CoResearch
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CSIRO AUSTRALIA

Same old party; some new hats

Well, it's all over, and we even know who's going to be doing the shouting for CSIRO and the rest of the science community. It's Senator Chris Schacht.

He's 47, an ex-school-teacher, a South Australian, and a Keating man, having supported Paul Keating against Bob Hawke during their battle for leadership of the Labor Party.

His political specialties are human rights, foreign affairs, and the media.

He has already shown his interest in communication as it relates to his new portfolio — Science and Small Business.

Several times during the Australian Science Festival in Canberra last month he publicly urged scientists to spend more time blowing their own trumpets. They should put as much effort into communicating the results of their work as they did into producing them, he said.

He even suggested that science communication should be made a compulsory part of all science courses in Australia.

As might be predicted from his portfolio, Senator Schacht is also committed to helping small business in Australia. He is convinced that sector will be crucial to the nation's economic future.

He referred to a recent McKinsey study that claimed some 700 small and medium exporting companies were responsible for more than half Australia's manufactured exports.

He does not, however, hold with helping individual companies, but believes the government should provide financial help for specific industries.

When it comes to science itself Senator Schacht believes the best returns for investment come from pure research.

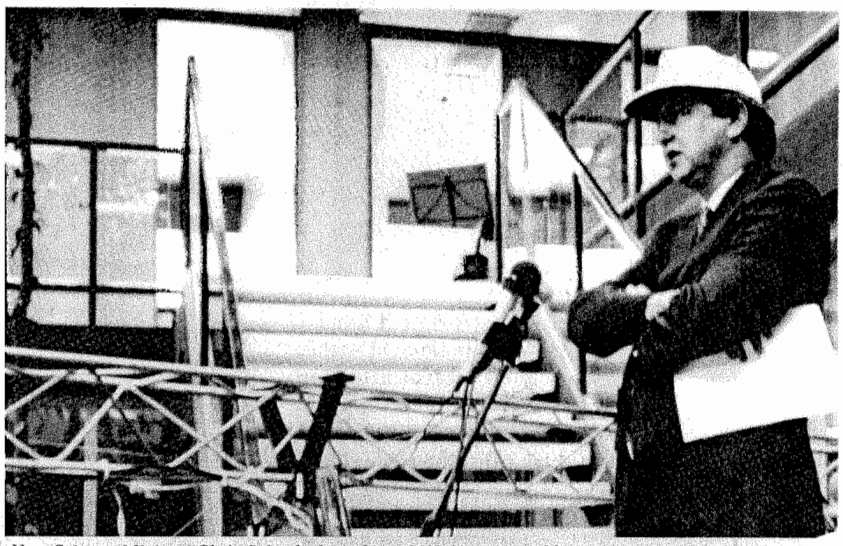
'But you have to explain this in the budget process to people who demand to see immediate results,' he said.

Initially a school teacher, Senator Schacht became a temporary organiser for the ALP in South Australia when he was 23, was for a time press secretary for the South Australian Minister for Agriculture in the Dunstan government, and became State ALP Secretary in 1979.

He entered the Senate in 1987.

Chris Schacht has been outspoken on human rights in South-East Asia and South Africa, republicanism, broadcasting policy and the concentration of media ownership.

He has chaired parliamentary committees on Foreign Affairs, Defence and Trade; the Political Broadcasts and Political Disclosures Bill; and Subscription Television Broadcasting Services.❖



New Science Minister Chris Schacht launching CSIRO's BIOTA 93 on April 2. Both he and CSIRO Chief Executive Dr John Stocker were accused of wearing funny hats, but in fact they wore the extremely dignified BIOTA 93 caps provided by the organisers, as can be verified above. BIOTA, an independent part of the nine-day Australian Science Festival held in Canberra last month, attracted 33,000 visitors, making it even more successful than the inaugural BIOTA in 1990. *(See page 11.)*

Not bad. Now, once more with a bit less energy ...

Think globally; act locally. That's what the environmentalists are always saying. Well, there's a CSIRO Division that might qualify, in that respect, for a place in their list of green achievers.

The Division of Atmospheric Research in Melbourne is probably best known for its work on the greenhouse effect. That's about as global as a research area gets, and now they've matched it with an impressive little bit of local action.

The staff have spent the past year doing everything they could to reduce electricity consumption. And they've got it down by 10 per cent.

That 10 per cent translates to about 70 tonnes of carbon dioxide that wasn't added to the earth's load of greenhouse gases last year.

According to the Division's Chief, Dr Graham Pearman, it has mainly been a matter of simple things like switching off lights and equipment after use.

Having done so well so far is going to make it hard to do better, but the Division's staff are aiming for a further five per cent cut in energy consumption during the coming year.

CSIRO's Chief Executive, Dr John Stocker, said the Division offered an example to the whole Organisation of what could be done with co-operative action.

'This Division,' he said, 'has reduced its annual energy bill by more than $5,000. That money is now going into research.'

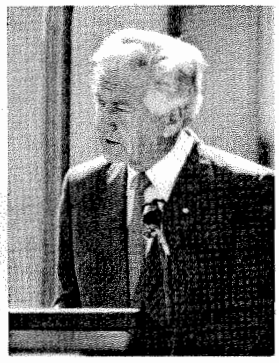
So, you buy one local event with a global consequence, and you get one free, it seems. Has to be a bargain.❖

International grassland congress

The International Grassland Congress held in Australia and New Zealand in February this year attracted some heavyweight grassland gurus. Above, left to right, Dr Malcolm Hadley from UNESCO, Professor Kevin O'Connor from Lincoln University, New Zealand, and Mike Young from CSIRO. Scientists at the congress weren't just sitting around watching the grass not grow. According to many of them the world's grasslands may not last 10 years. Politicians, they say, must work with scientists and the community to reverse land degradation trends. From that point of view, the situation may have improved since they spoke *(see story page 3).*

STOP PRESS: April 21. The CSIRO Division of Water Resources has won the Australian Water and Wastewater Association's Peter Hughes Water Award for its contribution to water conservation. Details next issue.

Aspendale and the Atmosphere of the electorate



Above, left, Paul Keating campaigning at CSIRO's Division of Atmospheric Research at Aspendale just before the election, 1993. Right, Bob Hawke, the same, 1990.

You could hardly call the recent election unexciting, I suppose, but there was a lot of disappointment within CSIRO ranks at the almost total lack of attention paid to science and technology. The 1990 campaign had a strong focus on science, but this time jobs, and other quality-of-life issues, took over the whole stage.

So science, which surely should have been a prominent player, remained stuck in the wings, with nobody effectively making the connection between innovation, technology, and jobs.

Apparently, no one was noticing that during the recession small business was starting to emerge very strongly, particularly in the manufacturing areas. It is interesting now to ask how these so-called 'born-to-export' companies acquire their technology. CSIRO will be paying close attention to that in a new study at the initiative of the CSIRO Board.

It is also worthy of note that there's one thing you absolutely have to do if you want to win an election, and that is to go and take the waters at the CSIRO Division of Atmospheric Research at Aspendale three days before the election.

Bob Hawke did it in 1990, releasing his election policy at a time when the opinion polls gave him no chance, and won the election.

This time Prime Minister and Mrs Keating, the Minister for Science and Technology Ross Free, and the Minister for the Environment Ros Kelly all turned up three days before the election at Aspendale. Mr Keating gave an excellent, very confident speech, looked every inch a winner as he stood on the podium, and confounded the pundits by winning the election.

I think it's going to be a very brave candidate who ever again faces the Australian electorate without first having taken tea (or tested the Atmosphere?) at Aspendale.

The election has also delivered us a new Minister, and I had the pleasure of a first meeting with Chris Schacht soon after his appointment. He is a direct, vigorous man, clearly deeply interested and engaged. He expressed great enthusiasm about the portfolio he now holds, which includes not only science and technology but small business and customs.

Already at that first meeting he has spoken of his keenness to explore links between technology and small business, and that fits very well with CSIRO's efforts to build productive links with industry.

He also expressed a great interest in scientists as communicators. He said he had noticed CSIRO doing a lot more in this regard in the past few years — though still more could be done — but he thinks that many other research groups and organisations are still quite unable to communicate what they do and why they do it. He urged CSIRO to continue emphasising communication; to keep training people in media skills and encouraging them to get involved in explaining our reason for existence. It will not be enough to say to Minister Schacht that a Division is employing 25 PhDs on a particular site; it will be critical to explain what they're doing, why they're doing it, and who benefits from their presence there.

Chris Schacht said he would be a regular visitor to Divisions. He's very keen to see our work and meet our people. He told me he likes to turn up unannounced so as to avoid elaborate preparations, formal presentations, and facing groups of people in suits. I told him that from my experience in the Organisation he wouldn't have too much to worry about on the sartorial front!

He's interested in a broad range of issues. Human rights were prominent, and his recent work on a parliamentary committee on telecommunications has increased his knowledge of — and interest in — the directions in which policy-making and the industry might be going in that area. On this topic, I told him about a very successful recent liaison meeting at the Division of Radiophysics in Epping.

I and some CSIRO colleagues — Colin Adam, John Brotchie, Dennis Cooper, Bob Frater, John O'Callaghan and Lyndal Thorburn — met and talked with Mr Graham Evans, Departmental Secretary, and other senior personnel from the Department of Transport and Communications. That meeting was highlighted by the identification of a number of opportunities for joint research. It ended with a splendid and spirited set of presentations from CSIRO scientists on the site ... communication at its very best!

Our new Minister's portfolio falls under the Cabinet Ministry of Industry, Technology and Regional Development, for which Alan Griffiths has been given responsibility. Alan Griffiths is already an old acquaintance of CSIRO's through his frequent contact with us while he was Minister for Resources under the portfolio of Primary Industries and Energy. I'm looking forward keenly to an active working relationship with him, particularly in those areas where CSIRO can help to strengthen industrial performance and where the Government can help to stimulate industrial investment in research. In early April I was pleased to deliver the latest in the series of DITARD Industry Policy Seminars.

All this leads me to a final point. I recently spent half a day with a very important CSIRO group — men and women nominated by their Directors to attend CSIRO's Leadership Development Program. I always find this group stimulating and our discussion at Woodend was no exception.

That discussion was mainly focused on a new report commissioned by the Organisation's Human Resources Branch and produced by Gibson Marlow Consulting. The report was an analysis — based on interviews with people at the highest leadership levels in CSIRO, Government and industry — of the qualities that should be demanded of a CSIRO Divisional Chief. That is, in PPE terms — and the report was in PPE terms — a report on what the people interviewed thought should be the new competencies for CSIRO Chiefs.

It was very interesting to note that in the last four years, since the original competency model for Chiefs was produced, much greater emphasis is being placed on the ability to interact with stakeholders, on entrepreneurial skills, and on those competencies the report called 'client orientation' and 'commercial orientation'. That is, on commitment to a culture in which emphasis is placed on delivery of results to someone outside the Organisation.

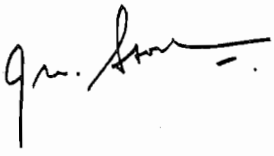
Several participants in the leadership course reminded me forcefully that we are going to have to recognise these qualities not just in words but in deeds, and especially in our promotion criteria. I was able to point to the recent promotion of Phil Jennings from within the Organisation across an Institute into a position as Chief of Tropical Animal Production as a recognition of a strong leadership performance demonstrating just these sorts of competencies.

Another example is Adrian Williams. He was promoted for exactly the same reason to the position of Chief of the new Division of Petroleum Resources.

The same thing can be seen in recent appointments of Program Leaders, many of whom I mentioned in my December column last year, when I spoke about multi-Divisional programs.

All of these Program Leaders were chosen for their skills in achieving results through their leadership of groups of people rather than for scientific stature alone.

CSIRO has long provided a national warehouse of brilliant scientists. What we need now as well is to foster an Organisational culture around effective delivery of technology to the people who need it.



John Stocker
Chief Executive

Letters to the Editor

But first, a letter from the Editor ...

I'm sorry it's been so long since the last *CoResearch*, though not entirely sorry to have had so many calls about it. I had a couple of months off in a row because of a bit of surgery, and when I returned, of course, it was to a pile of work even higher than after a normal holiday. Laziness did come into it too, as I was sternly advised to take it easy for a while, and did, but all that is behind me now ... —Ed.

Dear Editor,

I think there are good grounds for complaint about the recent introduction of the new five-tiered PPE Stage 3 forms. First, there is the well publicised, obvious lack of final, or further, consultation with the CSIRO Division of the PSU, before introduction of the new Stage 3 forms (everyone seems to agree the old Stage 3 forms needed changing).

Second, and less well publicised, is the abysmal timing and mismanagement of the introduction of these new forms. Stage 3 was under way throughout CSIRO, and completed in my project group, before new Stage 3 forms arrived in the Divisions. Surely revision and introduction of the forms should have occurred by January 1993. Even costed at one times salary (not to mention extra printing costs and the felling of a *few* extra trees) the cost to CSIRO of staff time to re-do Stage 3 is immense. Perhaps a three times multiplier should be used to account for staff malcontent.

I find it ironic that HRB are spending large sums of money on management training courses for staff, and yet seem determined to tough out a situation that need not have happened, but did through their own bad management.

One might ask, who within HRB had as one of their PPE objectives 'to release the revised PPE Stage 3 version by March 1993', and who were the Manager and the next-level Manager who agreed to such ludicrous timing? One might also ask 'Did all three people get their increments?' — that would be the least of the costs to CSIRO.

Yours sincerely
Greg Davis
Division of Water Resources

continued on page 8

International Grassland Congress calls for action

— and the grass is looking greener on this side of the election

When Paul Keating announced four days before the Federal election that he would allocate $20 million to Australia's degraded grasslands and rangelands the answering cries from conservationists were glad but faint. They, like every other group, expected him to be out of work, and out of public money, within the week.

But he was re-hired, and that casts a new and brighter light on much of what was said at a fortnight-long international grasslands conference held in New Zealand and Australia in February this year. Communication Manager for CSIRO's Division of Tropical Crops and Pastures, Jenni Metcalfe, was there, using her communication skills to help make the conference a success. She offers CoResearch readers this report.

More than 80 CSIRO staff members from seven different Divisions made the journey to Palmerston North in New Zealand and to Rockhampton in Queensland for the Seventeenth International Grassland Congress.

The first highlight of the Congress was its official opening by the Governor-General of New Zealand, Dame Catherine Tizard.

Dame Cath gave a stirring welcome to the 1,300 scientists at the Congress from over 100 countries.

She challenged scientists to make their research relevant to the policy-makers of the day.

'Scientists need to work to influence politicians more meaningfully than in the past,' she said.

'Politicians will never be influenced to action unless there is an informed public pressing them.'

President of the International Grassland Congress, Dr Ray Brougham, told delegates at the Congress they should debate the issues surrounding the good management of grasslands and provide some real recommendations and conclusions.

'Make them good and meaningful,' he said, 'because perhaps the world has not got much time left to ensure the sustainability of its grasslands.'

His words were echoed by the keynote speakers who challenged scientists to work with sociologists, economists, farmers and politicians to develop productive and sustainable grassland systems.

The first speaker, Professor Hal Mooney from Stanford University, said the world could expect a global population of more than 8 billion people in less than 30 years.

