CSIRO

CoResearch

75th birthday souvenir edition

CSIRO's staff newspaper

No.385 Autumn 2001

Chief Executive Dr Geoff Garrett prefaces this edition, marking CSIRO's 75th birthday, with his thoughts on what the organisation means to Australia.

Opportunity to reflect and seize the day

THE splendid and evocative montage of archival photographs featured inside reminded me of a poignant scene in the classic film, Dead Poets' Society.

A teacher, Mr Keating - played by Robin Williams - reverently approached a group of old photographs, saying to his student charges: "Listen. Can you hear?"

He whispered the old timers' response: "Gather ye rosebuds while ye may. Carpe diem - seize the day! That's what they're saying."

We at CSIRO have this wonderful opportunity to "seize the day" while we reflect on our origins, and the great progress made since 1926. In fact, we have the responsibility to nurture and build, and to be the best we can be, climbing on the shoulders of our CSIRO forebears.

This 75th birthday is an important anniversary for many reasons.

In this time of ongoing, and indeed, escalating change, being part of an organisation that has been around for 75 years, and one that has added immense value over this time, is a hugely stabilising influence for ourselves, and for Australia.

The world's population is growing at the equivalent of one Australia every 10 weeks, or three babies a second.

Child deaths from malnutrition are equal to an international aircraft crashing every 15 minutes.

Fairly soon there will be a billion people on the net and General Motors is now shipping more computing power than IBM.

And but a few years back sequencing a gene took long years - now a few short minutes.

This perpetual white water of change can be daunting.

In such a world of drastic change, CSIRO's brilliant history represents sustainability and stability. And we human beings need stability.

But equally - and from this stable organisational platform - we are in the business of science, which is - by nature - about change and adapting to it.

In a world full of explosive problems and challenges we are in the exceptional position of being able to help people with the tools to cope and respond to change, and indeed to benefit from it.

Finally, it's very important in life to celebrate, to have fun and to acknowledge such milestones of outstanding achievement.

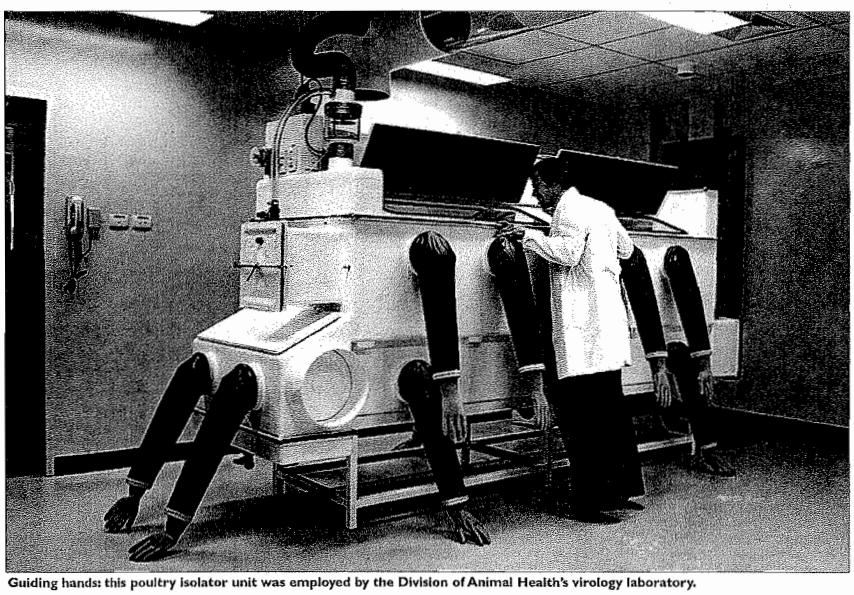
Thus, anniversaries are a time to reflect on the past, and on the future. Such rituals are important.

That's why these old photos are significant.

Listen to them.

And seize the day!

Girl power: a Land Army girl at the Dickson experimental station in Canberra cultivated opium poppies in 1942 and 1943 to produce morphine for the war effort.



Guiding hands: this poultry isolator unit was employed by the Division of Animal Health's virology laboratory.

Pictures to lead the way in celebrations

ARCHIVAL photographs will be a dominant feature of CSIRO's 75th birthday celebrations.

They will help tell the story of CSIRO in a book, an exhibition and a web site.

The book, by journalist Brad Collis, is a narrative history of CSIRO from 1949 onwards.

A pictorial-history booklet will also be printed and given to all staff and stakeholders.

The anniversary web site will feature archival photographs and achievements through the decades.

An exhibition at the national museum will feature old photographs and recent portraits.

A video history and a special SciFiles radio program will be produced and distributed to the media.

There will be an historical screening of some of Australia's oldest footage as part of Scinema, Australia's first international film and multimedia festival.

A special logo (see above) has been developed that is being used on divisional stationery.

The logo can also be viewed at http://www.csiro.au/services/CNAResources/75thann/75th_logo.html

These are some of the scores of birthday activities that are being organised around Australia.

● Inside: more photographs

Sizing up fashionable standards

TEXTILE and Fibre Technology has been approached to become part of a coalition to create uniformity in Australian fashion sizes.

The group plans to survey 25,000 men, women and children across all ethnic and age groups to provide a snapshot of the height, weight and body shape of Australians and update standard sizing.

Leading anatomical scientists from nine Australian universities, textile experts and fashion-industry representatives are part of the venture.

Fat cows

COWS might hold the answer to the mystery of why some people put on more weight than others.

Researchers at Livestock Industries have found four genes involved in the depositing of fat in cattle that might offer clues into understanding human obesity.

The aim of the research was to develop tests that allowed cattle breeders to know the potential of their animals to develop marbling fat. They developed the commercial GeneSTAR Marbling test to identify the thyroglobulin gene that is strongly linked to marbling.

Research roundup

Student eyes space wreck

A STUDENT astronomer has found evidence of a cataclysmic event, the collision of two clusters of galaxies.

PhD student Melanie Johnston-Hollitt, 26, from the University of Adelaide, found the wreckage while using CSIRO's Australia Telescope.

Australia Telescope National Facility director Professor Ron Ekers said: "Until now there has been only weak evidence that clusters might collide."

Beef up the labels

BUTCHER shops might soon be labelling their meat with as much detail as is found on a wine label, according to Food Science Australia scientists.

The age, gender, regional origins and eating habits of the animals – all factors that affect the flavour – could be on the labels.

Food Science Australia's Dr Heather Bruce said: "It would be quite possible to train people to taste differences in beef flavour with the accuracy with which many people can identify wine by regional and brand characteristics.

"The quality of Australian beef is among the best in the world and it is worthwhile understanding the factors that contribute to its flavour."

Million-dollar weevil

A WEEVIL that attacks the common weed, Paterson's Curse, could save farmers more than $253 million in the next half century.

The farming community will save $73 million a year from a biological control program, according to an economic analysis by Dr Tom Nordblom, from the Weeds CRC.

Dr Nordblom said: "Research from Entomology has shown that Paterson's Curse has been restricted in size, vigour and intensity where the crown weevil is well-established."

Twist to native limes

CITRUS growers are in the limelight with the first commercial harvest of fruit from three new varieties developed from Australian native limes.

The three varieties are the Blood Lime, a cross between a sour mandarin and a native Finger Lime, characterised by its blood-red rind, flesh and juice; the pear-shaped Sunrise Lime that makes an excellent marmalade; and the Outback Lime, a selection of the native Desert Lime with small green, juicy fruits that ripen at Christmas time.

Plant Industry's Merbein laboratory bred and developed the limes as part of a program to find out if useful native-lime characteristics such as disease resistance, salt tolerance and fruit colour could be bred into conventional citrus fruits.

The last word

"[Scientists] should be as famous as footballers and musicians ... [Dr Doug Waterhouse] must be remembered as one of our selfless heroes."
- Sunday Herald Sun, December 10

"Oddly enough, I cannot remember Mr Howard in opposition saying he would starve our hospitals of funds and scrap the renewable energy program. Nor do I recollect him stating that he would slash funding to the CSIRO."
- The Age, letter to editor, February 12

"In relation to the amount of content that we currently produce, about half of that is produced internally and I'd like to increase that amount. I'd like to think we will get more money to do science programming, but even within our current allocation we see science as fundamental and I'm sure you'd understand that everything I've said in relation to education would indicate that I naturally want to embrace the science community."
- Managing Director Jonathan Shier answering a question on ABC science programming, National Press Club, March 6

25 days in the Simpson Desert

I visited the Simpson Desert in 1965 and it made an indelible impression on me, so much so that it has been a life-long ambition, long postponed by pressures of family and career, to go back to the desert and cross it on foot.

My chance came this year, with my retirement and with the exceptionally favourable conditions. I set off with a group of 13 people and 16 camels on a 25-day expedition organised by Outback Camel Company.

We spent the first night and half-day at Old Andado, inside the western edge of the Simpson Desert, learning some of the fundamentals of camels and camel handling, grappling with the intricacies of the seemingly chaotic collection of ropes holding the saddles and loads together, and packing an enormous mound of provisions for the expedition. Conspicuous among these were numerous boxes of oranges.

Little did we realise then how significant these would become.

Once we left Old Andado, we would have no back-up and no outside support until we reached Birdsville, 404km and 25 days away, except for a depot of supplementary water to be dropped for us on the Colson Track, seven days away to the east.

The expedition leaders were very clear about this extra water. We could not rely on it until we actually had it on our camels.

At night, you lie in your swag, listening to the gentle clinking of hobbles, the occasional rumbling regurgitations and slow rhythmic munching as the camels chew their cud.

Day by day, we began to see order and purpose in the seeming confusion, to be able to recognise each individual camel by name, to know its own particular personality and its place in the string, to make sense of the jumble of saddles and cargo on the ground around the camp, and to be able to saddle and load up the camels.

The day typically started at 6am, with just the very beginnings of dawn light on the eastern horizon.

Postcard from retirement

When Alan Lane retired from Food Science Australia last year he declared: "No rugs and slippers for this retiree." Alan fulfilled a 35-year ambition by trekking across the Simpson Desert and kept an insightful journal along the way. Here are some excerpts.

Saturday July 29 (Day 4): A lot of drama today. Dunes very steep, difficult for the camels to negotiate with their heavy loads.

One of the rear camels lost her footing and sat down, bellowing loudly and refused to budge. Had to be unloaded and reloaded. Then problems with a herd of wild male camels that appeared and began to menace us. The lead male making "blub blub blub" noises and weaving his head around. Definite threatening body language, so the experts told us, and we were all told to stay close together beside our string.

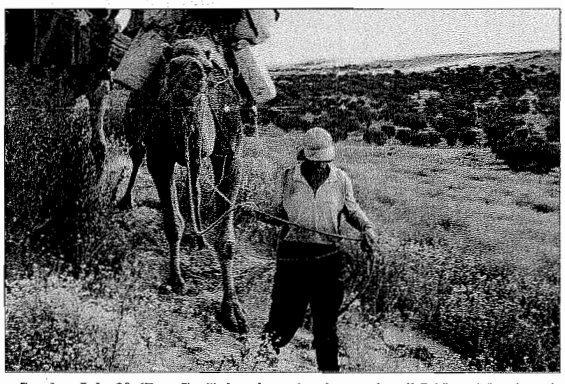
The camels took no notice of shotguns fired into the air and continued to come closer and behave more aggressively until the lead camel was actually hit by a shotgun blast. They turned away then, but only moved a little way off and still looked threatening. They only really left the scene when chased on foot for about a kilometre, when they disappeared over the next dune.

Each day, the navigator steered a compass bearing that was worked out the night before from a GPS reading and plotted on the map. Being navigator means you are out in front all day. You can't relax for a minute or the string of camels is on top of you and you have to rush to get ahead again.

Navigating in much of this region is made difficult by the absence of any significant landmarks. You have to study the top of the next sand ridge half a kilometre or more away, trying to pick a clump of spinifex with a different colour, or a patch of sand or a bush.

When you finally arrive at your chosen landmark, you greet it like an old friend and are surprised that it turns out to be no larger than a briefcase.

Between Andado and Birdsville, we crossed 768 sand ridges in 404km, in the process climbing then descending again something like the equivalent of the height of Mt Everest.



Sunday July 30 (Day 5): *Today the magnitude of this undertaking really hit me. Feeling so tired, footsore, demoralised and thirsty, and knowing that we will not even be half way for another week.*

I am writing this at 9pm, relishing the last few hundred millilitres of my daily water ration.

I was in good shape during the morning, but already beginning to plod by lunchtime. The afternoon a real struggle. I managed to keep my lunchtime orange until 3.30pm. I peeled it slowly and carefully, anxious not to lose a drop of precious juice. I ate it slowly, one quarter of a segment at a time, making each portion last as long as possible, savouring the acid and the juice, and that revived me and kept me going till we called a halt for the day at 4.30pm.

Wednesday August 2 (Day 8): I was first up this morning and got the fire going and the billy on while it was still dark. Then shepherded the camels while they browsed until 7.15am. Most beautiful sunrise, gorgeous pale mauve light that gradually changed to pink, orange, red and then the sun rose. It was the first time I had shepherded, so the first time I had seen the dawn properly.

You awake while it is still dark, and feel a coating of frost on the inside of your swag. You peer at your thermometer - it is registering –7.4°C.

Friday August 4 (Day 10): *Hopefully the flies will go away when it gets dark. Suddenly it dawns on you that for perhaps 80 per cent of the time, you are actually walking uphill and you understand at last why you find this walk so exhausting.*

Sunday August 12 (Day 12): I have no option now. Return is not an option. Tomorrow night, we'll be halfway. Reflected how extraordinary it is that there is still an uninhabited expanse on the planet where it is possible to spend nearly four weeks navigating straight across without seeing another human being. Frequently come across signs of the former aboriginal inhabitants, though: grinding stones, fragments of stone flakes from the knappers craft, etc.

Wednesday August 16 (Day 22): *Pressure is off, now we are only 30km from Birdsville and with water in hand - very relaxed breakfast. During the morning, we crossed a cattle fence then, shortly afterwards, a major station road, the first signs of returning to "civilisation".*

Friday August 18 (Day 24): Camped on a claypan containing a foot of water. Camels not interested except for Chewie who rolled in it.

Spoonbills, various species of duck, avocets, brolgas, budgies seen. Sense of anti-climax about getting into Birdsville in such a low-key finish.

It has been cool, so our fantasies earlier about lining up jugs of lemon squash, soda water, milkshakes, etc. have lost their urgency. It is hard now to remember when we were on strict water rations, having to push on hard every day to cover the distance, and that I, for one, was having a great struggle with both my stamina and my ability to handle the rationing of water.

Leading the string of camels up to the Birdsville Hotel next day, hooshing them down outside and drinking a few beers sitting on the ground among the camels with my companions was one of the most satisfying moments of my life. I recognised that this achievement was one of the most challenging and difficult things I have done, both physically and emotionally, and I'm proud to have joined the still-small group of people who have walked across the centre of the Simpson Desert.

●*Alan and his wife, Virgina King, have been commissioned by an educational publisher to write three books about Alan's experiences. Two, Camels In The Outback and Crossing The Desert, are based on his Simpson Desert experience. The third is about his Earthwatch expeditions studying the declines and extinctions of frogs. The books are aimed at upper-primary-school children.*

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Cool vest works like a bush fridge

SOLDIERS, miners and emergency workers will shortly be able to keep cool, thanks to a vest that has been designed like a bush fridge.

Champion Formula One driver Michael Schumacher is reported to be considering using the vest to combat the intense heat during Grand Prix racing.

The vest, jointly developed by CSIRO Thermal and Fluids Engineering and the Defence Science and Technology Organisation, was designed to be worn by soldiers under nuclear, biological and chemical clothing, body armour and other protective uniforms and miners working underground.

It features a personal-cooling system that collects body heat through vapour-filled cavities in the vest. An evaporative cooling heat exchanger helps the heat transfer to the atmosphere via a pipe.

The vest's developers have likened it to a bush fridge where a cool cloth placed over a container keeps the contents cool by the temperature drop caused by evaporation. The system will be developed by Freehills Technology Services and the Victorian Government.

Chill out: the new vest features a personal cooling system.

CSIR rejected a promising young Oliphant: archives

By Megan Bird

CSIR once rejected a job application from one of Australia's most brilliant scientists, Sir Marcus Oliphant.

It was not alone.

In 1919, a 17-year-old Oliphant had applied to dozens of organisations throughout Australia and New Zealand.

All showed this promising young man the door and he eventually supported himself by taking a job as a junior assistant at Adelaide's Public Library while studying one university subject.

A fascinating collection of letters recently unearthed from CSIRO's archives tells this remarkable story.

In one, written by Oliphant in 1964, he thanks CSIRO's Mr G. Gresford for sending him a copy of his unsuccessful CSIR application.

"At that time, jobs for scientifically minded youngsters were very difficult to obtain," he wrote.

"My parents could not afford a university course for me unless I could contribute something for my keep."

Oliphant's father was a civil servant and his mother an artist.

The letter goes on to reflect on his fortunes.

"It is strange how luck works out. After graduation I applied for jobs in Australia and New Zealand, but was unsuccessful in all…

"I often wonder, however, whether life for me and for my family would have been easier if I had landed a post here and had followed a more 'normal' career."

Oliphant's hopeful application letter to CSIR was written in a beautiful hand.

He enclosed a reference written in the polite tone of the day by his school principal.

It read: "He is a lad with undoubted bias towards science, and spends a good [deal] of his leisure time in fitting up chemical and physical experiments.

"He is of gentlemanly address, good mental powers, and thoroughly straightforward and trustworthy."

But this praise did not sway CSIR.

A brief note was penned back to the young Oliphant 10 days after his application.

"…I beg to inform you that the Advisory Council of Science and Industry is merely a temporary body and that pending the passing of a Bill for the permanent constitution of the Institute of Science and Industry by Parliament it is not likely that there will be any suitable opening for juniors."

The two-paragraph rejection letter was undoubtedly a disappointment to Oliphant and a great loss to CSIR. But, as Oliphant himself reflected, his life and Australian science might have been very different if CSIR had employed him.

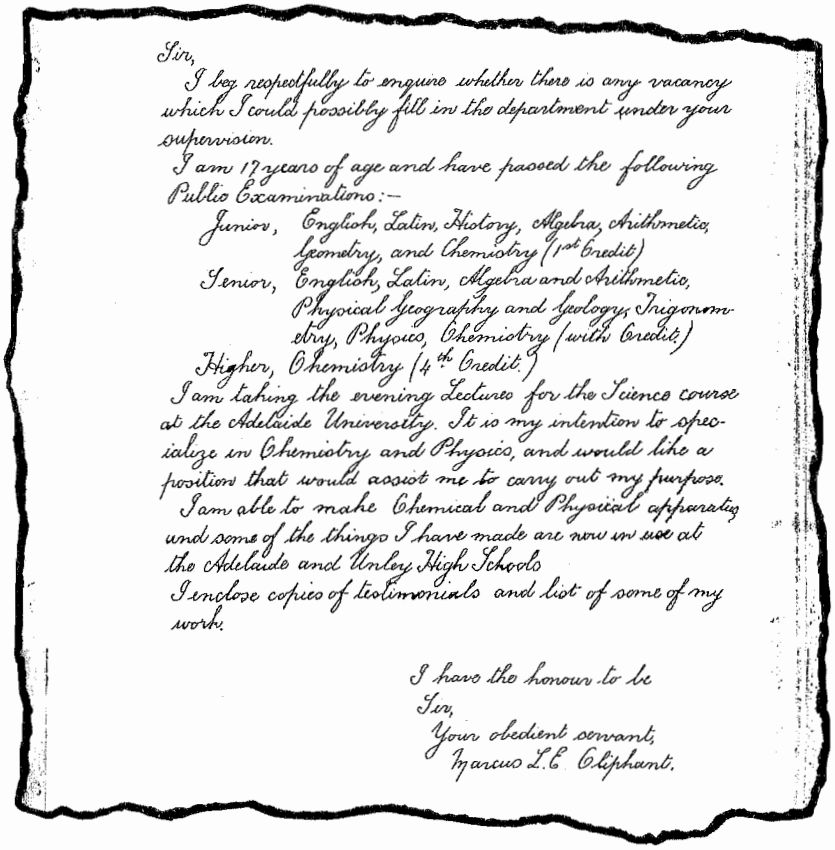
After school Oliphant became a library assistant and took up a cadetship in physics. He graduated with first-class honours in 1922 and eventually went to Cambridge to study.

During WWII Oliphant's team developed microwave radar and, in 1943, he worked on the Manhattan Project.

After the war he returned to Australia as the first Director of the ANU Research School of Physical Sciences, established the Australian Academy of Science and, after retiring from the ANU in 1967, became the State Governor of South Australia. He died in Canberra last year.

In its 75-year history CSIRO inevitably made decisions that could be judged, in hindsight, as erroneous. In the 1950s, for instance, a young Joan Sutherland, a secretary at Radiophysics in Sydney, burst on to CSIRO's talent-night stage.

She did not win.



Sir,

I beg respectfully to enquire whether there is any vacancy which I could possibly fill in the department under your supervision.

I am 17 years of age and have passed the following Public Examinations:—

Junior, English, Latin, History, Algebra, Arithmetic, Geometry, and Chemistry (1st Credit)

Senior, English, Latin, Algebra and Arithmetic, Physical Geography and Geology, Trigonometry, Physics, Chemistry (with Credit)

Higher, Chemistry (4th Credit)

I am taking the evening Lectures for the Science course at the Adelaide University. It is my intention to specialize in Chemistry and Physics, and would like a position that would assist me to carry out my purpose.

I am able to make Chemical and Physical apparatus and some of the things I have made are now in use at the Adelaide and Unley High Schools

I enclose copies of testimonials and list of some of my work.

I have the honour to be
Sir,
Your obedient servant,
Marcus L.E. Oliphant.

Birthday girl: Dame Joan Sutherland wishes CSIRO all the best.

Famous former 'typiste' ready to celebrate a birthday of her own

By Megan Bird

ONE famous Australian with an early link to CSIRO will also be celebrating her 75th birthday this year.

Opera diva Dame Joan Sutherland sent a birthday message to CSIRO staff from her home in Switzerland.

The surviving archival information on Joan Alston Sutherland, of 115 Queen Street Woollahra, NSW, alludes to the attitudes and work culture of the time.

Stilted and brief language was used to describe the work performance of the 18-year-old woman.

Miss Sutherland was employed on April 20, 1944 – initially as a temporary "junior typiste" for CSIR's National Standards and Radiophysics Laboratory in Chippendale.

She was paid £116 a year for her 43-hour six-day weeks.

Miss Sutherland signed a two-page Secrecy Act Declaration when she began – standard for those employed in top-secret areas during WWII. Almost a month later her work was recorded as being "quite satisfactory".

She was recommended for a full-time vacancy two days later. And, when she was given the job three days after this, it was recorded that she had given "very satisfactory service".

●CoResearch would like to thank Ann Nicolls from CSIRO Archives for her research on Dame Joan and Sir Marc Oliphant.

Dear CSIRO

What a surprise to hear from you that CSIRO is celebrating its 75th birthday.

I was indeed a "typiste" with the National Standards & Radiophysics Laboratory, typing such things for Dr D F Martyn and his colleagues as "Meteorological Effects on Radar". Most of the other secretaries and staff had science degrees but I was fresh from secretarial college and amazed by what I was typing. As for "keeping secret the nature of that work" I couldn't have begun to do otherwise as I certainly didn't understand it or its importance!

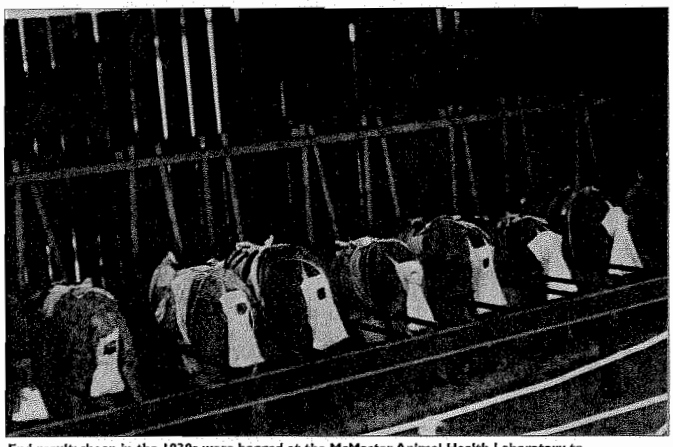
It's true I was not accepted for the concert but was not deterred from my goal – to sing at Covent Garden.

My best wishes for a happy 75th birthday to you all.

