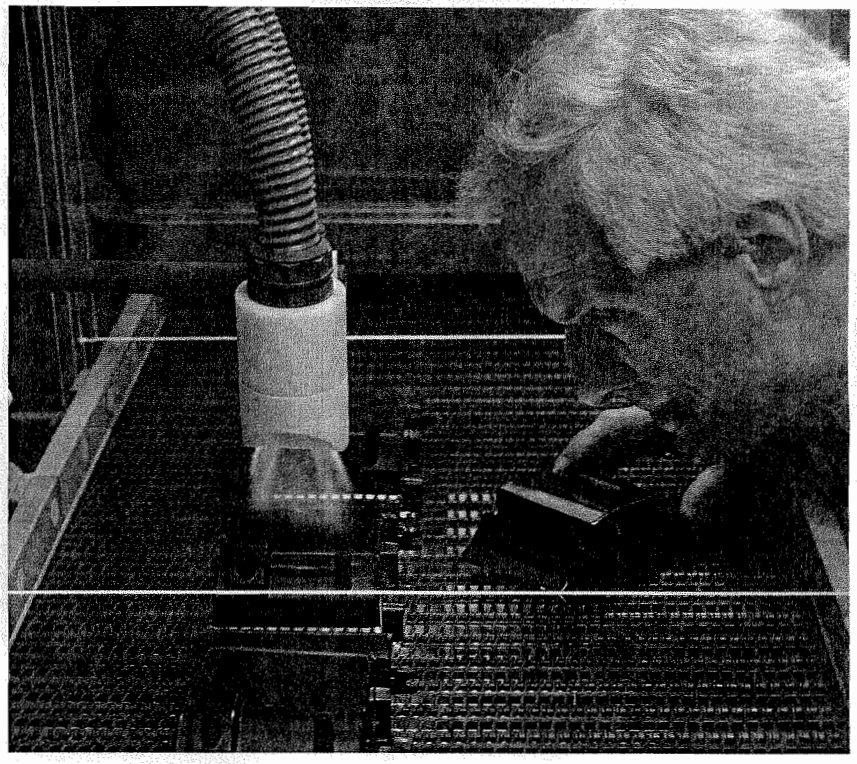
A modified "therapeutic" version of the vaccine is already being prepared for trial in HIV-infected patients in Australia. These trials are being conducted in collaboration with an Australian company, Virax.

CSIRO and the ANU co-own a patent for part of the modified vaccine technology. A patent for the fowl pox vector system is owned exclusively by CSIRO. A modern production laboratory has been built by the JCSMR at the ANU that will produce commercial quantities of the vaccine. CoR

Telescopes on track for millennium

The radiotelescopes at the Australia Telescope National Facility (ATNF) in Narrabri, NSW can boast Year 2000 compliance. The complex computer system running the array of radiotelescopes at the ATNF is a target for Y2K problems. Here, many interconnected computers of different brands run real-time software. Accurate time keeping is vital to the Facility's operation, so managing time problems is a way of life for ATNF staff. "For our telescopes to operate at all, we need to maintain our time standards to about a microsecond, so we tend to be concerned about things like leap seconds, the slowing down of the Earth and wobbles of the Earth's axis," says Head of Astrophysics and Computing at ATNF, Dr Ray Norris. "The Y2K bug is just another timing effect that we need to be careful about. "We have already run a Y2K simulation by winding the date on all the computers to 31 December 1999 and then watching it go through to the millennium. "Nothing startling happened. We found a few problems that we were able to fix, so by 1 January 2000 the telescope was operating normally."—*Jennifer Hum, CNA* CoR

Stuck on you: polymers that won't budge



Polymers are getting a whole new lease on life now that scientists at CSIRO Building, Construction and Engineering in Melbourne have developed SICOR. Not only is SICOR a low cost process that sticks plastics and paint together in a virtually unbreakable bond, it uses water-based chemicals that are much kinder to our environment. SICOR Project Leader, Dr Voytek Gutowski (above) is running samples through the SICOR test plant in Melbourne. More on page 2. Photo Ms Tracey Nicholls, BCE

Season's beetlings

by Jennifer Hum, CNA

The Christmas beetles' arrival each year is a sure sign that the festive season is upon us, but its colourful carapace hides a more sinister side of this well-loved Australian.

In south-east Australia, the Christmas beetle is a major agent of dieback in pastures and plantations.

Because the beetle larvae thrive beneath damp pastures and the adults emerge easily through moist soils, the wet year may herald a bad season for rural eucalypt defoliation in south-east Australia.

But a long-term solution may be on the bare horizon.

New research by Dr Mamoru Matsuki and Dr Rob Floyd of CSIRO Entomology, and Dr Bill Foley of the Australian National University's Division of Botany and Zoology, shows that Christmas beetles prefer some species of eucalypt to others, and in any dieback area, there are usually some beetle resistant trees.

Early research showed resistant species and individuals contained relatively high levels of cineole in their leaves, and this was thought to be some kind of beetle repellent.

But taking the lead from research on plant eating vertebrates, Drs Matsuki, Floyd and Foley investigated the deterrent properties of another compound called sideroxylonal.

Dr Matsuki manipulated levels of both cineole and sideroxylonal in eucalypt meals for beetles, revealing that the sideroxylonal, and not cineole, actually slowed down the beetles' feeding.

The role of cineole, a volatile, or fragrant compound, appears to be only as a warning against sideroxylonal.

Floyd says that in restoring pasture trees and plantations in dieback areas it is not always useful to replant the local trees, which are genetically similar to dieback victims. Resistant trees, naturally high in sideroxylonal, could be produced in nurseries, and then planted out. Rural Industries Research and Development Corporation have funded this research stage, which could help in dieback regeneration. CoR

The Christmas beetle is more than a festive season visitor, it is a major agent of dieback in pastures and plantations. Photo Rob Floyd.

Smart polymers stick with industry

A world breakthrough in polymer technology has opened the door for new applications for polymers in the construction industry, already winning a $16 million licence agreement in the US.

Developed by scientists at CSIRO Building, Construction and Engineering, SICOR is a low-cost process that can stick plastics and paint together in an almost unbreakable bond—and the process uses water-based chemicals that will not harm the environment.

In the past, use of polymers such as polypropylene and polyethylene was limited by their inability to bond or paint without the use of expensive, environmentally damaging solvents and chemicals.

The Chief of CSIRO Building, Construction and Engineering, Mr Larry Little, said that a great deal of interest is being shown by companies from a variety of industries.

"We have already signed a $16 million licence agreement with a US building products company that will use the technology to support a new product line that utilises recycled polyethylene," he said.

"The automotive industry is keen to adopt the technology and we are currently going through extensive exposure testing to prove SICOR for both painting and adhesive bonding applications for a local manufacturer."

Tests have shown that SICOR bonds automotive paints to moulded polymer parts like bumper bars so strongly that the polymer itself will break before the paint can be pulled from the surface.

"In one trial SICOR was used to stick polypropylene bodyside mouldings onto a Holden Carprice, which then underwent 40,000 kilometres of road testing, much of it on very rough terrain. At the end of the test, it proved impossible to remove the mouldings without damaging the door panels," said Mr Little.

Project Leader, Dr Voytek Gutowski, said the technology is suitable for current manufacturing processes.

The SICOR process can easily be integrated into existing manufacturing systems, treating polymeric products at speeds up to 300 metres a minute. Once a product has been treated, any future bond with paint or plastic will be equally strong whether the adhesive or paint is applied at once or 12 months later.

Because SICOR is a low-cost process that allows the use of alternative materials, it offers manufacturers improved quality and performance while allowing a reduction in manufacturing costs.

The SICOR team is eagerly waiting to hear whether it will receive a recommended bonus payment in recognition of its hard work and dedication.

Dr Gutowski first heard about the recommendation after being presented with a Certificate of Recognition by CSIRO Deputy Chief Executive, Dr Colin Adam in August.

"This is excellent news for the polymer team in Highett. SICOR technology has enormous potential in a range of industries and we should recognise both their commitment to creating world leading science together with the significant value Voytek and the team have added to CSIRO and its reputation," Dr Adam said.

In September, SICOR was highly commended in the Montell Worldwide Innovation Awards program. CoR

CSIRO Deputy Chief Executive, Dr Colin Adam presented a special Certificate of Recognition to the Building, Construction and Engineering team behind SICOR technology. Pictured left to right are: Mr Larry Little, Mr Con Filippou, Dr Sheng Li, Ms Magda Morehouse, Dr Voytek Gutowski, Ms Lee Russell, Mr Mark Spicer, Dr Dong Yang Wu, Mr Steven Petinakis, Mr Anthony Cerra and Dr Colin Adam. (Absent: Ms Bianca McKechnie). Photo Tracey Nicholls, BCE.

Wheat after rice an environmental boon

by Fiona Myers, CLW

A bowl of rice followed by a loaf of bread may well provide a sustainable partnership for farmers in irrigated regions across southern NSW.