'This is placing enormous pressure on the earth's resources, including the grasslands,' he said.

The themes and concerns of the first afternoon were echoed throughout the Congress during sessions dealing with a range of topics from plant resources to technology transfer and education.

Dr Bob Clements, Chief of the Division of Tropical Crops and Pastures and Vice-Chairman of the Australian Organising Committee, summed up what he saw as the main issues highlighted at the Congress —

1. Worry over the sustainability of the world's grassland ecosystems under pressure from population growth, low commodity prices, world trading policies, land development, climate change and the need to preserve biodiversity.
2. The need to move faster and further in using the world's vast wealth of knowledge and technology to produce farming systems that work.
3. The impact that new technologies will have on the maintenance and productivity of grasslands.
4. The need to make current scientific research and technology relevant to the needs of farmers and graziers, other beneficiaries and policy-makers.
5. The world-wide trend towards decreased investment in research on grasslands, just when the need for that research was increasing.
6. A new vitality among the world's grassland scientists.

Dr Clements said that the Congress had been particularly important in motivating grassland scientists around the world. 'We broke new ground in the organisation of this Congress,' he said. 'We opened the Congress up to the developing world in a way that had not previously been attempted.

'At the same time, we moved away from a previous preoccupation with scientific disciplines to focus attention on the urgent issues confronting the world's grassland ecosystems.

'There is a new vitality among scientists who have attended the Congress.

'They have been challenged to look at the relevance of their research and to influence policy-makers around the world to address the needs of grasslands and grassland farmers.'

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High-tech help from CSIRO

CSIRO had several computer systems on display at the Opening Congress in New Zealand, and they attracted quite a bit of interest from delegates:

- CLIMEX, from the Division of Entomology, for looking at the effect of climate change on the distribution of pests;
- LANDASSESS, from Tropical Crops and Pastures, for assessing the condition of rangelands and making predictions;
- METACCESS, Plant Industry, for predicting the weather;
- GRAZFEED, Plant Industry again, for planning better ways of managing pasture for livestock;

RANGEPACK, Wildlife and Ecology, for better management of cattle in rangelands;

- SWIM, from the Division of Soils, for predicting the movement of water and nutrients in soils.

Trevor McDougall wins Rivett Medal

Above, CSIRO Board Member Doug Shears prsents the 1992 Rivett Medal to Trevor McDougall of the CSIRO Division of Oceanography.

Dr Trevor McDougall of the CSIRO Division of Oceanography has won the 1992 David Rivett Medal for ten years of outstanding research in oceanography.

'Australia's regional oceans play a vital part in our economic future, as well as being the key to understanding our climate,' Dr McDougall said.

The 1982 El Nino–Southern Oscillation (ENSO) caused the death of 71 Australians, made 8,000 people homeless and cost the nation an estimated $2.5 billion.

Other ocean changes are also costly. 'For a 0.5 degree Celsius rise in the surface temperature of the equatorial Pacific Ocean, the nett value of Australia's crops decreases in the order of $1 billion,' said Mr Doug Shears, CSIRO Board Member and Executive Chairman of ICM Australia, who presented the Medal.

Mr Shears said the kind of research Dr McDougall was doing was vital for Australia's agricultural industries, who needed to plan for variations in climate, droughts and floods.

Dr McDougall is recognised as the world's leading authority on many aspects of how the waters of the oceans mix. Mixing in the deep layers of the oceans plays a critical role in global heat balance and climate change.

Over the past ten years Dr McDougall has made important contributions to many aspects of ocean mixing, and has discovered four previously unknown mixing processes.

The David Rivett Medal was begun in 1962 by the CSIRO Officers' Association to honour Sir David Rivett, Chief Executive Officer and later Chairman of CSIR, the organisation that evolved into CSIRO.

Notably, this is the first and last time the Medal will be presented by the CSIRO Staff Association. Until recently it was given by the Officers' Association, and now it will go over to the CSIRO Division of the PSU.

A Matter of Opinion

This month's opinion comes from Geoff Lane of the CSIRO Division of Exploration and Mining (formerly Exploration Geoscience) in Sydney. Mr Lane also manages the North Ryde site's Visual Resources group.

Announcement of the final round of Co-operative Research Centre selection suggests that attention to the quality of research proposal presentation is warranted in some quarters. This is particularly so in the dog-eat-dog funding decline we are forced to endure, but it should be stressed that these views are driven by the realities rather than ideals.

As I write, a Labor campaign promise from the recent election dangles the carrot of another ten CRCs in front of a punch-drunk scientific community. The 1990 CRC money bucket now allocated, these established programs and others in the future will need to be supplemented, enhanced, expanded and promoted — all possible only with an adequate commitment to excellent presentation.

The somewhat prevalent attitude — 'a glossy presentation gives the appearance of not needing the funds' — is naive at best, stupid at worst. In this competitive environment, everything must be professional, especially the science, of course, beginning with a properly presented argument for that dirtiest of commodities — money. The professionalism continues with properly presented reporting during the research, thus justifying the granting of the money. The end of the process is a properly presented final report and/or commercialisation plan. Good presentation need not be costly but the best science in the world is useless if it does not impress someone. It must be well presented.

During the work you may wish (indeed you may have been invited) to tell your colleagues and peers what you are up to. If you are still projecting pages of the phone book to support your theories and discoveries, the chairman ought to throw you out — assuming he/she and the audience are still awake. If you are doing it right, you may just win best paper.

So where does one obtain this holy grail of presentation technology? Chances are it is right there, somewhere in your Division. However, you may have to look pretty hard and it is quite likely to be suffering from a lack of effective management. You might be lucky enough to be in one of those areas which has access to a disciplined group.

Alternatively, you might be producing your own presentation resources (you know — bringing in your own Pentax or running that bootleg copy of Harvard Graphics on your PC). If so, don't let on to the Chief, who certainly wouldn't approve of highly paid scientists doing the work of skilled technicians ... would he?

You might be in a Division that purchases its presentation needs from commercial sources, in which case you must be awash with funds. But you still don't get quite what you want because science really isn't their bag.

But wait, there's that 'M' word back there — management — that thing for which this Organisation now exists, rather than for science as once was the case. Perhaps what is required is a little bit of m...m...management applied to those technical skills in presentation technologies. Get a few people talking to one another, perhaps doing a bit for one another ... the illustrator from Division X helps out the photographer from Division Y; the draftsman actually shows the graphic designer a thing or two and hey, I'll be damned if you don't have a bit of a cohesive group working here.

And just so Management feels involved with it all, you could ask It to set up some sort of funding arrangement for this emerging asset of presentation technologists. On second thoughts, work it all out yourself and then tell Management how it all runs. There will be a free lunch the moment a dollar is earned. OK, morning tea, at least ...

Believe it or not, all this actually works. All that is required is a little lateral thinking, flexibility and a commitment from a few people to work together productively rather than in selfish isolation. A higher degree in creative accounting is certainly useful, and, frankly, easily found in the new, economically rationalised CSIRO — the budgetary obligation *sans-appel* [without appeal] to devolve every minuscule expense and 'overhead' to project level leads to some bizarre practices as we all know! It will help to be able to communicate with more than one Division, but that is not nearly as difficult as getting one Division to talk to another. That's impossible, so don't waste time trying.

The bottom line is that you may actually start to impress people sufficiently to fund your latest idea (as long as it is strategically targeted of course). You might also join the ranks of those who regularly gain best paper or meritorious slide show awards at 'Conference Internationale'. Even if you are very, very shy, you will feel a little bit proud. The debilitating quest for the ever-elusive research dollar might actually begin to be fun ... and successful!❖

Media skills

... a scientific approach to the media?

CSIRO's Corporate Public Affairs has organised a two-day course designed to help scientists make better use of the media to get their message across. It brings them into contact with working journalists from television, radio and newspapers, and discusses the practice of getting exposure in the media.

What makes a good news story? How do you contact journalists? What is a good time to approach the media? How are the needs of a newspaper journalist different from those of a television journalist? How should a scientist handle awkward or potentially embarrassing questions? What preparation needs to be done? How do you stop the media from getting the facts wrong or misrepresenting the story? What should you wear for television?

Scientists and journalists come from different worlds with different pressures and deadlines, but in producing a good story, often their interests come together. Once the scientists understand how the journalists work, and the conventions and forms of their finished products, it gets easier to make the media work for them.

Specific topics covered include —
- a comparison of the priorities and needs of the different media;
- what makes a news story, and how it should be phrased;
- how to make a launch or big announcement;
- what to do when a journalist knocks on your door;
- how to prepare for the television cameras;
- writing a media release, and why scientists need the help of trained communicators;
- handling the hot questions.

The courses are run in a friendly atmosphere, with participants drawn from a number of CSIRO sites and other institutions. They are held away from CSIRO sites, so that participants are not distracted by normal business. A folder of notes and tips is given out.

Information about costs, locations and dates of the course is available from Beryl Morris, CSIRO Information Network, phone 02/413/7526.

Sir Ian McLennan Achievement for Industry Award

It's that time of year again, when nominations are called for the Sir Ian McLennan Achievement for Industry Award.

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

Winners are given a grant of up to $15,000 for an overseas study tour related to their achievement. They are also presented with the Sir Ian McLennan Medal at a lunch-time ceremony, which this year will take place in Sydney.

In these cost-cutting times the Award should be quite a help to those trying to catch up with overseas developments, or to increase even further the returns on their development in this country.

Joint winners for 1992 were Mr Les Edye, Division of Tropical Crops and Pastures, for his contributions to the tropical cattle and pasture seed industries, and Dr Robin Hill, Division of Exploration Geoscience, for his contributions to mineral exploration in Australia.

Brochures explaining the conditions of the Award and how to apply have been sent to all sites. The closing date for nominations is 30 June 1993 and the winner should be announced in October.

More details can be had from Ms Karen Robinson, CSIRO Corporate Communication, PO Box 225, Dickson, ACT 2602; phone 06/276/6108 or fax 06/276/6641.

Pinjarra Hills — open at last!

by Jenifer North, Manager, Corporate Communication

On a hot February 5th, Queensland Premier Wayne Goss officially opened the new CSIRO Centre at Pinjarra Hills, just outside Brisbane.

The Queensland Centre for Advanced Technologies (QCAT) is a joint venture between CSIRO and the Queensland State government. It takes on research and development in all aspects of the minerals, energy and manufacturing industries. Its goal is to increase the international competitiveness and efficiency of Queensland's and Australia's resource-based industries, and the industries related to them.

Mr Goss said he saw the Centre as a vital link in his State's strategy to become a world leader in mining, mineral processing and manufacturing. It was, he said, 'a milestone to a new future'.

In what may be a record for an opening, the Premier also announced a $1.3 million extension to the Centre, funded by the Federal and Queensland governments.

CSIRO Chief Executive Dr John Stocker, in welcoming Mr Goss, said he saw QCAT, with its joint projects reaching out beyond Divisions and beyond CSIRO, as a symbol of the Organisation's new outward focus.

Dr Alan Reid, Director of CSIRO's Institute of Minerals, Energy and Construction (IMEC), had thanked the many people involved with getting this project off the ground at a dinner the previous evening. However, he did specially single out at the opening Chiefs Ming Leung and Bruce Hobbs for the initial impetus, IMEC's Resource Manager, Peter Bosci and Corporate Property's General Manager, George Harley, for their help with the realisation of the idea.

The first planned opening, in September1992, had to be postponed at the last minute because a State election was called, but the wait has been worth it. Most newly opened laboratories are rather skeletal in staff and equipment, but not this one. The wait had enabled it to build up its staff and resources, so we saw a complex humming with activity.

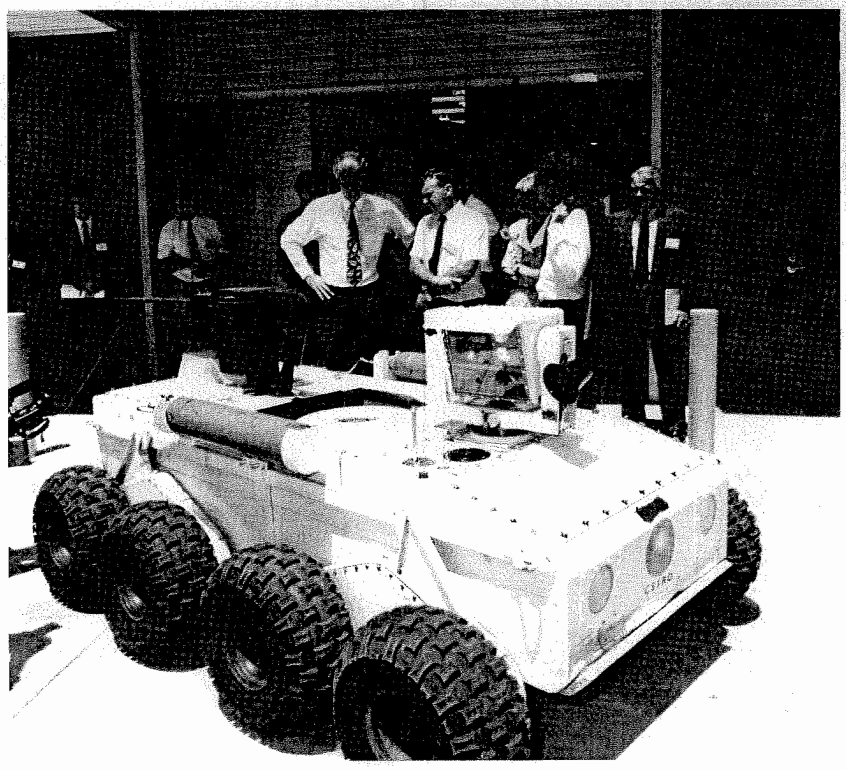
The Centre is now the headquarters of the Division of Geomechanics and houses staff from the Divisions of Coal and Energy Technology, Manufacturing Technology, Mineral and Process Engineeering, and Soils. About 110 people already work there.

The headquarters of the Co-operative Research Centre (CRC) for Mining Technology and Equipment is located at the Centre, and a substantial CSIRO project in light metal casting, part of a new CRC for Alloy and Solidification Technology (CAST), will also be established there. These two CRCs provide strong research links between CSIRO and the University of Queensland.

The Centre also hosts the Queensland Supercomputing Laboratories, which makes a medium supercomputer available to CSIRO, as well as to academic and industrial users.

After the formal opening ceremony, guests were invited to join extensive tours. It was a bit like a package holiday — so much to see and so little time. A lot of staff had put a lot of effort into well thought-out displays that whetted the appetite for more information.

I was uncharacteristically silent — conscious that asking too many questions would delay our group — but there's a lot of interesting work going on there in mine design, mining methods, mine-site rehabilitation, oil and gas engineering, mineral processing and waste management, coal preparation, and metal casting ... to name but a few. I'll be back, folks!❖



Above, NUMBAT, the remote-controlled mine rescue vehicle developed by CSIRO, gets an airing at the official opening of the new Queensland Centre for Advanced Technologies at Pinjarra Hills. Left to right, Wayne Goss, Premier of Queensland; Dr David Hainsworth, Project Leader, Mine Communication and Automation, Division of Geomechanics; Joanne Stocker and Dr John Stocker, Chief Executive of CSIRO, and Dr Graham Price, Acting Chief, Division of Geomechanics.