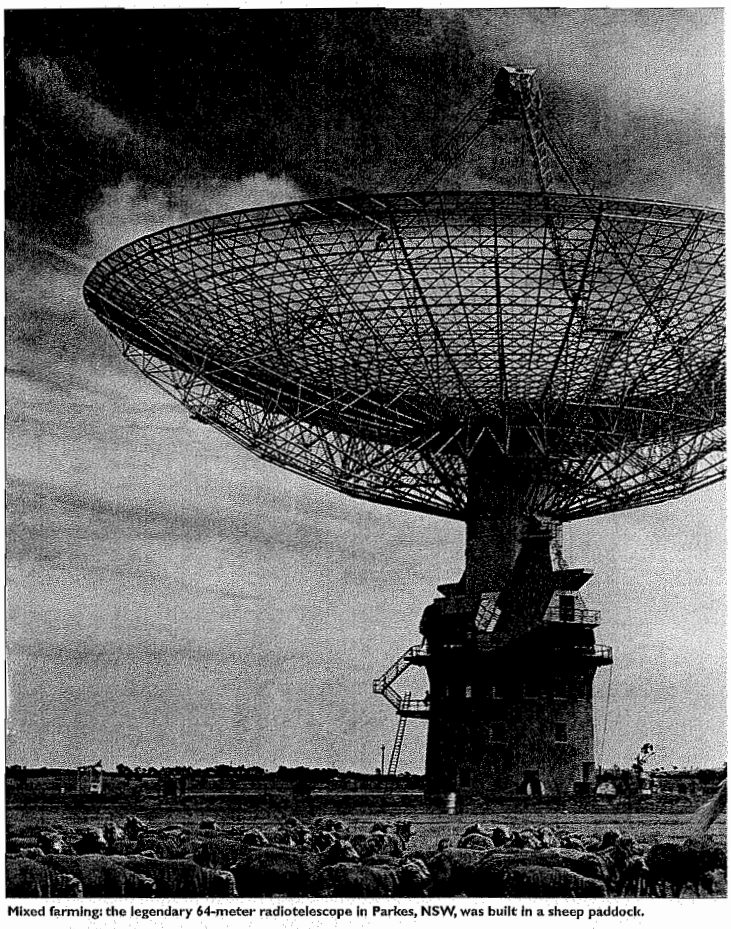
Yours sincerely,

Joan Sutherland
OM, AC, DBE

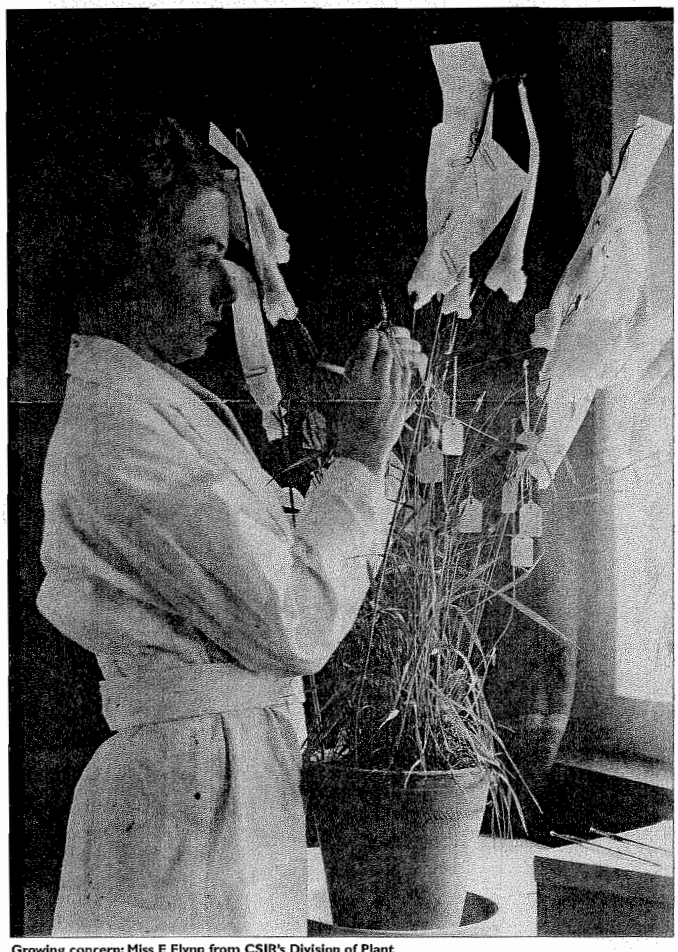
P.S. I am sending a signed photo by post, but have nothing from my happy days with you.



End result: sheep in the 1930s were bagged at the McMaster Animal Health Laboratory to collect worm egg counts and larval samples.



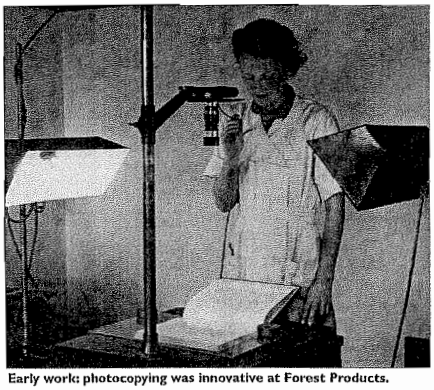
Mixed farming: the legendary 64-meter radiotelescope in Parkes, NSW, was built in a sheep paddock.



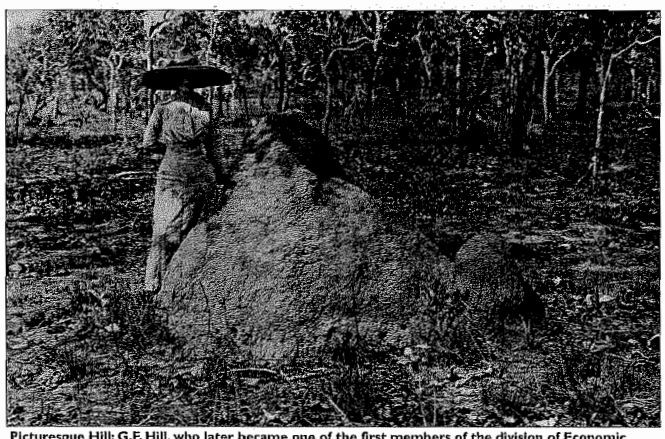
Growing concern: Miss E Flynn from CSIR's Division of Plant Industry masculated the head of Agrophyron species for pollination.

Bare facts: Dr J Legg and Mr R.B. Kelley worked in the first laboratory of the division of Animal Health at Oonoonba, Queensland, in 1932.

Helping hand: Dengue Fever mosquito which is needed by the female before



Early work: photocopying was innovative at Forest Products.



Picturesque Hill: G.F. Hill, who later became one of the first members of the division of Economic Entomology photographed Mrs G.F. Hill in 1916 next to mounds of Coptotermes acinaciformis and Termes sunteri at Stapleton, Northern Territory.

Picture perfect: library staff at Plant In July 1949.

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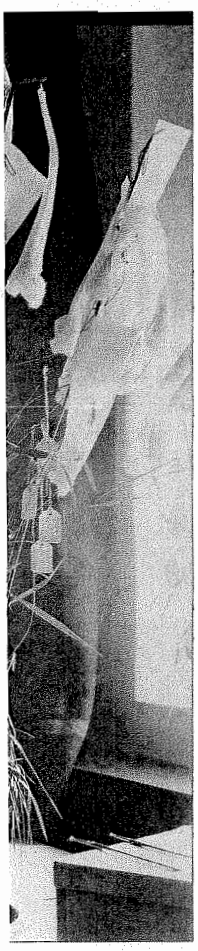

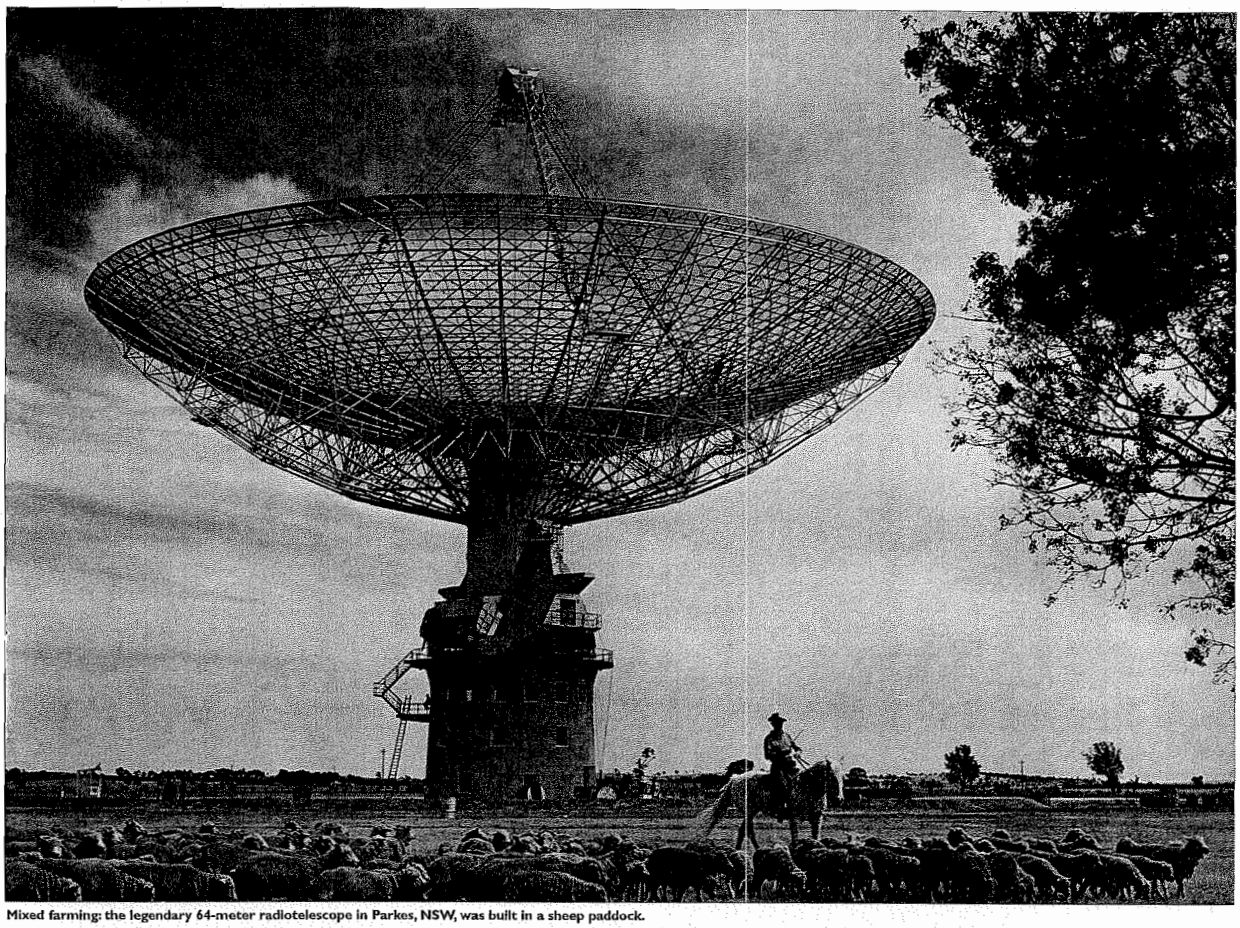

Mixed farming: the legendary 64-meter radiotelescope in Parkes, NSW, was built in a sheep paddock.

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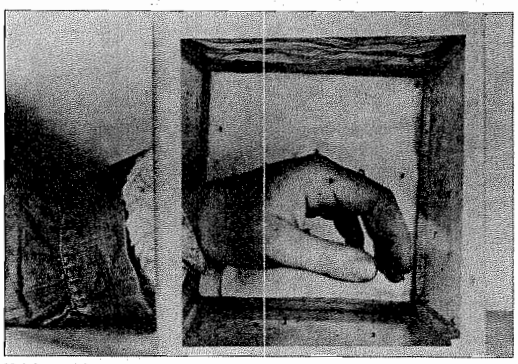
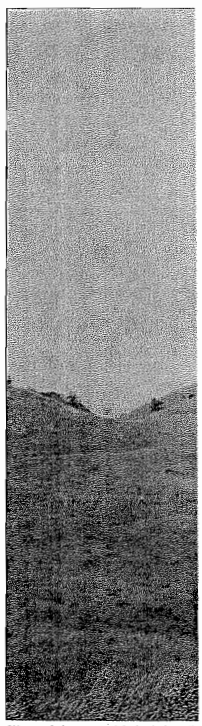


Helping hand: Dengue Fever mosquitoes in the 1930s were fed a blood meal, which is needed by the female before eggs can be laid.

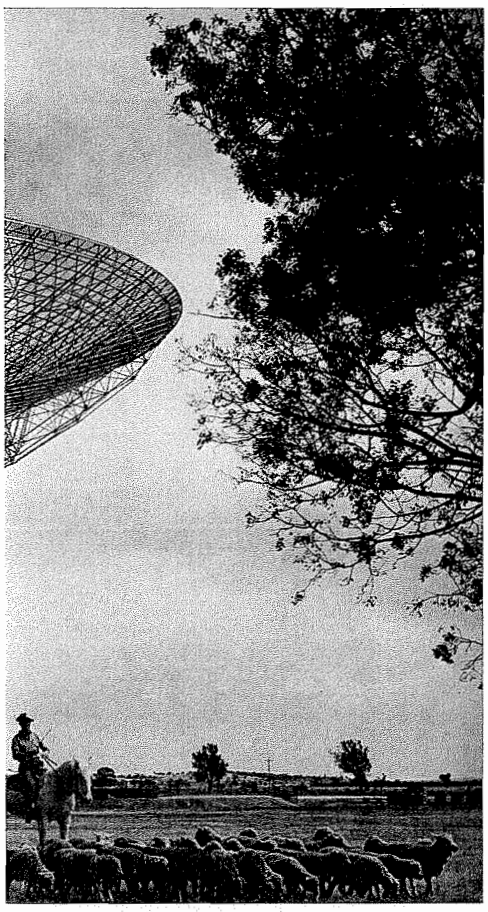
75 years of Australian Science
CSIRO

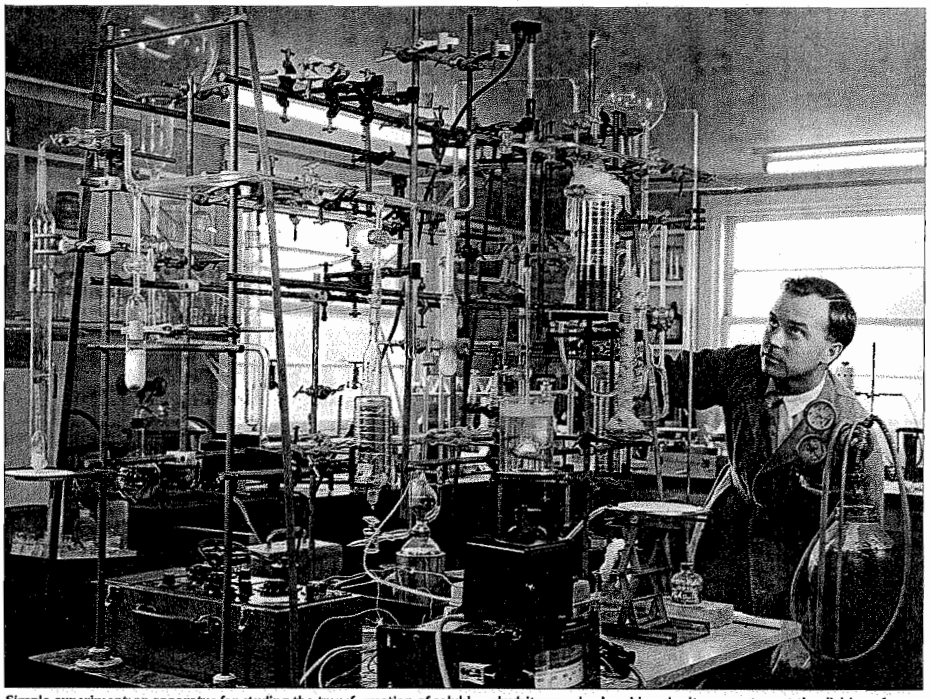
Picturesque Hill: G.F. Hill, who later became one of the first members of the division of Economic Entomology photographed Mrs G.F. Hill in 1916 next to mounds of Coptotermes acinaciformis and Termes sunteri at Stapleton, Northern Territory.

Picture perfect: library staff at Plant Industry posed for this portrait taken in July 1949.

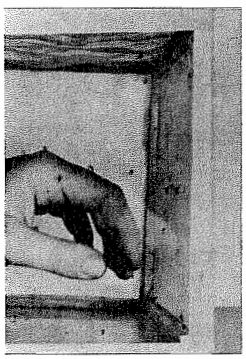


King of the soil: chief of the div





Simple experiment: an apparatus for studing the transformation of soluble anhydrite or orhorhombic anhyrite was set up at the division of Building Research.



the 1930s were fed a blood meal, can be laid.

Towering tobacco: tobacco plants used in experiments were grown in a glasshouse at Adelaide's Waite Institute in 1936.

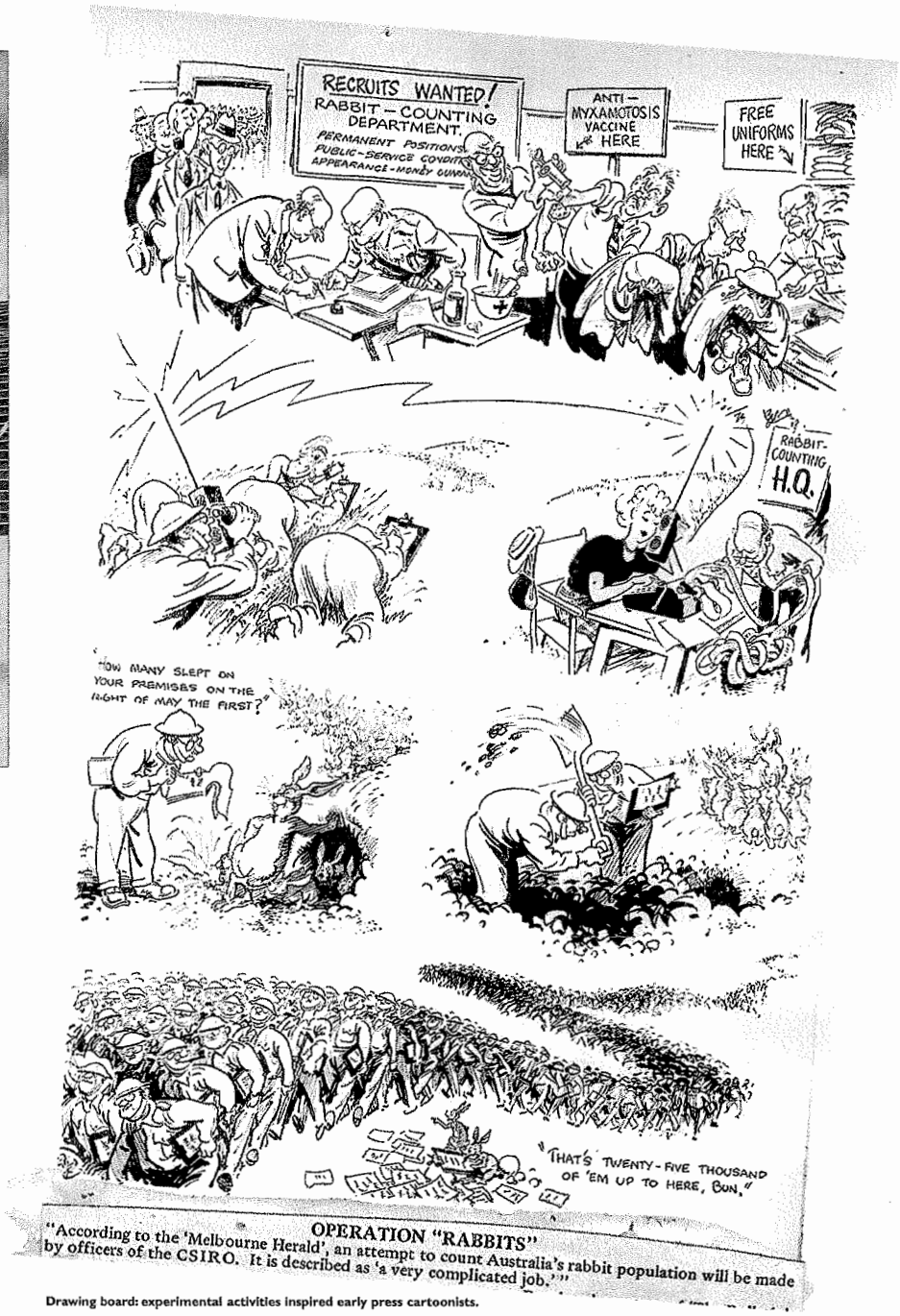
Party girls: CSIR assistants celebrated at a Christmas party in 1944.

ry posed for this portrait taken in

King of the soil: chief of the division of Soils and one of the earliest soil surveyors worked on King Island in Bass Strait on currie calcareous sand.

Head for heights: Prime Minister Malcolm Fraser and the Country Party's Mr England visited the Parkes radiotelescope dish in 1969.

Taste test: a staff panel tested trays of processed potatoes about to enter a dehydrator.



Drawing board: experimental activities inspired early press cartoonists.

Glamour girl: the division of building had a model approach to publicising its research

Well read: Ken Harley and Sergio Penna at Entomology's field station in Ingham, Queensland, kept in touch.

When science brushes with art

ART and science are increasingly overlapping in CSIRO workplaces.

In one Victorian CSIRO laboratory a project about interpreting data began with far-reaching scientific merits, but has developed into one of great artistic fascination.

John Ward from Forestry and Forestry Products helped develop an analogue colourisation process, which was later commercialised into a digital colour package.

His library of images, which has reached about 5,000, are captured by a digital-scanning electron microscope and then manipulated.

"Colourising the images made interpreting them easier for non-electronmicroscopists," he said.

But the surreal beauty of the images were soon in demand for more aesthetic reasons.

The Australian Academy of Science was the first to approach John on this front, for images for school textbook covers.

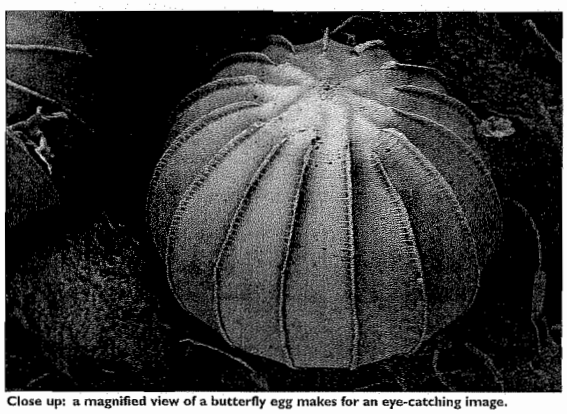
Many other publications, galleries and media outlets followed.

Visual art student Bee Rawlinson has been working with John for the last three months to help with imaging and marketing.

"They'll sell themselves," John said.

Other work-related artistic efforts are more intentional that John's.

Anne Hastings, for instance, has been a scientific illustrator for Entomology since 1983.



Close up: a magnified view of a butterfly egg makes for an eye-catching image.

And CSIRO has been home to artists-in-residence programs for most of its life.

Rebecca Scott, from National Awareness, spends most of her job encouraging links between science and art.

"Up until know it has been very ad hoc. There's been nothing structured across the organisation," she said.

Rebecca liaises with national bodies to secure funding for projects and to encourage co-operative programs.

She kick-started the art-and-science exhibitions, Metis, four years ago and is coordinating Australia's first international science film and multimedia festival, Scinema, this year.

"Science is about collecting information and seeing patterns," she said.

"These cross-disciplinary approaches have got to help in not only the way scientists see their own work, but in how the work of scientists is communicated to the public.

"The scientist tries to represent a concept, experiments with an idea and tests the validity of the creation. So too does the artist, and both lead to discovery, new vision and illumination."

Rebecca organised the first Metis in her spare time while working for Education Programs, but has organised this year's sequel and Scinema as part of a job she has carved out herself.

Rebecca's own background has a science-and-art crossover.

"I wanted to be a biological illustrator since school," she said.

She studied art and science subjects throughout school.

"To me there was never a conflict between them. But when I wanted to combine the two at university I was told I couldn't. They were separate departments."

She became a science communicator and has been working at reuniting the two disciplines in her own life since then.

"I get so much pleasure out of bringing artists and scientists back together," she said.

Metis and Scinema will run from May 3 during National Science Week. Scinema has received entries from countries ranging from Bulgaria and Belgium to Canada and Chile.

For more information visit www.csiro.au/metis and www.csiro.au/scinema

- MEGAN BIRD

Multi-skilled staff juggle creative pursuits

"A popular cliché in philosophy says that science is pure analysis or reductionism, like taking the rainbow to pieces; and art is pure synthesis, putting the rainbow together. This is not so. All imagination begins by analyzing nature."
- Jacob Bronowski, The Ascent Of Man (1973)

AN uncommon number of CSIRO staff have artistic interests.

CoResearch tracked down a selection of artists and performers of many colours: painters, cartoonists, actors, singers and a troupe of jugglers.

Portrait and landscape painter Shirley Winstanley is known for her love of painting hobos, and for paying her homeless models in food or cigarettes.

Shirley, Executive Assistant at Minerals and Energy, picked up her paint brushes about 20 years ago, but decided to get serious about five years ago.

"I'm working full-time and squishing it in on weekends," she said.

It was the smell that attracted her to painting.

"I've always loved the smell of paint and the smell of turps," she said.

"The funny thing was that my father used to paint and I never knew it until after I took painting up.

"That familiar paint smell must be buried deep in my memory."