Initial results from a trial backed by the Cooperative Research Centre for Sustainable Rice Production suggest that growing wheat immediately after a rice crop may well provide an excellent means of soaking up any excess water left at the end of the rice growing season.

Rice is a major crop in southern NSW, with more than 150,000 hectares planted annually. Wheat is considered to be an ideal crop to be grown in rotation with rice.

The trials, being conducted just south of Griffith, have already pointed to some major gains being made by sowing wheat after rice, with the wheat "mopping up" excess water left in the soil after rice.

Using this rotation may well stop water leaking down to the water table. Rising water tables are considered to be one of the biggest threats to irrigated agriculture, and often lead to salinity, making the area unsuitable for most types of agriculture.

CSIRO research scientist Dr Abdul Bhuiyan and his team at CSIRO Land and Water Griffith have been involved in the project "Crops after Rice" for just a few months, but already have produced some amazing results.

The combination of burning rice stubble, then sowing wheat almost immediately, has lowered the water table by 20 per cent compared to country where rice paddocks remain with just their stubble.

"Our survey results show 43 per cent of farmers regularly sow crops after rice," Dr Bhuiyan said.

"By doing this, they are using up water in the soil profile and not allowing it to get to the water table. "It makes sense economically but it also makes sense for the environment."

The results are some of the first to come out of the CRC for Sustainable Rice Production, and will form part of the project aiming to quantify and maximise the benefits of crops sown after rice.

While the late sowing of wheat into burnt rice stubble does have some benefits, it is the early sown wheat which is making the biggest positive impact on the environment. CoR

Dr Abdul Bhuiyan (front) and technical officers Ms Alison Fattore and Mr Brad Fawcett check the progress of the wheat after rice trial, where cereals are sown directly after rice is harvested in an attempt to lower the water table. Photo Fiona Myers.

Smoke, flames, victims, hysteria

by Emma Booth, CM

The CSIRO Minerals, Clayton-based first-aid team assisted by the Australian Red Cross recently took part in a simulated emergency involving burns, broken bones, smoke and fire.

The purpose of the drill was to provide the first-aid team with practice in an emergency situation. As they say, "Practice makes Perfect"!

Several willing, yet hysterical, staff members were made up with injuries and exposed to the abilities of the first-aid team. All survived the ordeal.

Many issues were identified as a result of the drill: the need to ensure that DRABCDB—danger response, airways, breathing, circulation, dangerous bleeding—is followed. It is also necessary to have someone coordinate the first-aid officers and to ensure the first-aid officers' safety before they attend any victims.

Other matters were isolation of victims, notifying the appropriate authorities, maintaining two-way communication with a central control point, and having serviced emergency equipment like oxygen therapy readily accessible.

A follow-up drill will be conducted to allow first-aiders to refine their skills further.

The emergency drill was one of a host of activities celebrating Health & Safety Awareness Week '98 at CSIRO Minerals, Clayton.

Staff were treated to neck and shoulder massages (10 minutes was not long enough!) blood pressure testing, seminars on hepatitis and meditation, a health expo, healthy eating lunch complete with mocktails (non alcoholic cocktails) as well as information videos.

Thanks go to Divisional Safety Officer Dr Angelica Vecchio-Sadus, Aryeh Seligmann, Jeff Douglas, Mick Creed, Debbie Carruthers, Tony Lynch, Deanna Twomey, Di Elders, the Evacuation Team, the First-Aid Team as well as Ross Close, Duncan Constable and Mike Horne. CoR

First-aid Officer Karen Rogers attending shock victim Ross Close. Photo CSIRO Minerals

Media study gives CSIRO top marks

Media coverage of CSIRO and its science is highly favourable by world - standards, leading international analyst CARMA Pty Ltd has found.

CARMA—or Computer Aided Research and Media Analysis—looked at 4,118 newspaper articles about CSIRO published in 1997, and concluded that 90 per cent were favourable, 7 per cent neutral and 3 per cent unfavourable.

CSIRO's performance rated in the highest group for CARMA's international clients, such as Sony, IBM, British Airways, Microsoft, McDonalds, several British Government departments, BHP, AMP, General Motors, the National Australia Bank, Telstra and Optus.

The CARMA study showed that the highest volume of newspaper reports—972—was obtained by the Land and Water sector, followed by Field crops. The most favourable coverage was generally by the Mineral Exploration and Mining Sector and by Radio Astronomy. Six sectors generated fewer than 100 news reports.

The issues most commonly reported in the press about CSIRO were staff, training, wool, soils and wheat.

CARMA found that the leading messages embedded in news reports about CSIRO related to economic and environmental benefits to the nation, followed by international goals, social benefits and scientific achievements.

Among the unfavourable press received by CSIRO, the most commonly reported issues were rabbit calicivirus (RCD), staff and funding issues, property sales, animal welfare and gene technology. The least favourable coverage of the Organisation dealt with animal welfare issues.

CSIRO's leading media spokespeople in 1997 were Dr Ian Record (Human Nutrition) and Dr Malcolm McIntosh with 35 articles apiece, followed by Dr Ian Franklin, Dr Jim Peacock, former Science Minister Peter McGauran and bushfire researcher Dr Phil Cheney.

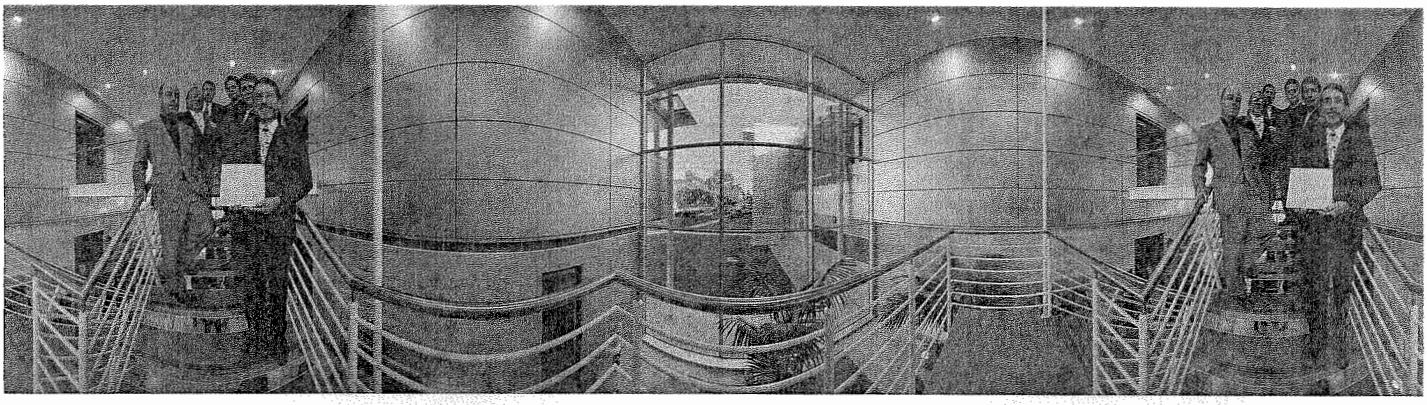
The study showed that most of the flak received by CSIRO last year came from US Professor Alvin Smith and Dr David Cubitt over RCD, and South Australian MP Susan Jeanes over the sale of Glenthorne.

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

"Overall, CSIRO attracted favourable sentiment in the media in 1997. Favourable messages significantly outweighed unfavourable messages," CARMA concluded.

CNA director Julian Cribb said the analysis of CSIRO's media coverage was the first such study to be carried out. It was important to the evaluation of CSIRO's standing with the community, industry and Government. CoR

Minerals lab wins architectural honours



On the steps of the atrium of the award winning Minerals building are (clockwise from front) CSIRO Minerals Chief, Dr Rod Hill, Woods Bagot Architects' Mr Marke Kelly, President of the Victorian Chapter of the Royal Australian Institute of Architects, Mr Jamie Learmonth, former Minerals Chief, Dr Rob La Nauze, Urban Design Juror, Mr Nicholas Giola, and Andrew King Architects' Mr Andrew King. Photo Steve Morton.

The new CSIRO Minerals research facility at Clayton in Victoria has won an Award of Merit in the 1998 Victorian Architectural Awards of the Royal Australian Institute of Architects.

The award was presented to Andrew Kings Architects and Woods Bagot Pty Ltd, in the category Institutional Alterations and Extensions.

"CSIRO's most valuable resource is the intellectual property residing within the community of scientists, technicians, managers and administrative personnel committed to excellence in scientific research," said Mr Aldo Mattessi of Andrew Kings Architects.

"As architects in association for CSIRO Minerals' new laboratory complex, Woods Bagot and Andrew Kings Architects were inspired by the challenge to create an architectural environment that would promote this dedication in a building that enhances CSIRO's reputation. We believe that this award of merit clearly announces that the challenge has been well met."

The new complex consists of two research wings designed to house bench-scale research activities, and a process bay for larger-scale activities such as pilot plants for mineral processing.

Services for the buildings are aligned in continuous service corridors. The development also includes a hazardous materials storage facility, an expanded workshop, an expanded library and new office accommodation for 70 staff.