New Chief for Soils

At the end of January this year Dr Roger Swift took over as Chief of the CSIRO Division of Soils. He brings to the Division not only an impressive research career but a good deal of administrative experience.

He has come to CSIRO from his post as Professor of Soil Science and Head of the Department of Soil Science at the University of Reading, England. While in that post he was also Dean of the Faculty of Agriculture and Chairman of the Centre for Earth and Atmospheric Science.

Dr Swift has taken on a number of specialist consultancy assignments for industrial and other organisations, worked as an adviser and given refresher courses for technical experts in the fertiliser and agro-chemical industries.

He first came to Australia as a post-doctoral fellow with the University of Western Australia. Later he moved to Edinburgh University as a Senior Lecturer in Soil Science. His next post was as Professor of Soils Science and Head of Department of Soil Science at Lincoln University in New Zealand. While there he was also made Vice-Principal of Lincoln University. It was in 1989 that he moved to Reading.

Dr Swift is a chemistry graduate from Birmingham University, and his research expertise is largely in the area of soil chemistry.

He has been elected to a number of national and international soil science posts, and is a member of the Council of the British Society of Soil Science.

Leon Smith wins Comcare award for seeder safety

If an ounce of prevention is worth a pound of cure, Leon Smith's new combine-loading platform must be worth about six state-of-the-art adjustable hospital beds complete with heavy traction gear and mature, well marbled surgeons (junior surgeons and anaesthetists assisting), five of the best heavy-duty wheelchairs and a couple of solid oak coffins, with metal trim.

Because it used to be a dangerous business at CSIRO's Ginninderra Experiment Station, loading and unloading combine seeders. A spokesperson at the station, which is part of the CSIRO Division of Plant Industry in Canberra, said, 'Whilst we are assured that suitable loading ramps are available at particular properties, the reality is that they are often makeshift and dangerous.'

Well, not any more.

In broad daylight Leon Smith, overcome by Necessity, conceived an invention. The idea was to make a low platform onto which the combine could be backed and secured. The platform is on wheels, so that it can then be winched up the sliding tray onto the truck and again securely attached. Unloading is the same thing in reverse. It's very safe.

Late last year Mr Smith's invention won Comcare Australia's 1992 Prevention Award for Commonwealth Sector Occupational Health and Safety in the ACT. ❖

Do-it-yourself cross-fertilisation

Two CSIRO scientists, Dr Ken Yap from the Division of Information Technology and Dr Grant Griffiths from the Division of Radiophysics, recently took part in a management course at Little Bay in Sydney with about 40 others from Divisions across the Organisation.

They were struck by what Dr Griffith called 'the amazing breadth of expertise and talent' they saw at the course, and equally by how little interaction really goes on between Divisions.

They were particularly impressed by the powerful creative potential of conversations between scientists from widely different backgrounds.

As an example of this creative potential, Dr Griffiths cited the use of millimeter-wavelength radio-waves to measure the fat content of leather, and the control of some insect pests by magnetic fields.

On the less glamorous side, he pointed out, such exchanges can also provide a wealth of useful information on such things as work practices, sources of supply, Divisional administration and management structures.

This potential for cross-fertilisation prompted Drs Yap and Griffiths to put forward a simple scheme to try to captialise on what they saw as a virtually undiscovered resource within CSIRO.

The essence of the scheme, in its present form, is that it allows scientists to visit other Divisions for one or two days to share ideas about projects, methods of problem-solving and, generally, how things should be done.

The visitor gives a short talk on the activities of his or her own Division and provides a brief written report after the event.

'It is important,' said Dr Griffith, 'that there is a specific host for each visit, also a member of the scheme, who has a genuine interest in sharing information.

'The success of the scheme depends on getting the right people. It will not appeal to everyone.'

The two doctors handed out a questionnaire at the Little Bay course, and the response was generally good.

Encouraged by this, they enlisted the Human Resources Branch to help them with a more detailed list of questions. This they sent out to about 280 CSIRO staff of CSOF level 6 and above.

The staff to be surveyed were chosen at random — Dr Yap received a questionnaire, and so did one retrenched employee — and the sample represented about 10 per cent of the Organisation.

The results of the survey are too detailed to cover here, but most respondents found the scheme interesting and thought their program or project could benefit from it.

They all believed, in greater or lesser degree, that Divisions had ideas that would be useful to other Divisions.

One and two-day visits, once or twice a year, was the average preference.

However, it wasn't all agreement. Among the comments offered were 'too busy doing PPE and earning 30 per cent'; 'you can't organise serendipity'; 'contradicts intellectual property ethos'; 'if we don't talk locally, why fund it nationally?; 'group visits more efficient'; and 'I'm a sociologist so I can help everyone and no one can help me'.

Dr Griffiths said that several useful suggestions were offered, most of which have now been incorporated in the scheme.

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Second Madsen Medal for Trevor Bird

The 1992 John Madsen Medal has been awarded to Dr Trevor Bird and Mr Christopher Sroka of the CSIRO Division of Radiophysics for their paper *Design of Ku-Band Antennas for the Galaxy HS601C Satellites*.

This is the second time Dr Bird has won the Madsen Medal. The first time was in 1988, for a paper called *Earth Station Antennas for Multiple Satellite Access*.

The medal is awarded annually by the Institution of Engineers, Australia, in honour of Sir John Madsen, foundation professor of electrical engineering at the University of Sydney from 1920–1949.❖

Caption Competition

Bungee jumping was the most popular theme for this one, but the winning entry came from John Burns of Canberra's Division of Water Resources — 'Stop your bloody tantrums. There are only three more transepts to do'. Another nice one came from Pat Francis of Materials Science and Technology in Clayton: 'Dung beetles buried Ted here in 20 seconds'. Brad Sherman, Centre for Environmental Mechanics, was a close third with 'You want me to shorten the bungee cord next time?' (even though it isn't related, at least as far as I know, to CSIRO work).

Bev George, from Food Science and Technology in Sydney, sent 'You must show me your job description some time' and Lynn Pulford of Education Programs in Canberra suggested 'The effect of too much Bundy'. Ron Chatelier of Chemicals and Polymers in Clayton had a similar idea, with 'Another victim of the latest Australian craze ... Bundey Jumping'. Ron also suggested 'An Institute Director being trained to carry the world on his shoulders'. From the same Division, and apparently after some collusion, Alastair Hodges submitted 'John Stocker discussing science policy with Ross Free'. (I know we've got a new Minister now, but still ...)

B.G. Hunt from Atmospheric Research sent 'Now, for the second part of your PPE ... ', and from Jenny Goode of Forest Products in Clayton came 'Good Heavens! I don't know why they drink it, that Bundey (Centro) rum'.

Gerry Sheltinga from the Information Network in Melbourne submitted 'A devotee pays his respects at the memorial of bungee-jumper extraordinaire Mr B. Centro'; from Noelene McCormack of the Division of Applied Physics in Sydney came 'Well that didn't work too well; now will you try the ferret?'; M. Mullett from Mineral Products in Floreat sent 'In this plot we are attempting to grow the perfect male scientist'; and this totally different entry came from Karen Perera of Mineral and Process Engineering — 'An ordinary drinking straw, if stabbed into a raw potato in a certain way, will go straight through it. CSIRO scientists in Australia are now testing the theory that if you did the same to the earth with your head, you should surface in Guatemala'.

Ross Hansen, Division of Tropical Crops and Pastures in St Lucia, sent 'Just look around down there. Don't you agree these are the best root systems we have developed for pastures yet?'

From Honorary Research Fellow T. Patrick Maler at Coal and Energy Technology in Sydney, came 'Come on Al! I know that you're married with children, but it isn't the end of the world!

Thank you all, and here's another. Fairly promising, I think ...

The rainbow connection, and China's increased ginseng harvest

How's your Yin-Yang balance? If you're getting on in years, or if you'd like to be a hard-driving, career-obsessed corporate competitor, but can't seem to drum up the enthusiasm, you might consider a little Chinese ginseng to warm up the whole system and stimulate your failing Yang.

Traditional Chinese medicine defines its remedies with terms like 'cool' and 'warm', 'female' and 'male', or 'Yin' and 'Yang', rather than by reference to their specific effects on localised maladies. Chinese doctors treat the person rather than attacking the disease; they placate the body rather than chastising it.

Here in the West (well, culturally speaking ...) we still seem to think in terms of casting out devils, be they tumours, viruses or diseased organs; so we poison, irradiate, liposuck or cut off bits of ourselves in order to become more healthy.

The Chinese tend to aim at something more like peaceful co-existence among their devils; going in less for redundancies, as it were, and more for strategic corporate restructures.

At least, that was one impression I got from a brief interview with a fascinating young Chinese scientist who is spending six months working in the Canberra Division of Plant Industry.Madam Liu Li-xia is a plant biologist on loan to CSIRO from China, where she has won awards as one of the '25 Best Young Scientists of the Chinese Academy of Sciences', in 1991, and as one of the '10 Best Young Scientists of Jilin Province', in 1993, for her work on increasing the yield of ginseng, both Chinese and American, among other triumphs.

Ginseng is one of China's most important crops, and a very difficult one to cultivate. Traditionally too expensive for any but the wealthy, it has come down dramatically in price, but remains very much a luxury crop, and very popular. The Chinese have great faith in its rejuvenating powers.

Apparently it was common in old China to call together the family when an ancient was dying. In those days travel was slow, and the relatives looking after the ancestor-to-be would, if they could afford it, place an entire ginseng root in the old person's mouth. It was believed this might delay death long enough to allow the whole family to be present.

In Madam Liu's province — Jilin, in the north-eastern region of China — ginseng is by far the most important commercial crop, and her group has managed to increase the annual yield by 8 – 10 per cent, without causing the plant to lose potency.

Her work has been focused on the effects of light on two varieties of the ginseng plant — Chinese and American. (There is a long history on the American continent, too, of the medicinal use of ginseng by both Indians and settlers. (One of its relatives with which we are more familiar, if only from American movies, is sarsaparilla, a popular soft drink with reputed tonic properties.)

Both varieties of ginseng, she said, act as tonics for the whole system; both tend to help the body fend off infections. Nevertheless, Madam Liu says that they are, in the terms of Chinese medicine, virtual opposites in the way they work.

Chinese ginseng is in the warming category, she said. It enhances the positive, the masculine, the Yang. American ginseng is in the cooling category, increasing the balance in favour of the Yin forces, the feminine, the negative. Older people, she said, 'might like to take' the Chinese variety, while anyone might use the American. And neither variety would properly be called a 'medicine'.

It reminded me of another conversation, with another Chinese woman, years ago. She had said that the great thing about Chinese medicine, the thing that made it superior to western medicine, was that it had 'no effects'. It had seemed obvious that she meant no bad effects — no unwanted side effects. But maybe she really did mean no effects, or at least none on particular internal organs, just a rebalancing, a re-alignment of complex forces, resulting in greater well-being.

Madam Liu is no herbalist, of course. Her concern is in increasing the yield of the valuable plant, and in this she has been remarkably successful. By studying the effects of light of differing quality on photosynthesis in ginseng she has been able to establish the best quality of light for optimum growth.

One of her triumphs has been the development of a multi-coloured plastic cover for the ginseng plants. The plants grow best in shade, but the exact effects of different colours and intensities of shade have been unknown up till now. Normally the very rare, very delicate, very valuable ginseng has been found at the bases of mountains, under trees.

But not under most trees, and not at the bases of all mountains.

And just planting it in spots that looked like the spots where it grew naturally hasn't worked out very well.

Madam Liu's treatment is working well. Purple, she says, has been the most successful colour, but her nearly 10 per cent yield increase has come from a plastic sheet with a carefully researched combination of all the colours in various intensities.

Drs Jan Anderson and Fred Chow, with whom she is working at Plant Industry, are interested in trying out her findings on shade plants here. Shaded cloths and plastics, says Dr Anderson, have been used before, in the middle east, for example, but in these cases there were no scientifically arranged bands of colour; a lower light intensity was aimed at, not the subtlety of the natural shade of trees and mountain slopes.

Madam Liu, in her turn, is impressed by what she has found here. She is particularly taken by the vastly better opportunities for training here, including equipment and libraries, and would dearly love to do her PhD in Australia. (She gained her MSc in Plant Biophysics in 1988.) She says it makes her feel very lucky to be working in CSIRO, where she is able to do research experiments all day long.

Considering the daunting nature of the obstacles in her path, Madam Liu is already doing impressively well in China. Aside from all her prizes, she is an Associate Professor in the Laboratory of Bioluminescence in the Changchun Institute of Physics of the Chinese Academy of Science. The Academy is the counterpart of CSIRO, except that it has 60,000 employees compared to our 7,000. Madam Liu's husband is also an Associate Professor, at the Northeast Normal University in Changchun, and they have a six-year-old son.

She says it is more difficult for women to succeed in science in China than it is for men, as women have also to look after 'the children, the family and the husband'. On the other hand, she says, young scientists like herself are being encouraged and rewarded much more than the older ones by the current Chinese Government.

Well, one wonders, with all those accomplishments behind her, is she really as young as she looks? Might there have been some secret ginseng-nibbling in the lab?

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Madam Liu Li-xia shows Dr John Stocker the rainbow-coloured plastic sheet she has developed for optimising the growth of ginseng, one of China's most precious plants domestically, and one of its most lucrative exports. By careful experimentation with combinations of colours that mimic the natural shade lighting the plant prefers, she and her group have managed to increase yields by 8–10 per cent. Ginseng is the main product of Jilin, Madam Liu's province. She is working at the Division of Plant Industry as part of the CSIRO/Chinese Academy of Sciences Exchange Program, having been judged to be one of the most promising young Chinese scientists of the Academy in 1991.

Letters to the Editor

continued from page 2

Dear Editor,
I would like to respond to the issues raised by Greg Davis about the introduction of the five-point rating scale in PPE Stage 3 and the timing of the change.

Introduction of the five-point rating scale

The CSIRO Division of the PSU and other unions who have represented CSIRO staff were consulted before changes were made to PPE. They were involved in the PPE Review and its presentation to the Consultative Council. The recommendations were then put to the CSIRO Executive Committee which approved the change to a five-point rating scale. Despite the support for the five-point scale by the majority of managers (63 per cent), implementation teams (83 per cent), human resource managers (82 per cent) and staff (53 per cent) surveyed in the PPE Review, the PSU proposed a three-point scale (preferred by seven per cent of staff). Given the restricted time frame, the expressed desire of staff for a five-point scale and the apparent gulf of difference between CSIRO staff and the PSU, the Executive Committee decided to implement the five-point scale.

The timing of the change

In most Divisions the PPE cycle for 1992/93 began on 1 April 1992 and finished on 31 March 1993. The replacements for pages 7 and 8 were available in time for the end of the cycle and the majority of staff will not have to 're-do' their PPE Stage 3. A few Divisions, including the Division of Water Resources, chose to align the PPE cycle differently and the replacement pages were not available for their staff who had started to do Stage 3. Since the only changes to pages 7 and 8 were the rating scale and the section outlining the potential reward options, the additional action required is a reconsideration of the rating for those staff whose performance was rated as 'very good' on the four-point scale.

The Decision to revise the PPE Stage 3 for this cycle was the Executive Committee's. The Human Resources Branch's role was to assist the Organisation to implement that decision.