Shirley sells about three paintings a month for between $100 and $1,000 each.

Another CSIRO woman with an artistic heritage is jazz singer and dancer Sue Mahoney.

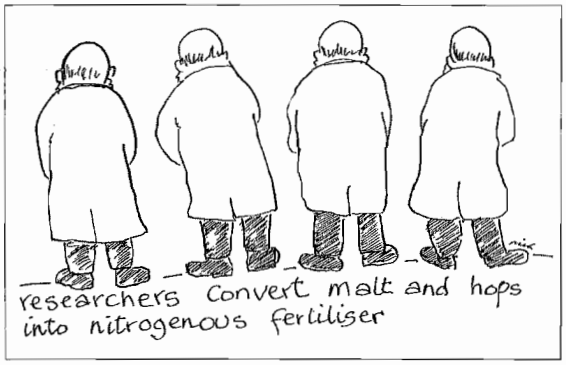
"My father was a world-class musician and my mother a dancing teacher," she said.

Sue, from Australian Animal Health Laboratory (AAHL), worked as a jazz singer for 13 years before retraining and joining CSIRO.

She still performs and has recently taken up the piano.

"It's never too late," she said.

"So for anyone out there who would love to do something creative, have a go. The freedom of self-expression is a wonderful experience."



Fertile ground: Nick Goldie's cartoons are another example of the artistic element that lurks within the organisation.

Late bloomer: Shirley Winstanley's Sunflowers is further evidence of the talent that abounds at CSIRO.

Balancing act: librarian Paul Bladen shows off one of his skills as part of a troupe of performers.

A troupe of apprentice clowns is having a go at juggling at AAHL in Geelong.

Ringmaster librarian Paul Bladen started the balls rolling a year ago when he put on a juggling act at a staff cultural function.

"My skills were pretty mediocre, but three or four people whose juggling skills were on a par with mine were there and we formed the group," he said.

They have progressed to juggling fire sticks, swords, rubber chickens, skittles, stilt-walking and riding a unicycle. The troupe of about two dozen research scientists, technical officers, support staff and others meet on Tuesday lunchtimes.

"We just do it for the sheer joy of it. We laugh a lot and exercise a lot."

At least three staff members moonlight as cartoonists.

Christophe Granet, from Telecommunications and Industrial Physics, has a Larson-like style. His cartoons can be viewed at http://Christophe_Granet.tripod.com

Carp scientist Brenda Ebner from Land and Water hung her CarpToons at a recent Entomology tea-room exhibition.

And Nick Goldie, from National Awareness, is CoResearch's official cartoonist.

"I've been drawing since the beginning of time," he said.

"Nowadays I doodle faces and names at meetings. I find it's a very good aid to remembering names."

Nick is occasionally commissioned to illustrate publications ranging from brochures and leaflets to magazines and newsletters.

"The innate talent is limited," he said. "But it's nice to be paid for it. I don't think people should be undersold."

Alan Mundy from Manufacturing Science & Technology has blended two diverse careers, as a laser-processing technologist for CSIRO and an actor dedicated to theatre and live performance.

Alan's recent CSIRO performances include laser demonstrations for the Double Helix club, at an industry open day, and for children's television show Totally Wild.

Alan and his wife Maggie started an amateur theatre company in 1987.

MANY other artists and dabblers work at CSIRO.

A flick through back-issues of this publication reveal that CSIRO staff have always had noteworthy artistic leanings.

In 1944, for instance, five musos formed the Melbourne-based jazz band, Sirocats. CoResearch photographs reveal the original clean-cut band members sported dark suits, ties and short haircuts.

The line-up and the attire changed over the years, according to a photograph taken in 1981 that shows band members with long hair and beards, jeans, polo-necks and impish grins.

The band's founder, Peter Law, used to play part-time for the Graeme Bell Band, but reformed Sirocats each year to entertain at staff Christmas parties.

- MEGAN BIRD

Wheel deal: Stephen Kingham takes one of his Datsun sports cars out of his shed.

Quality shed time for IT trio

THREE CSIRO tinkerers visit each other's shed once a week to restore and build classic cars and aeroplanes.

The like-minded trio from IT Services Data Communications have been meeting like this for the past 18 months.

They formed their rotational shed group over a cup of coffee and a chat at work.

Aeronautical fanatic John Morrissey said: "We're strange characters."

Morrissey got his pilot's licence at the age of 16, before he had a driver's licence.

"I'm an aeroplane nut," he said. "But restoring them is not as uncommon as you would think."

Morrissey's colour blindness, which prevents him flying at night, stopped him becoming a commercial pilot.

"The shed group gives me a release from staring at screens all day," he said. "I get to exercise the hands, we pool expertise and talk a lot about our projects."

There's also a fair amount of blokey pride that keeps shed activity on the boil.

"We all make sure we have done something since last week so the guys don't give you a hard time," Morrissey said.

The friends are building a two-seater Vans RV4 kit plane at Morrissey's shed. Stephen Kingham's shed is the restoration site of three Datsun 2000 sports cars. And John Barlow's shed houses an E-Type Jaguar in bits.

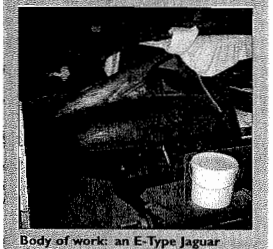
Morrissey said: "Barlow has the cleanest shed in the country. It's unnatural."

The trio's partners are encouraging.

Morrissey said: "They enjoy it because they actually see us doing things. They think: 'They might actually finish this'."

Morrissey has restored one plane since the group began its Wednesday-night trysts.

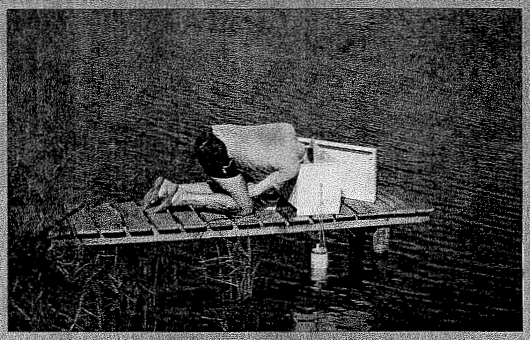
The other two are working on their vehicles. **- MEGAN BIRD**



Body of work: an E-Type Jaguar awaits further attention from John Barlow.

CSIRO around the nation

O caption my caption

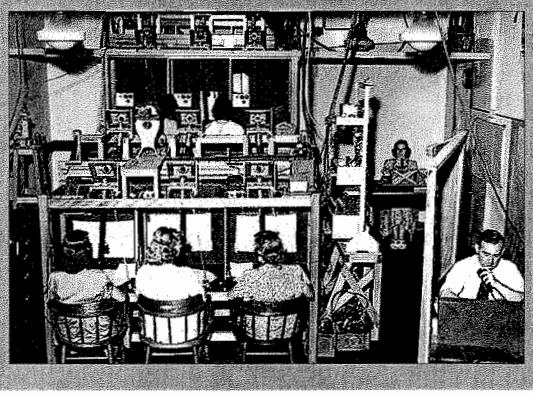


TOILET seats, krill and seasickness featured in captions written for last issue's photograph.

Diana Walter, from Land & Water: Damn Biotechnology. A giant mutant protozoan has got me by the dose.
Must get a real job on dry land. This being seasick on the end of a boat ramp is embarrassing.
Dr William Hearn, from Marine Research: CSIRO Marine Research job applicant fails micro-sea-state sea sickness test.
Warrick Glynn, from Health Sciences and Nutrition: Just like an ostrich, this CSIRO Commercial Development Manager believes if he can't see anyone, then no-one will notice him 'doing it'.
David Lamb, from the Australian Automotive Technology Centre: Now, Michelle, come and look down here and concentrate very hard on the float ...
Graham Pearce, from Sustainable Ecosystems: Bummer. I didn't mean to get so totally interfaced with 'Bigpond'.
Dr Lyndon Arnold, from Textile & Fibre Technology: We transferred him to this shore-based job, but he still gets seasick.
Martin Dillon, from CSIRO Entomology: Another CSIRO Marine Research Scientist falls victim to the deadly box jellyfish.
Greg Doran, from Manufacturing Science and Technology: It's much safer than when he drinks out of the toilet because the lid keeps hitting him in the back of the head.
Tricia Larner, from Sustainable Ecosystems: Oi! Who stole my bait?
Dr Alan Andersen, from Sustainable Ecosystems: CSIRO tests reveal that its inventions are a head of the rest.

And the winner is
Entomology's Martin Dillon for his caption: One of the many perks of working for CSIRO Marine Research ... 'Yummm - krill for lunch again'. Martin wins some magic balloons donated from Education Programs.

This archival photograph has baffled the CoResearch team. There's a CSIRO radiophysics stamp on the back of the image. But if anyone knows what is going on in this scene please keep it to yourself, and make up a more interesting classic caption.
Send captions and photos to CoResearch Competition, PO Box 225, Dickson, ACT, 2602 or e-mail Karen.Robinson@cc.csiro.au



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Science women top athletes

PLANT Industry's Dr Liz Dennis was made one of 26 Ambassadors for the Recognition of Women in January.

Dr Dennis is the only CSIRO member to be given the title.

Remarkably, the most number of ambassadors – seven - were from the science-and-medicine sectors, and included Professor Adrienne Clark and Professor Fiona Stanley.

The next most represented sector was sport, with four ambassadors, including Susie O'Neill and Lisa Curry-Kenny.

The initiative is part of a national strategy to increase the number of women recognised each year in Australian awards and honours.

Less than a third of those nominated for Australian honours last year were women.

Biodiversity pioneer

ONE of Australia's foremost entomologists, Dr Ebbe Nielsen, died on March 7 while attending a conference in California.

Dr Nielsen, 50, was a pioneer of Australian biodiversity research and Director of the Australian National Insect Collection.

Head of Entomology Dr Jim Cullen said: "We are deeply saddened. Ebbe will be greatly missed by all of us. He was a dynamic, highly accomplished and enormously enthusiastic person."

He died two days before he was to travel to Montreal to be part of Australia's bid to host the secretariat for the Global Biodiversity Informatics Facility.

● *The careers of Dr Nielsen and Dr Doug Waterhouse will be featured in the next edition.*

CSIRO's Big Day Out

A GROUP of 22 university students topped off their summer of CSIRO research with a Mathematical and Information Sciences (CMIS) Big Day Out.

The event, hosted by Triple J radio personality Bernie Hobbs, provided some food for thought on their careers in IT and maths. The event brought students from the Vacation Scholarships Program together from five different CMIS sites around Australia.

The highlight was a workshop where students discussed career options and heard from successful CSIRO scientists and staff from the CSIRO spin-off MediaWare Solutions.

Site of research action

MATHEMATICAL and Information Sciences has created a powerful dedicated search site for research.

Research Finder can search the web sites of all Australian research institutions at once.

The site was created for the Department of Industry, Science and Resources by CSIRO using their P@NOPTIC search-engine technology.

The site provides a keyword search of all CSIRO Divisions, Universities, CRCs and other government research bodies. Visit the search engine at: http://panoptic.act.cmis.csiro.au/research-finder

Accolades for coal expert

AN expert on coal science who has devoted six decades to his field has been presented with a prestigious award.

Professor Dalway Swaine, from Energy Technology, recently received an Excellence Award from the Energy & Environmental Research Centre (EERC) in North Dakota.

Inscribed on the award were comments from EERC directors and staff.

The award was given, "in sincere appreciation for his inestimable help and warm friendship generously given to the Centre for Air Toxic Metals".

It called him "the world's leading expert on the trace elements found in coal, and his comprehensive review published in 1990 will remain the principal reference work on this topic for years to come".

Australia Day honours

Four CSIRO scientists were recognised in this year's Australia Day Honours.

Dr Don Sands, from Entomology, was awarded a Medal of the Order of Australia and Dr Ian Common, who has retired from Entomology, was made an Officer of the Order of Australia.

Mr John Brockwell, an Honorary Fellow, from Plant Industry, was made a Member of the Order of Australia and Dr John Whiteoak, from the Australia Telescope National Facility (ATNF), was given a Public Service Medal.

Dr Sands' medal was for services to horticulture in Australian and the Pacific region through development of biological control solutions for pest insects and for conservation projects.

Dr Common was recognised for his study of Lepidoptera insect pests, their effects on agriculture, developing controls, and for community education through books dealing with insects and their role in the environment. He played a major role in the development of the Australian National Insect Collection.

Mr Brockwell was noted for his research on rhizobium ecology, its application to pasture, grain and oilseed legumes, and for promotion of the game of bridge.

Dr Whiteoak was given his medal for public service in radio astronomy, particularly his contribution towards ATNF and his work preserving the high-frequency radio spectrum for scientific research.

Prestigious soil award

LAND and Water's Dr Ravi Naidu has been named a Fellow of the Soil Society of America, the third person from Australia to achieve this honour.

Dr Naidu joined CSIRO in 1989 to work on soil structure and soil sodicity. His research soon shifted to environmental contaminants, in particular the fate and behaviour of metal and organic contaminants and innovative techniques for remediating contaminated sites.

He leads CSIRO Land and Water's Remediation of Contaminated Environment Program, which focuses on the fate and behaviour, bioavailability and ecotoxicity, exposure pathways and remediation of metals, pesticides, and industrial organic contamination in both soil and water.

Trio joins Academy

THREE CSIRO staff were recently elected members of the Australian Academy of Technological Science and Engineering.

They are Dr Greg Constable, from the Cotton Research Unit at Plant Industry, Dr Elizabeth Heij from Land and Water and Forestry, and Forest Products Chief Dr Glen Kile.

Carroll gets top job

FORMER CSIRO biomedical researcher Dr Simon Carroll has been appointed the first director of the Western Australian Biomedical Research Institute.

The institute, a co-operative venture between Murdoch University and Curtin University of Technology, is funded by the Department of Commerce and Trade.

OBITUARY Nigel (Harry) Kloot 1918-2000

Man who carved a life in wood

ONE of the pioneers of Australian research in the use of timber as a building material, Harry Kloot, died peacefully on December 6.

His passing recalls for us the excitement of those early years of research in CSIRO.

It was in 1934, aged 16, that Harry joined the Division of Forest Products of the then CSIR as a junior laboratory assistant. When he retired, 44 years later, he was a Principal Research Scientist in the Division of Building Research.

He obtained a bachelor of science in 1940 and a masters' degree in 1952, both from the University of Melbourne.

Harry always worked on projects with immediate practical application so it was inevitable that during World War II he was involved in round-the-clock quality-control testing of timber for aircraft and other wartime structures.

In the post-war years he contributed in some way to almost all aspects of the structural use of timber.

He was heavily involved in developing the technology and writing the standards that underpinned the use of radiata pine as a building timber, a commercial application that moved radiata pine from obscurity to become Australia's leading framing material.

He was one of the first to lobby the cause of applying engineering principles to the design of housing in cyclone-prone areas. In fact, he was a player in all the key developments of the emerging structural timber industry in the 1960s and '70s.

Harry Kloot published extensively and frequently toured Australia as part of lecture teams to publicise the practical application of research findings. One of his best-known publications was as co-author of the spectacularly successful text, the Timber Engineering Design Handbook.

In 1981 he was awarded the inaugural Stanley Clarke Medal in recognition of services to the Australian timber industry. And, because of his considerable services to the CSIRO Officer's Association, he was made an Honorary Life member of it.

The lasting impression Harry's colleagues have of him are linked to those regular morning and afternoon teas in his office. There, amid a cloud of cigarette smoke, the likes of Les Armstrong and Lon Wymond would join him to discuss the latest developments in the Australian timber industry and the world at large.

CoResearch

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CSIRO

CoResearch

CSIRO's staff newspaper

No.386 Winter 2001

Move over Tom Hanks: scientists scoop pool at 'Oscars'

By Megan Bird

FIVE CSIRO scientists were among the 33 Australian Citation Laureates honoured recently in what the media penned "the Scientific Oscars".

"The citation is the scientists' equivalent of an Oscar," the Age reported.

"Warrick Couch's name does not have the familiar ring of a Russell Crowe, Tom Hanks or Geoffrey Rush," observed The Sydney Morning Herald, "but when it comes to being judged by his peers he's a step ahead of the actors."

The scientists were honoured for their contribution to world knowledge with these awards, the first of their kind.

CSIRO scientists stood out for their work on pulsars, ozone depletion and climate change, greenhouse and related trace gases, cereal crops, legumes and soil biochemistry. They were Dr Dick Manchester, from the Australian Telescope National Facility; Dr Paul Fraser and Dr Paul Steele, both from Atmospheric Research; Dr Jeffrey Ladd, retired from Land and Water, formerly Soils; and Dr Neil Turner from Plant Industry.

The awards measured the influence of scientists' work.

Scientists that had written more than six high-impact papers, those among the 200 most-cited ones in the world for each year from 1981 to 1998, were honoured.

Dr Manchester said: "Personally, it's nice to be honoured but, more importantly, it shows that the work we're doing is at the cutting edge of world research."

Chief Executive Dr Geoff Garrett said: "I'm delighted to hear about this. It's a serious recognition of the quality of research that CSIRO scientists produce.

"It's just the sort of output that keeps Australian science relevant on the world stage."

The awards, presented at the Australian Academy of Science in Canberra, managed to avoid the glittering hype of Hollywood, however, in what the Age described as "a befittingly low-key ceremony".

Not enough priority for science: poll

ONLY eight per cent of politicians believe science and technology are adequately funded, according to a survey of 50 politicians conducted earlier this year.

A majority of 52 per cent said S&T was under-funded in Australia. The rest, 40 per cent and mostly state politicians, did not have an opinion on funding.

S&T did not receive sufficient priority in Australia's policy-making process, according to 60 per cent of those interviewed.

The largest majority, 66 per cent, believed S&T to be important to Australia's future, particularly for ensuring levels of economic activity and wealth creation.

Federal politicians, metropolitan-based ones and those who had recently been involved in science contact programs were the strongest believers in the importance of S&T.

Another key finding by a large minority of those interviewed was that the science community does not interact successfully with politicians and decision-makers.

This was the view of 40 per cent of those interviewed, most of whom were state politicians.

Suggestions about how this could be improved included:

- continuing federal and state events where scientists brief politicians;
- establishing a program that specifically engages new members of parliament during their first serving year; and
- encouraging scientists based in politicians' electorates to engage with them, actively and regularly, to demonstrate locally based science activities and their national benefits.

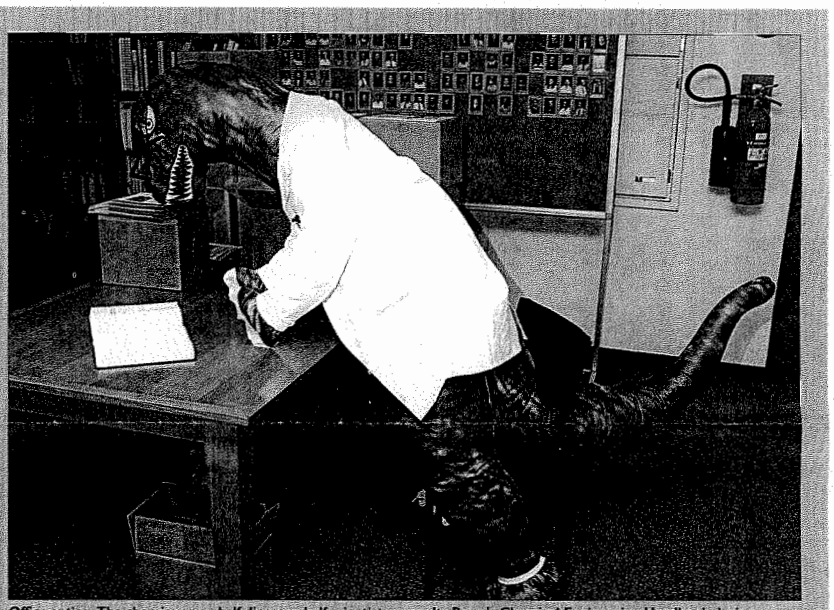
Most of those interviewed, 60 per cent, received a regular policy briefing from a scientist during a typical year. But 40 per cent, again mostly state politicians, did not.

One question invited suggestions for how Australia could become a clever country. Some politicians thought Australia could continue to invest in education, training and human capital. Others said more private-sector funding of science was needed. And greater government funding of science was suggested.

The study was conducted for CSIRO by Market Attitude Research Services.

Thirty of those surveyed were federal politicians and 20 were state. No names or affiliations were recorded.

- MEGAN BIRD



Office antics: The chemisaurus - half dinosaur, half scientist - consults Perry's Chemical Engineering Handbook during Library Week.

Invasion of the infopeople

A WOMAN screams. The eerie strains of the Pink Panther filter through the air.

Staff shuffle nervously in their offices as the library patrol storms through the building, hijacking their computers to demonstrate vital electronic information resources.

Staff at Manufacturing Science & Technology have learnt to expect the unexpected during Library Week.

As well as living in anticipation of the random office raids, this year staff were subjected to live demos of electronic resources in the tea room, a bewildering hybrid staff competition and, of course, national simultaneous story time, complete with emu impersonations.

The week was best summarised by the library limerick that won Colleen Bettles a bottle of hybrid wine:

There was a scientist old and sage,
Who mourned the passing of the Caxton age.
"But your journal's not dead,
Just electronic" Mel said,
As she clicked on the library's web page.

- STEPHANIE LAVAU, CMST

Geelong staff help contain foot-and-mouth disease

By Megan Bird

FOUR Australian Animal Health Laboratory (AAHL) staff recently returned from spending a month each in Britain as part of Australia's million-dollar foot-and-mouth disease (FMD) assistance program.

Veterinarians Tim Bowden and Philippa Miller worked in the field evaluating, diagnosing, containing and supervising the slaughter of sick animals.

Neither had seen an infectious outbreak before or a case of FMD.

Philippa said: "It was a steep learning curve for most of the Australian vets over there."

Tim said: "Hopefully we'll never see it here again, but if we do this experience will be invaluable."

Tim and Philippa are both completing PhDs in virology.

Tim said: "When you're working in the field the circumstances are very different from the theory. That hit home when I was there.

"When you're working in the field, putting theory into practise is not always simple. All sorts of issues crop up that you wouldn't think of otherwise."

The pair and technical assistant Brenda van der Heide were in Britain during the worst of the outbreak. Technical assistant Greer Meehan was there a little later.

About 50 cases a day were being reported during the pandemic's peak. Less than five cases a day are now reported.

More than 5 per cent of Britain's livestock were killed during the crisis, more than two million sheep, 460,000 cattle, 118,000 pigs and 2,000 goats were slaughtered.

> "The farmers were very cooperative. They found it very traumatic and emotional and you do as well. In some ways you work through it together."

Australia sent almost 100 vets and 37 regulatory officers to help contain the disease, under the International Veterinary Reserve agreement between Britain, Ireland, New Zealand, Canada and Australia.

Government coordinator Neil Tweddle said: "We've got all these Australians with unique experience and training, and that's worth a lot."

Philippa said the containment team worked "around the clock".

She was based in the hard-hit Devon area, in Britain's south-west.

"It was sometimes quite stressful, but the people in Devon were pretty incredible considering the stress they were under," she said.

Tim was based in Stafford, north-west of London, and had to supervise only one slaughter. "It's something no-one enjoys doing," he said.

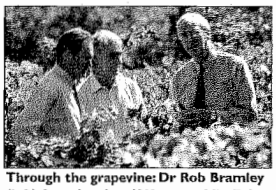
"The farmers were very cooperative. They found it very traumatic and emotional and you do as well. In some ways you work through it together."

The experience reinforced in Tim the value of having action plans ready.

"You realise the need for prevention and preparedness and maintaining strict quarantine practices," he said.

Neil, from Agriculture, Fisheries and Forestry Australia, said Australia had comprehensive manuals and procedures in place that were being constantly updated.

The crisis had, however, highlighted the need for a broader response that incorporated trade, social and community issues. A national-management group has been identifying these issues, to be discussed at the Council of Australian Governments meeting in June.



Through the grapevine: Dr Rob Bramley (left) from Land and Water and Dr Brian Loveys (centre) from Plant Industry discussed their innovative research in precision viticulture and partial rootzone drying with Dr Garrett.

Chief's taste of Adelaide

PLANT Industry and Land and Water made the most of Adelaide's superb autumn weather and took some presentations into the field at the Waite Campus experimental vineyard.

Amid the vines, Chief Executive Dr Geoff Garrett was able to appreciate research breakthroughs that have led to improved water use for vineyards, increasing both their profitability and sustainability. Viticultural research is particularly important to South Australia given its lucrative wine industry.

Dr Garrett was on a two-day visit to CSIRO divisions based in Adelaide.

He toured Waite Campus at Urrbrae and, after meeting with other Waite Campus research partners and addressing CSIRO staff, was briefed on research highlights and collaborative ventures.

OBITUARIES

Dr Jim M. Rendel 1915 – 2001

Rendel's legacy lives on

DR J. M. Rendel, after whom our CLI Rockhampton Laboratory was named, passed away on February 4 this year.

Dr Rendel was instrumental in helping to establish cattle-breeding research in northern Australia. He arrived in Australia at the end of 1951 on three years' secondment to CSIRO from the Institute of Animal Genetics in Edinburgh, Scotland, where he was a senior geneticist.