Key design features of the complex were developed through close collaboration between the architects and Dr Rob La Nauze, former Chief of CSIRO Minerals, who was intent that the buildings were sympathetic to the needs of scientists and their work.

These features include abundant natural light, line-of-sight between laboratories and adjacent work areas and corridors, and integration of project teams in small open-plan areas with central IT services such as printers and copiers, and a common atrium area for welcoming visitors and for semi-formal functions.

The Division received a commemorative plaque presented by Mr Jamie Learmonth, President of the Victorian Chapter, at a ceremony in the atrium of the new buildings on 4 September 1998.

The award is designed to recognise and raise the profile and importance of architecturally designed buildings.

The awards are judged by practising architects, academics and industry representatives, and are presented annually by the Victorian Chapter of the Institute.

According to the Institute, the awards, now in their 70th year, are the most prestigious in the design and construction industry and have had a significant influence on trends in architectural design.

In bestowing the award the Institute recognised that this building had been designed by architects that had "deeply researched their subject in the same manner that the research scientists occupying it now conduct their explorations". CoR

CSIRO flies high on aerospace deal

CSIRO and British Aerospace Australia (BAe) have signed a research relationship agreement worth up to $20 million to develop advanced materials and processes for the global aircraft industry of the early 21st century.

Research to be carried out under the new agreement will involve the development of tougher composite materials for building lighter aircraft structures, and devising more effective and environmentally-friendly ways to monitor and extend the life of aerospace parts.

"This is a move that will keep Australia at the cutting edge of international aerospace science into the 21st century," said Deputy Chief Executive Dr Colin Adam.

"The first five research contracts under this agreement commenced in October and will be completed over the coming three to four years."

A key element in securing the agreement was effective account management, according to Dr Adam.

"For British Aerospace and CSIRO, both large and complex organisations, account management is about appointing people in both organisations whose responsibility it is to ensure that the interactions between the organisations are kept positive and productive," he explained.

CSIRO's Account Manager for British Aerospace, Mr Trevor Thacker, says his major task is to help build relationships. These need to be at multiple levels—from the technical level to the senior management level. Dr Adam is the Account Executive overseeing the relationship.

BAe Australia's Operations Director, Mr Barry Murphy said "British Aerospace Australia is committed to building valuable skills, capabilities and expertise to assist in the long-term development of high technology industry within Australia.

"We believe these research contracts will play an important role in developing Australia's competitive edge within the aerospace and defence industry. They will also enhance the partnerships British Aerospace Australia already has in place with both CSIRO and DSTO."

Mr Thacker said the outcomes of account management to date are very positive, but that "on-going and vigilant account management will be needed to ensure both parties find benefit in the long term relationship envisaged." CoR

Science has a new Minister

Senator Nick Minchin was sworn in as the Minister for Industry, Science and Resources on 21 October, taking over from Mr John Moore who has stepped into the role of Minister for Defence.

His portfolio is a greatly expanded one that brings together science and industry with resources to include mining and energy.

The addition of resources, once part of the large Department of Primary Industries and Energy, is a significant change and transforms the portfolio into one of the Liberal Government's key economic portfolios alongside Treasury and Employment.

Most recently, Senator Minchin, who is described as an 'economic dry', operated as Special Minister of State and Minister Assisting the Prime Minister. His tasks were to look after Ministerial and Parliamentary Services, The Australian Electoral Commission, the Office of Government Information and Advertising, and play a key role in negotiations over the Native Title Act.

But his political experience spans more than 20 years. With a degree in Law and another in Economics, Senator Minchin started out in 1975 at the Liberal Party Federal Secretariat before moving from New South Wales to South Australia in 1985 to take up the role of State Director of the Liberal Party.

He was elected to Parliament as a Liberal Senator for South Australia in 1993, and from 1994 to 1996 was the Parliamentary Secretary to the Leader of the Opposition.

In 1996 when the Coalition won Government, he was appointed Parliamentary Secretary to the Prime Minister with specific responsibility for implementing the Government's policy to hold the Constitutional Convention and assisting negotiations over the Native Title Act.

His portfolio among other things includes science policy. CoR

Senator Nick Minchin. Photo Auspic

Public supports ocean research

by Sheree Glasson, CNA

If they ever doubted their worth, staff at CSIRO Marine Research should be feeling heartened by a national poll that shows almost unanimous public support for their work.

According to the poll, 96 per cent of Australians think ongoing research and monitoring is necessary to balance the conflicting demands on our oceans, while 92 per cent support mapping of the ocean territory and its contents. Conducted by Roy Morgan Research, the poll was commissioned by CSIRO Marine Research prior to its Ocean Forum in Sydney in October.

The poll highlighted the extent of public concern for our oceans. Seven in ten people thought resource development had damaged the oceans, and almost one third of these people considered the damage major. Eighty five per cent rated safe and responsible marine development as "very important".

However, most people underrated the economic importance of Australia's ocean territory. Only 42 per cent thought income from the marine sector was increasing, whereas in reality, says CSIRO Marine Research Chief Dr Nan Bray, it is growing two to three times faster than the national economy, and is worth more than agriculture and its supporting industries combined. CoR

Dairy research wins top award

Dr Mary Ann Augustin from Food Science Australia is this year's winner of the Sir Ian McLennan Achievement for Industry Award. Dr Augustin's research for the dairy industry over the last ten years has helped generate millions of dollars in sales of specialised dairy products.

The core of the innovation in Dr Augustin's work is the component interactions in the milk system, and her studies of the effects of composition and processing on dairy based ingredient functionality.

Dr Augustin leads the world in her field, both in her strategic studies and in their application in industry.

Presenting the award in Melbourne, Mr Hugh Morgan, AO, Managing Director of Western Mining Corporation Ltd spoke about Sir Ian's significant contributions to industry over many years.

The Sir Ian McLennan Achievement for Industry Award was established in 1985 by CSIRO's Advisory Council. It commemorates, Sir Ian McLennan, a former chairman of BHP for many years and later Chairman of the ANZ Banking Group and Chairman of Elders IXL.

Sadly Sir Ian passed away on 25 October, 1998 just before his 90th birthday. An enthusiastic supporter of new technology, he will be remembered as one of the most influential businessmen and economic innovators in Australian history. CoR

Dr Mary Ann Augustin (centre) winner of this year's Sir Ian McLennan Achievement for Industry Award with team members Mr Bruce Aitken (left) and Mr Phil Clarke (right).

Remembering Sir Alan Walsh

Sir Alan Walsh, the "father" of atomic absorption spectroscopy, died on 3 August, 1998, aged 81.

Born in Lancashire, Walsh graduated in physics from the University of Manchester in 1938. In 1939 he became a research physicist with the British Non-Ferrous Metals Research Association, where he gained wide experience in the application of spectroscopy. In 1944 he became Deputy Chief Chemist for the UK Ministry for Aircraft Production.

Walsh accepted an appointment with CSIR (later CSIRO) in 1946 and came to Melbourne to work in the Chemical Physics Section of the then Division of Industrial Chemistry. Here he devised an elegant new optical system, the double-pass monochromator, which doubled the resolution of infra-red spectrometers and improved their signal-to-noise ratio dramatically.

But it was in 1952 that Walsh found the answer to a problem that had challenged scientists since the 19th century. The problem was how small concentrations of metallic elements could be measured more exactly by atomic spectroscopy. In a flash of inspiration, in the garden of his own home, he reasoned that it would be better to measure absorbed rather than emitted light in order to overcome some of the basic limitations of spectrochemical analysis.

> "Walsh found the answer to a problem that had challenged scientists since the 19th century."

At first atomic absorption was not readily adopted by analytical chemists as they believed that it would offer no operational advantages over emission methods. But Walsh continued to persevere. He and other scientists in Australia and New Zealand had been applying atomic absorption to a variety of difficult analytical problems using apparatus made by themselves, based on simple and cheap equipment Walsh had designed himself.

Walsh worked tirelessly to promote the establishment of a local firm to manufacture atomic absorption equipment. In 1958 a small firm of instrument-makers, Techtron Pty Ltd, began to manufacture atomic absorption instruments, and soon the rest of the world began to realise their value. The atomic absorption spectrophotometer is used in chemical analysis to determine low concentrations of metals in a wide variety of substances. At the time it far surpassed the technology of the day. Today atomic absorption has wide ranging applications for use in medicine, food analysis, metallurgy, agriculture, mineral exploration and environmental monitoring. The instrument is now manufactured in Australia by Varian Australia Pty Ltd (which grew out of Techtron Pty Ltd) and GBC Scientific Equipment Pty Ltd, and by a number of companies overseas.

This brilliant piece of work, reported in his classic paper "The Application of Atomic Absorption Spectra to Chemical Analysis" *Spectrochimica Acta 7 (1955) 108–117*, was by far Walsh's major contribution to science.