Yours sincerely
Bob Marshall
Acting General Manager
Human Resources Branch

Godism exposed

Dear Editor,
You somehow manage to find ever lower moral depths to sink to, don't you! To racism and sexism you've now added blasphemy.

In the December issue of *CoResearch* (No. 351) your cartoon entitled 'Read My Rainbows' depicted God as incompetent, untrustworthy and, worst of all, bald!

But you have hoist yourself with your own petard. In your strenuous attempts at defamation you have inadvertently represented Her as a man!

Prudence Goodbody
Division of Psychobotany

Too clever for our own good?

Dear Editor,
We are being urged to become the clever country. Cleverness today means living a life of leisure, sustained by an automated economy. Yet our political leaders think that cleverness means working long hours exporting goods and services. Is this cleverness or world-class stupidity?

Science makes it possible to hand much production and distribution over to automatic procedures, but too many people are still stuck in the stone age. The owners of capital want to expand their business activity, just for the sake of it. If this is cleverness, who needs it?

The natural world is full of automation. The sun shines down indiscriminately, cubic kilometres of rain fall out of the sky, and plants produce an atmosphere for us to breathe. All this at no charge. Such natural processes can be thought of as analogues of an automated economy.

Rather than use science to engage in a global trade war, we should use science to create a world of abundance and leisure.

David Erskine
Division of Water Resources
Griffith

History distorted

Dear Editor,
I am prompted to write to you by the article in the December 1992 *CoResearch* 'Crean opens new wool lab' in which attention is drawn to the new SIROLAN–LASERSCAN instrument for measurement of the distribution parameters of fibre diameter of a sample of wool.

Unfortunately, but perhaps inadvertently, the impression is given in the article that the new instrument has filled a vacuum and that here, at last, is the first means of measuring mean fibre diameter, a characteristic that is quite rightly described as important in determining the processing and end-use potential of a parcel of wool.

The impression is a misleading one; measurement of mean fibre diameter of semi-processed wool (tops) was made possible from about 1954 by the work of Anderson and others in the Leeds laboratories of WIRA and by the work of Monfort and his associates in Belgium. A form of 'airflow' apparatus was developed on each side of the Channel with only minor differences between the two. In 1968 James and Bow, at the CSIRO Division of Textile Physics (now the Division of Wool Technology) showed that, with some preparation, samples of raw wool can be measured by the airflow method. Since then the method has been used by AWTA and other laboratories as part of the pre-sale measurement system. A number of improvements have come about, some from CSIRO, some from AWTA, as a result of experience. An important factor in maintaining the accuracy of the measurement is the conduct of round-trials by an independent international organisation (Interwoollabs) based in Brussels. A similar assurance scheme will be necessary in the case of SIROLAN–LASERSCAN.

The main limitation of the airflow method is that it gives no measure of fibre diameter distribution; that measurement, if required, initially had to be done by means of the tedious manually operated projection microscope. This situation stimulated the search, that has extended over a number of years, for an automated version of the projection microscope procedure culminating in the development of SIROLAN–LASERSCAN.

The ingenious application of the latest technology in the new instrument is worthy of emphasis but I believe it is not necessary to distort history in order to achieve that emphasis.

Yours sincerely,
H.G. David (Retired)
Formerly Division of Textile Physics/Wool Technology

More pictures please!

Madam Editor,
Can I again please use your columns to ask for pictures to be sent to me for the CSIRO Christmas card? Both of last year's cards used pictures that were sent in as a result of my *Coresearch* request.

So if any of the readers have attractive photographs or computer images relating to our work, I'd love to see them. The photographer gets credit on the card.

Could I have them by the beginning of June please? Send (preferably) duplicates to me at Corporate Communication, PO Box 225, Dickson, ACT 2602.

Jenifer North
Manager, Corporate Communication

Play it safe

if you work with chemicals

CSIRO's Health and Safety Advisers have developed a comprehensive computer data-base containing safety information on thousands of chemicals.

It is a compact disc library of in-house and commercial data-bases, and you get into it through CSIRO's Megapack communication link.

To get into the system you need a terminal connected to the Megapack. This gives you access to the host compact disc library at North Ryde. You will need a software package called Norton's PC Anywhere (4.5) Remote Software.)

Once connected to the system remote users can —
• view all on-screen information;
• print selected files at the remote printer; and
• transfer selected files from the host system to the remote terminal.

To check that your site has access to the system contact your Health and Safety Adviser or Librarian.

For more information contact Graham Rockwell (data-base development) on 02/887/8616, or Steve Kingham (communication/technical information) on 02/887/8614.

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May is Manufacturing Month in CSIRO

Throughout May CSIRO will be running a series of events to highlight the contribution that research and development can make to the productivity and world-competitiveness of Austrialia's manufacturing industry.

Research areas to be covered include smart manufacturing technologies, instrumentation, waste management, pharmaceuticals and the automotive industry.

The events are designed for Chief Executives and Directors of manufacturing enterprises;
investment advisers; and
middle managers, who want to improve their product lines or manufacturing processes.

Some program highlights include —

the **launch** at the Grand Hyatt Melbourne, with the topic *Australian technology: the direction for Australian manufacturing*

Business Breakfasts
• pharmaceuticals, diagnostics, biomaterials and medical devices (Sydney and Melbourne);
• waste management: monitoring and treatment technologies (Sydney, Melbourne and Brisbane);
•State-specific events for Western Australian and South Australian manufacturing.

Forums and Seminars
• the Car of the Future industry forum (Melbourne);
• Australian leather — the latest technology (Melbourne).

Exhibitions and tours showcasing Australian technology in advanced materials, new processes, workplace re-organisation and standards and quality (Sydney and Melbourne).

For more information on events and how to book for them, call Melbourne 03/418/7363 or Sydney 02/413/7526.

Governor-General tours Brisbane Divisions

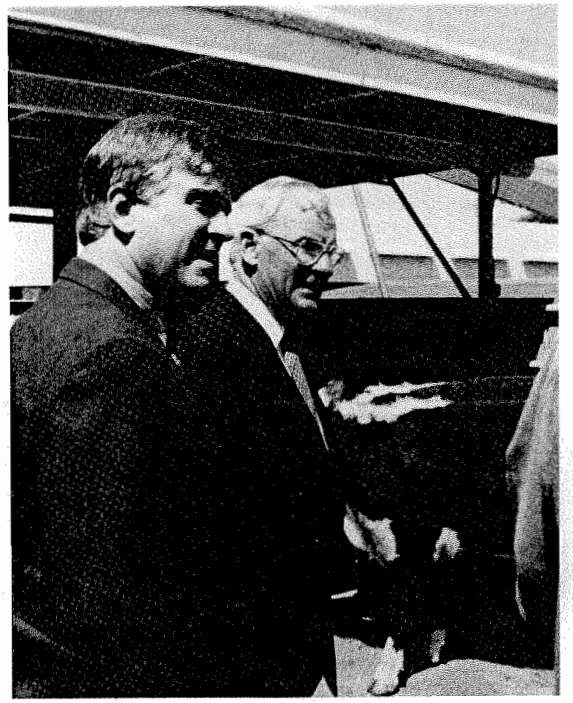
Australia's Governor-General, Bill Hayden, sought specialist advice from CSIRO's rural research sites in Brisbane on April 5.

Visiting the Division of Tropical Crops and Pastures and the Division of Tropical Animal Production, Mr Hayden was introduced to research for the broad-acre tropical crops and northern cattle industries.

Highlights of this research included advances towards cattle tick control and buffalo fly vaccines.

The visit provided Mr Hayden with an insight into how CSIRO tackles problems for farmers and graziers in areas similar to Boonah where he owns a property.

The latest technology was on show during the visit and Mr Hayden had a sneak preview of CSIRO's multi-million dollar Controlled Environment Laboratory at St Lucia, due for completion in September this year.



Above, Governor-General Mr Bill Hayden tours the CSIRO Division of Tropical Animal Production with its new Chief, Dr Phil Jennings (left).

Rickard elected to Academy

Professor Mike Rickard has been elected a Fellow of the Australian Academy of Technological Sciences and Engineering.

This is just the latest in a long string of awards and honours accumulated by Professor Rickard. To pick out a few — the recent inaugural Clunies Ross National Science and Technology Award; his Fellowship of the Australian Society for Parasitology and his Professorship at the University of Melbourne; a University of Queensland Medal and the Bancroft-Mackerras Medal of the Australian Society for Parasitology; and, of course, his Chiefship of the CSIRO Division of Animal Health.

Professor Rickard — BVSc (Hon), PhD, DVSc, FASP, FTS — has concentrated most of his research on tapeworms, both those that infest livestock and those that can be passed from animals to humans.

He is the author or co-author of more than 120 scientific publications.

He was elected to the Executive Board of the World Federation of Parasitologists in August 1986 and is now chairing the World Health Organisation's working group on hydatid disease.❖

International astronomy symposium in Sydney

CSIRO's Australia Telescope National Facility and the University of Sydney got together recently to host an international astronomy symposium on campus.

The University runs one of the world's most interesting telescopes — a world-class instrument for measuring the sizes of stars.

It's called SUSI (Sydney University Stellar Interferometer), and it lives alongside the Australia Telescope at CSIRO's Paul Wild Observatory, near Narrabri in New South Wales.

The week-long symposium was about making highly detailed pictures and measurements of objects in space — which is the function of both the Australia Telescope and SUSI.

The purpose of the meeting was to discuss new techniques and recent results.

About half the astronomers at the conference were optical astronomers (working with telescopes that collect light) and half radio astronomers. As technology has developed the the techniques used in the two fields have begun to overlap.

The meeting discussed a diverse range of subjects, from telescopes in orbit (both existing and planned) to ways of making images of the planets using radar (making pictures by bouncing radio signals off the planets' surfaces).

One new technique was developed as Star Wars technology and has only recently become available for astronomy.

The technique consists of firing a laser beam into the upper atmosphere and focusing it at a distance of 10 kilometres to create an artificial star.

This 'star' is used to guide the telescope optics, allowing astronomers to correct for the effects of the atmosphere, which otherwise limit the performance of large optical telescopes.

This new technique will allow large optical telescopes to perform much better.

People came to the symposium from observatories around the world, and were interested to compare Australian observatories with their own.

After the symposium about 75 of the 200 attendees went on a tour up to the Paul Wild Observatroy, to see the Australia Telescope and SUSI, and then went on to see the telescopes at the Australian National University's Siding Spring Observatory near Coonabarabran.

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DSTO and CSIRO to strengthen links

Australia's two largest research and development bodies, CSIRO and the Defence Science and Technology Organisation (DSTO), are moving to increase their level of collaboration.

On the formal side, a memorandum of understanding on collaboration was signed just before Chirstmas by CSIRO Chief Executive Dr John Stocker and the retiring Chief Defence Scientist, Dr Bob Ward. The agreement will be reviewed in two years' time.

On the practical side, a research liaison and co-ordination committee is working on ways of getting the project moving.

The committee met in March at CSIRO's Division of Applied Physics in Sydney. Apart from the business of the meeting itself, DSTO visitors were given a tour of the site and expressed considerable interest in much of the Division's work

More visits are planned, with the next to be a visit by CSIRO research staff to the Defence Surveillance Laboratory at Salisbury in South Australia in September.

Any CSIRO scientist interested in having a look at the work going on in Salisbury should ring Malcolm Robertson at CSIRO's Corporate Services Department, Canberra, on 06/276/6222.

A gathering of Australia's two research giants, CSIRO and DSTO, at the CSIRO Division of Applied Physics in March. Left to right, Barry Inglis, Program Manager, Applied Physics; Malcolm Robertson, Corporate Services Department; Colin Adam, Director, Institute of Industrial Technologies; Achim Leistner, Division of Applied Physics; Chris Walsh, Program Manager, Applied Physics; Ian Hagan, First Assistant Secretary, Science Policy, DSTO; Wyn Connick, Director, Aeronautical Research Laboratories, DSTO; Geoff Horne, DSTO Central Office; Arthur Blewitt, Director, Corporate Services Department.

CSIRO signs up for $9-million agricultural research facility

Above, Dr John Radcliffe, newly appointed Director of CSIRO's Institute of Plant Production and Processing, signs a contract for the construction of major new facilities at the Waite campus in Adelaide. (Left to right, John Takats, CSIRO Property Unit; John Radcliffe, Director, IPPP; Derek Hough, Manager, Buildings, Baulderstone Hornibrook; Gary Dare, Project Manager, Baulderstone Hornibrook. Photo by Philip Martin.)

The facilities will be shared by researchers from CSIRO, the newly created South Australian Research and Development Institute (SARDI), Primary Industries SA, the SA Animal and Plant Control Commission, the Co-operative Research Centre for Soil and Land Management, and the Soil Science Department of the University of Adelaide.

The centre will bring together the soil science and land management resources of major participants in South Australia and will provide a national focus through CSIRO and the Co-operative Research Centre,' Dr Radcliffe said, 'This co-location will generate the biggest synergistic agricultural research effort in the nation'.

The contract formally initiates a $9-million works program expected to be completed by mid-1994.

The signing, which took place on March 19, was Dr Radcliffe's first public duty since taking office as Director of IPPP on February 8. Formerly Director-General of Agriculture in South Australia, he is also Chairman of SARDI, and has played a major role in developing the Waite Institute Campus as a joint initiative between the South Australian Government, CSIRO and the University of Adelaide.

Rizzardo wins Polymer Medal

Above, Dr Ezio Rizzardo, winner of the Australian Polymer Medal for 1992. Dr Rizzardo, a Program Manager in the CSIRO Division of Chemicals and Polymers, also led the polymer research team that was awarded a CSIRO Medal for outstanding achievement in 1990 and won the Chairman's Medal in 1992. Dr Rizzardo joined CSIRO in 1976 and is now a Chief Research Scientist at the Ian Wark Laboratory in Clayton, Victoria. He was recently appointed Director of the Co-operative Research Centre for Polymer Blends.

Scared of flying?

If so, you might be interested in some non-profit clinics aimed at curing fear of flying that are being offered in a number of Australian cities.

They are run by the Australian Women Pilots' Association in conjunction with Australian Airlines and Qantas, and cost about $450 for a series of seven three-hour weekly sessions.

And apparently they work.

According to Sally Sheppard, one of the women pilots involved, 'many people say it is the best thing they have ever done for themselves'.

There have even been cases, she says, of participants going on to become pilots themselves.

Ms Sheppard says that about 15–20 per cent of people have such a strong fear of flying that it affects their choices about how they will travel.

'For many,' said Ms Sheppard, 'their fear stops or limits their travel for work, family, holiday or other commitments

'Many recognise that their fear is out of proportion with realistic risks associated with flying, but ... providing them with information alone often doesn't help.'

However, she says, the course run by the Women Pilots does seem to work.

Participants listen to and ask questions of experienced members of the aviation industry and the course psychologist; watch videos; listen to tapes and inspect aircraft and various facilities at an airport.

The course finishes with a Graduation flight. Sydney and Canberra graduates fly to Melbourne, and Melbourne graduates to Sydney, have lunch, and fly back. While there, they also explore the Australian Airlines Flight Training Centre and some 'reward themselves' by taking the controls of one of the flight simulators.