He was appointed Assistant Chief of the Division of Animal Health and Production in 1953.

He was asked to lead a research team in cattle breeding investigations being established at Belmont, the research field station bought by the then Australian Meat Board.

His original breeding program was so well prepared that it is still largely followed today.

Dr Frederick Harold William Morley HDA, BVSc, PhD, DAgrSc, FTS, FACVS, FASAP, FAIAS, FAAABG 1918-2001

Inspirational leader

AUSTRALIA lost an outstanding scientist, farmer, keen sportsman, fierce critic and friend and colleague of many in CSIRO with the death of Dr Frederick Morley on March 14.

Dr Fred Morley graduated from Sydney University with a BVSc in 1942 and began work as a Veterinary Officer with NSW Agriculture.

In 1950 he undertook a PhD with Professor Lush at Iowa State University in animal breeding, genetics and statistics.

He was appointed Assistant Chief in CSIRO Plant Industry in 1963.

- JOHN DONNELLY, CPI

Project to stop the hop

IN a hot muggy laboratory in Canberra, a group of scientists are sweating on the arrival of their newest charges, a horde of tiny tadpoles.

CSIRO is investigating gene technology as a means to halt the march of Australia's cane toads (pictured right) in a two-year project funded by the Natural Heritage Trust.

The Sustainable Ecosystems group is looking for a gene critical for the toad's metamorphosis from tadpole to adult.

If the gene can be switched off, development will be arrested before the toad reaches sexual maturity.

Australian Animal Health Laboratory researchers in Geelong are focused on using a naturally occurring, but weakened virus as a "taxi" for the development-controlling gene. Researchers believe that the toad's immune response to the inserted gene product will deactivate it, preventing the tadpoles from developing into adults.

- MONICA VAN WENSVEEN, CSE

Research roundup

Replacing the Pap smear

RESEARCHERS from Mathematical and Information Sciences have played a key role in developing a revolutionary cervical cancer detection system that gives instant results and is more accurate than the Pap smear.

The TruScan system is being developed by Australian company Polartechnics and is more accurate than Pap smears by at least 20 per cent, according to trials.

The pen-like probe collects information about colour and electrical properties of cervical tissue. This is analysed using CSIRO-developed mathematical algorithms to classify the tissue as healthy, pre-cancerous or cancerous.

TruScan will be released in Europe this year and in Australia in 2002.

Hearty attack on diets

HEALTH Sciences and Nutrition has begun testing a new weapon in the war against heart disease, plant sterols.

About 60 South Australian volunteers are taking part in the study, being done in collaboration with the Baker Research Institute and Sydney University.

The cholesterol-lowering effect of plant sterols has been known for more than 40 years, but the ability to incorporate them easily into foods is a recent development.

Food manufacturers have extracted sterols from plants, concentrated them and added them to food for the trial.

Coastal waters study

LAND and Water will help conduct a $4 million investigation of the ecological health and sustainability of Adelaide's coastal waters on behalf of the South Australian Government.

The study is in response to concerns about the condition of Adelaide's rivers and coastal waters.

Director of the CSIRO Environmental Projects Office Dr David Fox said: "Working closely with South Australian state agencies we will study a wide range of chemical, physical and biological processes in the water systems, to assess their current condition and see how sustainable they are".

Database to stop decline

AN innovative approach to native plant revegetation in one of Australia's top cropping districts is set to reverse the region's trend of declining native vegetation.

A new database will help farmers find out what local native plants once grew in their area, and how to re-establish them. Just 2.8 percent of the native vegetation cover remains in the Harden Shire.

The database has been developed by the Centre for Plant Biodiversity Research (CPBR) and the Harden Murrumburrah Landcare Group with funding from the Natural Heritage Trust.

Information for the database came from the Australian National Herbarium in Canberra, part of the CPBR.

For more information, visit www.anbg.gov.au/greening-grainbelt.

The last word

"But the underlying message of the National Museum of Australia, opened yesterday ... is one of sneering ridicule for white Australia ... A guest muttered, it's more a museum of what's missing. Howard Florey? CSIRO? Qantas? Not a mention."

- Miranda Devine, Daily Telegraph, March 12.

(For the record a syringe and fumigator donated by CSIRO and relating to control of rabbits is on permanent display at the museum and CSIRO's Mathematical and Information Sciences Division developed the unique interactive Welcome Space area. See the story on page 3 :Ed)

"CSIRO's history is peppered with scientific breakthroughs that have earned megabucks for the companies that commercialised them, but not much for the organisation itself."

- The Age, April 21.

"There's nothing wrong with the brain drain. It's ensuring that the brain-regain equals or exceeds it."

- Australian, May 10, quoting Chief Scientist Robin Batterham's National Press Club address.

"[Dr Batterham] also rejected claims that the CSIRO should have received a funding boost as part of the $2.9 billion [innovation-incentive] package."

- Australian Financial Review, May 5, reporting on the same address.

Passionate visionary leaves biodiversity legacy

Dr Ebbe Schmidt Nielsen, 1950-2001

ABOUT 300 colleagues, some from overseas, recently attended Ebbe Nielsen's memorial service in Canberra.

At twilight on the same day a handful of friends attended an intimate ceremony to scatter Ebbe's ashes around the Tidbinbilla Platypus Pond, accompanied by the eclectic strains of Mozart and jazz.

Ebbe Nielsen was passionate about life, a passion that drove him from the learned surroundings of the Australian National Insect Collection (ANIC) at CSIRO in Canberra, where he was Director, to being the most successful global advocate for the science of systematics, especially insect taxonomy.

Arguably his most outstanding work in recent years was as a champion for the Global Biodiversity Information Facility, an initiative of the OECD countries that now includes many other countries.

He was, in fact, enroute to Montreal to help present the Australian bid to host the GBIF Secretariat when he died.

Colleague Dr Joanne Daly, from the Department of Industry, Science and Resources, said: "GBIF would never have got where it did without Ebbe. He really ran it hard.

"He had this enormous presence internationally. I don't think there was a good understanding in Australia of the very significant role he played on the world stage in taxonomy," she said.

One of his many passions was biodiversity, a concept that did not gain world popularity until the 1990s. As the rest of us caught up with its meaning and importance, Ebbe was already advocating that if we wanted to continue to use these resources in a sustainable way, it was vital that we develop our knowledge of species and their characteristics.

PHOTO: Brad Collis

So biological collections, such as the ANIC, were an important, objective source of information about life on earth. But he and his colleagues were concerned that the growth of the world's great collections was outpacing our ability to handle the data inherent in them.

A Global Biodiversity Information Facility (GBIF), incorporating state-of-the-art informatics software, was urgently needed. GBIF came officially into being on March 1 this year.

A decision on whether Australia is successful in its bid to host the GBIF Secretariat will be made in June.

At the meeting of the GBIF Governing Board to which Ebbe was travelling when he died it was decided to establish an Ebbe Nielsen prize to promising young scientists in biodiversity informatics.

-MALCOLM ROBERTSON, CE, and MEGAN BIRD

Warm and lasting benefits from Aerogard legend

Doug Waterhouse, 1916 - 2000

ABOUT 300 people recently attended Doug Waterhouse's memorial service where his book, Classical Biological Control Of Arthropods In Australia, written with Doug Sands, was launched.

Douglas Frew Waterhouse was remembered at the Australian Academy of Science as an extraordinary person.

He was a passionate biological scientist who will forever be remembered as the person who identified the active ingredients in the insect repellent Aerogard, and a humanitarian with a deep desire to help communities in Australia and overseas.

Doug was a warm and friendly individual with just enough of the Australian larrikin in him to put those around him at ease, but cause his superiors grief. He died in Canberra on Friday, December 1.

He was born into the family of Gowrie and Janet Waterhouse in Sydney and was one of four sons.

Doug's Uncle Athol, his father's elder brother, was a noted naturalist and scientist who started collecting butterflies at the age of 16 and who, by 24, had sufficient data to publish the first comprehensive catalogue of Australian butterflies.

Throughout his school years Doug's interest in entomology grew. He graduated from Sydney University in 1938, with first-class honours and a University medal.

Doug followed up student vacation employment with CSIR, with a secure position in 1938.

He was launched straight into research into the pest sheep blowfly, then costing Australia's sheep producers dearly in lost production, to be followed with work on repellents during the war years, especially against mosquitos, and after the war some work on the wool moth and more on the sheep blowfly.

Flies and repellents continued to be a focus for Doug and he ultimately identified from the scientific literature the key ingredients of what we all now know as Samuel Taylor's famous Aerogard product for protection against the Australian bush fly. By this time in his career, Doug was saddled with senior management responsibilities at CSIRO Entomology, so his time at the bench was limited.

In his leadership capacity at CSIRO Entomology for 21 years from 1960 to 1981, Doug championed a number of significant research programs that continue to have lasting benefits to Australian agriculture, to our unique biodiversity, and to all Australians today.

His visionary approach to biological control has seen huge payoffs not only to Australia in terms of pest and weed management, but also to many of our neighbouring countries, where successful projects have restored local economies and livelihoods.

He retired from CSIRO in 1981, but continued in an honorary capacity providing expert advice to governments and agencies in Australia and overseas.

- MALCOLM ROBERTSON, CE

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Best ever stand at Hannover Fair

By Rosie Schmedding, CNA

CSIRO recently mounted its most successful Hannover Fair stand.

It was the fourth time CSIRO and some of its commercial partners have exhibited at the fair.

CTIP's Dr Gerry Haddad said: "We think it was the best we've ever done.

"Hundreds of people came through, leading to around 530 good contacts. This was an increase over the previous year where we made 360 contacts.

"Some of the enquiries came from people representing really major businesses, which was very exciting."

Developing these contacts could lead to sales of products into export markets, joint research ventures and investors and licence agreements.

Technologies showcased included the Holden ECOmmodore, the "Hospital Without Walls" project, the tube eccentricity measurement system, Quickstep, nanoparticles, a sub-surface radar and the thin-film measurement instrument.

CMST's Dr Terry Turney, who was with the nanoparticles' display said: "I was surprised at the effectiveness of this event as a medium for promoting CSIRO and its customers.

"We confidently expect at least three contractual outcomes, all very good," he said.

"In addition we got research collaborators who will save us a lot of money doing testing for us that would have cost us heaps to do ourselves.

"It was definitely worthwhile."

Sexy science celebrations

CSIRO put sex on this year's National Science Week agenda.

The Science of Dating cabaret toured the Northern Territory and The Curiosity Show's Deane Hutton and Rob Morrison were dusted off and paraded for Sexy Skivvy Science, a highlight of Australia's first international science film and multimedia festival, Scinema.

Hutton and Morrison's favourite clips, some off-screen tales and bloopers were highlights of the evening.

Scinema attracted 140 entries from about 40 countries.

Australian films dominated the award ceremony. ABC television won the Best Film with Eye Of The Storm; Questacon won the Best URL; Dr Karl Kruszelnicki's Great Moments In Science – Murphy's Law won the Best Short Film, and Australia's Classroom Video won the Most Innovative Film with The Atom With The Golden Electron.

Air waves: Bioremediation project leader Dr Robyn Russell, talks about her work and her favourite insects with the ABC's Julie Howard on Classic FM Drive. PHOTO: Damien Beaumont

Hundreds of visitors took part in CSIRO open days during National Science Week at venues including the Telecommunications and Industrial Physics laboratory in Lindfield and the Energy Technology laboratory in North Ryde.

Open doors: Sustainable Ecosystems ran special tours of the wildlife collection. PHOTO: Giulio Saggin, Australian Science Festival

ABC Classic FM's Julie Howard included insect-inspired music in her play list when she broadcast live from Entomology's open day in Canberra.

The Top End was also a focus of CSIRO events. Dr Karl and Triple J's Adam Spencer launched Science In The Northern Territory and fairs were held in locations ranging from Alice Springs to Nhulunbuy.

Alcoa World Alumina Australia announced a $50,000 sponsorship deal during science week at Perth's Scitech Discovery Centre.

Alcoa has entered into a partnership with CSIRO Education to boost innovative student science through CREST, a program that encourages students to undertake their own experimental science or technology project.

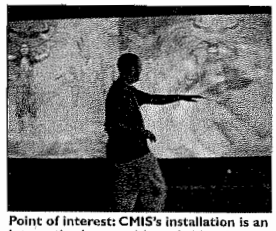
The deal also includes support for the magazine Scientriffic.

CSIRO's Lab On Legs toured to scores of Victorian schools with eye-catching demonstrations on bubbles, combustion and the singing chimney.

Double Helix took the Cool Chemistry project to Adelaide and throughout rural South Australia.

And art was a focus in Tasmania and throughout Australia with the Metis exhibitions and Illusions: Art Meets Science.

About 500,000 Australians visited National Science Week events in May.



Point of interest: CMIS's installation is an interactive juxtaposition of old and new.

Museum favourite a CSIRO concept

By Megan Bird

MATHEMATICAL and Information Sciences (CMIS) has developed one of the National Museum of Australia's most popular interactive exhibitions.

The Welcome Space, in the First Australians area, is unique in the world and is creating an international stir.

The installation, which has been likened to walking through a modern corroboree, was designed, according to its developer, to give visitors a next-generation museum experience.

Dr Steve Barrass said: "The typical museum experience is studious and very solitary.

"The interactivity here generates curiosity and motivates interaction between people.

"It was designed to give a positive feeling about Aboriginal culture, that it's alive today and will be part of the future of Australia as well as the past."

A surreal smoking, traditional cleansing, ceremony; six life-sized dancers projected on to walls; modern Aboriginal compositions; ripples; sounds and other effects are features. Multi-media effects are triggered by visitor footsteps on the floor.

Dr Barrass said: "The life-size dancing is infectious and appeals to all ages.

"I have seen toddlers running and jumping to activate colours and sounds, and an 80-year-old mum teaching her 60-year-old daughter some of the dance movements."

The installation relies on immersive multi-media. It uses no text or objects, no keyboard or mouse.

"But how we got the gig makes a good story," Dr Barrass said.

A chain of critical events, including a review, an illness, a chance conversation and some communication skills, secured the job for CMIS.

A late review of museum exhibits found they weren't interactive enough.

Shortly later Dr Barrass spoke to museum director Dawn Casey at a meeting in Sydney he attended as a last-minute replacement for a sick colleague.

Dr Barrass said: "I described our research in virtual environments to her, and after further demonstrations and meetings with museum staff and exhibit designers Dawn asked us to work on the Welcome Space."

"They had a strong need for something they couldn't get internationally and yet we were only two minutes away, at the Australian National University."

A shark's tale by satellite

By Megan Bird

A YOUNG great white shark is sending an electronic travel log to Marine Research in a world first.

Neale, a 2.4m, 150kg youngster, has a satellite tag attached to his dorsal fin. His location is transmitted back to scientists every time he surfaces.

Heather, also tagged by Marine Research in March last year, was the first shark to be satellite monitored.

She stopped transmitting last year after 800km and 46 days when scientists believe she damaged the transmitter's aerial.

Neale was tagged on March 2, off Port Albert, Victoria. He sends signals every two to three days and has travelled more than 1500km.

He was named after local commercial fisherman Neale Blunden who helped capture him.

The shark was caught under a special permit from the Victorian Department of Natural Resources and Environment, tagged and released within six minutes.

Scientists plan to monitor his daily and seasonal movement patterns for up to year, barring damage to the 20cm-long tag.

Marine Research's Dr John Stevens said: "Applying satellite tags is a difficult process and tags are expensive, but this type of tracking is allowing us to build a picture of the movement and behaviour of white sharks in Australian waters."

Melbourne Aquarium and the Discovery Channel are helping the project, part of a larger study on white sharks in southern Australia.

For the latest on Neale's travels, visit http://www.marine.csiro.au/mumees/sharks/index.html

Feathered companion volume

By Megan Bird

A PICTORIAL and historical feast of bird art was recently unveiled in Canberra at the launch of CSIRO Publishing's Feather And Brush: Three Centuries Of Australian Bird Art.

In a measure of the book's potential success, half of the first print run had sold before its launch at Tilley's Devine Café Gallery.

Author Dr Penny Olsen said: "I wanted to show that there wasn't any great divide between fine art and biological art."

Her coffee-table book is packed with well-researched analysis of the relationship between art and science beginning with the early explorers and in settled Australia and with a sprinkling of anecdotes such as the tale about William Dampier, the pirate turned explorer and naturalist.

Penny, a wildlife consultant and ornithologist with a particular interest in raptors, has published more than 100 research papers, many popular articles and written or edited several books.

Her interest in the book's subject matter grew into a passion as the project took shape over three years.

"It really was a labour of love," she said. "Some of the most interesting things happen when two fields, such as art and science, meet.

"In the early days birds were often painted from some poor thing that had been shot and taken back to England where it was awkwardly stuffed and plonked on a perch. They had no idea how Australian species looked or moved, and they were often mounted and drawn to resemble English birds, which are quite different."

Penny traces developments and fashions in bird art since then. "The better modern artists go beyond the anatomical and capture the personality of the bird," she said.

Take-off: Penny Olsen's book includes this print of Steve Morvell's 1991 pastel entitled Silver Gull.

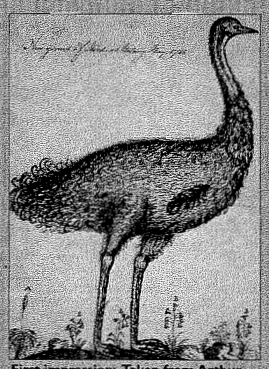
Her vision for the book was tested in her hunt for a publisher. "It was a huge relief when I met Nick Alexander [from CSIRO Publishing]," she said.

"He's put his heart and soul into it and he's produced something that was pretty much what I had in mind."

Penny spoke of her frustration of talking to publishers who wanted to hijack her research to produce a purely historical text or worse.

Penny wanted the book to have an historical slant, but was adamant that 34 contemporary artists and their stories be given equal space to complete the picture.

Penny worked for CSIRO Wildlife Research for 12 years until 1982.



First impression: Taken from Arthur Bowes Smyth's 1788 journal, 'Emu' is the first known illustration of this species by a European.

New insecticides set to revolutionise $20 billion industry

A NEW generation of hormone-based insecticides has the potential to reverse the wide-ranging damage inflicted by broad-spectrum pesticides according to CSIRO scientists.

The new breed is highly specific and environmentally friendly in comparison to the 1940s insecticides such as the deadly DDT and dieldrin that revolutionised crop protection.

The world's agriculturists, who spend more than $20 billion a year on agri-chemicals, are monitoring the progress.

The research has the potential to be used commercially in crop protection, veterinary chemicals and against vectors for human parasites such as mosquitoes that carry malaria and Ross River disease.

Developing the insecticides involves cloning receptors and molecular design similar to that used to produce the successful anti-flu drugs.

In the heady 1940s, powerful, but pervading, chemicals were used indiscriminately. By the 1950s and '60s the effects were beginning to show in the contaminated environment, residues in humans and animals and the beginnings of pesticide resistance.

In the 1960s Harvard University insect biologist Carroll Williams pointed out that more than 99 per cent of insect species are innocuous, even beneficial to humans, and that only 0.1 per cent of insects are pests.

He suggested that a new generation of insecticides, specific to these pests, could be developed from the chemistry of the insects' own hormones.

Nearly 40 years since the insecticide revolution, scientists from CSIRO's Molecular Science and Health Sciences and Nutrition have collaborated with Dupont to adapt Williams' idea.

They are targeting the ecdysone receptor in a way intended to overcome a previously unforeseen problem with hormone-based insecticides.

CSIRO molecular biologist Dr Ron Hill said: "A major problem with Williams' approach is that insects have a system for breaking down their own hormones once they have performed their regulatory function.

"So we're trying to develop new chemistries involving the use of synthetic hormones that will interact with the insect ecdysone receptor, but that can't be broken down by the insects' own catabolic systems."

The hormone ecdysone and its receptors play a central role in controlling the insect life cycle during which hormone concentration normally rises and falls many times. The hormone, acting through ecdysone receptors, coordinates the activity of hundreds of genes whose orderly expression is critical for insect development and reproduction.

Molecular Science is cloning the genes encoding ecdysone receptors from insects and the atomic structure of the receptors is being determined by Health Sciences and Nutrition.

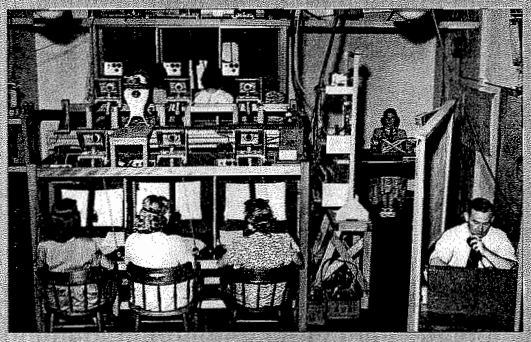
The structure will allow design of candidate insecticides by a process similar to that used to develop anti-flu drugs binding to influenza neuraminidase. And the ability of the insecticides to bind to cloned ecdysone receptors will be assessed to allow rapid screening.

Synthetic molecules that interact with the receptor, but resist catabolism, will switch on the genes controlling critical events at the wrong time.

"So the insects will moult prematurely or they'll undergo metamorphosis ahead of time causing major disruption to their orderly process of development," Dr Hill said.

CSIRO around the nation

O caption, my caption



Last issue's photograph depicted Radiophysics's staff simulating air-traffic control some time between 1948 and 1949. See the story at the bottom of this page for more information.

Tom McGinness, from Mathematical and Information Sciences: Early prototype of the CSIRO digital bingo machine, codenamed legs 11.

Dr Alan Andersen, from Sustainable Ecosystems Tropical Ecosystems Research Centre: CSIRO's prototype computer chip.

Diana Walter, from Land and Water: Operator to Supervisor: "I have a Mr E.T. on this frequency. He wants to phone home."

Crist Constanti, from Manufacturing Science and Technology: Okay, ready Mr Music.

Jill Watson, from Corporate Executive: CSIRO staff prepare for a radio version of The Weakest Link.

John Deane, from Telecommunications and Industrial Physics: Radiophysics demonstrates its Windows-1950 Operating System.

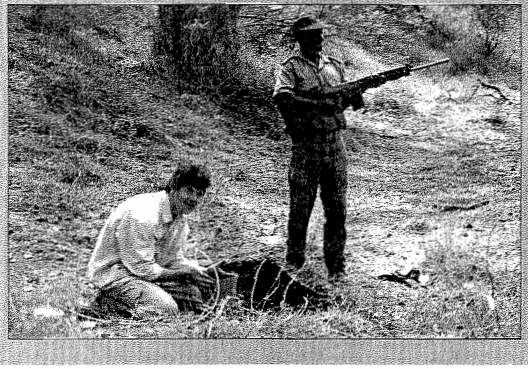
Laura Allison, from CSIRO Education: Fellow with microphone: "Now hurry up girls, we still have another 1,000 pages to go at Dr Garrett's letter to John Howard 'Reasons why every CSIRO employee should have a red Mazerati'."

Darrell Wells, from Molecular Science: Early radio telethons were conducted in primitive surrounds with a minimum of frills and equipment.

And the winner is

Land and Water's Ron Casotti: After many years of submitting work requests to Site Engineering, Basil finally succeeded in getting the carpenters to build his private office.
Ron wins a plastic rainbow-coloured slinky spring, donated by Education Programs.
The judges decided to also award a special commendation to **Neil Wendt, from Mathematical & Information Sciences**, for his caption: The Radiophysics BHAG Department - working on its winter collection.

The photograph below was sent in by Richard Stirzaker from his last field trip to South Africa.
Send captions and photos to CoResearch Competition, PO Box 225, Dickson, ACT, 2602, or email Karen.Robinson@cc.csiro.au



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Second prestigious award

CSIRO scientists have won the world's most prestigious award for forestry and forest industries research for the second year running.

King Carl XVI Gustav of Sweden will present the A$370,000 Marcus Wallenberg Prize to Dr Rob Evans, from Forestry and Forest Products, in October.

Last year's winner was Dr Bob Leicester from Building, Construction and Engineering.

Dr Evans was chosen for his pioneering work in characterising the quality and structure of wood.

This led to the development of SilviScan, an instrument that allows the rapid analysis of wood samples to help determine the optimum and most valuable end use of wood.

The second sponsored project was the inaugural annual Malcolm McIntosh memorial lecture, held recently at the Discovery Centre in Canberra.

Director of the Missouri Botanical Garden Dr Peter Raven presented the address, Sustainability In An Interconnected World.

Pair retire after 40 years

TWO staff who joined the then National Standards Laboratory on the same day have retired from Telecommunications and Industrial Physics after 40 years' service each.

Mr Frank Wilkinson joined the laboratory in 1961 as a technical assistant. He completed his Bachelor of Science in 1968, and spent 16 months working in optical radiometry at the West German National Standards Laboratory in Braunschweig.

Frank developed the National Standard Laboratory's measurement units of spectral radiance and irradiance and has a special interest in the biological effects of UV radiation.

Mr John Fiander joined the laboratory on the same day as Frank, March 20, 1961, as an experimental officer.

John worked on the development of new measuring equipment for use on power and audio frequencies, and calibration and standards work on voltage and current transformers.