In a letter retrieved from the CSIRO archives, Mr Lewis Lewis, who was the Australian Scientific Liaison Officer in London, wrote to Dr Ian Wark, Chief of the Division of Industrial Chemistry, in 1947. "The more I hear and see of Walsh the higher is the opinion which I form of his ability as a spectroscopist, which he tends to hide beneath a somewhat rugged exterior. I think he is also a very hard worker and have little doubt that he will be a success in the Division." (*National Archives of Australia, A8520/12, File PH/WAL/021 Part 1*).

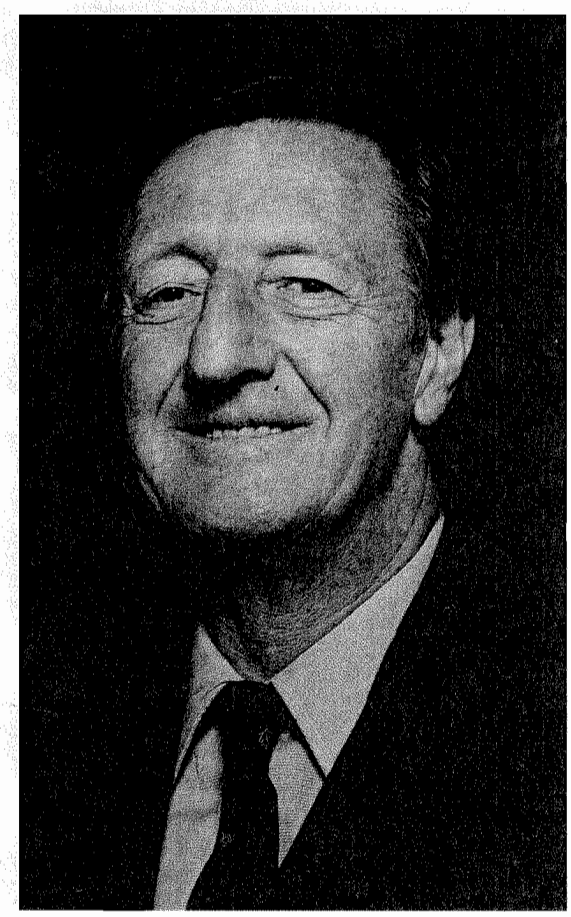
Unbeknown to Mr Lewis at the time, Walsh was to become one of Australia's most eminent and distinguished scientists.

Walsh received numerous honours and awards during his long and successful career. In 1958 he was elected a Fellow of the Australian Academy of Science, and in 1969 a Fellow of the Royal Society of London. He was made a Foundation Member of the Australian Institute of Physics in 1962 and a Foreign Member of the Royal Academy of Sciences, Sweden in 1969.

He received the Britannica Australia Science Award in 1966, the Talanta Gold Medal in 1969, the Maurice Hasler Award of the US Society of Applied Spectroscopy in 1972, and in 1976 a Royal Medal of the Royal Society of London.

In 1977, the year of his retirement from CSIRO, Walsh received a knighthood for his services to science.

Alan Walsh will long be remembered for his wonderful North Country humour, his generous spirit and the warmth of his friendship. A keen tennis and squash player in his younger days, he later became an enthusiastic golfer. He is survived by his wife, Audrey, and their two sons, Tom and David and their families. GOR



Dr Alan Walsh—a most eminent and distinguished scientist.

Visit blends sheep know-how

Diners Club OVERSEAS TRAVEL Awards

by Sandra Eady

Thanks to the support of my Division (Animal Production) and Dr McIntosh (through the Diners Club Travel Award) I was able to visit research colleagues in New Zealand earlier this year. You may say—not a very adventurous trip, but then I had never made it across the Tasman before and the New Zealanders are working in the same area of research—sheep of course!

The trip involved an international conference at Christchurch at which I presented some of our work on breeding sheep for resistance to worms. This generated a strong amount of interest from South American and South African delegates, as they face even greater challenges than Australia with worms that have become resistant to the drugs being used to control them.

Breeding sheep to become more resistant to these worms is a very attractive option as the benefits are permanent. Improved host resistance is likely to be a major contributor to sustainable worm control in the future.

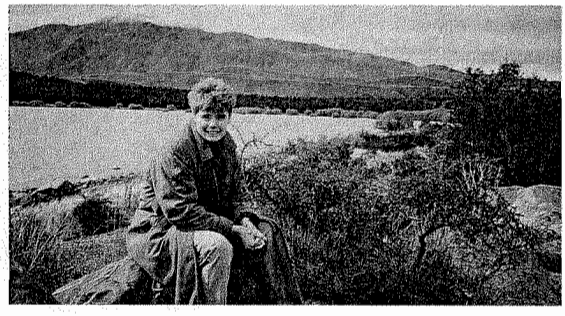
After the conference I headed off with some friends and colleagues to Dunedin, more specifically "Invermay", which is an AgResearch facility at the far end of the south island. En route we visited "Tara Hills" research station, which is located in the high country between Christchurch and Dunedin. This is the type of country (mountainous!) on which most Merino sheep are run in New Zealand. Very spectacular and very "Footrot Flats", you can just picture the lambs rolling down the slopes as they are born!

The visit to Dunedin was very interesting with examples of New Zealand tenacity and innovation showing through in the way they have pursued the search for major genes affecting reproduction and worm resistance in their sheep. They have a commercial DNA pedigreeing service up and running for deer, a goal we have for Merino sheep in the next 12 months.

I was also able to spend time with Dr Peter Amer who will be visiting our laboratory at Chiswick (yes we are still there) as a McMaster Fellow later in the year.

Peter is working with us on the more complicated aspects of developing a relative economic value for disease traits, so that farmers have some way of judging how much selection pressure they should put on a trait like worm resistance, compared to more, or finer, wool.

In summary the trip went well showing off some of CSIRO's research to the international community, stimulating ideas for new work and furthering collaborative links that will benefit our research program. I recommend it to any young scientist. GdR



Dr Sandra Eady used a Diners Club Travel Award to go to New Zealand where she compared notes on sheep research with her trans-Tasman colleagues. Here she takes time out "somewhere between Christchurch and Dunedin".

Franklin rounds up Year of the Ocean visits

The oceanographic research vessel, *Franklin*, completed its round of International Year of the Ocean port calls in October. The calls aimed at highlighting Australia's marine research effort and two strategic platforms for that research—the *Franklin* and *Southern Surveyor*—as CSIRO owned and operated vessels. *Franklin's* final port of call was a month long stay at the National Maritime Museum at Sydney's Darling Harbour (above). Its visit coincided with the International Year of the Ocean Forum.
Franklin is available as a National Facility and is used by many research organisations. She was made available for three International Year of the Ocean port calls by the National Facility Steering Committee. Pictured are Director of the National Maritime Museum, Dr Kevin Fewster (right) and the Master of the *Franklin*, Captain Neil Cheshire. Photo Andrew Frolows, National Maritime Museum.

CNA on line

NEW

At the CSIRO National Awareness web site you can find out about the services CNA offers, like communication advice and speechwriting!

Check it out now on the CSIRO intranet http://www.csiro.au/services/CNAResources/CNAhome.html

Success at Manufesto '98

by Rosie Schmedding, CNA

"Manufesto '98 was fantastic and we were very, very pleased with it," says Deputy Chief Executive Dr Bob Frater.

Manufesto featured the work of Cooperative Research Centres, universities, CSIRO and some small companies who teamed up to present a highly successful exhibition and conference.

The event was held at the end of September in the Melbourne Convention Centre. It brought together people from the public sector research areas with people from industry, finance and the business sector.

More than 1,000 people went through the exhibition, and around 300 attended the conference.

"This year we built on the success of Manufesto '97 to produce an event that was even bigger and better. The displays looked professional, we got a lot of top people there and the feedback was great," Dr Frater said.

The conference was opened by the then Federal Minister for Industry Science and Tourism, Mr John Moore and the exhibition by Mr Mark Birrell, MP, Minister for Industry, Science and Technology in Victoria.

"Events such as Manufesto are vital to the future of Australia. They demonstrate what our country is capable of in the field of high technology and industry science. They bring together industry with research to build linkages and improve communication." Dr Frater said.

The Manufesto exhibition featured over 100 top high technology projects, some of which have already been commercialised. Among them were:

Dr Ray Ackhurst at Entomology's Bioinsecticides stand, one of the 49 exhibits by CSIRO. Photo Stewart Duff

- Relenza™, the 'flu drug;
- the Skin Polarprobe®, a device that can assist GP's to diagnose melanoma (skin cancer);
- a tough wood-like material produced from recycled paper and plastic;
- an advance that makes a bionic ear for babies possible;
- stunning colour pictures of very tiny objects magnified to look lifesize;
- a computer that can recognise your face in a crowd; and
- a new test for tuberculosis.

"Manufesto is an outlet for scientists to present their research. Putting your research on show in such an event gets a message across in a way that won't happen with any other method. It gives industry an opportunity to see what Australia's R&D is capable of and to talk to the scientists behind it," Dr Frater said.