Courses are usually run twice a year. The next courses will begin in Canberra, Melbourne and Sydney in Spring 1993.

The courses, says Ms Sheppard, are effective and confidential, run by sympathetic people who love flying.

If you want more information, call —

Canberra: Liz McKenzie, 06/248/0103 (h) or 06/243/7377 (w), or Sally Sheppard, 06/274/0908 (w);
Melbourne: Barbara Annison, 054/28/2620 (h);
Sydney: Glenda Philpott, 02/522/8709 (h).

CSIRO and the first Australian Science Festival

There were some disappointments, but on the whole the recent inaugural Australian Science Festival was a great success. The Festival Co-ordinator, Lynette Williams, is very pleased with the result. She said that during the nine days of the event more than 70,000 people showed up for its 65 activities at 30 separate venues around the national capital. 'The first Australian Science Festival has now set the stage for an annual Science Festival in the National Capital,' she said, 'thanks to support from the Commonwealth and ACT Governments, the science community and the many individuals who participated.'

Fascinated kids at Canberra's BIOTA 93, which attracted an estimated 33,000 out of the 70,000 who attended events throughout the nine-day Australian Science Festival. As always, spiders were by far the most popular display, but these once-warm-blooded animals pictured above also attracted quite a few.

BIOTA 93 — CSIRO's natural science and environment festival

CSIRO wasn't officially part of the Australian Science Festival, but of couse we did things during it, and the biggest thing we did was BIOTA 93, at Canberra's Black Mountain site.

BIOTA was certainly one of the most successful activities throughout the Festival. In its three days, from April 2–4, it attracted an estimated 33,000 visitors. (The estimated total for the whole festival was 70,000.) That figure was based on the numbers attending the Spiders and Termites exhibit, on the reasonable assumption that everyone who could would visit that (they always do). However, the queue this year was so long, so constantly, that many gave up and missed the exhibit. So the numbers of visitors were probably quite a bit larger.

Perhaps it just goes to show that experience counts for a lot. CSIRO had already had one BIOTA, in 1990, and knew some of the ropes. Even that event had been firmly grounded on the experience of past Black Mountain Open Days.

A great deal of advertising was done for the event, much of it simply through the enthusiastic, and free, efforts of CSIRO staff, and it paid off in a great deal of publicity in the media.

Of course all the tents were put up, spruiked in, and taken down by volunteers. Visitors were able to talk direct with the scientists doing the research displayed, and a lot of work went into making sure that children would be able to understand and enjoy the exhibits. There was a lot of science, but there was also a touch of carny, provided by food stalls, toys and activities for the kids. (Research from the last BIOTA had shown that visitors typically came in family groups with two children aged between five and thirteen).

This year's BIOTA Festival had five themes: waste management, land and water care, biodiversity, genetic engineering and global change. Twenty-three CSIRO Divisions were involved.❖

Human resources conference

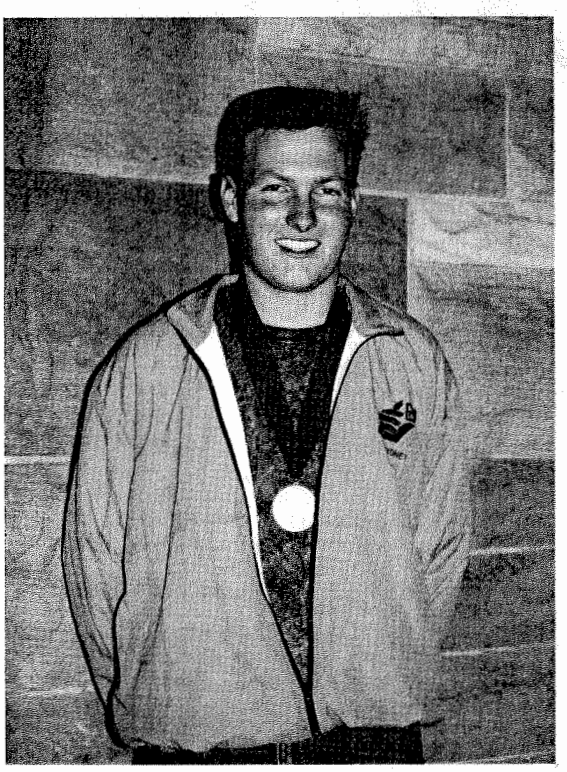
Another very successful part of the Science Festival was CSIRO's first international conference on the problems of human resources management in research and development organisations.

The conference attracted speakers from Britain, Sweden, Indonesia, South Africa and many other countries.

CSIRO Chief Executive Dr John Stocker announced at the conference that the Organisation would be spending $2.5 million in an attempt to raise its number of Aboriginal and Torres Strait Islander staff to 70 by 1988. This would be 1 per cent of staff (as against less than 0.1 per cent at present) and much closer to the currently estimated 1–2 per cent throughout Australia.

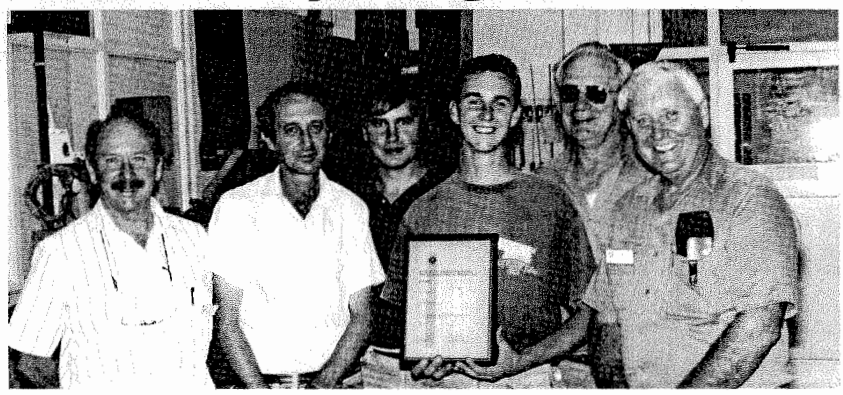
Human Resources Branch staff will be seeking out Aboriginal science students at Australian univerities and offering themselves as mentors to help them through their courses.❖

Public honours for CSIRO's young achievers



Warren Preston, an apprentice draftsperson at the CSIRO Division of Radiophysics, sports the silver medal he won at the Australian Work Skill Titles held in Sydney from February 8th to 13th. CSIRO had one other competitor in the Titles, Mr Richard Schuhmann from Materials Science and Technology at Clayton, competing in the Computer Numerical Control Machining section. Mr Preston said it was a 'fantastic experience' to meet and compete with other young people from all over Australia. He and Mr Schuhmann wanted to encourage all other CSIRO apprentices who had not competed before to enter the next round of Work Skill, which begins about a year from now.

Above, Nick Goldie, media journalist with Corporate Communication, offers a suggestion for a possible attraction for BIOTA 93. (See story page 11.) Nick was one of many CSIRO staffers, from Divisions around the country, who gave up a lot of their spare time to help make the event a success. He co-ordinated the waste-management theme of the festival. Other co-ordinators were Lena Melero-Nichele, Rob Wiseman, Robyn Turner, Mick Crowe and Sandy Smith.



Grant Potter, surrounded by his colleagues, displays his 2nd Level Apprentice Award, the first ever awarded by CSIRO. (Left to right, John Anderson, Alan Cook, Todd Crandell, Grant Potter, Joe Miksch and Bob Thomas.) Mr Potter, who works in the Sydney Laboratory of CSIRO's Division of Wool Technology, was judged to have demonstrated the most outstanding overall achievement among all of the Organisation's second-year apprentices in 1992. At an official ceremony on March 25 Dr Ken Whiteley, Chief of the Division, presented Mr Potter with a framed certificate and a cheque for $100. Mr Potter is apprenticed as a fitter-machinist, and has been involved in several of the Division's most important current projects.

CSIRO's Division of Entomology in Canberra is offering garments embroidered with a choice of two CSIRO logos — the normal blue and white one and a reverse logo in white over the garment colour. The company making them has restructured its ordering system, allowing Entomology to offer a greater range, more colours, and a cheaper price. Full details can be had from Pat O'Mahony — phone 06/246/4001 or fax 06/246/4000

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CoResearch

No. 353 June 1993 CSIRO's staff newspaper

CSIRO AUSTRALIA

Peter Colman's flu research: a light at the end of a very congested tunnel

The influenza research of Drs Peter Colman and Jose Varghese of CSIRO's Division of Biomolecular Engineering featured in a front-page story in the authoritative British science journal *Nature* this month, and has attracted a great deal of publicity ever since. With good reason: influenza, 'The Flu', *La Grippe*, has been a great scourge of man and other animals throughout history, and any promise that we might finally be beating it is news indeed. And not just because of aches and shakes and time off work.

The First World War brought people from all over the world into close contact with each other, and killed about nine million of them. Immediately after that a wave of influenza swept across that smaller, chastened world and wiped out four times as many in a quarter of the time — 20 million directly, and another 20 million from secondary infections. With a world population of two billion at the time, that was one person in 50.

It wasn't the first time the flu virus had turned really nasty; it was just the most dramatic in recent times. In fact influenza is a frighteningly persistent enemy: it keeps attacking in a new form just when our bodies have found a weapon that works against the old.

It's still ranked as the world's most lethal virus, AIDS notwithstanding. The vaccines medical science has come up with are some help, but not much, and not for long; they offer the immune system a sort of Identikit picture of the current attacker, but by next week he's grown a beard, put on 20 kilos, and changed his race, age and licence plates. The immune system has to set to work to fashion new defensive weapons against this mutated virus, and that takes time. During that time the body may sicken and die under the assault.

More than 10 years ago, however, CSIRO scientists started down a track quite different from that of the vaccines, seeking a cure that didn't depend on stimulating the immune system. They found one identifying mark of the flu virus that never changes. It's a characteristic little pocket in the outer skin, and subsequent research has used knowledge of the exact shape of that pocket to design a matching molecule that can lock into it. This can incapacitate the virus and stop the disease spreading, whatever new or old strain it may be. At least, that's the theory.

And it's not just theory. The drug has already proved completely successful in protecting ferrets against all strains of the disease, and will be tested this year on human volunteers in Australia, Europe and the USA.

If all goes very well, a drug could be on the market before 2000, and there are hopes, based on animal tests, that it will be not just a prophylactic, but a 'morning-after' pill. That would be a huge advantage, not only in offering a second chance to those for whom advance protection had failed, but in offering the option of using the drug only on those who needed it. This would be especially useful if the drug turned out to have side-effects, or a price-ticket, that made it a bad bargain for the healthy.

The development of the drug is the culmination of 15 years of research by a team led by Drs Peter Colman and Jose Varghese of CSIRO's Division of Biomolecular Engineering.

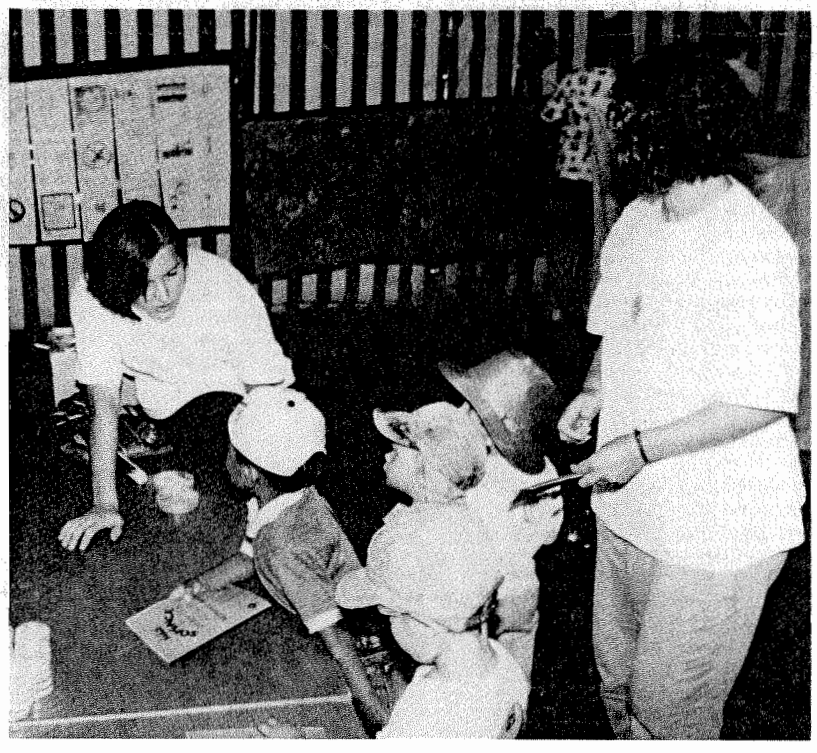
About 10 years ago they first discovered the common feature in all flu strains, and realised its potential for designing a cure. *Nature* published a detailed description of it in 1983.

Using this research, Dr von Itzstein of the Victorian College of Pharmacy — funded by Biota Holdings, who bought the intellectual rights to the discovery from CSIRO — was able to tailor a molecule that could lock on to this constant feature and stop the virus in its tracks.

Glaxo Australia has now joined Biota in developing the drug, but CSIRO and the College of Pharmacy share a one per cent interest in royalties from the discovery, split 75:25.✣

CSIRO Stress Project completed

CSIRO's Donald McDonald, a physicist and psychologist, has recently completed a pilot research project into stress levels in the workplace, using several hundred CSIRO staff of various Divisions at the Clayton site as a sample. He has developed a series of questions and a computer program that lets you answer them in the privacy of your own office. He hopes it will become widely used, and not just in CSIRO. His results check out very well against recognised measures of stress, and some of those results are perhaps surprising. For example, it turns out that CSIRO workers are much less stressed than the average public servant, or at least we complain much less (1–2 per cent of our compensation claims are for stress, as opposed to an average 8–9 per cent in the greater public service). Most of our work stress, as is apparently standard with workers in both public and private sectors, is reported as coming from communication problems with supervisors, but we have our own special high-stress areas — presentation of work to colleagues and industry, and the getting of funds from industry. Turn to page 3 for a more detailed report.



Remember BIOTA? Although it certainly wasn't a local event, but featured displays from Divisions around Australia, the CSIRO celebration of environmental science held earlier this year as part of the first Australian Science Festival in Canberra did include a local element: Canberra kids were invited to say what problem they would like to solve if they were scientists, and nearly 1,000 of them responded. Among the replies — 'how you have babies without having to have sex'; 'to solve what is going on in my head'; 'a magic band-aid to stop the hurting'; 'to solve the problem of cot death by designing a special pillow that holds the baby's head and the baby can't turn over but only wriggle'; and 'a way to save water for the garden by using sea water and taking the salt out of the water'.

CSIRO's Manufacturing Month

Above, Nufarm Managing Director Doug Rathbone (left), and CSIRO Chief Executive John Stocker, at the launch of Manufacturing Month, examine a gidget developed jointly by the two organisations.

At the time of writing, we've just rolled up the Big Top after our second successful Manufacturing Month, a special CSIRO season designed to improve our links with important stakeholders in the business community.

The Month involves breakfasts, seminars, and meetings all over Australia. With eminent speakers brought in from outside, CSIRO and industry representatives get together to focus on the best means of combining forces in the interests of Australian development.