$75,000 sponsorship

KIDS can now slime the kitchen at home then talk to a scientist to find slime's place in nature and how it's used in the real world, all without leaving the house.

The service is one of two new CSIRO projects Members Australia Credit Union has sponsored to the tune of $75,000.

CEO of Members Australia John Gilbert said: "We see this as an investment back into the CSIRO community."

Science by Email will provide regular emails containing experiments for kids, the latest science news, webchats with scientists, a moderated chatroom and materials to help teachers explain the wonders and worth of science.

Anyone can subscribe to the service through the Double Helix Club or Scientriffic magazine, or by sending an email to education@csiro.au

Run of anniversaries

CSIRO will celebrate another birthday this year when its premier running event, the Black Mountain Cup in Canberra, turns 25.

The 5.6km event, organised by Health Promotion Committee CSIROfit and sponsored by Members Australia Credit Union, attracts more than 100 runners and walkers from all Canberra divisions.

Prizes for placegetters and spot prizes are donated by Members Australia Credit Union.

Birthday bash: Nerida Gibb, Sue Brown and Rebecca Osborne show the strain as they approach the finish of the Black Mountain Cup course.

The Black Mountain Cup is awarded to the division with the lowest aggregate time for the first four runners across the finish line. The Tom Van Gerwen Trophy goes to the division with the lowest aggregate time for the first three female runners.

Sustainable Ecosystems performed exceptionally well last year, winning the Black Mountain Cup, the inaugural Chiefs' Challenge Trophy and line honours. The Tom Van Gerwen Trophy was won by Land and Water.

This year's race will be on July 27, and entry is free.

For more information contact Nerida Gibb on 02 6246 4236 or Greg Foster on 02 6246 5565. - **NERIDA GIBB**, CE

Tasmanian appointment

A TASMANIAN librarian has been elected president of the International Association of Aquatic and Marine Science Libraries and Information Centers.

Mr Denis Abbott has been the librarian at CSIRO Marine Research since 1984 and will serve a four-year term as International President.

The appointment includes a commitment to host the organisation's 2004 conference in Tasmania.

New student resource

CSIRO Enquiries has replaced Student Information Packs with new online learning resources.

IT specialist Brett Maher and teacher Penne Daley developed the materials in conjunction with CSIRO divisional communicators and IT staff.

The Student Education Resource Units address key areas in the Australian senior science curricula and provide links to information on relevant CSIRO research and activities. Visit http://www.csiro.au/page.asp?type=faq&id=EducationResourceUnits

- **KARL ARMSTRONG**, Enquiries

Young achiever

AMANDA Tilbury has won the Environmental Young Achiever award as part of this year's Western Australian Youth Awards.

Amanda is researching her PhD in chemistry jointly at CSIRO Land and Water and at the Department of Chemistry, University of Western Australia. She discovered in 1999 as part of her chemistry honours project, in a polluted site in Perth, a native microbe that eats the world's most commonly used herbicide, atrazine. She was working with Land and Water microbiologist Dr Peter Franzmann at the time.

The microbe, Pseudomonas AT2, initialled after Amanda, chomps up atrazine in a matter of hours.

Internet innovation

AN Internet Innovation Centre has been launched to promote CSIRO's Internet-related R&D services to industry.

Deputy Chief Executive Dr Ron Sandland said: "The centre will be a one-stop shop for industry to access the wide range of innovations, tools and products derived from CSIRO's internet-related research."

The centre has been established online at http://internet.csiro.au

Innovation grant

A MEMBER of Forestry and Forest Product's Papermaking Systems Team has won a US $10,000 research grant.

Dr Richard Helmer came third in the international Merrill Lynch Innovation Grants Competition for PhD graduates.

His proposal, entitled Supersonic Paper, was based on his PhD thesis recently completed at the University of Melbourne.

Richard's super-heated steam proposal offers significant advantages as a fluid for forming wood fibre into a sheet of paper.

More details and grant application forms can be found at http://www.ml.com\innovation

Photographs generate correct details

THE 11 Radiophysics' staff in last issue's caption competition photograph were simulating air-traffic control some time between 1948 and 1949 before computers were available to do the job.

The nine women seated in rows, three of whom are hidden, moved tubular pointers to simulate aircraft motion. Lights in each tube projected their position on to the wall behind them via mirrors.

Researcher Otto Adderley was testing one of a series of procedures for the new profession of air-traffic controller. He was facing a large simulated radar display created by the lights projected on the wall.

The nine women had a list of instructions each about how to move their tubes and Otto was giving them additional instructions through their headphones. The woman behind him was recording the messages and events and triggered a camera to periodically record the projection screen.

This was one of a series of projects that helped apply CSIRO's wartime radar work to civilian air navigation.

After these tests were done the simulator was passed to the Department of Civil Aviation, which used it to train their air-traffic controllers.

Thanks to John Deane from Telecommunications and Industrial Physics for providing this information. He did his best, but does not guarantee that every detail of this description is correct.

● THANKS also to Albert Trajstman from Mathematical & Information Sciences who pointed out that one of last issue's captions was incorrect.

Malcolm Fraser had not yet become Prime Minister, as stated, when he posed for the photograph taken at the Parkes radiotelescope in 1969.

He was, in fact, Minister for Science and Education. He did not become PM until after the constitutional crisis in November 1975 and held the top job until March 1983 when the Labor Party, led by Bob Hawke, defeated him.

CoResearch

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Readers are encouraged to contribute or offer suggestions for articles. The deadline for contributions to the next edition of CoResearch is Wednesday, July 25.

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CSIRO

CoResearch

CSIRO's staff newspaper

No. 387 Spring 2001

Radical forum for excellence

By Megan Bird

A RADICAL new forum is planning to move CSIRO into a new level of collaborative scientific excellence.

Members of the CSIRO Science Forum were appointed in September to advocate excellence within the organisation and to forge external partnerships.

Forum Chair Dr Vijoleta Braach-Maksvytis from Telecommunications and Industrial Physics said: "This has the potential to unify CSIRO and elevate scientific excellence to a key priority, rather than something that is inherent and assumed.

"We want to maintain and reignite the craft of science, that excitement, that curiosity, why we chose to do science in the first place.

"It's like a drop of water on a desert to hear that science excellence is back on the agenda in the highest levels of CSIRO."

The 29-member forum will hold events to highlight and unify excellence in science within CSIRO and review and implement strategies to harness cross-discipline cohesion. Partnerships will be forged and strengthened with stakeholders from outside CSIRO and strategic directions will be determined.

Dr Braach-Maksvytis said: "The level of CSIRO commitment to science excellence is reflected by the fact that the forum's Chair is appointed to the CSIRO Executive to ensure the highest level of advocacy."

She said the forum would be unconventional.

"I have no interest in most committees. "Each member will drive and follow through a particular issue that's associated with science excellence."

Members have been chosen for their scientific excellence, their ability to move across boundaries and their passion.

Chair: Dr Vijoleta Braach-Maksvytis

They are from all levels of the organisation and will provide expertise ranging from ethics and psychology to business and the traditional sciences.

"The range of skills represented is astounding and exciting," Dr Braach-Maksvytis said.

"It needs people to pull information across boundaries to make it thrive."

Dr Braach-Maksvytis is no stranger to this approach.

She has been specialising in nanotechnology for the past 17 years.

While establishing a nanotechnology initiative three years she realised that many divisions were working with this emerging technology in isolation. She set up the CSIRO Nanoscience Forum, which has 110 members from 11 divisions.

Frustrated that Australia was lagging behind the rest of the world with no nanotechnology policies Dr Braach-Maksvytis lobbied government and organised a national workshop between industry, science and government to put nanoscience policy on the national agenda.

"The power of pulling together is quite phenomenal," she said.

Dr Oliver Mayo, former Chief of Livestock Industries, is Deputy Chair of the forum.

Other members are: Dr Michael Ayliffe, PI; Dr Mark Berman, MIS; Dr Fabio Boschetti, EM; Dr Aaron Chippendale, ATNF; Dr Ian Colditz, LI; Dr Arnold Dekker, LW; Dr Ian Enting, AR; Dr John Finnigan, AR; Dr Alison Green, CSIRO Publishing; Dr Greg Harper, LI; Dr Andrew Johnson, SE; Dr David King, TFT; Dr Maxine McCall, MS; Dr Louise Morin, Entomology; Mr Tony Murphy, TIP; Dr Lincoln Paterson, PR; Dr Geoff Poulton, TIP; Dr Rama Ramakrishna, MST; Dr Steve Rintoul, MR; Dr Murray Rudman, BCE; Dr Fiona Soloman, Minerals; Dr Brian Spies, on secondment to ANSTO; Dr Tom Spurling, MS; Dr Wesley Stein, ET; Dr Regine Stockman, FS; Dr Nafty Vanderhoek, FFP and Dr Colin Ward, HSN.

Action plan prompts group to plot revolution

THE CSIRO Communicators Network met for the first time in a decade in July to formulate a new policy.

The policy, aptly titled The Communication Revolution, has been developed in response to CSIRO's new Strategic Action Plan.

It outlines the framework within which the network sees itself, and major initiatives to be undertaken by the group.

Senior communicator Wendy Parsons said: "We were told before we formulated this plan that what was needed was revolution, not evolution."

CSIRO's 120 professional communicators worked together to devise the plan.

Ms Parsons said: "The conference helped us get to know each other and we are now working much more effectively as a team.

"And communicators are already taking up some of the initiatives."

The policy's objectives range from convincing government, industry and the community that CSIRO is delivering great science and innovative solutions to building CSIRO into a global brand that stands for excellent service from great science.

The group devised dozens of initiatives to achieve these objectives.

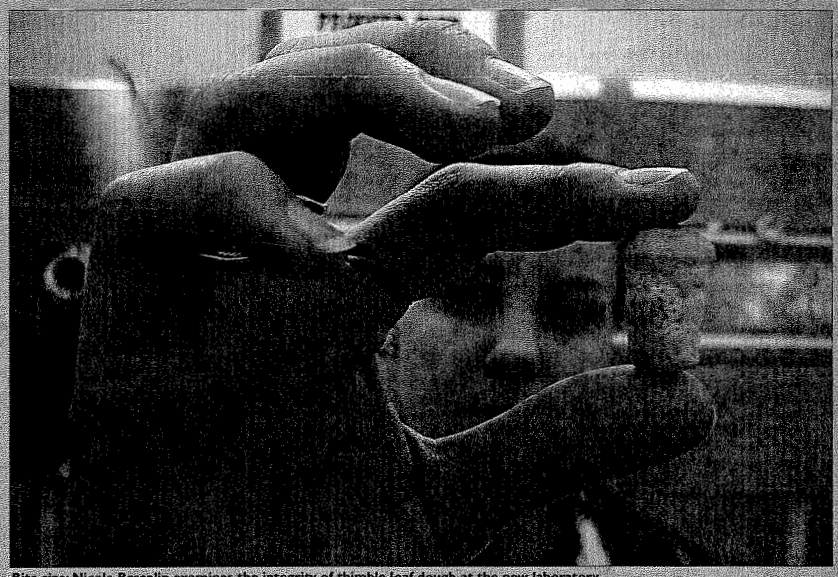
They range from strengthening CSIRO's media profile, especially on television, to raising awareness of selected government decision-makers by meeting with them and sending them direct mail.

Rebecca Scott has been appointed Internal Communication Coordinator to build on internal communication systems using initiatives ranging from an Intranet home page with regular columns from Chief Executive Geoff Garrett to a web camera that will broadcast the activity of research projects via the Intranet.

Relationships with universities, CRCs, academies and other research providers will be strengthened in ways ranging from focussing publicity on stories in their publications to promoting studentships and joint education programs for major long-term projects.

And a working group is being established to reposition and reinforce the CSIRO brand.

New laboratory is baking better dough



Bite size: Nicole Bresolin examines the integrity of thimble loaf dough at the new laboratory.

PLANT Industry's new cereal chemistry laboratory has begun baking better dough.

Bread, noodles and pasta are also on the Canberra menu.

The operational lab will officially be opened in late October.

Plant Industry's Dr Matthew Morell said the laboratory's move from Sydney closes the gap between complementary Canberra-based cereal-research programs.

"We have created a research environment that brings together scientists from many fields who are all working toward a common goal: improving wheat quality," he said.

"Experts from areas, including wheat breeding, molecular biology and diagnostic development now have the opportunity to regularly brainstorm ideas, go back to the lab together and work through ideas."

Ironman among us

By Megan Bird

A CSIRO staff member is Australia's reigning triathlon Ironman for his age group, 50 to 54.

A colleague of Mick Crowe who is the Communication Manager at Forestry and Forest Products tipped CoResearch off about Mick's sporting prowess.

Mick said: "You've got to be a bit careful about blowing your own trumpet.

"Triathlon is just something I do."

Mick's wife Kate is also a triathlete.

"She does them as well," he said. "It's a case of, if you can't beat them join them."

The pair's 20-year interest in triathlons has been a source of amusement to their two children and the impetus for how and where they spend their holidays.

"My children find it amusing to complain about their nutters of parents who are always on their bikes," Mick said.

Meanwhile, triathlons have taken the competing couple to destinations ranging from Mexico to Malaysia.

"It's part of our lifestyle," Mick explained.

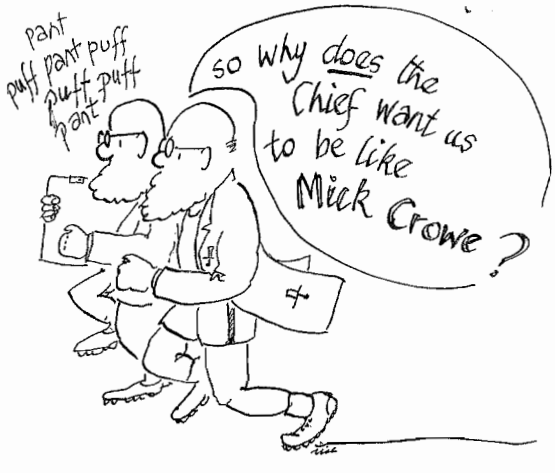
Mick cycles to work every day, jogs with a group of colleagues at lunch times and swims at nights.

"I've always been reasonably competent at each of these pursuits, but never fantastic at any of them," he said.

Mick won the Ironman Australian Triathlon at Forster this year in a time of 9 hours and 58 minutes.

The course included a 3.8km swim, 180km cycle and 42km, marathon-length run.

"I was only five minutes faster 10 years ago so I haven't diminished much with age," he said.



Towards a brave new oil-poor world

BRUCE ROBINSON, from Exploration and Mining, examines the growing controversy surrounding the predicted petroleum shortage and what this could mean for CSIRO. Bruce, an electron microscopist, has had a long-standing private interest in oil-supply predictions and their influence on transport policies, and challenges OPEC spin doctors in this article.

THE world's rate of production of petroleum is predicted to start its terminal decline within the next five to 15 years, much sooner than commonly thought.

This is the assessment of respected dissenting senior oil geologists who are challenging long-accepted optimistic interpretations of oil-industry data. The group is led by Dr Colin Campbell and Dr Jean Laherrère who have both had long successful careers in exploration.

They call themselves "retired oil geologists, concerned about the future of their grandchildren" and, as such, are free of many of the substantial commercial and political constraints that taint much of the published data and interpretation about future oil supplies.

Much of their data comes from a reliable worldwide oil-field reserve and production database amassed by Geneva-based Petroconsultants.

The "Big Rollover" is one name given to the forecast change from the buyers' market to the future sellers' market, when the world demand for oil will outstrip our capacity to produce it.

Senior US Geological Survey oil geologist Les Magoon coined the term.

"There is a limit to how much oil the world can produce every day. We are not running out of oil, it will just become more precious," he said.

There are innumerable opportunities for science and technology to anticipate and ameliorate the possible effects of an oil-supply decline.

Some are no-regrets options, those already justifiable on existing social, environmental and economic benchmarks, but even more favourable in the rollover scenario.

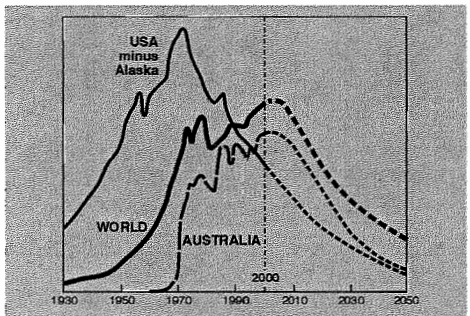
CSIRO's recent moves to monitor and reduce internal greenhouse emissions and energy consumption are a small but useful step towards a more energy-frugal mindset.

CSIRO recognition would also send valuable warning signals to our stakeholders that the end of the age of cheap oil may well be fast approaching.

Consideration of the energy-sensitivity of industry sectors and of the proposed outcomes of research projects would be a useful dimension to add to forward planning. This is especially important for liquid fuels, such as petrol and diesel, and for chemicals requiring petroleum as an essential feedstock.

The rollover scenario would lead to conservation, demand management, efficiency gains, changes in lifestyle and substitutes. There will also be deprivation if it is as swift and severe as predicted.

A low-cost, easily transportable direct substitute for diesel and petrol energy is most unlikely to be available in high volumes within the rollover timeframe of one or two decades. Hydrogen, for instance, is an energy carrier, not a primary energy source. It needs to be produced from gas, electricity or solar energy, and can not be stored efficiently.



Actual and predicted oil production decline curves on different vertical scales for the US, the world and Australia.

Proposed research projects, crops or processes could be compared using future oil-requirements as one yardstick. Advance warning of the vulnerability will allow substitution, adaptation and forward planning.

The Big Rollover is a global extrapolation of the prediction made in 1956 by Shell geologist Dr M. King Hubbert that the US oil production would rise only until about 1970 and then sharply decline. Although widely derided at the time, the decline did happen and resulted in the first of the world oil shocks as growing US dependence on imported oil became apparent. This led to the rise of OPEC, queues at petrol stations in the US and Europe in 1973 and a second Iranian oil shock in 1979.

Many world oil provinces like Bass Strait and the North Sea have reached or are nearing their decline phases.

World oil-discovery rates have been declining since the 1960s, according to Campbell and Laherrère.

New discoveries are failing, by a factor of four on average, to keep pace with extraction.

Even a successful exploration spike last year, with big successes in the Caspian and Iran, failed to match the world reserves drawdown for the year.

The bulk of the world's remaining oil reserves are in the Middle East, and the seller's market will increasingly provide OPEC with considerable power to control both production and prices. The rollover in the Gulf region is predicted to happen only about a decade later than that of the rest of world.

The date of the Big Rollover is uncertain, with ranges from 2003 to 2020 quoted by Magoon.

OPEC and oil-industry data manipulation further confuses the situation.

The Oil And Gas Journal, for instance, shows 81 countries reported no change whatsoever in their oil reserves for the 12 months ending 2000.

This requires exploration successes in all those countries to have exactly matched their production rates. Campbell describes this as "utterly implausible".

"Governments variously under-report or over-report or simply fail to update their estimates," he said.

Laherrère documents severe downward revisions of previously overestimated oil reserves in the former Soviet Union after the fall of the USSR, and a 40 per cent decline in the reported reserves in Mexico once its financial crisis had been solved in 1998.

Post-dating of the discovery of oil reserves is another industry data flaw central to the Campbell and Laherrère hypothesis.

Campbell describes the coming oil peak as a turning point for mankind, a period of great tension that could lead to a better world.

There would be advantages for city-dwellers, with lower air-pollution, and less traffic noise and congestion. Community health levels are likely to rise, as physical activity, such as riding a bicycle to school or walking to catch a bus to work, are reinstated as part of our daily lives.

The Big Rollover scenario is one with lots of opportunities for CSIRO staff to play invaluable roles.

Magoon says: "Hang on tight, if we don't recognise the problem and deal with it, it's going to be quite a ride".

Les Magoon will be giving luncheon seminars on the Big Rollover in six capital cities from October 25 to November 19 as part of his Petroleum Exploration Society of Australia visiting lecturer tour. Visit www.bml.csiro.au/sustnet.htm for discussion and more details.

OBITUARIES

Douglas John Boland 1947-2001

Career of many parts

DOUGLAS Boland had a distinguished and unusual professional career in forestry research.

His was a career of many parts: the polished forester, the accomplished botanist, the writer, the social scientist, the cross-cultural networker and the internationally respected forest genetic-resource specialist. He was a generous man who respected his co-workers and drew pride from his family.

Doug Boland was born in the NSW town of Inverell. The family moved to Nambucca Heads in 1957.

He gained a Commonwealth Forestry Scholarship in 1965 and this encouraged his tertiary studies at the University of New England. He completed his BSc (Forestry) at the Australian Forestry School and the Australian National University in 1968.

Doug was offered a job in what was known as the Seed Section of the then Forest Research Institute in Canberra. This group has gone on to become the CSIRO Australian Tree Seed Centre at CSIRO Forestry and Forest Products.

He was was a member of the Institute of Foresters of Australia for more than 30 years.

His botanical training began with the completion of a Master's degree in Botany from the Australian National University on the taxonomy of Eucalyptus leucoxylon. He was curator of CSIRO's herbarium collection of eucalypts, and wrote and researched widely, describing 10 new taxa of Eucalyptus.

He was also senior editor and co-author of some major books that have become standard texts in their field.

His great sense of fairness made him a champion for equity in sharing genetic resources and he developed Material Transfer Agreements to cover the ownership and intellectual property issues involved in international exchange of tree seeds that are now used by CSIRO and other agencies.

- STEPHEN MIDGLEY, CFFP

Dr Richard Tweedie, 1947-2001

Passion for numbers

DR Richard Tweedie, elder son of Nel Tweedie of Leeton in western NSW and the late Lewis Tweedie, has died in the United States.

Richard's passion was the application of mathematics and statistics and he applied his expertise to practical problems, ranging from telephone-network analysis to cattle-parasite studies and from evaluation of lung-cancer risks to consideration of the delays in court systems.

Richard was Professor and head of the Division of Biostatistics at the University of Minnesota in Minneapolis. His career spanned most of the states in Australia and three continents.

After leaving Leeton High School in 1964, Richard went to the Australian National University, graduating in 1969 with an honours degree in statistics.

Continued on Page 4

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Funds to bring Supernet closer

CSIRO is leading a consortium that will develop an Internet that is hundreds of times faster than the one we use now.

The Supernet will transform areas such as tele-medicine, media systems, information brokering, tele-collaboration and distance education.

The consortium will receive $14 million in seed funding from the Federal Government to establish a Centre for Networking Technologies for the Information Economy (CeNTIE). The six consortium members will provide another $30 million for the project.

Neale goes into hiding


Rare glimpse : Neale breaks the surface.

NEALE the great white shark has turned off the media spotlight and gone under deep cover.

CSIRO Marine Research lost contact with their great white champion in June.

He is the second great white shark in the world to have been tagged, satellite tracked and lost.

The Marine Research project has gathered valuable information on the shark's behaviour, and the division has begun lobbying for funds to continue.

On the PR front, Neale continues to inspire. Here's an excerpt from a letter the division received from the principal of a school it visited recently.

"If Neale has been lost please, please consider tagging another. Better yet, one in each state. This is fascinating to primary students who are just beginning to think science is fun and I would like to be a scientist if this is what I could be doing. Great PR for science which is at a low ebb in schools over the last decade." - Chris Bayly, Principal, Port Adelaide Primary School.

Mowing causes smog

MOWING your lawn in Sydney could be more polluting than driving your car, and it could be causing up to a quarter of summer smog.

Freshly cut grass hosts normally harmless chemicals that combine with industrial pollution to create photochemical smog.

When grass is mowed it increases the production of chemicals classed as volatile organic compounds by 100 times, according to a study by Atmospheric Research and Energy Technology divisions commissioned by the NSW Environment Protection Agency.

Research roundup

Toxic organism detected

A POTENTIALLY toxic organism has been detected for the first time in Australia during CSIRO monitoring in Tasmanian waterways.

Ms Caroline Lapworth from Marine Research discovered low levels of the dinoflagellate, Priesteria shumwayae, near Triabunna and in the Huon estuary.

The organism is known to be deadly to fish, but there is no recorded case of human illness from eating fish or shellfish exposed to it.

Tasmanians have been warned to avoid swimming in affected areas.

Researchers from the United States, where the organism has been a decade-long problem, are helping authorities develop management mechanisms.

It is not known if the organism has been introduced or has existed there naturally for millions of years.

Giant eyeball focuses bid

AUSTRALIA'S bid to host the world's most sensitive radio telescope has been boosted by the arrival in Sydney of a 1m-wide sphere from Russia.

The commercial Luneburg lens, nicknamed the giant eyeball, is not available in Western countries.

It collects and concentrates radio waves, just as an optical lens focuses light.

Testing the eyeball will help CSIRO's Australia Telescope National Facility refine the mathematics and software for designing its own spherical collectors for the mega-telescope.

Prawn industry aid

AUSTRALIAN prawn farmers will soon be able to use a Virus Test Kit to head off outbreaks of prawn diseases estimated to have caused more than $40 million in losses.

Viral diseases in prawns have hit this fast-expanding industry hard and devastated prawn farming operations in Asia.