The conference focussed on the many challenges facing Australian scientists and industry when they take research from the laboratory to the international marketplace. It provided a forum for researchers and industrialists to develop a better understanding of each other's capabilities, needs and views.

"This year we had some of the top people in the R&D commercialisation world, including exciting new high technology firms and spinoffs, taking part in the conference," Dr Frater said. "Many spoke at the conference to give us the benefit of their experience.

"This gave others the chance to see what path they took, and to find out what the opportunities and pitfalls are," said Dr Frater.

One of the key speakers at the conference was Dr Peter Farrell, Chief Executive Officer of ResMed Inc.

ResMed was founded in Sydney in 1989 and is now a global company with an annual turnover of US$66.5 million. It sells devices that help people with sleep apnea and related respiratory disorders.

Other speakers included:

- David Hogg, president of the High Performance Manufacturing Consortium of Canada, which has total sales exceeding $6 billion. Mr Hogg talked about the Canadian experience in improving company performance;
- Leo Hyde, R&D Manager for Dupont Australia and president of the Australian Industrial Research Group, spoke about R&D from an industry perspective;
- Ray McFarlane, Managing Director of Scottish Enterprises, talked about how Scotland encouraged innovation; and
- Professor Vicki Sara discussed the role of the Australian Research Council as a catalyst and broker in matching the needs of industry to the excellence of Australian research.

CSIRO Chief Executive Dr Malcolm McIntosh, who attended the opening of Manufesto '98, said he was very pleased with the event. "It was a good show, was very well done and I was very proud of the research that was on display. It showed how diverse we are as an organisation," Dr McIntosh said.

Dr Frater said that for CSIRO it was important to stage an event such as this not just for external people but for internal people as well. "It can't be underestimated how much value there was for the scientists to see what is happening in CSIRO and the other research institutions." The event was sponsored by CSIRO, Business Victoria and AusIndustry (Department of Industry Science and Tourism) with the support of the Australian Industry Research Group (AIRG) and the Australian Vice Chancellors' Committee (AVCC). CoR

CSIRO's Australia Telescope National Facility's stand did some brisk business while attracting the young and younger. Pictured are Mr Graham Mooney (far right) and Dr John Brooks explaining to visitors aspects of a receiving system ATNF built for NASA. Photo Stewart Duff

Secondments boost careers

by Paul Spurling*

Secondments provide great opportunities for staff members and the Organisation, and should be strongly encouraged according to Dr Michael Eyles, Chief of the CSIRO Division of Food Science and Technology, and Chief Executive of Food Science Australia.

Secondment is when a member of staff takes up a temporary position in an organisation outside CSIRO.

Dr Eyles is a veteran of two such arrangements. The first was for several months in 1991 when he was the acting Scientific Director of the National Food Authority.

From 1992–94 he was seconded to the Dairy Research and Development Corporation (DRDC), where he set up and ran the Dairy Industry Quality Centre.

At the DRDC he learned much about the dairy industry as a whole and the factors that determine whether or not rural research corporations decide to support CSIRO research projects.

However, it was finding out how CSIRO is perceived by people outside the Organisation that was the most important thing he learned while on secondment to the DRDC.

"This knowledge changed my behaviour in various ways, and had a very positive impact on my career in CSIRO," he said. "I improved the way I operated because I understood much better what organisations outside actually wanted of us, and the sort of behaviour they find attractive and unattractive.

"It was a very positive experience for me personally, and I really believe that CSIRO benefited too."

The seconding of CSIRO staff to outside organisations as a means for personal and professional development has been in operation for many decades.

Mr Mick Crowe, Communication Manager for the Division of Forestry and Forest Products, was seconded to a logging industry cooperative set up by the State Forests of NSW and logging contractors in the Eden area from 1978–80.

"At the time I was working as an Experimental Scientist in the Harvesting Research group, developing training manuals for people in the logging industry, and working on accidents," he said. "That's essentially how I got the job."

"My job in the cooperative was to develop and implement training courses for people using chainsaws in an area where logs were being processed."

He also collected accident statistics to find ways of improving the safety record in the region.

"We introduced standards on the types of chainsaws that could be used, and the sort of protective clothing that people needed to wear," he said.

He learned a lot more about how the industry works and gained an understanding of some of the "practical problems that people have at the workface".

Dr Simon Saubern, a Level 5 Research Scientist at CSIRO Molecular Science, and one of the Organisation's most recent secondees, concurs with Mr Crowe's sentiments.

"It was great to see what's really practical as opposed to what everyone talks about," he said of his nine-month stint as a visiting scientist at DuPont Merck that ended in June this year.

When CSIRO Molecular Science wanted to find out about combinatorial chemistry, Dr Saubern was seconded to work in DuPont Merck's drug discovery group with the aim of setting up something similar on his return.

"It was a way of jump-starting our efforts in the area," he said. "It was important for us to understand what works and what doesn't work, what's useful, what's expensive, and what's affordable."

The secondment was relatively easy to tee up given that Molecular Science has had a collaboration with DuPont since 1985.

"Some years ago we had one of DuPont's scientists come out for a six-month sabbatical with us, and I was the return visitor," said Dr Saubern. He rated the experience highly: "It's a very intense way of learning the particular skills applicable to an industry, how they use them, and why." He was part of research group "who are not really doing science the way CSIRO tries to do it".

"Rather, they've got a specific aim in mind and that's drug discovery and making money from that," he said. "They can quickly cut through all the rubbish and hype and say, 'yes that's practical; that's clever but not really helpful; that's clever and helpful, but is too expensive; that's clever, useful and cheap, but we've already got three other ways of doing it, and we don't need a fourth'."

Secondments have also provided a way for CSIRO to build strategic alliances with universities.

Dr John Rankin, Market Development Manager, CSIRO Minerals, was seconded to the University of Melbourne from 1989 until 1993 as a Professorial Research Fellow, and Director of the GK Williams Cooperative Research Centre.

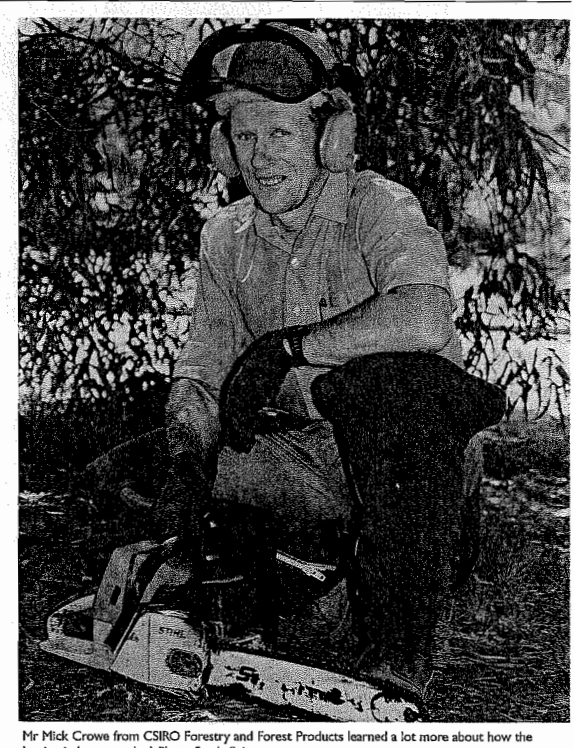
"It came about through an advertised position at the university, which I was interested in applying for," he said. "At the time I was Program Manager for the base metal smelting area, and it was decided that it was in the Division's interest for me to get that job, but stay as a CSIRO employee.

"I learnt skills in how to manage diverse groups to achieve a common purpose by using influence and persuasion rather than direct line management authority, and that is a very useful management skill in today's world. More and more that is the way business is being done."

Meanwhile, Mick Crowe's logging industry secondment still looms large in his life.

"It was an excellent experience, I'm a strong supporter of secondments."

**Paul Spurling is a freelance writer based in Melbourne.* CoR



Mr Mick Crowe from CSIRO Forestry and Forest Products learned a lot more about how the logging industry worked. Photo Sandy Spier.

Going down in history

We can find out about life in Australia at the time of Federation, or who turned up in the First Fleet. We even know how the Egyptians taxed farmers—all because of the records we keep. CSIRO's Brendan Hills is keen on making sure that this decade and those to come are safely recorded and not lost in the electronic ether.

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

Hills: I work in the Carlton lab of CSIRO Mathematical and Information Sciences. I'm a researcher in the "Information Sciences" side. My specific area is electronic documents. I'm interested in the way documents can be structured. Everyone knows from looking at a printed document, which bits are the headings, which paragraphs belong together and the relative importance of various parts. Usually we work this out from the different sizes of text, layout, borders and colours. But if you want to process your document with some software, it is really hard for that software to know all these things. I think this area is becoming increasingly important as we store more and more information in electronic documents, send those documents all over the world using the internet, and then get computer programs to read them, summarise them, and tell us only the bits that are really important.

CoResearch: How did you get into IT research?