At the launch of Manufacturing Month in Melbourne the Minister for Science and Small Business, Senator Chris Schacht, spoke enthusiastically on this. He particularly stressed the important and growing role of small and medium enterprises in building the Australian economy, and the importance of CSIRO as a source of technologies for this dynamic sector of the economy.

In my speech I too raised these issues: I'll repeat some of the points I made.

A recent and much-quoted report by McKinsey and Company identified a band of small and medium-sized Australian firms they named the 'Magnificent 700'. These 700 have helped Australia record a growth of nearly 19 per cent per annum in elaborately transformed manufactures over the last five years. This is extremely good news, and cause for optimism.

But there are still far too many companies that haven't embraced the advanced manufacturing technologies so vital to competing in the international market.

CSIRO wants our successful exporters to continue to grow; and we want new recruits to join their ranks. That 700 could become 7,000!

The McKinsey study found that next to quality, our successful exporters listed technology as their most important competitive advantage.

Overseas experience shows that if these companies are to maintain this advantage they will need access to external sources of expertise.

Like us.

CSIRO recently commissioned McKinsey and Company to produce a tailored report on how we can help the Magnificent 700 — and others that are so far falling short of full magnificence — to improve their access to the expertise they need.

That report is now complete and was presented to the Organisation's Executive Committee on June 11. It was a Board initiative, and of course the Board's latest triennial priority-setting exercise has also defined some areas of research crucial to manufacturing, such as specialty polymers, advanced instrumentation and pharmaceuticals.

We are already working with industry in these areas. Specialty polymers, for example, are the basis of our agreement with Boeing, and we are helping Biota Holdings and Glaxo develop a new anti-flu treatment. (That's the one the media are still buzzing about since its recent coverage in *Nature*.)

And we haven't been neglecting the small companies.

Greenspan Technology, for example, employs only nine staff. The firm has been working with the Divisions of Geomechanics and Water Resources for some years now, and has commercialised a number of developments. One is the 'Greenspan Sap Flow Sensor', and another is "Minifrac', which measures rock stress in bore-holes.

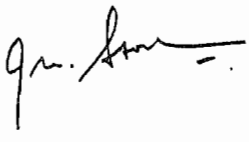
Greenspan had its first overseas sale of the sap-flow sensor a year back: sales now total just over $250,000.

MCI (Mineral Control Instrumentation) was set up in 1981 and employs 40 people. It sells a range of products based on original CSIRO research and developed jointly with us, including SIROTEM, IRONSCAN, and COALSCAN.

The company has an annual turnover of $10 million and exports globally, including to the difficult US market.

MCI is confident of its future prosperity because — and I quote from its own prospectus — ' ... through its close affiliations with the technical brilliance of CSIRO and universities, [MCI] has a technical depth in its field that cannot be matched'.

That brilliance of ours could be lighting up even richer technical depths for Australian industry than it is at present. I expect the McKinsey study to point the way.



John Stocker
Chief Executive

Letters to the Editor

From the Editor — a plea for letters, and an assurance

I was again told recently, with the usual quiet confidence, that it is widely known that letters to the Editor in CoResearch are censored by management. The Editor is always the last to know!

Well, in this case, since I am the only person involved in the censorship or otherwise of letters sent to CoResearch, I do know. They are not censored, not even to the extent that they would be in ordinary newspapers. (I wish I had such a flow of controversial letters that I had to reject all but the most interesting and best-written, simply for lack of space, but I haven't.)

As far as I know, and I can speak with certainty only of the three years I have been Editor, no letter has ever been omitted or even cut in the interests of managerial peace of mind. There have been letters critical of John Stocker, the Minister, and several top managers, which I have always published in full. There have even been (many) letters critical of me as Editor, which I have also published in full, though I must admit that is an exercise I often find disagreeable to the point of perversion. (In the old days you could at least shudderingly pass such offensive material to the typesetter, but the wonders of desk-top publishing have turned it to a sort of self-flagellation, where you actually have to type up the insults with your own hands and place them attractively on the page, taking especial care not to mispell the name of your attacker. It goes with the territory, however, and my own taste makes me personally more committed to the open forum role of CoResearch than to its other functions, important though they are.)

In the interests of fairness, I did early on introduce a new policy of showing critical or abusive letters to the people being attacked, offering them the right of reply in the same issue. But apart from that the letters are vetted only by me, and if I want to shorten one or leave it out I contact the writer. (I've done that only when I thought the writer might suffer from its publication. In almost every case my advice has been rejected, and so I've published the letter in full.)

CoResearch does attract a high proportion of letters critical of CSIRO's leadership and policies, certainly more than other house journals, as reading of almost any issue will reveal. It must be admitted, however, that there is more criticism voiced than written, and this leads some to the tempting conclusion that there is censorship at work. The truth is, I suspect, apart from good old human apathy, that most people are not awfully keen to have their names appear in bold type under letters, remarks, articles or cartoons that might annoy the people in charge of their careers, especially in these times. Very understandable, too. When it comes to sledging new corporate policies I've certainly had a lot more attempts to put words into my mouth than signed letters into my in-tray. I must say, however, that I have never known anyone to be penalised for a letter in CoResearch that was disagreeable to management. (If anyone was really worried, I would, I suppose, consider publishing an anonymous letter, though the writer's name would have to be provided to me, in confidence.)

So please, feel free! Let's have lots of crisp, intelligent and argumentative letters, as befits an organisation with so many people so thoroughly trained to use their critical faculties. Times have changed, certainly. It may be true that we now need to please industry with value-added, customer-oriented, high-cash-return discoveries and management with quantifiable outputs, upgraded competencies and priority-aligned strategies, but in the staff newspaper — surely — we still need only to interest, amuse or enlighten each other. It could be a positive relief, as well as useful.

Changes to PPE form

Dear Editor,

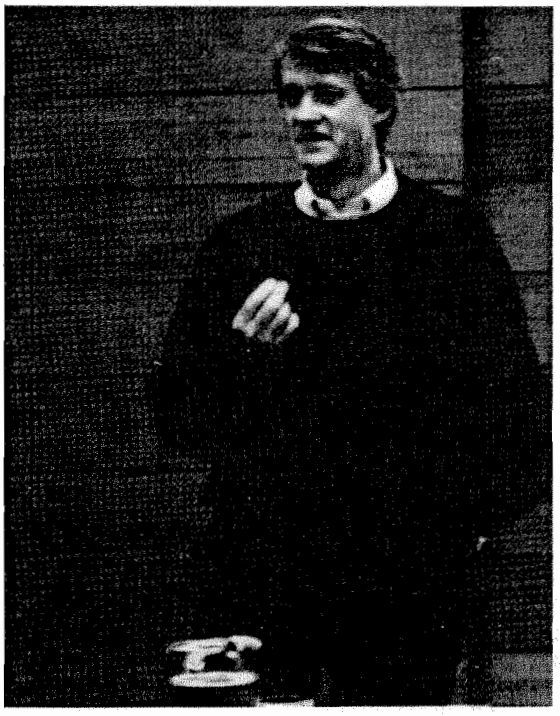
I would like to challenge Bob Marshall of the Human Resources Branch over his trivialisation of the unilateral changes made to the PPE form (*CoResearch* 352, April 1993).

Reading the small print of the original and replacement pages 8 of the 1992-3 PPE form, I find that the changes in wording go beyond the number of levels of assessment.

For example, whereas the old form defined the conditions for Accelerated Advancement as: 'This year's and other year's [sic] work appear consistently outstanding', the replacement form changes this to 'This year's and other years' achievements appear to constitute a sustained record of high achievement over a period of several years, ***in comparison***

continued on page 6

Don McDonald's Stress Project — how are we coping?



Don McDonald was a physicist when he joined CSIRO 25 years ago. Now he's a psychologist, and working as a health and safety officer for three of the Organisation's Melbourne sites. His latest project, just completed, included a study of the stress levels of a cross-section of 250 staff of various Divisions at the Clayton site. He hopes it won't end there, but even the information he has collected so far is fascinating.

Mr McDonald created for the study a sort of software psychiatrist: a floppy disc that asks you probing questions, notes your answers, and like all the best psychiatrists, says nothing but 'hmmm'.

The next stage, analysis and diagnosis, needs a bit of help from humans, but the initial consultation is just between you and your computer screen.

Mr McDonald said that the new set of questions he incorporated into the study along with more established ones provided a diagnosis of stress that matched very well against accepted symptoms of stress.

He calls it the NSSI, or normalised self-assessed stress index, and he described how it works:

'Basically,' he said, 'we ask people to rate on a scale from zero to nine how stressed they are at the moment. Zero means there is no stress and nine equals as much stress as they can imagine.

'Now, other people have done that sort of thing in the past, but it does not correlate very well with the results that you get from applying questionnaires, tests and so on to measure the symptoms and signs of stress.

'We also ask them how well they are coping. That is rated on a scale from zero to nine as well. Zero means they are not coping at all and nine means that they are coping completely, so that their stress is no problem.

'By combining those two numbers we get what we call the NSSI. That does correlate very well with measures of stress that we get from our tests.

Mr McDonald said that quite a few of the people tested reported they were coping well when in fact the psychologists agreed they were coping so badly that they needed to be referred for urgent counselling.

On the whole, however, the CSIRO staff tested seemed to be less stressed than the average in the work force.

This is backed up by Comcare statistics, which show that CSIRO employees proportionally put in far fewer claims related to stress than do most public servants throughout Australia. (Of course, we may have a higher proportion of those people encountered in the test who didn't know they were stressed, and in times of high redundancy rates many people who do know they are stressed may think it unwise to draw attention to the fact.)

Stress is one of the most expensive areas of compensation (more than a third of all costs nationally) which is why CSIRO has recently been able to reduce its Comcare insurance premiums. We simply don't cost as much in sickness as most organisations do.

Even in Victoria, which is notorious for its high number of stress compensation claims, CSIRO scores very well in relation to national figures.

However, there were some areas in which CSIRO people were suffering relatively high work-related stress, Mr McDonald said, and one of these was in working with or obtaining funding from industry.

He said many higher level staff had training for this, but many lower down did not, though they still bore considerable responsibility for attracting funds. These people often felt inadequate and stressed.

Mr McDonald said there had been quite a culture change in CSIRO in recent years, and it had brought problems we shouldn't ignore.

'It was always my perception in the past,' he said, 'that people, when asked who they worked for, were very proud to say CSIRO.

'We now find that a lot of people seem to work for their projects. If you ask them what sort of work they do, they will tell you about their project. They seem to have the idea that their whole future depends on the survival or success of the project. That is quite a big change.

'Our idea is to address this issue by having people attend meetings where they are told about the changes in the culture of CSIRO, that it is not quite the way they think it is, that some of the changes have been necessary and that CSIRO is still basically a good place to work.'

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Some ironic facts about people

(explaining, among other things, why athletes can't win, why some people might as well be drunk as the way they are, and why we get sick from eating healthy food ...)

Inadequate iron in the blood can cause fatigue and listlessness, and, as we all know, sometimes anaemia. This effect is much more common with women than men. On the other hand, too much iron in the body may contribute to heart disease, and this is more common with men. However, in both sexes, having too little iron is more common than having too much, and CSIRO's Division of Human Nutrition has recently released a report on iron intakes amongst Australians that offers a guide to the complex business of who is at risk and why.

The at-risk groups identified by the report were people on low incomes, homeless men, migrants, Aborigines, athletes, pregnant women, vegetarians and adolescents. But there were complicating factors.

Many homeless men were supplying a high proportion of their energy needs with alcohol, which enhanced their absorbtion of iron, even though they were eating very little food.

Athletes, another very high-risk category (because of internal bleeding during training or racing), were also found to be improving their iron levels by the taking of iron supplements, as were some pregnant women, though it was mentioned that this could be dangerous, as it may increase the risk of infection. (It also seems that women may be better at absorbing iron when pregnant, so that they need to consume less to achieve healthy levels, like the alcoholics.)

Vegetarians were in danger not so much because they weren't consuming iron in their food as because much of the iron in vegetables is poorly absorbed by the body, unlike that in meat.

Female vegetarians or athletes were especially at risk, as they also lost blood with menstruation, and this factor of course applied to women in general.

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Less salt, more justice

Water Resources wins Hughes Award for water conservation

Social research may be at the trailing edge of CSIRO's national priorities graph, but the Division of Water Resources has just won an important national award — and been nominated for an international one — for research into the social justice issues raised by the sharing of scarce water resources, as well as for its work on salinity in arid regions.

The award is the Australian Water and Wastewater Association's Peter Hughes Water Award, and winning it automatically makes the Division a nominee for the international Stockholm Water Prize.

The Division won the award for two separate projects, recognised as jointly contributing to water conservation. The two projects were the applied hydrology research on dryland salinity carried out under Dr Graham Allison, and the research into perceptions of fairness and social justice in the allocation of water resources carried out under Dr Geoff Syme.

Initially Dr Syme's team had noted that legal models of conflict resolution are seldom successful in natural resource allocation, tending to polarise and escalate the conflict. This seemed especially so in the USA.

In light of the increasing concern that the next world war might be fought over water, they wanted to find a better method of allocating that, and any other, limited natural resource.

Dr Syme and his colleague Blair Nancarrow found that conflict management is successful only when stakeholders perceive any decision-making process as fair. They also found most people consistent in their judgements.

Dr Syme's team is now developing a model, based on their research, to make allocations of water to communities and individuals fairer.

•••

Dr Allison's team (Walker, Barnes, Jolly, Leaney and Hughes) devised a variety of tech-niques for investigating ground-water behaviour. Using these, they found that changing from native vegetation to pasture often led to severe environmental degradation.

This work has been important for Australia's water systems, especially the Murray–Darling, where various pumping strategies have now been set up to ameliorate the worst effects of salt loadings.

Some of the techniques the team developed are simple, cheap and easy to use, a boon for under-developed countries, and their research has been applied in sites across Africa, Israel, China and Saudi Arabia.

The detailed knowledge of low rates of underground water movement made possible by the new techniques may also be useful in nuclear waste disposal. ❖

Ag.ROUND

Australian Agriculture on CD-ROM

There's a lot of information on Australian agriculture, but, like the country itself, it's far-flung, and often inaccessible. So, like early settlers, we mostly choose to stick to what's nearby rather than go exploring.

If it were possible to flick quickly, and often, over that whole vast continent of facts, it might be a different story. And no doubt a truer and more interesting one.

CSIRO's Information Services Branch has come up with a high-tech way to let us do just that. It's a CD-ROM computer disc called Ag.ROUND.

In broad terms, Ag.ROUND offers information on plant and animal husbandry and protection, rural economics and sociology, agricultural engineering, the rural environment, food technology, forestry and fisheries.

On the technical side, you need a CD-ROM drive linked to an IBM-compatible PC. If you understood that, you've probably got one, or can beg time on one. If you didn't, and are interested, it might be worth checking, because it will offer you access to over 63,000 bibliographic references to Australian agricultural literature in the Australian Bibliography of Agriculture (ABOA), and 4,300 research project descriptions in the Ausralian Rural Research in Progress database (ARRIP).