An agreement has been signed between CSIRO Livestock Industries, BIOTEC (the National Centre for Molecular Biology and Biotechnology, Bangkok, Thailand) and Farming IntelliGene (a Taiwan-based company). It will lead to the commercial production and distribution of the Virus Test Kit for Gill-Associated Virus and Yellow Head Virus, two of the major viral killers of prawn stocks in Australia and Asia.

DNA diet map

PEOPLE could shortly be given a DNA map of themselves with a matching diet to stop any cancer they might be developing.

The Health Sciences & Nutrition research has shown that everyone has a different DNA damage rate that makes them more or less susceptible to a range of degenerative diseases.

The researchers now plan to develop a table of recommended daily allowances so doctors can design individual diets for their patients.

Starch helps bowels

A TYPE of starch that has been considered almost useless for decades could be playing a key role in preventing bowel cancer.

Health Science and Nutrition scientists began understanding the benefits of resistant starch in bowel health after noting that populations in Africa, Japan and China had low rates of bowel cancer but ate less fibre than westerners. They did, however, eat much more starch.

Resistant starch is found in undercooked vegetables, partly cooked pasta, baked beans, white and brown bread and brown rice, as long as they're not chewed too much.

Pure bottle sells rainwater for $15.50

By Megan Bird

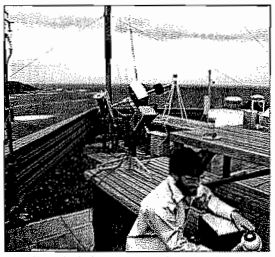
THE marketers of Tasmanian rainwater are borrowing CSIRO credibility to sell a 750ml bottle of it for almost A$16 in New York.

A director of The Cape Grim Water Company, David Duchett, said: "It certainly does heavily rely for its point of difference on its purity claim."

The water is marketed as the world's purest, a claim Mr Duchett says the company can scientifically substantiate through links to the Cape Grim Baseline Air Pollution Station. The Cape Grim Program is managed jointly by the Bureau of Meteorology and CSIRO Atmospheric Research.

Mr Duchett said: "We believe we can scientifically support that it's the purest bottled water in the world.

"The former officer in charge of the station, Chad Dick, is a consultant for us," he said.



Quality air: Work at the Cape Grim Baseline Air Pollution Station is done by the Bureau of Meteorology.

Present officer in charge of the station, the bureau's Dr Neil Tindale, said: "The station provides no publicly available data on rain-water quality. And we make no claims about rain-water purity."

The company is selling its water on the west and east coasts of the US and to airlines. It is in discussions with some north Asian buyers and is considering markets in Europe, Mr Duchett said.

The company uses specially engineered plastic sheeting angled on the ground to collect the water, which is diverted into tanks and then bottled.

When asked why the company established itself near the baseline station, Mr Duchett replied: "It's no coincidence.

"They've been able to scientifically argue that the air's amongst the purest, if not the purest, in the world."

Dr Tindale said: "There is no affiliation between the station and the company."

He said: "Using 'Cape Grim' in their name implies they're only a stone's throw away from the station, but they're actually located 20 to 30km away."

Atmospheric Research's Mr Paul Holper said: "It's certainly good marketing."

Dr Tindale said: "The air here has been recorded to be as clean as anywhere else in the world, under certain conditions."

It is not among the world's cleanest air when the wind is blowing to Cape Grim from Sydney or Melbourne.

Mr Duchett was a little evasive when queried about the conditions under which water was collected for sale.

He said it was "mostly" done during baseline – the purest – conditions, but that water was collected between eight and nine months of the year.

"It's not a continuing resource," he said. "There are dry periods during the year, principally in summer."

The last word

"...We must end the slow strangulation of our great national institutions, such as the CSIRO."
- Kim Beazley, Adelaide Advertiser, July 7

"The CSIRO acronym immediately demands attention and respect, and any business that can manoeuvre itself close to this research organisation automatically basks in its halo."
- Australian, July 7

"If you want to implement Labor's plan to create a national database of knowledge, skills and environmental resources, then the CSIRO's Australian National Insect Collection in Canberra is the perfect place to start: it already has 11 million bugs in its drawers."
- Australian, July 3

Key role: Helen Barry spent 41 years at CSIRO.

Hot fingers Helen signs off in end of an era

By Megan Bird

CSIRO's longest-serving woman has retired from the organisation.

Helen Barry recently reminisced on her 41-year CSIRO career.

There was no maternity leave and no superannuation for married women when Helen joined the organisation.

"I remember one Czech scientist who was pregnant," she said.

"The buttons on her lab coat just kept getting tighter and tighter. Finally she took her two weeks annual leave, had her baby, and was back again."

The alternative was to resign.

Another former colleague who married while employed at CSIRO was given her superannuation contributions back in a lump sum.

Most of Helen's memories are fond ones and tempered with gentle humour.

"Hot fingers Helen", as she soon became known on the job, started at CSIRO in Forest Products in 1959.

She joined the typing pool, went through many updates in typewriters and various computers, and worked as a personal assistant to many chiefs and executives.

She also completed a Bachelor of Arts and a post-graduate diploma in Art Curatorial Studies while working full-time.

One of her greatest joys was the multicultural makeup of CSIRO.

"We were able to sample food from other countries and hear about different experiences at lunch times.

"It never felt like going to work. It felt like a big extended family," she said.

"People were proud to work for CSIRO. I certainly was."

Helen has left to work at the newly formed Structural Biology Division at the Walter and Eliza Hall Institute.

Mineral Research's haven for wildlife

A PROPAGATION shadehouse, plans to extend a walking track and the discovery that site maps about a creek flow were wrong are a few of the achievements of an environmental group formed by a pair of CSIRO scientists.

Mr Andrew Taylor and Mr Stephen Peck are architects of a plan to preserve a creek that runs through CSIRO's Queensland Centre for Advanced Technologies (QCAT) in Brisbane's western suburb of Pullenvale.

The pair, who usually have their hands dirty working on new coal or magnesium technology, were soon joined in their quest to preserve Farm Creek by a large number of other site staff and management and local community groups.

The creek is surrounded by original vine forest that is uncommon in the western suburbs. It is also very rich in local flora and fauna and provides an ideal wildlife corridor from the Brisbane River to Brisbane's Forest Park.

The project began six years ago, and has been publicised by CSIRO's Environmental Management Committee.

Since then there have been scores of working bees to clear out weeds and plant more than 280 native trees along the creek.

Australian Trust for Conservation Volunteers helped to clear further exotic vegetation and plant local species last year.

A raised boardwalk that links offices with the new car park has been built from material recycled from the old canteen.

The site services team constructed a shadehouse that is used to propagate local species for the creek revegetation project and to use in the site's gardens.

Operation preservation: QCAT's shadehouse is used to propagate local species for the creek revegetation project.

The Bayer Australia-funded Richmond Birdwing Butterfly shadehouse was moved to the site in February this year.

Here the food plant Pararistolochia praevenosa is grown for the threatened Richmond Birdwing Butterfly.

Detailed flora and fauna lists, recording 85 birds, 36 reptiles and frogs, 10 mammals and more than 100 plants, have been created to monitor the effects weed removal and replanting is having. Some of these species are threatened in the western suburbs.

Andrew and Stephen also discovered that site maps were wrong about where the creek actually flowed.

QCAT Executive Manager, Dr John Read, said this meant building plans had to be changed to protect the creek site. A planned car park was moved to avoid impact on the creek.

"We think it's important to care for the local environment here and the creek area is the most important part of that environment," Dr Read said. "This area is also important for staff morale as people like working in a pleasant environment, and if anyone is feeling frustrated at work they can always go for a walk along the creek and take a few deep breaths."

The group plans to label trees and plants in the area and extend the walking track along the creek for another two kilometres.

Andrew said. "This will make it a great educational facility for local schools in the western suburbs wanting to come through."

Freewheeling Forestry staff get on their bikes

Pedal power: Mick Crowe persuades dedicated motorist Glen Kile to take a spin on a tandem in front of the bike shed.

WHAT is the hardest thing for a site manager to finalise?

Anyone experienced in this field will immediately know it is the bike shed.

Is it just a CSIRO thing that the expenditure of thousands or millions of dollars can be dispensed with at a meeting with cursory consideration, but when it comes to a bike shed agreement can take forever? A colleague provided me with a chapter from Parkinson's Law in which this dilemma is explored.

But at Yarralumla, in Canberra, we finally got there after two-and-a-half years of to-ing and fro-ing. The bike shed is operational, and provides secure weatherproof protection to that prized possession that gives the user the most efficient, non-polluting form of transport invented by humankind.

We have suffered the jibes of dedicated motorists wanting carports to protect their vehicles. They were stumped when some figures were produced that suggested individual carparks, not carports, can cost between $4,000 and $6,000 to provide.

We have had the arguments about location. The highest point of the site was not highly favoured by cyclists. And the back of beyond was considered unsafe.

So now we have it, a shed that will house 20 bikes at the door of the laboratory.

It is built of treated radiata pine. (What else in Forestry and Forest Products?) It has a secure electric roller door. (Well, we couldn't be too pure) with card-reader access.

If you really want to do something for the environment get on your bike and ride to work. Reducing our use of fossil fuel in commuting is probably the most valuable thing we can do as individuals to reduce our impact on the planet.

It has been a long hard road, but all involved should be congratulated.

Staff will be encouraged to dust off the old tredley and give it a try with this first-class facility available at the other end. Others are considering leaving their bikes at work and taking an enjoyable ride around the lake at lunchtime to clear the head and enliven the body.

By the way, if you want to know how it was all done, we are available for contract work and I'm sure we can cut some time off building the next bike shed.

- MICK CROWE, CFFP

CSIRO around the nation

O caption, my caption

LAST issue's intriguing photograph was not as exciting as it looked. In it Land and Water's Richard Stirzaker is monitoring the duration of waterlogging on the banks of a Kruger Park river in South Africa to determine whether trees or grass will dominate the vegetation. His fatigue-clad companion is guarding him against buffaloes in their favoured habitat. The buffalo is considered the most dangerous animal you could meet in this bush.

We do not have space to run all submitted captions. Here is a selection.

Mike Copland, from MDFRC: I know truffles are valuable, but do we really need him?

Paul Walker, from Sustainable Ecosystems: I guess now we will have to look for a new Chief.

Steve Milroy, from CSIRO Cotton Research Unit: CSIRO is at the cutting edge of developments in IT security. Here a CSIRO scientist buries his CDs somewhere in Africa.

John Morrisey, from Information Technology Services: Collecting the rare African diamond-backed dung beetle calls for some extreme security measures.

Malcolm Jenkins, from Manufacturing, Science and Technology: Field trialing government-incentive scheme targeted at halting Australia's brain drain.

Martin Sheppard with help from Milton Yates, from Health Sciences and Nutrition: Former Australian Animal Health Laboratory employee courageously collects soil samples, even though he is waiting to be put down after contracting foot-and-mouth disease on a recent trip to England.

Greg Doran, from Land and Water: They try to run, but we just hunt 'em down and bring 'em back. It's the only way we can retain quality staff, said a senior member of CSIRO management.

Andrew Davidson, from Land & Water: Keep your eyes peeled. Peter Cundall could be lurking anywhere (assuming that the sample is manure). Merle Thomas, from Livestock Industries: Patter-cake, patter-cake ...

Diana Walter, from Land & Water: I've heard of guarding payrolls, but guarding pay-dirt?

Magen Geyer, from Tropical Ecosystems Research Centre: Now look here, I've had enough of you army ants. My soldier friend is bigger than your soldier friends ... one more bite and the entire colony gets it.

Jason Watling, from Molecular Science: The young kiddies of today play too rough ... I'm going to stick to the gentle pursuits of my youth.

Trevor Hobbs, from Sustainable Ecosystems: CSIRO develops an innovative technique to prevent those pesky Springboks from escaping from pitfall traps during a survey of local fauna.

Adrian Hodgson, from Livestock Industries: I told these damn moles I mean business.

Michael Fisher-White, from Minerals: Elephants are very protective of their dung in South Africa.

Scott Cunningham, from Australia Telescope Compact Array: Smarter than your average deity, CSIRO officer Richard Stirzaker demonstrates how to make a fully armed version of man, and still have clay to spare.

And the winner is ...

Sustainable Ecosystem's Michael Doherty for his caption: He's not big, he's not hairy, he's not audacious, but he's got a gun and I'll do anything he tells me.

Michael wins some Mars Mud, donated by Education Programs.

This issue's photo (right), sent in by Louise Ralph from Econnect - environmental and science communication, is of Louise's daughter who did some impromptu sandwich-board advertising at ABC's outside broadcast during the Brainwaves festival.

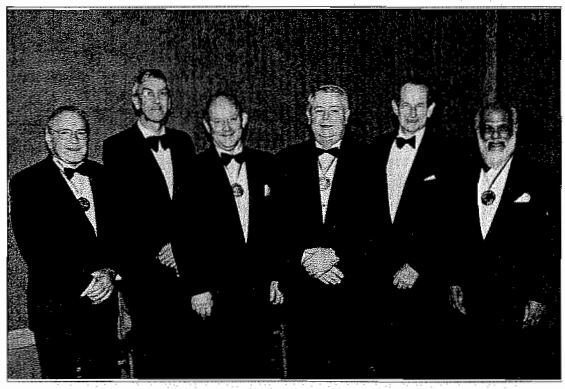
Send captions and photos to CoResearch Competition, PO Box 225, Dickson, ACT, 2602 or email Karen.Robinson@cc.csiro.au

Major honour set in concrete

DR Vute Sirivivatnanon from Sustainable Materials Engineering has won the concrete world's most prestigious award.

Dr Sirivivatnanon won the award for his work in turning industrial waste into a useful component of concrete for building and construction.

He received the Canada Centre for Minerals & Energy Technology and The American Concrete Institute, Mohan Malhotra Award for Supplementary Cementing Materials in July.



Rewarding reunion: An auspicious reunion of some CSIRO recipients of Clunies Ross medals took place at this year's ceremony. Three of the four winners pictured above are from CSIRO Minerals. Dr Frank Jorgensen (1999 winner), Chief Executive Geoff Garrett, Dr Ralph Holmes (1998), Dr Mike Rickard (1991) from Livestock Industries, Chairman Mr Charles Allen and Dr Bill Mathew (2000) posed for this recent photograph. CSIRO staff members have received 11 Clunies Ross Medals over the past decades.

Moon rock champion

A RETIRED CSIRO scientist who helped discover Australia's current reserves of oil and gas has won an international award.

Dr John W. Smith, retired from Petroleum Resources, recently received the Alfred Treibs Medal from the Geochemical Society of America for outstanding achievements in organic geochemistry.

Dr Smith was one of Australia's first geochemists. He determined the carbon composition of lunar rocks for NASA that decided there was no life on the moon. And his research led to a better understanding of the effects of gases, such as sulphur from burning fossil fuels, on our environment.

Environmental group

THE local community in Useless Loop in Western Australia recently won Australia's highest environmental honour, the Gold Banksia Award for Environmental Achievement.

The Useless Loop Community Biosphere Project Group in partnership with local mining company Shark Bay Salt Joint Venture, CSIRO Sustainable Ecosystems and Earthwatch have reintroduced three species of threatened mammals to a predator-free reserve on mainland Western Australia.

40-year friend retires

CSIRO recently lost one of its longest serving officers when Mr Alan Kirkpatrick retired.

Alan began as a chemistry graduate with the Division of Protein Chemistry at Parkville in early 1961. The Australian wool industry was booming and the division's work was focused almost entirely on fundamental research on the wool fibre.

When he left in July for 12 months' long-service leave before retirement, he had worked in five CSIRO divisions: Protein Chemistry, Biotechnology, Biomolecular Engineering, Molecular Science and Health Sciences & Nutrition, all of them at 343 Royal Parade, Parkville.

Alan became an internationally recognised expert in peptide synthesis.

The success of his professional contributions was probably linked to the qualities that he will be most remembered for: diligence, honesty and cheerfulness. Alan's colleagues at 343 will remember him as a true friend with a gentle sense of humour, and wish him well in his retirement.

- LINDSAY SPARROW, CHSN

Animal-welfare advocate

CSIRO has appointed a Special Advisor on Animal Welfare.

Dr Mike Rickard has stepped down as Director of CSIRO Livestock Industries' Australian Animal Health Laboratory and into the new role. His principal role will be to advise CSIRO on animal-welfare needs.

"The welfare of animals in research and in agricultural enterprises has been a major interest to me since my previous employment with the University of Melbourne School of Veterinary Science," he said.

Open House

AUSTRALIA'S most accurate clock and the world's roundest balls are a couple of highlights of the open day at the Marsfield and Lindfield sites.

A sneak preview of the hospital without walls and the giant eyeball will also feature between 10am and 4pm on Saturday, November 24, at displays from CTIP, CMIS and ATNP.

For more information contact jacqui.debattista@tip.csiro.au.

Agriculture honours

DR John Radcliffe was awarded Member of the Order of Australia (AM) 2000 in the recent Queen's Birthday Honours.

Until his retirement in 1999, Dr Radcliffe was a Deputy Chief Executive of CSIRO, responsible for the divisions that comprised CSIRO's Environment and Natural Resources Alliance.

He received the award "for service to agricultural science policy and land-resource management through the dissemination of scientific knowledge in support of sustainable development, biosafety and conservation of agricultural biodiversity". He continues to be a Special Adviser to CSIRO and represents CSIRO on the Council of the National Land and Water Resources Audit, a $35 million initiative of the Natural Heritage Trust, chaired by former CSIRO Chief Executive Dr Roy Green.

He is also Chairman of the South Australian State Committee of the Crawford Fund, which promotes research and exchange in international agriculture.

In 1987 Dr Radcliffe was awarded the Medal of the Order of Australia (OAM) in recognition of his many years of service in the cause of another of his lifelong passions: transport museums, trams and railways.

Dr George Bornemissza, retired from Entomology, was awarded the Medal of the Order of Australia (OAM) for services to science and entomology, particularly through the ecological study of dung beetles and the introduction of new species to Australia.

Dr Anthony Nicholls, from Sustainable Ecosystems, was awarded the Public Service Medal for outstanding service in the field of ecological research.

Professor Ian Lowe, based at Griffith University received an AO for services to science and technology.

And Professor John Mattick, based at Queensland University, received an AO for services to molecular biology, genetics and biotechnology.

Richard's passion for numbers

Continued from Page 2

He was awarded an ANU Travelling Scholarship and chose to go to Cambridge, where he completed his PhD in 1972. He returned to Canberra, and joined a newly created group in the CSIRO, the Division of Mathematics and Statistics.

After several years he spent a year at the University of Western Australia, and then moved to Melbourne to head the Victorian office of the CSIRO Division.

Soon a unique opportunity arose when CSIRO created Siromath Pty Ltd to carry out statistical research and consulting for business and industry.

He was appointed general manager and later managing director of the Sydney-based company.

After several years in Sydney, Richard moved to the Gold Coast to become foundation Dean of Information and Computing Sciences at Bond University.

In 1991 he accepted an offer to move to the United States to become professor and later chair of the Department of Statistics at Colorado State University, in Fort Collins, Colorado. In 1999 the family moved to Minneapolis when he joined the University of Minnesota.

Richard's friends, family and students will remember him as an outstanding man and a brilliant and generous guide and mentor.

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CoResearch

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389##2001/2002

75 years of Australian Science
CSIRO

co:research

CSIRO'S STAFF MAGAZINE
NO. 389
SUMMER 2001/2002

THIS ISSUE

Organisation pride tops staff poll

BY **MEGAN BIRD**

Staff members are overwhelmingly proud of being associated with CSIRO, according to a recent poll on how staff regard the organisation.

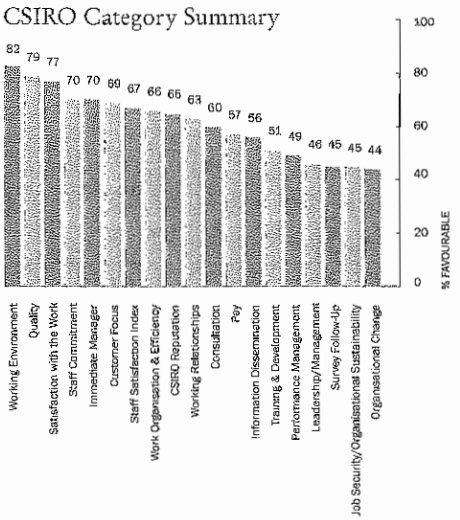
The Insight poll, undertaken by International Survey Research (ISR), is the first of its kind for three years and will be conducted annually.

About 90 per cent of respondents are proud to be associated with CSIRO and think the organisation is highly regarded by the public.

Staff ranked their satisfaction with the overall physical working conditions the next best category.

These and other results have been benchmarked, for the first time, against a global pool of staff in other R&D organisations.

CSIRO's top three favourable categories that were benchmarked were: working environment, at 14 per cent above the norm; CSIRO reputation, 9 per cent up; and pay, 8 per cent above average.



The worst-performing benchmarked categories were: job security/organisational sustainability, 8 per cent below average; working relationships, down 7 per cent; and survey follow-up, 6 per cent under par.

The area of most concern, the driver that most impacted on other categories, was leadership/management. This effected factors such as intentions to leave, the satisfaction index and desires to recommend CSIRO as a place of work.

People Development's (PD) Peter O'Keefe said: "The results were not that surprising and reinforced a lot of messages we had heard from other sources.

"Fortunately, a lot of work is already underway to address many of the areas of most concern, so we feel we are on track."

PD, formerly Human Resources, has recently changed its structure to allow PD staff to work up to 40 per cent of their time on strategic projects.

Divisional chiefs have elected what projects they will be: strengthening leadership capability; responding to issues raised in the Insight poll; enhancing performance culture, learning and development programs; negotiating a new enterprise agreement; and using technology to improve HR delivery.

A notable poll trend was that the majority of staff did not think action would be taken on the survey outcomes, but were certain they would be informed of the results. Management has been put on notice.

About 63 per cent, or 4,003 staff members, completed the survey in October. The full CSIRO results are enclosed in this CoResearch issue and available from www.csiro.au/intranet/multi/changes/Insight01.htm. Divisional results will be released shortly.

Tell us what you really think

CoResearch has been published for CSIRO staff for 42 years. It has changed format and focus many times over the decades, but your contributions and readership is what has kept it going. This new look has been designed in response to staff feedback and with the same budget. The CoResearch team would like to know what you think of it. Please tell us by phoning Editorial Manager Rebecca Scott on **02 6276 6639** or emailing internalcomm@csiro.au

CoResearch is published by CSIRO Internal Communication for staff and interested outsiders.

Editorial Manager: Rebecca Scott
Editorial Assistant: Karen Robinson
Editor and writer: Megan Bird, Hippity-Hop Journalism
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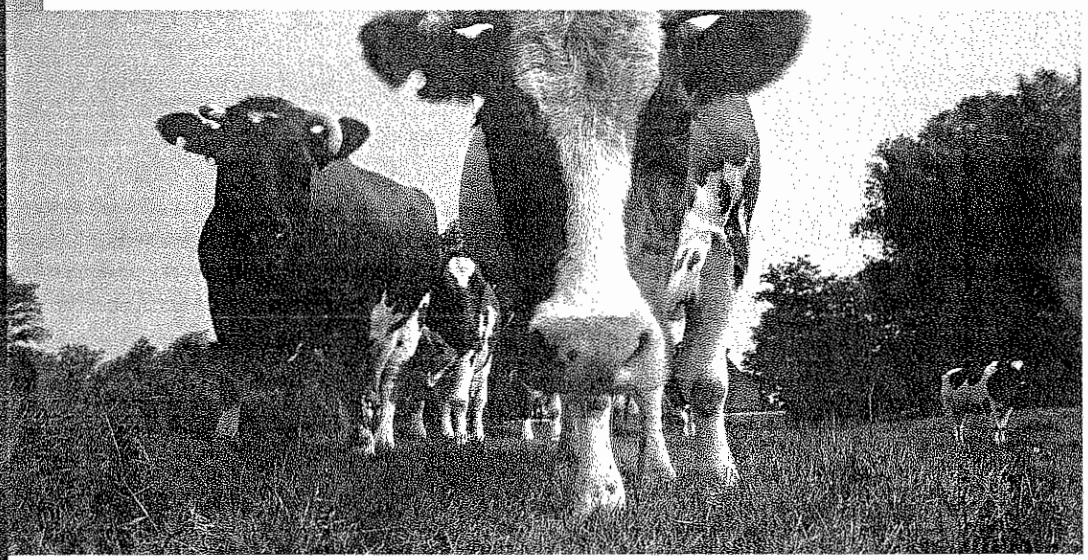
Contact Karen Robinson to add or delete your name to the CoResearch mailing list.

BY MEGAN BIRD

Recent rural property sales

Five CSIRO rural properties have recently been sold, vacated or are being sold. This leaves the organisation owning just two rural properties at Armidale, NSW, and Bakers Hill, Western Australia. Two other rural sites, in Rockhampton, North Queensland, and Ginninderra, Canberra, are leased by CSIRO.



The sales are part of a 12-year policy to downsize and consolidate where possible on to major regional sites, according to Corporate Property General Manager Mr George Harley.

"Also, there's less need for rural sites as most research is in labs these days, not the field," he said.

CSIRO occupied more than 100 rural properties 12 years ago. This has been reduced to about 60.