Hills: I kind of fell into IT research. I seem to live my life that way. I was working for a small IT consulting firm in Sydney, and decided to leave because I didn't like the short-term 'make-this-month's-targets' focus. I saw an ad in aus.jobs for a position in the then Division of Information Technology in Melbourne.

I'd always wanted to work for CSIRO and Melbourne sounded like a nice change, so I applied. When I came to Melbourne for the interview I had a pre-interview coffee on Lygon St (the Carlton lab is just near Lygon St, one of the top places in Melbourne for sitting and drinking coffee) and I was hooked.

CoResearch: What's your favourite project at the moment?

Hills: My favourite project is the one I'm doing now (what a nice situation!). It's a project with the Public Record Office Victoria (PROV) to look at archiving electronic records. Public records include things like births, deaths and marriages, ministerial correspondence and hospital records.

There are currently masses of things done in government everywhere that exist only in electronic form—emails, Word documents, spreadsheets, databases. This works fine, except that records are getting lost—emails get deleted, word processor formats change, databases become obsolete and are taken offline, so the PROV, whose jobs it is to record what goes on in government, asked us to help.

Progress in the IT industry will continue at its current frantic rate for quite some time, so the worry is that the current period will be lost to history as the electronic tools we have used to record our activities become obsolete. It is this that we are trying to solve!

CoResearch: Why do you like it so much?

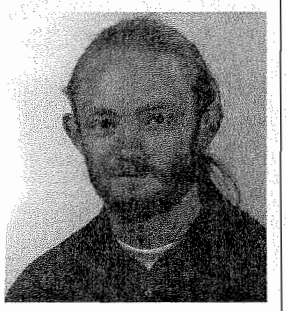
Hills: I guess I like it so much because not only is it technically challenging, but it seems like it has important implications for government and society as a whole. I'm also enjoying working in the PROV's offices in Melbourne city with three others from CMIS, two consultants for Ernst & Young, and two people from PROV. The work environment is relaxed and fun and we have been quite successful in terms of what we have managed to do and of how our results have been received.

CoResearch: Where would you like to see this research go?

Hills: We are at the leading edge of this work. No one else has a solution to this problem and we think we have one. There is an increasing realisation of the importance of archiving electronic records and I would like to see the work our team has done be taken up in Australia and in other countries. Perhaps it's just a fame thing.

CoResearch: Apart from your research what else do you enjoy doing?

Hills: Mountainbiking and travel! CoR



Brendan Hills from CSIRO Mathematics and Information Sciences in Melbourne is keeping track of history. Photo courtesy Brendan Hills.

Offshore

Hanoi's science week

As a Dialogue Partner of the Association of South East Asian Nations, Australia has participated in previous ASEAN Science and Technology (S&T) Weeks in Singapore, Manila, Kuala Lumpur and Bangkok.

This year the Government decided to support a major Australian representation at ASEAN S&T Week in Hanoi, from 12–15 October.

The week normally involves a series of meetings of ASEAN Science Ministers and senior officials, several ASEAN-organised scientific conferences, and an S&T exhibition.

DIST funded three CSIRO scientists to make presentations at two of the scientific conferences, and subsidised a CSIRO display in the S&T Week Exhibition. A total of 49 Australian companies and agencies participated. The universities were also there in strength selling courses and services.

CSIRO showcased its activities in the ASEAN region. From the point of view of many local visitors, kangaroo hide, the hospital-standard merino sheep skin and the flash Sportwool cycling top from Wool Tech were the highlights of the Oz pavilion.

Apart from the Deputy Prime Minister of Vietnam, ASEAN Ministers and local and visiting ASEAN officials, many local academics, scientists and businessmen visited the CSIRO stand.

Other meetings with CSIRO's equivalent in Vietnam, NCST (National Centre for Natural Science and Technology) went well, and all Australian agencies represented were keen to see a more systematic and coordinated Australian approach to S&T collaboration in Vietnam. CSIRO projects there—32 recent or current—can only benefit if such a strategy can be forged. CoR

Forty-six years with CSIRO

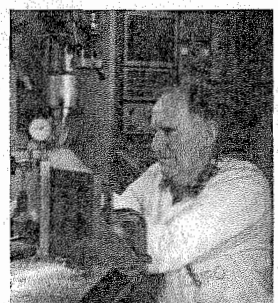
Mr Brian Turner, CSIRO's third-longest serving staff member, retired in August after nearly 46 years with CSIRO Atmospheric Research.

Mr Turner began his career as a 15-year-old apprentice at the Meteorological Physics Section in Highett, a southern suburb of Melbourne, in 1952. Having completed his apprenticeship, he worked as a specialist scientific instrument maker, contributing his design and manufacturing skills to numerous projects over the years, many of which have been used and acknowledged internationally.

One of his first tasks was to make a device for monitoring shockwaves from the atomic bomb tests of the 1950s and '60s.

Demonstrating great lateral thinking, he fashioned a highly sensitive detector from a biscuit barrel, some mercury and a baby's potty. Mr Turner also pioneered development of recorders that could be left out in the field, automatically recording factors such as wind speed and evaporation.

During the past decade, he has built a series of sophisticated radiometers for measuring atmospheric water vapour and radiation, and a prototype atmospheric pressure sensor for monitoring from space surface pressure fluctuations. CoR



Mr Brian Turner retires from CSIRO Atmospheric Research after 46 years. Photo CSIRO Atmospheric Research

Salvos thank CSIRO staff

CSIRO Chief Executive Dr Malcolm McIntosh (left) received on behalf of CSIRO staff a plaque from the Salvation Army acknowledging their contributions over the years.

One hundred and forty CSIRO staff contribute on a regular basis to the Salvation Army through an organised pay-roll deduction. In the last financial year CSIRO staff contributed around $17 614.

Salvation Army Captain Mark Campbell (right) said that even though people don't expect it, the plaque is a way the Salvos can thank those who have supported them. "People are our lifeblood," he said. "They keep us going."

The plaque is on display in the foyer of the CSIRO Head Office in Canberra.

If you would like to contribute to the Salvation Army through an organised payroll deduction, contact the personnel officer in your Division. Photo Bronwen Healy. CoR

Media fellow

Dr Louise Goggin from CSIRO Marine Research received a 1998 Science Media Fellowship, which allowed her to spend six weeks at the ABC.

Funded by the then Department of Industry, Science and Tourism, the Fellowships are for practising scientists and engineers with several years' experience in their fields and intend to create a greater awareness and understanding of the media among working scientists.

The fellowship involved working with a range of ABC radio and television programs from Quantum to Triple J, conducting or assisting in interviews and talkback, and working alongside science media and current affairs specialists. CoR

Wildlife returns to town

by David Salt, CWE

On 15 October, CSIRO Wildlife and Ecology officially opened its new laboratory at Floreat, Perth. Unveiling the commemorative opening plaque was Ms Cheryl Edwardes, the Western Australian Minister for the Environment.

Besides opening a new lab, the ceremony also marks the return of Wildlife and Ecology to the city after having been based at Helena Valley (just outside Perth) since 1965.

Before Helena Valley, the Division began its WA operations in Perth in 1955 (then known as the Wildlife Survey Section). It originally established itself in an old house in Myers Street, Nedlands, on the campus of the University of Western Australia.

Under the guidance of Dom Serventy, the research at that time focused on the mutton bird. The new lab at Floreat is a marked improvement on these humble beginnings. The research these days focuses on conserving the natural landscape in the heavily modified wheat belt, and reintroducing mammals that have been lost from the region. CoR

Population research fund

The Australian Academy of Science has recently established the "Population and Environment Research Fund", for debate about population and the environment based on fact, not emotion.

The Fund will support empirical research into how the size, distribution, material aspirations and other characteristics of Australia's population are likely to affect our land and landscape, social cohesion, health, the economy and defence.

More information tel (02) 6247 5777, email aas@science.org.au 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. What is currently the most distant known planet in the Solar System?
2. Are antibiotics effective against cold sores?
3. Pick the odd one out: barnacle, crab, periwinkle, crayfish, prawn?
4. What is the largest organ of the human body?
5. Why don't polar bears eat penguins?

Answers

1. *Neptune (Pluto is inside Neptune's orbit until 1999)*
2. *No. Cold sores are caused by Herpes simplex, a virus that is not affected by antibiotics. Taking of antibiotics, they were developed by an Australian Nobel laureate, Howard Florey, whose centenary was celebrated this year. More information at www.abc.net.au/science/slab/florey/story.htm.*
3. *Periwinkle is a mollusc, the rest are crustaceans.*
4. *The skin*
5. *They are poles apart.*

Double Helix Club quiz question competition

Congratulations to Nicholas Corbet from the CSIRO Tropical Beef Centre who submitted a number of questions, including questions 4 and 5 above. Nick wins a $10 Double Helix merchandise voucher, and the honour of having his questions used in the Double Helix quizzes running in *The Age*, *The Canberra Times*, *The Helix*, and *CoResearch*.

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 the next round.