Here are some of the things you can do with the handy new software gadget:

- conjure up articles from the 1991 edition of the Australian Journal of Experimental Agriculture, and print them out;
- survey current research work to discover potential research and development needs and avoid duplication;
- find out who's working in a particular area of interest, and their contact details, for consultation or collaboration;
- scan the literature from all major Australian journals in agricultural and related fields;
- assess strengths and weaknesses in rural research and development; and
- direct your applications for funding support more accurately, and therefore more successfully.

Ag.ROUND is to be released twice a year. The annual subscription rate of $525 includes the current version and one six-monthly update. There are special terms for multiple orders and networking arrangements. For more information contact Tony Ermers or Joy Sutton at CSIRO Information Services Branch, PO Box 89, East Melbourne, 3002; phone 03 418 7333, fax 03 419 0459, or AARNET jcs @isb.csiro.au.

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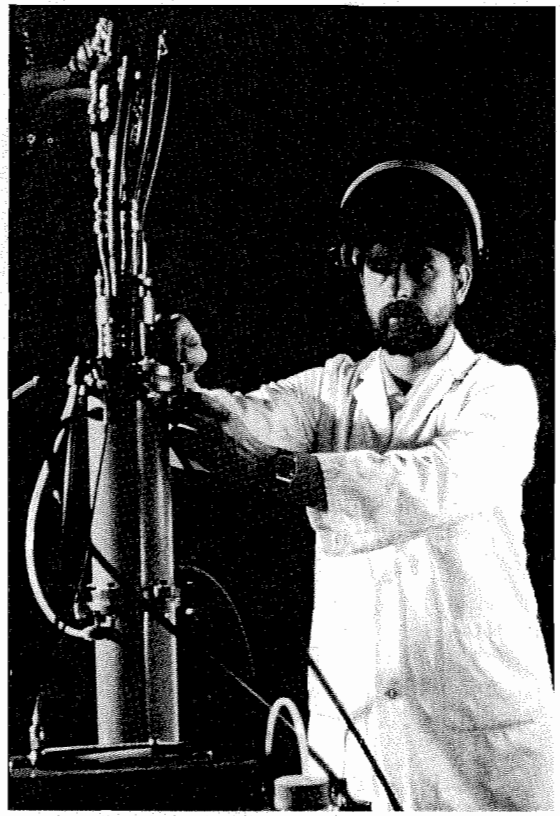
PLASCON: an ideal cleaning tool for a polluted Europe?

PLASCON, a toxic-waste disposal process developed jointly by CSIRO and the Australian company SRL Plasma, may soon become one of the tools used to clean up Europe's environmental messes.

It was recently put on display by Austrade at IFAT, the international environmental technology fair in Munich, and some companies have already expressed interest in using it for specific jobs.

PLASCON destroys dangerous liquids or gases by injecting them into a plasma arc at temperatures between 10,000 and 15,000 degrees Celsius.

This sounds like good old high-temperature incineration, to which so many environmentalists have objected, but there's an important difference. High temperature incinerators produce harmful by-products through oxidation, and PLASCON doesn't need oxidation to do its work.



John Hallett, Austrade's Senior Business Development Manager in Frankfurt, said that the European market for environmental technology is huge — representing 35 per cent of the world's total expenditure in this field in 1989 compared with just 8.5 per cent spent by Asia.

It is expected to increase to 40 per cent by the year 2000, largely as a legacy of 40 years of environmental devastation in eastern Europe.

This year's IFAT was attended by a record crowd of more than 100,000 industry specialists. Most came from Germany but 84 other countries were also represented.

Germany is by far the largest market for environmental equipment in Europe, accounting for around 30 per cent, or more than $A300 billion. Much of that will be spent trying to clean up the despoiled water, soil and air of the former East Germany.

Mr Hallett said environmental technology was one highly specialised sector where Australia could be said to be a world leader. 'These are very large technologies,' he said, 'for which there is an enormous demand in Europe.'

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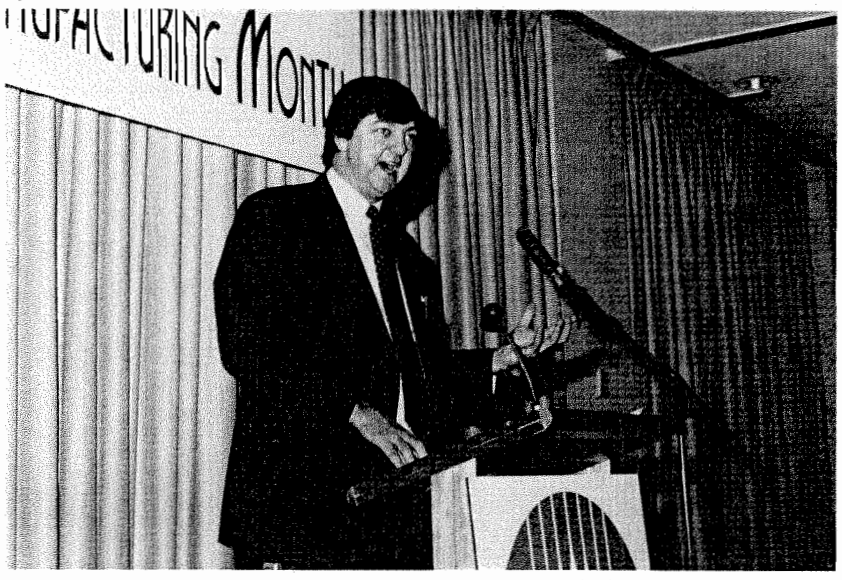
Manufacturing the future

by Karen Robinson



Last month was Manufacturing Month in CSIRO. A series of breakfasts and seminars was held all over Australia, focusing on how scientific research and development could make Australian business more profitable, both here and overseas.

Speaking at the breakfast launch of the event at the Grand Hyatt, Melbourne, Science Minister Chris Schacht praised the CSIRO initiative. 'It means business can keep up with what's becoming technologically feasible and scientists can keep up with what the market place is demanding,' he said.

Around 140 people attended the breakfast, a good proportion of them from the private sector. The breakfast took as its theme 'Australian Technology: the Direction for Australian Manufacturing'.

'Business is beginning to realise that CSIRO is serious about working with industry and that there's money to be made from Australian science and technology', the Minister said.

Other events included a two-day series of seminars, tours and exhibits at the CSIRO Division of Manufacturing Technology in Preston, Victoria. The Preston event had two themes: 'Technology in the Workplace' and 'Materials and Processes in the workplace'.Visitors totalled around 100 over the two days.

Adelaide's Manufacturing Month breakfast also attracted close to 100 people.

Its theme — 'Manufacturing: Making Australia's Future' — focused on the role of technology in developing strategies to give Australia's manufacturers the competitive edge. Keynote speakers included the Honorable Mike Rann, South Australian Minister of Business and Regional Development, Mr Rick Allert, Chairman of SA Brewing Holdings and Dr Colin Adam, Director of the CSIRO Institute of Industrial Technologies. The CSIRO organisers of the Adelaide breakfast reported lively discussion and many requests for copies of the speeches.

Rae Robinson, a member of the working party for Manufacturing Month, said the events they organised had successfully showcased some of the work CSIRO was doing with companies in specific industry sectors, especially in the automotive industry, pharmaceuticals and waste management.❖

Science and the Dirty Dollar

National Science Forum report from Nick Goldie

'CSIRO has a long and honourable record of advice on issues of public importance,' says Professor Ian Lowe of Griffith University. 'How likely is it that scientists who have to obtain funding from the private sector will feel inhibited in criticism of their industrial supporters?'

Professor Lowe has a deserved reputation as a critic of society and of science, and has the priceless gift of communication.

At the May meeting of the National Science Forum, held in the CSIRO Conference Centre at Limestone Avenue, he gave a Canberra audience full value.

Professor Lowe took several texts: an article by Professor W.C. Clark in the April issue of New Zealand Science Monthly, and papers published by the Australian group United Scientists for Environmental Responsibility and Protection (USERP). In particular, he looked at the USERP allegations of 'doctoring, misinformation and censorship' by the West Australian Department of Conservation and Land Management. (See, especially, *Search* May 1993 for a full report of this issue.)

Ian Lowe's quotations, and his own expressed views, were challenging:

'...deceit and lies are being routinely employed as a technique of advocacy on issues where science is crucial to policy ...' (Prof. Clark).

'While censorship by others is undesirable, self-censorship is more insidious. When scientists feel they have to watch what they say for fear of alienating those who support their research, it is no exaggeration to say their silence has been bought ...' (Prof Lowe).

Professor Lowe's plea for the 'integrity of public science' raised important questions for the universities and research institutions. ❖

PPE: some good news, and some bad news

Among the points raised during the recent dispute between CSIRO and its major union, the CSIRO Division of the PSU, over changes to the PPE form, was the fact that there is a possible ambiguity in the wording of reward options. Some people have been interpreting 'increment where available' to mean 'increment where funds are available'. Wrong. CoResearch is assured by the Human Resources Branch that all staff gaining a rating of 'effective' or above are guaranteed an increment unless there is not one technically available, which only happens when you are at the maximum pay point of your level. Any change to this (and further changes are rumoured) will have to be negotiated by management with the union. On the other hand, management is being leant on to tighten up on increments, and if you score below 'effective' for two years in a row inefficiency procedures can now be set in train against you. In that case you will not only lose your increment, but stand to have quite a large excrement imposed on you. Guide booklets explaining the changes to PPE were sent out by the Human Resources Branch to Divisional Personnel Managers in early May. Do read one. (See also Letters, page 2.)

CSIRO salaries: what's the drum?

CSIRO is about to enter into negotiations with its major union, the CSIRO Division of the PSU, in response to a new wage claim lodged by the union on June 7.

The claim is for a five per cent increase for all members, to be phased in through 1994. The increase would be in return for productivity improvements either already in place or to be agreed between the parties.

The union is also asking for an undertaking that there will be no staff reductions directly resulting from an enterprise agreement.

Deputy General Manager of CSIRO's Human Resources Branch, Gary Knobel, said the negotiations should begin within the next couple of weeks.

In the meantime, the Branch has just conducted a survey on how wages and conditions in CSIRO compare with those in the Australian Public Service as a whole.

Broadly, CSIRO's award restructure in 1990–91 gave us the lead, the APS quickly caught up, and, as of March this year, we're behind.

(The study was of research-related jobs, not administrative ones, but the Branch said the relativities were about the same in the two areas. Only Levels 4 and above were covered in the study.)

The differences between the salary packages offered under the new Australian Public Service award and those of comparable research-related positions in CSIRO can be summarised as follows:

- at CSOF Level 4 we lag by about $2,000 in base salary;
- at Level 5 the gap widens to $4,034 (about $2,000 in base salary plus $2,034 in allowances);
- Level 6 has the greatest disparity, at $5,051 (about $2,000 in base salary plus $3,051 in allowances);
- at Level 7 the difference drops again to $2,000; and
- at Level 8 it's about $3,000.

Noel Tarbotton, the Human Resources Branch officer who carried out the study, said it had been difficult to make even these general comparisons because of the different increment ranges and optional entry points of the two awards.

At the time of the 1990 CSIRO award case, which traded more demanding conditions of employment (such as the tightening up of what had been virtually an automatic yearly increment) for increases in real and potential rewards, base salaries jumped up considerably as compared with the Australian Public Service. This was particularly so for CSIRO's senior scientists and other senior managers, some of whom were granted up to 17 per cent rises.

Mr Tarbotton said that since that time, however, science and engineering positions in both the public and private sectors of the wider community had gained lower increases than had positions in areas such as finance, administration and human resources management.

'Wage relativity,' said Mr Tarbotton, 'is like a perishable commodity: you need to nurture it to keep it fresh.

'The real problem, when an organisation is on a fixed budget, is the fact that one person's increase in salary may mean another person's job.

'On the other hand, to recruit the best people, CSIRO needs to be able to offer competitive salary packages.' ❖

Letters to the Editor *(from page 2)*

with other people at the same level.'

This alters the whole criterion for accelerated advancement, in that it abandons merit promotion in favour of comparative promotion.

Previously, at least in theory, everybody could have qualified for accelerated advancement if all performed sufficiently well. Now, no matter how well people perform, only a minority can qualify for accelerated advancement. Indeed, according to the current wording, even if I perform poorly in absolute terms, I will still qualify for accelerated advancement if others perform even less well, because I would still be better than 'other people at the same level'.

Reading the PPE form for 1993–4 makes the matter even more serious; the box headed 'Salary Implications', which defines the meaning of the various assessments, has been dropped altogether! Whereas the PPE process was originally sold to staff on the basis that a rating of Satisfactory would **guarantee** an increment (if possible), the PPE form no longer makes any direct connection between level of assessment and reward.

And why, on 6 May when all 1993–4 forms should have been submitted, has Human Resources Branch still not distributed its explanatory booklet explaining the revised PPE form?

No, Mr Marshall! To dwell on the number of levels of assessment as the key to the discontent over the unilateral changes to PPE seems to me to be a deliberate policy to distract attention from more important changes.

Yours sincerely
Alister K. Sharp

Dear Editor,

Thank you again for the opportunity to respond to concerns about PPE, this time from Alister Sharp.

Mr Marshall's letter was a response to the specific points made by Greg Davis. To accuse him of trivialisation therefore seems a little unfair.

Mr Sharp makes some additional points about the changes. The first is about accelerated advancement criteria. Accelerated advancement means multiple increments ***within a level***, and is different from ***promotion to the next level***. The additional wording simply reflects the processes currently used by Divisional Reward Review Committees to distinguish between achievements of individuals.

His second point is about salary implications or reward options. The box containing this information has been moved from the PPE form to the explanatory booklet. The information itself has not been changed other than to reflect the modifications in the rating scale. A rating of 'effective' still guarantees an increment where one is available. Any proposals to change reward options would be negotiated with unions.

The third point is about the explanatory booklet. I agree that it would have been desirable to have the explanatory booklet available at the same time as the revised forms. Following the Executive Committee's decision on the changes to PPE, our first priority was to produce and distribute the new forms to avoid disruption to Division's PPE cycles. The explanatory booklet was finalised as soon as possible after the forms were completed and it was sent to Divisional Personnel Officers in early May.

Finally, Mr Sharp refers to discontent. Our feedback indicates overwhelming support from staff for the changes, which reflect the wishes of the majority of people surveyed in the joint CSIRO–Staff Association review of PPE.

Yours sincerely
Carmel Macpherson
Human Resources

Pinjarra Hills — used at last!

Dear Editor,

I was interested to read of the opening of the CSIRO Centre at Pinjarra Hills (*CoResearch*, April) and pleased to know that the land known earlier as CSIRO Kenmore has an occupant at last.

In 1963 the Division of Entomology was faced with acquiring a property in Queensland to ensure continuation of its work on cattle tick and biological control of weeds. This was the result of: being forced to vacate the facility at Yerrongpilly; the reluctance of the Division of Animal Health to give up any of its property at Indooroopilly (Long Pocket, Queensland); and the unavailability to CSIRO of any further land adjacent to the Indooroopilly site.

As a result the CSIRO Executive agreed in August 1963 to a proposal from the Division of Entomology for CSIRO to purchase 33 acres of land at Kenmore from the Commonwealth Repatriation Commission. This land was finally purchased for $9,920!