The largest sale is expected to be the 60ha Prospect site in Sydney.

"Funds from sales have gone back into restructuring and research and, in the case of Prospect, will be divided between the site's equity partners, the wool industry and CSIRO," Mr Harley said.

That site housed Animal Production staff before that division, Animal Production and parts of Tropical Agriculture were recently restructured into Livestock Industries.

All Prospect staff were offered relocation to Armidale, Rockhampton, Perth, Geelong or Brisbane.

The other four sites are:

- The 200ha Human Sciences Nutrition site in Glenthorn, Adelaide, was sold to the South Australian Government last year.
- The 1,000ha crown-lease site in Mundubbara, south-east Queensland, was vacated early last year by Tropical Agriculture and returned to the Queensland Government.
- The 200ha site in Samford, Brisbane, a former Tropical Agriculture location, is being sold. Settlement is scheduled for early 2002.
- A 1,400ha site in Townsville, part of the Woodstock property, and another former Tropical Agriculture location, is also being sold.

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BY **MEGAN BIRD**

CSIRO's role in commercial success

Supercapacitor developer cap-XX is the world leader in its field and on the verge of clinching some major deals, thanks to CSIRO vision and commitment.

Head start: *cap-XX CEO Anthony Kongats has been a champion of supercapacitors for many years.*

The story of the Sydney-based company's success began more than a decade ago when Dr Tony Vassallo from Energy Technology came across a couple of mentions about the supercapacitor phenomena in published articles about carbon science.

"And I thought: 'We need to be there'," he said.

German physicist Hermann Helmholtz had envisaged the potential for supercapacitors 120 years ago.

He spoke about this concept of electrical double layers in his 1881 Faraday lecture as "a condenser of enormous capacity".

Helmholtz's concept was abandoned for almost a century until a US oil company attempted to prove his theories in the 1970s, but did not apply them.

The term supercapacitor describes high surface-area carbon capacitors and similar high-energy storage devices. Supercapacitors are able to hold a very high charge that can be released very quickly or more slowly, depending on the application need.

Cap-XX chief executive officer Anthony Kongats said:

"Supercapacitors store electrical energy but deliver electrical power."

This translates to more battery-run time but smaller size, weight and cost.

"It's a key enabling technology for this next generation of mobile wireless devices," he said.

Cap-XX is concentrating on making supercapacitors for the notebook-computer and wireless hand-held-device markets. Applications range from cellular phones and hand-held data terminals to toys and power tools.

Mr Kongats expects his company to dominate the global supercapacitor market, which he forecasts to exceed US$6 billion by 2005.

But back in the laboratory 10 years ago Dr Vassallo read some published research on supercapacitors by a Japanese academic and approached the NSW Sustainable Energy Research Development Fund for seed money. The fund was receptive, provided an industry partner was produced.

Dr Vassallo approached the owner of Plessy Ducon, Mr Kongats.

"It didn't take long for Anthony to realise it was an opportunity he needed to be in," he said.

The state government awarded the $600,000 seed money to a joint venture between Plessy Ducon and CSIRO.

"We then showed that we were able to make supercapacitors better than anyone else had demonstrated," Dr Vassallo said.

The cap-XX and CSIRO team wrote a business plan while attending an intensive weekend-run Business In Growth workshop, and won first prize for their marketing plan. Their mentor during the scheme, Professor George Paul, was later recruited as cap-XX's first full-time employee.

In 1996 the company won a $2 million federal R&D Start grant.

And during 1997 and 1998 CSIRO carbon scientists worked beside

Mr Kongats expects his company to dominate the global supercapacitor market, which he forecasts to exceed US$6 billion by 2005.

cap-XX scientists in the Energy Technology labs at North Ryde.

"That fertile collaboration was really the most effective technology transfer," Dr Vassallo said.

"We were able to transfer carbon technology to them, and they exposed us to marketing and commercialisation of technology."

Cap-XX has just been offered another $3.2 million R&D Start grant that it will add to the $35 million it received in September in second-round venture-capital funds.

Cap-XX now has 35 employees, two of them former CSIRO scientists.

Mr Kongats said: "CSIRO was critical early on and still very significant."

The company pays CSIRO commercial rates for its expertise, has worked with scientists from six different divisions, and continues to rely on CSIRO skills.

Dr Vassallo said: "This started out from nothing. Cap-XX took all the risks and is now getting the benefit.

"Our payback is in fees for service now rather than in royalties."

The project has exposed CSIRO carbon scientists to working with the BMW Group based in Germany, thanks to components it manufactured for Holden's hybrid-electric ECOmmodore and CSIRO's AXcess Car.

Dr Vassallo was offered early equity in the cap-XX company but, because of CSIRO's charter, was unable to accept it.

"Someone like me has to see an opportunity for speculative work," he said. "Someone has to provide seed money. There has to be an industry partner with foresight. There has to be some successes and risks have to be taken.

"And if you remove any of those the project stops."

For more information on the company visit www.cap-xx.com

389-2001/2002

BY **MEGAN BIRD**

Anniversary dance

Discovery, in Canberra, recently borrowed a formula that has worked for Olympic and other spectacular sporting events to portray the spirit of CSIRO's 75 years in Australia.

The Rainforest performance by 90 students, many the children of staff, began with Torres Strait pigeons returning to their nests after feeding in the forest and ended with a whip bird duet and riflebird courtship.

The accurate interpretation of rainforest life portrayed themes such as growth and biodiversity, pollination and the potential impacts of climate change in a choreographed spectacular set to music.

The children, aged between six and 16, had been rehearsing the show every weekend for months, and were bedecked in dazzling costumes made by scores of volunteers.

The production, which ran for a week in October, was mounted to coincide with simultaneous open days at Canberra CSIRO sites. It was one of many anniversary celebrations that have been held late this year around the country at CSIRO sites.

Black Mountain events over the October weekend attracted about 5,000 visitors.

Visitors to the Black Mountain site boarded a bus and were treated to a commentary on their way up to a tour of the Herbarium.

They were escorted through the Australian National Insect Collection, and dallied at marquees showcasing innovations and research ranging from a sprinkler system activated by a mobile phone to virtual-reality technology that is helping surgeons hone their skills.

Films featured past innovations and achievements and the journey of crops from paddock to supermarket shelf.

And the grape and wine samples were well received.

snap:shot

A good stab: The staff-snapshot competition will be judged early next year. Happy staff snappers have been brandishing their cameras in an effort to capture an enjoyable part of their jobs.

Here's one attempt at doing just that, by Internal Communication's Rebecca Scott.

"Ian's arrival to Internal Comms was supposed to mean I had someone else to share the work load. But there are some things (like pressing the send button on CSIRO-all emails) that we both hate doing. We settle a lot of the decision-making at the magnetic Dartboard of Doom."

Classroom favourite sparks collaborations

What do secondary wood products, biodegradable packaging and aerospace composites have in common?

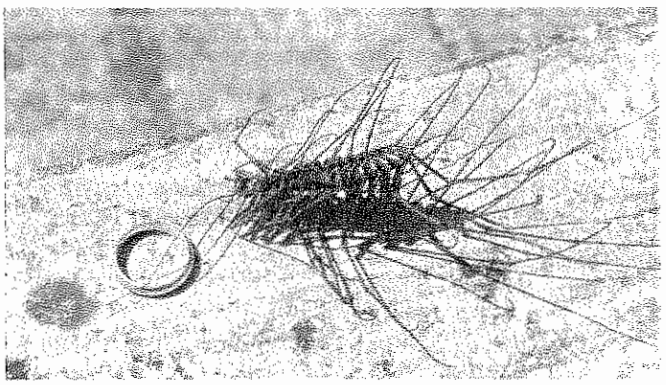
This was one of the challenges facing staff from Forestry & Forest Products, Manufacturing Science & Technology, and Molecular Science at the end of their recent show and tell day at Clayton. Staff borrowed the show and tell formula that has proved a successful communication tool in schools worldwide to present their research and capabilities in a brainstorming forum designed to identify new potential areas of collaboration. This one-CSIRO initiative was spiced up by an offer from Geoff Garrett to fund half of a compelling joint project that involved all three divisions. At the end of the day, with heads reeling from paper-making systems, forest canopies, x-ray images, traffic monitoring, waste water and carbon nanotubes, opportunities for collaborative projects were identified and considered, informal drinks provided by Molecular Science's social club were a welcome catalyst. And the end result? A proposal for a Three-AS-One opportunity, codenamed project TASO, is under evaluation by the sharpest brains we could muster. Mind you, our counting skills are a bit off because there are now five divisions involved. Nothing more can be said about TASO until the Chiefs involved have approved it. Staff are also following up lots of clever ideas for bilateral projects.

- Stephanie Lavau, CMST

Absent ring makes the heart grow fonder

Dr Peter Ryan from Plant Industry examines the absent-minded image of a scientist and adds a twist of his own.

Frankly, I reject the popular portrayal of scientists as a nerdy group of social misfits who are engrossed with their research to the exclusion of everything else, including fashion trends and world wars. I reckon I have a fair grasp of current affairs, I'm not overly absent-minded and, as far as I am aware, my sense of fashion is as good as the next person's. Having said that, I do admit to being easily distracted by things or events that fascinate me, sometimes to the point of forgetting the bleeding obvious. There is a collection of these stories, but perhaps the most telling one concerns my wedding ring.



Honeymoon antics: *Dr Ryan's fascination with the biological world left its legacy.*

"I was wandering along a narrow path on Lamma Island, in the middle of Hong Kong harbour, enjoying the novel sights and smells when my eye caught sight of the most weird insect-like creature I had ever seen."

My wife and I had only been married for a few months and our backpack tour through southern China in 1996 was really a delayed honeymoon. I was wandering along a narrow path on Lamma Island, in the middle of Hong Kong harbour, enjoying the novel sights and smells when my eye caught sight of the most weird insect-like creature I had ever seen. With enormous care I slowly bent down to examine it. It didn't move and some cautious probing with a grass blade established it was probably dead.

It had a linear, segmented body with a line of very long, grasshopper-like legs running down each side. Was it an insect? Too many legs, I thought. Perhaps it was a marine animal, but how did it get all the way up here? I began to take photos with my ancient but trusty Pentax but I quickly realised I needed a scale comparison.

The local coins in my pocket were of no use because noone would be familiar with their dimensions back home. So, I slipped off my gold wedding ring and sat it next to the creature on a rock wall.

I shot it from every angle and then moved it to another rock to photograph its underside, all the time adjusting position and shade. What taxonomic group did it belong to? Perhaps if I could see its tiny mouth parts I might get a clue to its general classification. I picked it up and realised a photograph would not pick out the details. There was only one course of action. I needed to draw it. I walked excitedly back to our boarding house to do just that.

It was two weeks later in Hunan province before my wife noticed I wasn't wearing a wedding ring.

We never returned to Lamma Island to see if my ring was still sitting on the rock wall but I am left with a set of wonderful photographs of it glinting in the strong Chinese sunlight next to one of nature's most bizarre creatures.

The creature was quickly identified in Australia as a house centipede, not uncommon in those regions but very unlike the centipedes from our neck of the woods.

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Pollution becomes personal

About 200 Australians in Sydney, Melbourne, Perth and Adelaide will wear monitors the size of a pen for five days in winter and again in summer.
The study they will be part of will focus on personal exposure to the air pollutants benzene, toluene, ethyl benzene and xylenes.
The volunteers, aged 20 to 68, will wear the monitors 24 hours a day and keep diaries of their activities.
The project, which began in June and will continue for two years, is funded by Environment Australia through the Living Cities Program at a cost of $500,000.
It is being led by the Department of Environment Protection, Western Australia, in collaboration with state environmental agencies in South Australia, New South Wales and Victoria, CSIRO Atmospheric Research, Murdoch, Monash and Flinders universities and the University of Western Australia.
CSIRO is conducting the chemical analyses on samples. The results will be used to understand the exposure of the Australian public to these pollutants and to identify activities that increase this exposure.
It will aid in the development of national-management strategies.

Dog tags research gold

A beachcombing dog that retrieved an $8,000 pop-up satellite tag has furnished Marine Research with a wealth of information on the journey of a black marlin it tagged.
The pooch found the mythical equivalent of a message in a bottle at Brunswick Heads in northern New South Wales, and the dog's owner read the address on the tag and posted it to Tasmania.
Marine Research's Mr John Gunn said: "We were thrilled. It was an incredibly unlikely event, and it was the first time we had used the $8,000 pop-up satellite tags on black marlin in Australia."
The dog's find recorded a 1,100km journey of a marlin tagged last November off Cairns.
The journeys of the other four black marlin tagged in the pilot project were recorded and transferred via satellite to Marine Research in much less detail.
Data is retrieved when the tags automatically pop to the surface.
Black marline game-catch rates have been declining.

Vending for themselves

Vending machines that run out of your favourite drink or snack could be a thing of the past, thanks to Mathematical and Information Sciences.
A team from there has devised a cheap and flexible way to make vending machines call service people when they need filling.
The same technology could be used to set up a low-cost do-it-yourself home security system that will call your mobile if anyone breaks in. The system could also control, with a phone call, a sprinkler system.
The system combines sensor technology, the Internet and the mobile-phone network.
Dr Ken Taylor said: "It is possible to get systems that do similar things but they tend to involve purpose-designed devices that can only do that one thing and are very expensive."

Mango project ripens

Plant Industry is collaborating in a project that is negotiating commercial associations to develop new mango varieties for international and domestic markets.
Commercial collaborations grower cooperators were sought through a public call for expressions of interest in the project.
The Australian National Mango Breeding Program has, through controlled hybridisation techniques, produced more than 1800 hybrids. Many that display desirable combinations of characteristics, such as taste, colour and texture, have been earmarked for further development.
Commercial partners and grower cooperatives are being sought.
The program's other partners are the Queensland Department of Primary Industries, the Northern Territory Department of Primary Industry and Fisheries and the Western Australian Department of Agriculture.

Searching comparison

Mathematical and Information Science has been developing techniques to evaluate the performance of search engines.
Search-engine performance varies according to the task, according to Dr David Hawking from the Electronic Content Technologies group.
"Some search engines are very good at finding lots of hits for a query but may fall down in how they rank the results," he said. "The most relevant sites can end up too far down the list to be noticed."
Google (www.google.com), Fast (www.alltheweb.com) and Northern Light (www.northernlight.com) are the best at producing highly ranked and relevant hits, according to a recent test.
The top three in the home-page location test were Fast, Google and Microsoft search.msn.com).
The group is seeking support from search-engine operators to publish regular evaluations.

Wood-fired power

Wood will be converted into enough electricity to power between 20 and 30 homes, thanks to a recent $1 million Commonwealth grant and a partnership involving Forestry and Forest Products.
The Green Gasifier Generator will use CSIRO wood-gasification technology and a microturbine to produce electricity.
The plant will be fully tested by the end of 2003.
Gasification breaks down complex wood compounds into smaller volatile compounds that can be burnt in microturbines with near-zero emissions.
Chief Dr Glen Kile said: "Green Gasifier Generators could be located in remote and regional areas close to sustainably produced biomass resources and provide a constant supply of renewable energy."
About 10 per cent of electricity is lost through overhead lines when it is delivered over long distances.
Energy produced by these plants is expected to compete with electricity delivered over long distances, where additional transmission capacity would need to be installed and where remote or regional electricity is produced using fossil fuels.

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A Guide to the Strategic Action Plan
Going for Growth

CSIRO's Executive Management Council (EMC) decided in May 2001 to undertake its 'Go for Growth' strategy. The following document outlines the major components of this strategy.

Why should we grow?

CSIRO wishes to increase its contribution to making Australia a stronger global competitor in the 21st Century and a better place to live. To enable it to perform this role and to position itself strategically in the new global and research environment, the Organisation plans to increase its revenues by moving into new areas of research and new markets, and to provide its staff, many of whom are tired of working in a contracting organisation, with a healthy and vibrant work atmosphere.

In relation to our business, our five-year mission states:

- We will grow our business by 50 percent to $1.3bn over the next five years.
- Based on our intellectual assets and capabilities, we will increase our revenue from licensing and enterprise creation by a factor of 10 over year 2000 levels.
- We will transform our effectiveness as an organisation through the creative use of information and communication technologies to: enable us to do business in new and different ways; significantly increase the efficiency of our business processes; and facilitate the unhindered sharing of knowledge across the Organisation.

How can we grow?

Similar to most of our personal budgets, the organisation can grow its business by:

- Ensuring we're currently being paid what we're worth
  - Making our contract work user-pays. (Ensuring we get the right amount for our contract research and that we're not subsidising it with the money we get from the government (Subsidy elimination, 6.7.2 in the SAP, which can be found at http://www.csiro.au/services/planeval/StrategicPriorities/index.htm))
  - Making a profit instead of just breaking even on commercial contracts. (Looking at what value our research is worth to our customer, not just the actual cost of doing the work (Value pricing/customer value proposition 6.3.4)). We can then invest these profits back into our core business.
- Maintaining good relationships with those who fund us
  - Ensuring the government knows we do a great job and continue to fund us well. (The government is our biggest funder so to ensure our growth we must improve our relationship with it (6.5.2). We get our funding every three years from the government (Triennium funding), so it's really important that we do well when we put in our funding bid (6.3.1)
  - Improving our relationships with other research organisations. (Keep working on our relationships with current and potential partners like universities, Cooperative Research Centres (CRCs), academies and other research providers (6.5.3))

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- Taking on extra work
  - Forming new partnerships and starting new projects (6.5.2, 6.5.3)
  - Tapping into the global market (6.3.3)
- Making better decisions about how we use our money
  - Improving how we choose projects and what we focus on (6.3.1)
  - Streamlining our business processes
- Increasing our efficiency
  - Better planning (Implementing better business planning (6.3.6))
  - Being the leaders in our field by achieving best practice
  - Ensuring we know our customers well, by having experts whose key role is to strengthen our relationships with key stakeholders. (Key account management and facilitation (6.3.5))
- Investing wisely so our money makes more money
  - Investing in new acquisitions (6.3.3)
  - Creating new spin-off companies based on our technology. We could either partly own the companies or they would pay us royalties for use of our expertise (Enhancing licensing and new-enterprise creation (6.3.2))
  - Making money from our knowledge. (Protecting our intellectual property and using it to make money through licenses and patents (6.3.2))

How will we meet our growth targets?

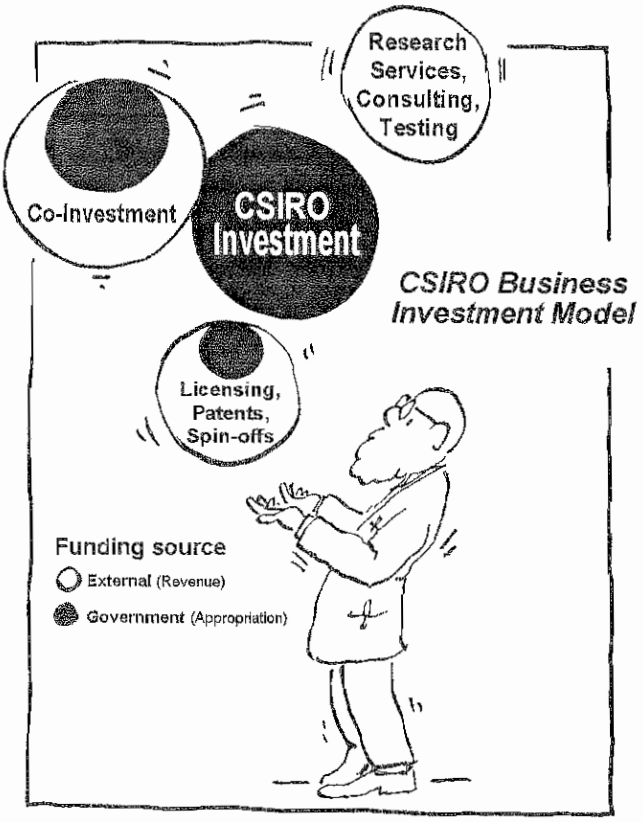
We rely on two different types of funding:
- Government (appropriation)
- External (revenue we get from other customers, our licenses and other revenue)

CSIRO is a portfolio of businesses. That's one of its key strengths as an organisation. All Divisions and Business Units will work towards CSIRO's growth target, but because of their different strengths and specialities, they will each have different plans and opportunities to help us achieve the overall target. For example, some Divisions do a lot of contract work and earn a lot of external revenue, whereas other Divisions concentrate more on strategic research and rely on a higher proportion of government funding. Each Division has now begun to work out a plan for the different parts of their business.

Juggling the four parts of our business

It's called the CSIRO Business Investment Model (Appendix 2 of the SAP) CSIRO has to maintain a balance between four parts of its business:

1. CSIRO Investment: our strategic R&D directed towards our national priorities (This part should be fully government funded although as we generate profits, income from licensing etc, we will increasingly re-invest this discretionary revenue into the core of our business)



2. Co-investment: partnerships we are involved in that tackle issues of national significance. Our work with the CRCs or the rural R&D corporations would fall into this category (part government, part customer/partner funded).
3. Research Services, Consulting and Testing: solving problems for industry, or helping them with new opportunities, using our know-how and extensive facilities (we're working towards fully customer-funded).
4. Licensing, Patenting and Spin-offs: new enterprises created on our know-how as well as intellectual property protected through patents and generating revenue by way of licenses (seeded by judicious use of parliamentary appropriation funding as well as re-investment of revenue generated by this route).

Each Division or Business Unit has a Business Investment Model that looks slightly different and reflects where funding comes from.

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The Basics on Subsidy Elimination and Value Pricing

Warren King is running the subsidy elimination show and is also Chief of Telecommunications and Industrial Physics in his spare time. He explained what subsidy elimination; effort-logging and value pricing were in this interview with Rebecca Scott, and how they would benefit staff and CSIRO.

What's subsidy elimination and why is it happening?

The expression arose from Geoff's visits to Divisions when he first arrived. Nearly every Division indicated a high level of frustration that we spend about 50-60% of our time and resources earning our 30% external earnings. Geoff quite rightly identified two separate causes of this and they occur in two different parts of our investment model. The first is co-investment – a quite deliberate strategic decision to use our appropriation with a partner to advance our strategic research, sharing both the risks and the returns. This is quite kosher. The second situation arises in a number of ways when we provide research services to a customer. Sometimes we use our appropriation deliberately to cut the price to get the job, since we are concerned about the external earnings target. Or it can happen inadvertently because it takes much longer to do the job than we expected, because we don't really know have good data and experience on costings. In this case we are using our appropriation to subsidise an activity and probably not getting a fair return in terms of any IP generated. This isn't kosher, and we'd like to eliminate it from our business practices so that we can free-up our time and resources to spend on our core strategic research. This should reduce the level of frustration that staff feel and allow us to invest more in the research that will have impact in the future.

How can we tell if we're subsidising our research services?

We can't tell until we accurately measure what we spend our effort and resources on. But it's pretty easy. All we have to know is how much time and effort we put into a project and how much revenue it generated. For example, once we've paid off the real expenses, if we've got money left over then we've managed to avoid a subsidy. But the trick is properly costing everything up front, including the support services. For example, typically the biggest cost in any of our projects is the salary and labour cost. In most Divisions it's between 60-70 percent. If we want to eliminate these subsidies, we need to know how much time we are spending on labour in each project and learn to manage and cost our time better through experience. That's where effort-logging comes in.

What's effort-logging?

It's recording how much time you spend on a given activity. It's a bit like filling out a time sheet and working out how much time you spend on different projects.

Is effort-logging going to be introduced in CSIRO?

Yes.

Will it happen across the whole organisation?

Yes. There are about seven Divisions already effort-logging but we are undergoing a process whereby everyone in the organisation from Geoff down will be doing it.

Will it only be directed at scientists?

No, everyone in the whole organisation will do it. We need to know how our business works, not just the contracts, but also the time we spend on our basic research, including the administration and support activities. There will also be a small number of general categories for such functions as corporate citizenship, development and training.

Is this just one more routine task that staff will have to undertake?

Actually, over time it should lead to better working conditions for staff. For example, it's common to have staff over-working on some projects to get them finished in the agreed timeframe because we underestimated how long the project would take. This isn't sustainable or healthy. In the future, we would hope that effort-logging will enable us to better predict the real time it takes to do a job and then adequately resource it. So it's actually about properly valuing staff and their work.

Will it be important for all staff to participate?

Definitely! It's just like a science experiment where the

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overall results are only as good as the data. Recording good-quality data allows you to come to good quality conclusions. We anticipate that staff will probably have to fill in the data at least once every week. Just as a scientist wouldn't do an experiment and then try to remember the results a month later, we should try and capture accurate data as soon as possible to give us good results.

What system will we use?

Well that's still up for grabs and there's a dedicated task force looking at this. We do know that recording will be done electronically and there would be pull-down menus appropriate to the project to allocate your time against. Whatever system is used, it has to be very user-friendly. If it's not, people won't use the system and our data won't be any good.

Will we be recording our time in units of minutes, hours or days??

There's no use recording tiny little amounts of time, but to measure it in quantities appropriate to the activity. For example, lawyers record their time in minutes because they charge you by the minute, but I personally can't imagine a situation in CSIRO where we'd want to record in detail finer than an hour. Whatever, the situation will allow people to record in the units most appropriate to the sorts of work they do. In our case, some recording would be in days, and the coarsest unit being a week.