***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

Research Roundup

CSIRO research in the news compiled by Nick Goldie, CNA

Breathe deeply in the city

A well-designed city could radically reduce air pollution, according to Dr Peter Manins of CSIRO Atmospheric Research. Dr Manins told the 1998 Clean Air and Environment Conference in Melbourne that to develop cities along corridors could lower people's exposure to photochemical smog by over 50 per cent. Cities should also be compact, with increased inner city density, which would bring about a reduction in harmful emissions of about forty per cent, says Dr Manins. The research project looked at six different city forms to assess air quality in the future.

We note that the divisional acronym, new-style, is CAR.

The good (old) oil

Droplets of the world's oldest oil have been found in three billion-year-old rocks from Australia, South Africa and Canada. Dr Adriana Dutkiewicz of CSIRO Petroleum Resources and a team from UWA and the University of Sydney published a paper in *Nature* about their discovery. The ancient oil reveals that aquatic life at the dawn of evolution was far more abundant than previously thought, and it opens up new areas of research for scientists and oil exploration companies alike.

Warm fruit salad, anyone?

Our man in the tropical rainforest reports that Cassowary poo is 'just like warm fruit salad'. Dr David Westcott of CSIRO Wildlife and Ecology says that there may be as few as a thousand of the rare flightless birds in the forests of northern Australia, and that not much is known about them—except for the texture and appearance of their droppings. The fewmets may contain DNA traces, and feathers, which will enable researchers to build up a DNA 'fingerprint' of the bird. Cassowaries face multiple threats from dogs, cars, feral pigs, tuberculosis, and loss of habitat.

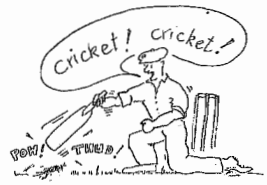
When the fox is away, the feral cats play

More from CSIRO Wildlife and Ecology and the Vertebrate Biocontrol Cooperative Research Centre.
Ms Robyn Molsher has been conducting a long-term field study into the behaviour of feral cats, and their relationship with foxes. Mostly, she says, they stay out of one another's way, but when they do meet they have a bit of a cat-and-dog blue. Foxes and cats make a deadly combination against native wildlife and farm poultry. "There's more to fox control than just baits and bullets," says Ms Molsher. "We have to deal with foxes and cats together."

Be they arms or be they legs?

Now you too can be an expert squid-identifier. CSIRO Marine Research, with the Fisheries Research and Development Corporation and the Australian Fisheries Management Council has produced *Cephalopods of Commercial Importance in Australian Fisheries*, a practical wire-bound volume written by CSIRO's Dr Vicki Wadley and Dr Malcolm Dunning of the Queensland Department of Primary Industry and Fisheries. The illustrations are by Roger Swainston and Georgina Davis.

Cricketing threat



Beware of the changa mole cricket! It could wreak havoc with golf, football, horse racing—not to mention cricket—because of its huge appetite for turf. The big olive-coloured cricket emigrated to the Newcastle (NSW) region from South America. Nematode expert Dr Robin Bedding of CSIRO Entomology may (once again) have the answer: a cricket-eating nematode. Entomology researchers warn that this may be a race against time, as the cricket is spreading in NSW.

Golden apples threaten the rice bowl

The golden apple snail is a handsome creature, which can indeed grow to the size of an apple. According to Dr Geoff Baker of CSIRO Entomology, it is also almost impossible to distinguish from an aquarium snail commonly sold as the 'mystery snail' in pet shops around Australia. The golden apple snail eats aquatic plants, and rice, voraciously. It derives from South America; it was introduced to the Philippines as an edible snail, but failed the taste test and went feral. Now it is rampant in SE Asia, and researchers are wondering how long before it border-hops into Australia. CoR

Readers want more issues

More articles on current issues in CSIRO and less feature articles are the major findings of a survey of *CoResearch* readers.

Conducted in May, the survey had a response rate of 0.07 per cent.

Analysis of the five point Likert response showed that readers preferred news on current issues in CSIRO followed closely by news on research and people, over longer feature articles.

Accordingly, readers would like to see more articles on current issues followed by research and people news.

But when asked if *CoResearch* provided readers with information they wanted to know about CSIRO, 80 per cent agreed. Eighty per cent of respondents also agreed that *CoResearch* is an entertaining read.

Most did not want to see an electronic version of the newspaper, with 80 per cent disagreeing that they would read it more if it was on the WWW.

All respondents said they wished to continue receiving regular copies.

If you've read this far, no doubt you are horrified by the statistical invalidity of our analysis. For those wishing to see our statistics validated, please find the survey form in the May issue. Fill it out and send it in. We look forward to your significant input. CoR

Goodbye and cheers George!

by Angela Gackle, CPI

Long serving staff member Mr George Kerridge retired from CSIRO on 2 December after a 47 year career at CSIRO's Merbein site.

Mr Kerridge joined the Commonwealth Research Station at Merbein, Victoria in 1951 as a junior Technical Assistant in the soils and nutrition group.

In the late '50s and '60s he was the farm manager at Merbein. He was also involved in the first Australian experiments on cotton, which was imported and quarantined through the Merbein Research Station.

The 1960s saw the start of research in viticulture at CSIRO, and Mr Kerridge's involvement in CSIRO's viticultural and grape breeding work.

Mr George Kerridge leaves CSIRO after a 47 year career. Photo: CSIRO Plant Industry

He raised, maintained, selected and evaluated over 55,000 grapevine seedlings, and planned and commissioned a small-scale winery.

He managed CSIRO's grape germplasm collection at Merbein, which now contains around 700 varieties or species, and imported many useful new varieties. An ongoing connection with Spain is the result of collaborative project started by Mr Kerridge.

Mr Kerridge is one of Australia's national wine judges participating in 33 wine shows since 1973. He is a foundation member of the Australian Society of Viticulture and Oenology and the Australian Society of Horticultural Science.

In 1991, the viticulture group, which included Mr Kerridge, received a CSIRO Medal acknowledging the significance of the development of mechanisation for Australian vineyards. In 1995 the National Australia Day Council awarded Mr Kerridge an Achievement Medal for his contribution to CSIRO.

As a winemaker, he can relate viticultural practices to fruit and wine quality. As a colleague he is unfailingly calm, helpful and courteous, rarely complains, has an enormous breadth of knowledge and a good sense of humour! CoR

Toilets, plagues and SIROMAN

In its 70 year history CSIRO has developed many products and processes. It has also produced names for many of them, which are just as creative: BACLASH is a jetting compound for blowfly-proofing sheep; BIO-LOO is a humus toilet; HOTCROSS is software for predicting cattle breeding performance; AUSPLAGUE is software for managing contact-spread diseases in wildlife; and BIOLOG is a metabolic fingerprinting technique kit. SIROMAN, alas is not the Organisation's very own super hero, but a mercury pathfinder used to explore for mineral deposits. Perhaps CSIRO should investigate the possibility of a superhero. If anyone has some ideas about what form such a superhero would take, and what super feats he/she would perform, send them in. More names at http://www.csiro.au/services/CNAResources/commresource/acronyms.html. CoR

Farewell Wendy!

CSIRO Entomology's Dr Wendy Milne retired recently after nearly 30 years dedicated to controlling insects.

Born and educated in South Africa, Dr Milne completed her PhD on aphids at Silwood Park, UK. In 1972 Wendy joined CSIRO Entomology to work at the Biological Control Station near the Royal Botanic Gardens and then at Warrawee, Sydney.

After working on scale insects, she moved to biological control of exotic aphids that were devastating lucerne crops and was involved in the introduction of parasitic wasps to control them.

Wendy moved to Canberra where she worked on wheat aphids, canola pests and the spotted clover aphid. She became a recognised expert on aphids. CoR

Award celebrates 25 years

A new Postgraduate Scholarship has been awarded by the Australian grains industry to help celebrate 25 years of successful collaboration between the industry and CSIRO. The Scholarship was awarded by Vicgrain General Manager, Mr Graeme Watsford, to Mr Alexsander Antic for research studies leading to a PhD in a field of interest to the bulk grain storage and handling industry at a special ceremony in August in Canberra. The ceremony celebrated the opening in 1973 of CSIRO's Stored Grain Research Laboratory (SGRL), located within CSIRO Entomology in Canberra. SGRL was established under a formal agreement between CSIRO and a number of partners with an interest in the future of Australian grains. It was formed in response to an approach to CSIRO by the Australian Wheat Board (AWB) to establish a separate organisation to carry out research into grain storage. Entomology Chief, Dr Jim Cullen, commended the grain industry for its commitment to funding research at SGRL. CoR

Discovery Open Day

The staff Open Day to the *Discovery* site in October was a great success. Over 360 people, many collected from CSIRO sites around Canberra by the special *Discovery* bus, toured the construction site under the direction of a handful of tour guides.

Tours left every half hour to visit the site. The visit included a sneak preview of the nearly completed labs, a look at the plans for the atrium and the exhibition hall, as well as an overview of the lecture theatre, shop, cafeteria and *The Green Machine*.