Does that mean that staff who are currently filling out time sheets now have to deal with two different systems?

No. The systems will be integrated so staff only have to fill out one set of data.

Some people work longer than a standard week but don't record it. Will the same fudging happen with effort-logging?

People will continue to get paid on the basis of a standard week but we are going to record the actual hours people work on a project. If people are working too many hours, we need to know that and improve the situation. It's important for my group to keep in mind that this all started out from a sense of staff frustration. So one of the aims is to reduce the number of hours staff have to work to complete contracts. First step is recording the hours actually worked, not a fictional standard.

Can the system be used to pinpoint people who aren't working productively?

No. That's not the intention at all. Effort-logging is about measuring inputs, not outputs, which is done via the APA process. It's about getting data about the project. On the other hand, I can imagine that where staff are spending far too long on a project because we've managed the costings badly and underestimated how long it will take to complete we might want to bring up the effort logging data at APA time.

When will effort-logging begin?

The intention is for it to be trialled in March or April next year with the whole organisation ready to be online by July 1 next year.

Will you put your money where your mouth is?

I'm already effort-logging. I've divided up my time as a Chief to see how much time I spend talking to customers, undertaking Divisional duties or working on corporate activities. It allows me to get my priorities right and check that where I spend my time is where I think I'm spending it. So it's both an excellent time-management and business-management tool.

Let's wrap our head around value pricing. What is it?

Value pricing is about looking at what value our research is worth to a customer, not just the actual cost of doing the work. Quite often we can do the research far cheaper than our customers could because we've built up the skills and knowledge to be able to do the work over many years. The value to them is quite unrelated to the cost for us to produce it, and relates more to what their competitors are doing, what it can be sold to their customers for.

Why should we change how we're doing our business?

Twenty years ago, we did a lot of our business for free because we could afford to. Then over time we started charging the cost, estimated to the best of our ability. Often we didn't know what our labour costs were so it was a bit hard. We then moved to making a small profit on top of our costs. This is "cost plus" pricing. But more recently we've realised we should be charging customers what the value is to them rather than what it costs to deliver. The idea is to negotiate the price with the customer so they are really happy with the value they are getting and we'll be able to make a profit to put back into our strategic research. Of course it sounds simple, but in fact it will take us time to get the experience and skills to do this effectively and successfully.

Who will be involved in value pricing?

In most cases it will be the senior commercial and project managers in a Division, but it's difficult to be prescriptive as our Divisions work in many different ways. Value pricing is not easy and it takes good negotiation skills and a very good idea of what our customers want. We are shortly going to roll out training to people who will be involved in such negotiations.

Where can staff get more info about subsidy elimination or value pricing?

The recommendations of the task force are on the web with the Strategic Action Plan http://www.csiro.au/services/planeval/StrategicPriorities/index.htm
When we've made a decision about what system will be used for effort-logging, we'll be trialling the system across a number of Divisions. We hope to have a decision by early 2002 and will let staff know more details then.

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Party in a paddock

A weekend-long party in a paddock was the setting for the 40th birthday celebration of one of Australia's icons.

Flying high: *about 90 sorties flew around the dish (top).*
Head for heights: *about 1,600 visitors clambered around the telescope (above).*

BY **MEGAN BIRD**

More than 2,500 people visited the Parkes Radio telescope in mid-west New South Wales for the celebration.

About 1,600 of them clambered about the telescope, and viewed astronomers at work on pulsar observations.

Dubbo Helicopters flew about 90 sorties around the dish.

Two of the passengers were winners of the school drawing competition.

The recreated control panel from the hit movie, The Dish, was a highlight of the information marquee where visitors chatted to radio astronomers and viewed historical displays.

The film was screened in the sheep paddock adjacent to the telescope to an audience of about 500 picnickers on Saturday night after a screened interview with the observatory's first director, John Bolton, about Apollo 11. Sam Neil played Cliff Buxton in the movie, a character loosely based on John Bolton, the observatory's director when man first landed on the moon.

The evening's unplanned finale happened when the moon began to rise behind the telescope during the silver screen's climax.

The telescope, opened on October 31, 1961, was used to identify the first quasar, discover magnetic fields in space and find more pulsars than any other telescope.

It also helped track spacecraft from the Apollo missions, the Mariner spacecraft to Venus and Mars in the '60s; the Voyager and Giotto spacecraft in the '80s; and Galileo in the '90s.

One unexpected visitor introduced himself to staff as James Murphy, a worker who had laid the original mesh panels on to the dish in 1961. The observatory's director, John Reynolds, took him on a personal tour of the telescope and dish surface and traded anecdotes with him.

It was the first time in 40 years that James had been back to the dish.

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CSIRO prominent on innovation A-list

CSIRO has made or been linked to 14 of the hundred most important innovations in the twentieth century, according to a recently released list.

The inventory, compiled by the Australian Academy of Technological Sciences and Engineering and Sydney's Powerhouse Museum, incorporates public nominations.
CSIRO's century of milestone innovations began with systematic racecourse betting and ended on a dry and healthy note, according to the list.
Mr George Julius, is mentioned for inventing the automatic totalisator. The first machine for computing bets made in races was installed at Ellersile racecourse in Auckland, New Zealand, in 1913, and took up an entire building. It replaced a labour-intensive non-mechanical system, and its inventor became CSIR's chairman in 1926.
Plant Industry's Partial Rootzone Drying method for improving fruit quality by using less water sneaked in at the tail end of the century, in 1999. CSIRO's Dr Brain Loveys and University of Adelaide's Dr Peter Dry jointly developed the technique but, unfortunately for them, the method cannot be patented.
Protein Chemistry's Relenza flu treatment made the list for an innovation in same year. But its story began two decades before when the Australian National University's Dr Graeme Lava isolated and accidentally crystallised one of two proteins in the outside coat of every influenza virus.
CSIRO's Dr Peter Colman joined him in studying the crystal in 1978. Four years later they identified a part of the molecule that stayed the same, important given the annual mutation of the virus.
The pair shared the 1996 Australia Prize with Monash University's Professor Mark von Itzstein who had been working with them on the project for a decade. Biota licensed Glaxo Australia to manufacture and conduct trials on the drug in 1989, and it is now available in more than 50 countries. And the drug was approved for the market in the US, Europe, Britain and Australia in 1999.
Comprehensive stories on the 100 innovations can be found at http://www.phm.gov.au/australia_innovates/
In other recent ratings, CSIRO is in the world's top 1 per cent for knowledge generation in 11 of 22 scientific disciplines over the last decade, according to international journal ScienceWatch.
It ranked as the world's third most influential research agency in environmental science and fourth in agricultural science.
And CSIRO made Overseas Trading magazine's annual list of 50 beautiful exports for the first time to join the likes of Kylie Minogue, Uluru, Foster's and Ian Thorpe. Exports chopped from this year's list include Greg Norman, Bananas in Pyjamas and Bondi Beach. - **Megan Bird**

Our groundbreaking century

1913 - Automatic totalisator machine for computing bets. Inventor George Julius went on to become CSIR's first chairman.

1953 - Mechanical Engineering's Solahart water heater.

1957 - Wool technology from the divisions of Textile, Wool, Textile and Fibre Technology, for improvements in production and processing.

1976 - Ultrasonic Research Centre's Octoson ultrasound scanner for images of body organs.

1962 - Chemical Physics's Atomic Absorption Spectrometer instrument for analysing metals in samples.

1982 - Mineral & Process Engineering's Coalscan coal analysis instruments for measuring coal quality.

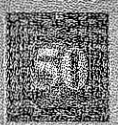
1983 - Mineral Engineering's Isasmelt ore smelter that separates metals from ores.

1988 - Radiophysics's Australia Telescope, an advanced radiotelescope.

1988 - Chemicals and Polymers' non-forgeable polymer banknotes.

1989 - Entomology's nematodes for pest control, large-scale production of worms that kill insects.

1992 - Entomology's buffalo fly trap, a low tech way to rid cattle of insects.



1992 - Manufacturing Science and Technology's EXELGRAM anti-counterfeiting technology, optical security technology for banknotes and documents.

1999 - Protein Chemistry's Relenza flu treat drug, prevents the spread of influenza virus.

1999 - Plant Industry's Partial Rootzone Drying method for improving fruit quality by using less water.

Information: Australia Innovates, compiled by the Powerhouse Museum & the Australian Academy of Technological Sciences and Engineering.

CSIRO medal winners

The $25,000 Chairman's Medal Winner 2001 is the multi-divisional SilviScan Technology Team led by Forestry and Forest Products' (FFP) Dr Robert Evans. SilviScan is a unique integrated suite of instruments that provides cost-effective, non-destructive assessments of many wood-fibre indicators. The team is: Ms Leanne Bischof, Dr Ronald Jones and Mr John van der Touw, from Mathematics and Information Sciences; Mr Malcolm David Boyd and Mr Murray Hughes from Digital Solutions; Dr Tim Gureyev, Mr Bruce Coley, Mr Christoph Kohle and Mr David Tuttleby, from Molecular Science; Dr Geoff Downes, Dr Laurence Schimleck, Ms Kirsty Surridge, Mr David Menz, Ms Sharee Harper from FFP; and Dr Sue-Anne Stuart, formerly FFP.

There were three CSIRO Medal Winners:

The Hydraulic Fracturing in Mining Team is: leader Dr Robert Jeffrey, Mr Michael Camilleri, and Mr Timothy Ferguson from Petroleum; Dr Kenneth Mills from Strata Control Technology Pty Ltd; and Mr Andre van As from Northparkes Mines.

The Bioenergy and Carbon Products Team, all from Forestry and Forest Products, is: leader Dr Paul Fung, Mr Adrian I De Vos, Ms Vanessa Dusting, Mrs Kaye Harvey, Mr Velauthapillai Muruganathan and Mr Soo Ng.

And the DELTA Water-use Efficiency Team is: team leader Dr Richard Richards, Dr Anthony Condon and Dr Gregory Rebetzke from Plant Industry; and Prof Graham Farquhar from the Australian National University.

The CSIRO External Medal Winner was Mohan B. Singh from the Institute of Land and Food Resources, University of Melbourne, for his research with grass-pollen allergens.

And the CSIRO Business Excellence Medal was won by the Growth Factor (GroPep) Team of: team leader Dr John Ballard, Mr Geoff Francis, Dr Chris Goddard, and Dr David A Belford from GroPep Limited; Dr Frank Tomas and Professor Richard Head from Health Sciences and Nutrition; Professor Paul Nestel from the Baker Medical Research Institute; Mr Stephan Wellink, formerly CSIRO Commercial Advisor Agribusiness; and Mr Terry Healy, from Legal.

Young scientists win funds

Three of the 15 winners of the first AFFA Science Awards for Young People are from CSIRO Livestock Industries. They received funding towards these projects.

Dr Dean Jerry from Armidale will go on a study tour of genetic improvement with the aquaculture industry in Hawaii, the US, Norway and the Philippines.

Dr Tim Doran from Geelong will work on developing RNA interference as a biological control strategy for coccidiosis, a parasitic disease of chickens estimated to cost the world's industry more than US$400 million a year to control.

Dr Soressa Kitessa from Perth will be funded to help put lamb roasts as a source of health-enhancing polyunsaturated fats on our tables. He will work on calculating the optimum length of time needed to feed sheep with a special supplement to enrich the meat with omega-3 polyunsaturated fatty acids.

South Australian accolade

Leading scientist Dr Glen Walker won Australia's most prestigious accolade for innovation in salinity research and development in November, the 2001 WE Wood Award.

Australia's National Dryland Salinity Program (NDSP) sponsors the award which recalls Walter Ernest Wood, a railway engineer who observed in the 1920s the link between land clearing and the development of salinity in railway dams.

NDSP's Kevin Goss cited Dr Walker's work as a major contribution to improved understanding of the causes and impacts of dryland salinity in Australia.

"The judging panel was unanimous in its opinion that Dr Walker more than met the award's criteria of scientific content, innovation and lasting significance to Australia," he said. "Glen has been highly influential in refining our understanding of the groundwater processes that cause salinity, and has made a unique and leading contribution to estimating its future impacts."

Dr Walker's extensive work on dryland salinity has ranged from basic research and modelling that has led to the understanding of recharge and discharge in Australian catchments to being one of the authors of the FLOWTUBE computer program for dryland-salinity management.

South Australian-based Dr Walker, who is senior principal research scientist with Land and Water, is seconded to Primary Industries and Resources South Australia.

Land and Water's Dr Tom Hatton was the inaugural winner of the award in 1999.

Top Japanese coal award

Exploration & Mining's Dr Cliff Mallett has become the first Australian scientist to win Japan's top award for service to the coal industry.

The Iki Award recognises Dr Mallett's long-term contribution in building collaboration between Japanese and Australian scientific institutions, mining companies and government.

Under his leadership $40 million of collaborative research projects involving bodies in both countries have been established.

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Statistician reflects on change

A statistician who has seen four decades of change in the way CSIRO does business and the tools it has used to do so recently shared some of his experiences.

George Brown retired from CSIRO on October 12.
He joined the Division of Animal Genetics as statistician in 1961.
He worked during his distinguished career at or with the divisions of Mathematical Statistics, Mathematics and Statistics, Textile Physics, Textile Fibre Technology, Animal Production, Wool Technology and Biometrics Units, with the changes being as often in the name as in the job.
George spoke about scant early computing resources, "mainly electric calculators that are now museum pieces".
"The only computer in Sydney at the start of the '60s was Silliac, with hardware consisting of vacuum tubes that had to be programmed in machine language.
"It used paper tape input/output and, as all our data was on punched cards, this presented huge difficulties.
"Later in the decade, computers with attached card readers started to arrive in Australia and I spent a good deal of time travelling with boxes of punched cards to various installations as far afield as South Australia."
The 1987 McKinsey report heralded changes to the way George and his colleagues worked.
"Barely surviving dissolution the division was split into DMS, which was to be more outward-looking and entrepreneurial, and the Biometrics Units that, more or less, retained our earlier function of working with other CSIRO scientists," he said.
George took on the challenge.
"In the spirit of embracing change I opted for the DMS stream and spent a few years doing quality-related statistics and trying to gain commercial contracts.
"Such work, for me, usually turned out to be small routine applications with little prospect of developing interesting applied statistical work and so I transferred to a biometrics unit where I assessed my experience would be better utilised.
"Three long-term collaborations with my client divisions occupied much of my time for a decade and numerous small commercial jobs helped meet CSIRO's expectation of doing some external work."
Since 1997 George has been a valuable member of the Environmetrics group with Mathematical and Information Sciences.
"Recent work is mainly commercial but offers much more potential for exploratory research although confidentiality restrictions often hamper the publication and dissemination of results," he said.
"Heavy consulting loads and time deadlines for reports to clients, however, means there is often little time for the follow up on research interests."
Good luck and farewell, George.
- Tom McGinness, CMIS

The occupant resigns

Senior communicator Wendy Parsons joined CSIRO on the same day as David Smiles in 1971.

She had worked as a school teacher in Australia and Canada, and told at her November farewell how she had applied for so many jobs she forgot to put her name on the CSIRO application. Her job offer came back addressed to "the occupant".
Wendy joined CSIRO headquarters as a media-liaison officer and went to the Division of Forest Research as a communication coordinator six years later.
She took up a CSIRO Overseas Study Award to the US, Canada, Britain and Europe to evaluate and learn about communication strategies and, on her return, founded and chaired the National Science Forum, which ran for a decade.
Wendy became a Senior Communicator with National Awareness in 1996 and started the National Science Briefings in Parliament House. These briefings are now held at many Australian parliaments.
She was a founding member of Australian Science Communicators, but was most loved by colleagues for her straight-forward and effervescent personality.
Wendy will continue to work in the communication industry for a growing list of clients.

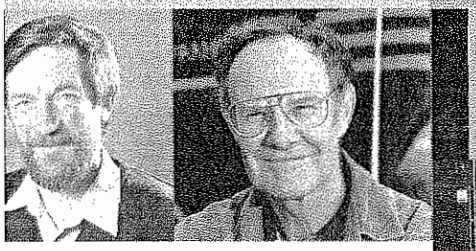
Barbecue farewell for Smiles

About 70 people toasted Dr David Smiles' retirement from Land and Water recently at a barbecue lunch.

David was awarded a PhD from the University of Sydney in 1962 and lectured there on soil science from 1964 to 1972.
During his 30-year CSIRO career he was Chief of Environmental Mechanics from 1980 to 1982, of Soils from 1983 to 1992, and then a Chief Research Scientist in Land and Water.
He has published more than 100 refereed papers, been a visiting lecturer in soil science at Sydney University, the Australian National University, the Australian Defence Forces Academy and the University of California.
Recent work has involved studies on the transfer of triated water for the US Nuclear Regulatory Commission in relation to design for low-level radioactive waste disposal. He is a member of a team identifying suitable sites for an Australian low-level radioactive waste repository.
David's aim is to remain with Land and Water on a research fellowship until nobody notices that he has gone.

Oceanographers step ashore

Two icons of Australian oceanography are about to step ashore after careers that have shaped and paralleled the development of deep ocean Australian research.
Dr George Cresswell and Dr Stuart



Left: Dr Stuart Godfrey
Right: Dr George Creswell

Godfrey began their liaison with the sea when both applied for a CSIRO job advertisement in 1969 seeking a "physicist or mathematician to study the East Australian Current". After working with CSIRO for almost half of the organisation's 75 years, Stuart and George are opting to pursue their favoured research aspirations in a more leisurely but, nonetheless equally committed, retirement.

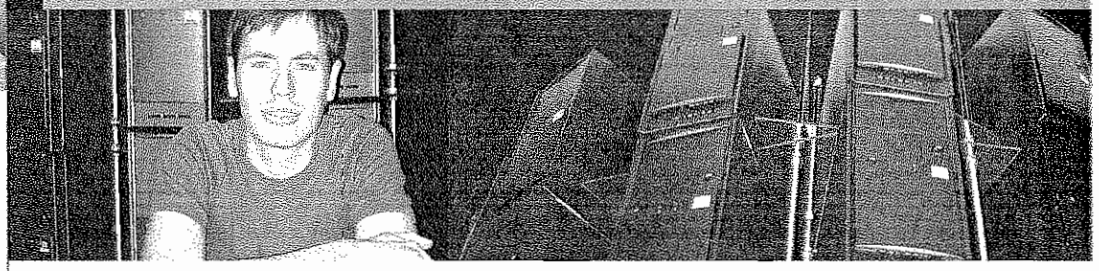
Chief of CSIRO Marine Research Dr Nan Bray said: "Much of what we know of the oceans around Australia can be attributed to the work of these two scientists. "They have made substantial contributions that, in one way or another, touch most Australians, through better understanding of the ocean's influence on Australian rainfall, deciphering the signals of El Nino, and discovery, exploration and dynamical prediction of current systems around Australia, including the Leeuwin Current and the East Australian Current, as well as the recently discovered Rochford Current in the Arafura Sea.

George and Stuart formally leave CSIRO with a fistful of scientific credits and discoveries behind them.

The pair believe the next decade of oceanographic studies overseas and in Australia should see fundamental research of the past three decades translated from theoretical simulations into valuable, practical tools for use by the Australian community.

- Craig Macaulay, CMR

BY MEGAN BIRD



Wild wizard of drug jigsaws

The story of a monster computer in Parkesville, Melbourne, was recently filmed by the Totally Wild crew.

The 24-year-old PhD student who built the 64-processor Cadueus, Mr Kim Branson, has been using it to design drugs for about a year.

"It's like a three-dimensional jigsaw puzzle," he said.

Kim uses a large database of drug compounds and screens up to a thousand of them a day against a protein involved in a disease. The computer matches up to 10 of them and he tests them in the laboratory for solubility, bind and other properties a medicine needs.

"That's good because it gets me out of sitting in front of the computer all day," he said.

"I've had a few successes," he said.

Kim is in the process of patenting a drug that modulates cardiac function, which would be useful, for instance, in heart transplantation.

He plans to hand in his thesis in May next year.

Asked if he would work for a pharmaceutical company after that he replied: "I'm interested in working on Third World diseases."

The computer is named Cadueus after the staff of Hermes, an ancient symbol of healing that has been adopted as an emblem of the medical profession. Hermes, in the Greek pantheon, is a herald and messenger of the gods, god of roads, commerce, invention, cunning and theft.

The computer was constructed to resemble Cadueus and a DNA cluster.

Kim is also working with a friend from Monash University on a related hobby, designing drugs on a virtual supercomputer. He is using the idle times of more than 20 supercomputers owned by institutions and companies in countries such as the US, Holland, France, Germany and Japan, and has linked them by a global grid. Computer owners interested in testing the concept have donated the time.

He built a replica of a three-rotor Enigma, the formidable code machine used by the Germans in WWII and featured in the current-release film of the same name, a decade ago in his father's shed.

Kim's enthusiasm for medicine, science and computing will be screened shortly on the Totally Wild afternoon children's show.

CSIRO Education Manager Mr Ross Kingsland negotiated a deal with the show's Executive Producer, Cherrie Bottger, about three years ago. Cherrie's daughter is a Double Helix member.

The Tuesday-afternoon Network Ten slot is devoted entirely to science stories, most of which are researched by CSIRO Education Marketing Officer Ms Vanessa Woods. Tapes of the resulting stories are made available to divisions for educational use.

Ross said: "I think we played a role in educating the media. Totally Wild found it a new challenge at first moving away from the cuddly animal stories. But now science stories are second nature to them. "

And the show's ratings have increased since CSIRO has been involved in its production.

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O caption:my caption

Last issue's photo is of Econnect's Louise Ralph's daughter who did some impromptu sandwich-board advertising at ABC's outside broadcast during the Brainwaves festival.

Dr Andrew Groth from Molecular Science:

CSIRO child prodigy scientist Dr Ralph demonstrates her new Hot Air-Powered Electricity Turbine. Dr Ralph says all politicians nationwide will be fitted with the new device in order to halve Australia's fossil-fuel consumption.

Alan Andersen from Sustainable Ecosystems:

Students feel propelled to support CSIRO in the face of declining career opportunities.

Darren Osborne from CSIRO Education:

CSIRO puts in bid to buy Ansett, and demonstrates how it will reduce the cost of flying.

Jason Watling from Molecular Science:

What happens when alternative-energy research is not managed properly.

Kevin Cheong from Mathematical and Information Sciences:

Another way CSIRO air travellers could get to their destinations when Ansett stopped flying.

Angelica Jermakow from Plant Industry:

CSIRO has come up with a new way to generate wind-powered electricity... it's amazing what they get work-experience kids to do these days.

And the winner is Land and Water's Greg Doran:

CSIRO tests wind-powered children. "We tried using solar-powered children originally, but we were using a hot-glue gun to hold the panels on and the kids kept squirming," said a senior CSIRO scientist.

Greg wins a Betting On Nature card game donated by Education Programs.

Donut Days were held around Australia to encourage participation in the Insight opinion poll.

But what do you make of this pair, Chief Executive Dr Geoff Garrett and communicator Bianca Nogrady? Write your captions for one or both photographs.

Send captions and photos to CoResearch Competition, PO Box 225, Dickson, ACT, 2602 or email Karen.Robinson@csiro.au

defining:moments

Medical wonder BY IAN WATSON, CIC

Are you picky about numbers? Bruce Warrington, a research scientist from the National Measurement Laboratory, certainly is.

When he's not braving windstorms and blackouts to fill the diesel generator that protects our national time standards he's carrying out high-precision experimental spectroscopy to ensure our clocks are the benchmark of accuracy. He did, however, spare a few minutes to tell me about the defining moment that steered him into research.

"My father is a physics lecturer in New Zealand and, when growing up, I was exposed to the physics' research environment and thought it was interesting," he said. "But the big defining moment was when I bowled up for the pre-medical course orientation interview on the first day at university and they asked: 'Why do you want to be a doctor?' I said: 'Um, I don't really know.'

"They gave me a very good piece of advice, to choose my courses as though I wasn't going to medical school. So I took physics, computer science and some maths and enjoyed them too much to come back to medicine, and here I am."

That moment triggered a career in measuring time for Bruce. I had to know if he is ever late for appointments.

"Sometimes," he laughed. "But I'm getting better.

"My wife thinks it's very funny that somebody who shares the responsibility for maintaining the national time standard is most likely to be five minutes late."

the last:word

"The CSIRO is advertising for an "Experimental Officer Indefinite" . Sounds kind of temporary."
- Sunday Age, October 7

"Back in the 1950s CSIRO pioneered the first domestic solar hot water services ... But that research has not translated into a robust solar energy industry."
- Sunday Herald Sun, August 19

"New Labor has enough tax concessions to put the Cayman Islands out of business. If these cats get elected, the CSIRO will be wearing Armani."
- Financial Review, November 1

"Being a quiet achiever might have suited our national psyche during the CSIRO's first 75 years ... But this is not an image that CSIRO's new chief executive, Dr Geoff Garrett, wants anything to do with."
- Newton magazine

"What Howard didn't mention is the destruction that naivety – by Labor and Liberal governments – has wreaked on our research and development [and] the CSIRO..."
- Sydney Morning Herald, August 23

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