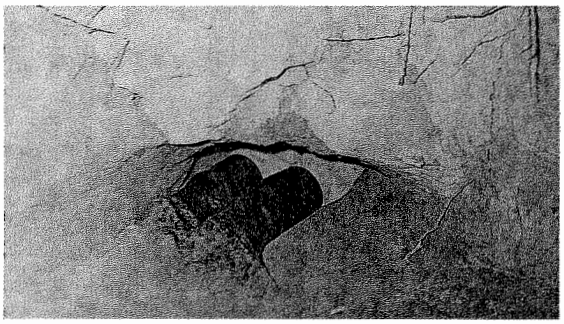
The result was a better understanding of this corporate facility, which has been designed as a showcase to benefit the whole of CSIRO.

It's hoped that special tours can be arranged for CSIRO staff from other locations around Australia. If the wish is there, the *Discovery* team would be happy to oblige. CoR

Backpage

CSIRO around the nation

O caption, my caption!



What a lot of captions we got for the pic of Wolf Hermann in his gumboots.

Lynn Pulford of Education Programs suggests: From the 1998 Staff Opinion Poll, "Having access to appropriate equipment to do my job properly. Yes"

Viki Pinkard of Molecular Science sent: "I'm sure I scrolled his telephone number down somewhere—you know what my desk is like! It will take but a minute to find!"

From Robin Kirkham of Manufacturing Science and Technology: "Got it! The Year 2000 Bug!"

Elizabeth Davy of Atmospheric Research wrote: "CSIRO's newly revised accommodation standards for travelling scientists ensure fiscal responsibility despite the weakening of the Australian currency on overseas exchanges."

Three entries arrived from Gordon MacGillivray of Forestry and Forest Products: "Simulated artificial insemination experiment on African elephants." "Bureka—I've finally found out how the reproductive system of a woolly mammoth works!" and "I have finally found out where CSIRO holds its board meetings."

From Tom Gosling of DIST (now DISR) "Scalpel!"

"I left my finished PPE form somewhere in this desert rodent hole," wrote Michael Fisher-White of Minerals.

Entomology's Mike Lacey sent: "As the GMO peered over Black Mountain at the Plant Industry site, it started to feel rather peckish..."

Anne Lehmann of Education Programs sent "Scientists have become aware of an unforeseen side effect in humans given monoclonal antibodies developed using mice. Sufferers have reported an overwhelming urge to hide in small dark spaces. No cure has yet been found."

From Therese Carroll at Tropical Agriculture: "No holes were barred, as Mr Wolf continued his search for the elusive pigs!"

And the winner is...Neill Jonker, another Tropical Agriculturite, for: "Are you SURE this is the correct procedure for taking an elephant's temperature?"

Neill wins a bright pink helirang!

But what was Wolf really doing? He was "bugging" the inside of a wombat's burrow for work using telemetry to collect data from the animals and their environment.

Our latest pic (below) from Martin Dillon, is of Entomology's Colin Tann. You could win a book called "Let your Creativity Bloom". Send captions and pics to *CoResearch* Caption Competition, PO Box 225, Dickson, ACT 2602, or email Karen.Robinson@cc.csiro.au CoR

Energy excellence

Energy Technology researchers Dr Chris Veal and Dr Richard Sakurovs each received a 1998 Australian Coal Association Research Program (ACARP) Award of Excellence. Chairman of the ACA, Mr Bob Cameron, presented the awards, acknowledging their contribution to R&D in coal preparation and utilisation. CoR

Book awards

Two books from CSIRO Publishing were winners in the Whitley Book Awards for 1998 sponsored by The Royal Zoological Society of New South Wales.

A Rich and Diverse Fauna by Dr Murray Upton was judged by the Society to be the best book in the category History of Australian Zoology, 1998.

Dr Upton's work is a history of the formation of CSIRO Entomology and the Australian National Insect Collection and covers the growth of the collection over the first 65 years.

This year's Whitley Medal for the Best Book on Natural History of Australian Animals went to Pam Beesley, Graham Ross and Alice Wells of the Australian Biological Resources Study for their book *Mollusca: the Southern Synthesis*, published by CSIRO Publishing.

Information on both titles is available at www.publish.csiro.au CoR

Top guns

Dr Bruce Firth and Dr Shenggen Hu were awarded the John A Brodie Medal by the Australian Institute of Engineers at the CHEMECA Awards.

The award is presented to the author or authors of a published paper on a chemical engineering related topic being of practical usefulness with an immediate application to the science, art and practice of the discipline. Drs Firth and Hu's paper was titled *Factors causing biased slurry feed subdivision and a design method for unbiased multi-part distribution.* CoR

Oceanography medal

Dr Stuart Godfrey is the 1999 winner of the Sverdrup Gold Medal awarded by the American Meteorological Society (AMS).

Dr Godfrey is a physical oceanographer at CSIRO Marine Research in Hobart.

The Medal is awarded by the President of the AMS on the advice of an international committee to researchers who make outstanding contributions to the understanding of interactions between the oceans and atmosphere. It is named after the 'father' of oceanography Harald Sverdrup, who also gives his name to the measurement of ocean currents. CoR

Roberts' on the move

Dr Jane Roberts has moved from CSIRO Land and Water, Griffith to take up a position at CSIRO Land and Water in Canberra.

Dr Roberts' close association with the Riverina has led to many achievements including putting a scientific basis into the issue of environmental flows, especially plants and their role in the environment, carp, the oral history of the Lachlan River, ecological management of irrigation drains and bio-indicators, where plants are used to indicate the health of a river floodplain system. CoR

Win for horse research

CSIRO Animal Health's Mr Mark Williamson was named Rural Industries Research and Development Corporation—Vetsearch Equine Research Student of the Year 1998 at an award ceremony in Adelaide on 13 November.

The award recognised his research into the Hendra virus (formerly equine morbillivirus), which killed a man and fourteen horses in 1994. In 1995, the virus was associated with a second death when a farmer from McKay died in Brisbane.

His research focussed on how the virus replicates and is transmitted to other animals by infected horses and flying foxes. This information provides an understanding of how the virus spreads throughout the body, and has important practical implications for handling infected horses. CoR

CSIRO sponsors maths quest

In September, Dr Rob Bell of the Bureau of Meteorology/CSIRO High Performance Computing and Communications Centre (HPCCC) attended the Presentation of Awards for the 1998 Mathematics Talent Quest in Victoria.

CSIRO, through CSIRO Mathematical and Information Sciences, sponsored two prizes—the Year 7 Special Award for Excellence, which was awarded to Candice Kim and Jennifer Seo of Presbyterian Ladies' College for their project "The Extraordinary Viewing Instrument", and the Year 3 Award of Merit awarded to Year 3 at Mount Scopus Primary School for its project "Gallipoli". CoR

Prescott Medal

Dr Rob Fitzpatrick from CSIRO Land and Water has been awarded the JA Prescott Medal of Soil Science for his contribution to soil science.

Dr Fitzpatrick's research combined field and laboratory studies that show the importance of iron and titanium minerals in relation to soil-landscape processes, pollutant element retention, soil degradation, and water quality. His work resulted in new approaches and methodologies for constructing mechanistic models of landscape evolution and soil formation. It also stimulated new avenues of research nationally and internationally.

Dr Fitzpatrick developed technical soil classification systems as a planning tool for agricultural, viticultural, forestry and mining industries, private businesses, and public agencies. CoR

Fox to EPO

Dr David Fox has been seconded from CSIRO Mathematical and Information Sciences to manage CSIRO's Environment Projects Office (EPO) for the next three years.

The EPO will manage large multidisciplinary environmental projects.

To be placed on the EPO mailing list or to register your interest in participating in EPO projects, contact Dr Fox directly: david.fox@cmis.csiro.au. CoR

Satellite symposium

The 4th International Symposium on Satellite Navigation Technology & Applications will be held in Brisbane from 20–23 July 1999. It will focus on the latest in satellite navigation technologies and associated applications. More information from Organisers Australia, (07) 3369 7866, email mail@orgaus.com.au CoR

Murray to US

Dr Keith Murray, Deputy Chief with CSIRO Animal Health, has been appointed as the director of the National Animal Disease Centre (NADC), the largest animal disease laboratory within the United States Department of Agriculture.

He will take up the position in Ames, Iowa, this month.

The NADC carries out research in the detection, characterisation and prevention of animal diseases of importance to US livestock industries. CoR

Operational prize

CSIRO Energy Technology and CSIRO Wildlife and Ecology were joint winners for their entry into this year's Operational Plan.

The prize was set up to "encourage 'best practice' and introduce friendly competition for contributions to corporate planning documents". The Divisions won the competition for the 'best', most informative entry.

The prize includes a return domestic economy class airfare, courtesy of Strategic, Planning and Evaluation, for a staff member to attend a conference, networking or training event. CoR

CoResearch is published by CSIRO National Awareness (CNA) for CSIRO staff and interested outsiders.
Editor: Jane Kahler
Assistant to Editor: Karen Robinson
Design and art production: *Flying Fox Typography & Design*
Printed by: *Pirie Printers*
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