However, in July 1964 the Premier of Queensland relented and offered CSIRO seven acres of land adjoining its Indooroopilly site so that the Division of Entomology could establish itself there instead of at Kenmore. Kenmore was then used only to run cattle for the Division's cattle tick work. It remained under Divisional control until 1983 when, without prior consultation with the Division, a proposal was advanced by CSIRO to develop the Kenmore property as 'Pinjarra Hills' for the Divisions of Tropical Crops and Pastures, Soils, Computing Research, Mathematics and Statistics and Forest Research. This proposal did not eventuate either.

Yours truly
Murray S. Upton
Honorary Fellow
Division of Entomology

Caption Competition

I expected to be trampled under by captions for the foot photograph, but in fact there were fewer than usual. (Probably because, as someone remarked, it was so good it didn't need a caption.) The entries that did come in were good quality, however. Angela Gackle from the CSIRO Information Network in South Australia takes out first prize with the neatly imaginative 'Siamese twins, joined by the soles of their feet since birth, greet each other after their recent separation. "I guess we just grew apart," they said simultaneously.' Almost as delightful was the entry from Judy Sprent of Forestry in Hobart: 'If this is EEO in action, why does he get to wear the protective clothing?' Lynn Pulford from Education Programs in Canberra introduced a multi-cultural note with 'French scientists demonstrating a well known French folk dance to a group of interested Australian scientists', and internal politics reared its head with 'The only two known Grand Masters of Si-Ro Fu show some interested students the fate of HRB staff should the rules of PPE change again this year' from Warrick Dawes of Water Resources in Canberra. External politics also got a guernsey, with 'Well, that's got rid of another bloody Minister for Science' from B.G. Hunt of Atmopheric Research. I had my first-ever entry from a non-CSIRO person, one Matthew Reid. After much soul-searching, I allowed him in on the grounds that his father, Peter Reid, works at CSIRO's Cotton Research Unit at Myall Vale. Matthew's entry was 'Look Mister, I don't care who you are; just remove that double-strength Araldite from my tootsies! Next month's challenge appears below. Go for it.

Food, glorious food

There's nothing quite like it ... for eliciting public interest and interaction. At least we hope so! CSIRO is about to create a major travelling exhibition on food and nutrition to follow in the footsteps of the successful Genetic Engineering Exhibition 'Will Pigs Fly?'. The Institute of Animal Production and Processing has called together a group of CSIRO's communicators to plan ways of involving the whole Organisation in deciding the best themes, content and form for the exhibition. If you'd like to be put on the mailing list for information, or, better still, if you'd like to contribute some ideas, contact the co-ordinator, Beryl Morris, by phone on 02 413 7527 or by fax on 02 413 7635.

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CSIRO donates electron microscope

It seems we had this old electron microscope we didn't need any more, so we gave it to someone who did.

Dr John Radcliffe, Director of the CSIRO's Institute of Plant Production and Processing, and Dr Elizabeth Williams, Chief of its Division of Horticulture, formally presented the microscope to the Vice Chancellor of the University of South Australia, Professor David Robinson, at an on-campus ceremony on April 30.

The instrument, a high-resolution Philips EM400 transmission electron microscope with a capacity to magnify specimens some 280,000 times, will be used in the University's School of Pharmacy and Medical Sciences.

CSIRO donated the microscope, which was surplus to its needs, to the University, and the University paid for moving it.

'This has been a most satisfactory outcome, with the University acquiring a considerable asset at a fraction of its replacement cost,' said Dr Anthony Woods, a senior lecturer at the School, who co-ordinated the transfer of the machine.

Dr Woods said the University had previously had to conduct its high-resolution electron microscopy at outside laboratories.

He praised CSIRO for its co-operative spirit.

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Don't forget to do a save before you go. And here's how...

Politicians and others keep telling us we ought to be saving more, for our own sakes and for the sake of the country. For around 20 per cent of the population this advice is idle: living takes the lot. For many CSIRO staff, however, there is a chance to save, if only small amounts, since we are, for the moment, in work.

But what is the best way to do it? Most of us pay into the Organisation's superannuation fund, and can now choose, within limits, how much. That's a good bargain for many, as the government supports it. But in less obvious ways the government also supports investment in housing. Should we be paying less into our super and more into our houses, by building extensions, for example? Should we be taking out insurance policies, and if so, what kind?

The increasing threat of redundancies, in CSIRO as elsewhere, and the decreasing prospects of jobs for our children, has made these dull questions unpleasantly interesting. Arthur Anderson, Financial Services Manager for CSIRO's credit union, SIROCREDIT, offers his expert and detailed analysis of the options. If readers find it useful, we could make it a regular column, an occasional item, or perhaps a question and answer section. RSVP —Ed.

SUPERANNUATION, as most readers will know, is a very effective means of wealth creation. It enjoys very attractive 'concessional' taxation treatment.

The term concessional implies something better than appies to other forms of investment. These concessions are intended to encourage people to use superannuation to finance their own retirement rather than depend on the public purse.

Because of our aging population, social security pensions will absorb a larger percentage of government revenue than the remaining taxpayers can afford. So we should all be saving for retirement.

You pay a lower rate of income tax on earnings of superannuation funds than on earnings from other funds, bank deposits, or salary.

Most, but not all, contributors to super funds also receive some form of tax deduction for the amounts they pay in.

We can expect that with the greying of the population, there will be restrictions on the amounts paid from super funds as lump sums and that these concessions will be varied to encourage people to accept a pension payment rather than a lump sum for the major part of the benefit.

A pension income may not suit everyone. For example, a person with a short life expectancy may be better off with a lump sum, some of which can be passed on to dependants. Some may want lump sums to pay off debts or mortgage loans as they enter retirement. There may be a spouse who already has a pension large enough to make a second one unnecessary.

In such cases it could well be desirable to ease back reliance on super and build wealth outside of the superannuation system.

Homemaking for profit

Alternatives to super might include partly funding your retirement through the family home (as the principal residence is not subject to capital gains tax) — improving it by renovations, extensions, or landscaping, for example.

You might sell the home and move into something smaller on retirement, using the amount freed up as a retirement nest egg.

A second or holiday home, a small business, a property or share investment, an insurance savings plan or a diversified managed growth fund may be a suitable alternative investment to super.

You don't have to borrow money to invest, but if you do you can generally get a tax deduction for the interest paid on the borrowed amount. That tax deduction usually enhances the rate of return on the investment, because less of your own money is used to provide that income.

In this way, any growth in your capital is 'geared' or 'leveraged' upwards, but so also is any capital loss enhanced. So take care whenever borrowings are involved.

Savings and insurance

Savings plans should be used especially where there is a goal such as a child's education or where savings discipline is lacking or difficult. Traditionally insurance companies have offered savings plans, generally with a life assurance component so that much of the contribution in the early stages is used to buy a life cover instead of savings, but as the fund builds up the insurance component declines.

Thus, within the first few years these policies may show a 'negative result' if you pull out. That is, you will actually get back less money than you put in. High agency commissions have been cited as the main reason for this.

Over the life of the plan, however, these investments may prove of great value. They can come in very handy for funding education expenses, for example, or an overseas trip, or the wedding of a son or daughter.

Friendly society bonds are often used where contributors have a regular saved amount available. You first have to save a minimum amount, usually $500 or $1,000.

It is important that you increase contributions over time to ensure that the end result is protected from the erosion of inflation. The non-super, or non-life, investment does not have the automatic or inbuilt increase to the contribution that super, which is based on salary, has.

Investment

A property investment is usually made in one single lump sum amount. A benefit of borrowing for property is that some forced saving results through the regular repayment of the loan amount. In the case of a rental property the rent is usually indexed to the cost of living and reviewed annually.

Investment trusts with fund managers such as Bankers Trust and Rothschilds may also be used and amounts contributed to them from a savings deposit on a regular basis, for example monthly, will build to a handy amount. These funds have an entry fee but the costs are generally less than in life office savings plans. Investors in these funds usually have the amount deducted from a savings deposit as a sort of 'painless extraction'. If required, a life cover on a term basis may be taken separately.

Share investments in quality companies should provide a growing dividend income that underpins the growth in the asset value over time.

Shares may be bought on a drip-feed basis and investments in a share trust may be bought usually in amounts of $1,000 or more at a time.

Hidden extras

As in all markets there are costs involved whenever you buy or sell. Depositors incur a fee to enter, and sometimes to leave. People often imagine that there is no entry fee for a simple bank savings account. The truth is that the bank deducts the costs of operating the account before paying the interest.

In superannuation savings plans, share funds and managed funds, there is also usually an entry fee. Where there is no entry fee, you should look to see if an exit fee, or a penalty for early withdrawal, is payable.

The level of ongoing management expense is vitally important, because the amount the manger and trustee take as a fee may seriously cut back your investment return. It is the task of the independent adviser to recommend funds that do not have excessive administration fees or take excessive commissions from clients. You should challenge your adviser if you think that costs and commissions quoted are excessive. The law requires these to be fully disclosed in writing when a recommendation is made.

Obviously, you should also select a fund management firm that will outlast the life of the investment, have a solid record of past performance, be sound and reliable and provide a quality service to you, the investor. ❖

Arthur Anderson is the Financial Services Manager for SIROCREDIT, (CSIRO's co-operative credit society) and an authorised representative of Securitor Financial Group, a licenced dealer in securities. He can be contacted for financial planning advice about investments or for retirement planning, rollovers, etc, by phone (03 483 1500) fax (03 483 1555) or mail (SIROCREDIT, PO Box 9, East Melbourne, VIC 3002).

Bradley comes in from the cold for the Frost Award

by Alex Wallace

Twenty-one-year-old Patrick Bradley, a fitting and machining apprentice from the CSIRO Division of Atmospheric Research, is this year's winner of the Arthur Frost Award for Most Improved Apprentice.

aCSIRO's Chairman, Professor Adrienne Clarke, presented Mr Bradley with an inscribed plaque and a $500 cheque on April 21 this year.

Mr Bradley was on Heard Island when he first learned of his win. He was on his way back from the Antarctic where he had been the one-man mechanical support crew for a CSIRO research team.

The team, which apart from him consisted of CSIRO scientist David Etheridge and two French scientists, was collecting ice-core samples from a place called Law Dome in the Antarctic. (Air trapped in the core samples can be dated very precisely, which allows the scientists to analyse changes in climate and atmosphere over time.)

Mr Bradley said he had been keen to tackle the huge responsibility of making sure that the expedition's high-tech ice-core drilling equipment kept functioning in spite of the harsh Antarctic conditions. He also helped the team with the labelling and analysis of the ice-core samples.

Mr Bradley's supervisor, Reg Henry, said that his apprentice's ability to find innovative solutions to difficult problems had made him an obvious candidate for the Antarctic job as well as for the Award.

Once, Mr Henry recalled, an expensive aircraft nose probe had been damaged beyond repair. The Division was faced with the harsh news that a replacement would cost them at least $10,000, and the even harsher news that no such replacement was in fact available, at any price.

Mr Bradley used his own initiative to solve the problem. He sectioned the probe, made sketches of the components and constructed a complete new probe.

'That new probe,' said Mr Henry, 'has shown test results that are 100 per cent accurate compared with test results from the original probe. He has now been asked to design a four-hole nose probe for future experiments.'

Mr Bradley has also built a sophisticated device called a multi-wave length-scanning laser radar, which allows the operator to make rapid three-dimensional profiles of moving smoke plumes. It also measures the height, thickness and optical properties of clouds and other gaseous layers in the atmosphere.

'Another project Patrick has undertaken,' said Mr Henry, 'was to modify a very complex detector for an atmospheric pressure sensor which we hope will eventually be sent into space.'

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The Frost Award commemorates Arthur Frost, a CSIRO toolmaker and workshop supervisor with a special interest in the welfare and development of apprentices. He died in 1972, at 45, and the Award was instituted in 1974.❖

CSIRO Chairman Adrienne Clarke presents Patrick Bradley with the Arthur Frost Award for his outstanding achievements as an apprentice in the trade of fitting and machining.

Anyone walking past the CSIRO site at Highett on Monday May 17 might have been excused for thinking a new CSIRO Division had been formed. The usual Divisional signs at the main gate had been replaced by a new sign proclaiming 'Division of Organic Chemistry'.

Indeed a new division had been formed, but only in the mind of a television scriptwriter.

The placement of the new sign was the signal for an invasion of the Graham Road site by swarms of people, trucks and equipment to film a segment for the new ABC mini-series 'Secrets'.

The plot of the episode being filmed involved marital relationships, investigations by ASIO, and the leaking of cutting-edge science.

The drama series, from the same team that produced ***Phoenix****, is expected to go to air in September.*

Going for the big six

The Helix, the magazine of CSIRO's Double Helix Science Club, is making another great leap forward — it's going bi-monthly! Yes, now you can expect six copies of the fabulous, full-colour magazine each year instead of four!

Of course, two extra magazines will cause a slight increase in the cost of membership. One year's membership will now cost $19.50 instead of $15. However, if you join (or renew) before July 15, you'll get a year's membership at the old cost. (We've extended the deadline from June 30 because of delays in getting this offer to press.) Effectively, that's two magazines free!

If you've ever considered joining, or signing up your children, now is definitely the time to jump in. CSIRO's Double Helix Science Club has always been good value. Now, for a short time, it'll be exceptional value.

To sign on, fill in the enclosed application form and get it in to us — today! If there's no form enclosed, see your information officer, who has been sent forms, or phone 06 276 6643.

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CoResearch

No. 354 August 1993 CSIRO's staff newspaper

CSIRO AUSTRALIA

CSIRO resists amputation and implant: Democrats offer support

At the annual National Science Forum's post-budget debate in Canberra on August 20, Australian Democrat Senator John Coulter declared that the Democrat Senators would vote against Science Minister Chris Schacht's recent proposals to reshape the CSIRO by adding ANSTO and removing two Divisions.

Dr David Kemp, Shadow Minister for Science, would make no such undertaking when asked, but did say that the Coalition would do its own thinking on the matter regardless of the findings of the reviews the Government is currently having conducted.

He said he believed the Schacht plans would not be able to proceed without new legislation being passed.

Science Minister Schacht is still pushing forward with his proposal, which he had first intended to have passed as part of the recent budget.

In the face of a very public outcry, however, Cabinet put off its decision on his plan until late October, when an independent report they ordered will have been completed by Professor Ken MacKinnon of Wollongong University.

As a result, the major decisions on CSIRO's budget allocation have also been put off till then, and will possibly not be made until 1994.

Senator Schacht has in the past few weeks been spending long hours on the phone to many of the eminent CSIRO scientists, and eminent journalists, who have attacked his proposals in public, challenging them on points of fact and defending his case for the changes he proposes.

The Minister wants to take the Divisions of Fisheries and Oceanography out of CSIRO and combine them with the Australian Institute of Marine Science, (AIMS), to form a new Marine Institute. He believes this will give greater focus and political clout to marine science in Australia.

He also wants to put the Australian Nuclear Science and Technology Organisation (ANSTO) into CSIRO, where he thinks it will be managed more effectively.

CSIRO sees little merit in either proposal, particularly the removal of the marine Divisions.

On the question of CSIRO's taking over ANSTO, there is some feeling within CSIRO that although it would be difficult to accommodate ANSTO within the existing structures and culture, it may finally be in the national interest to do so.

On the question of the removal of the marine Divisions, however, there is apparently almost unanimous opposition. The Organisation's College of Chiefs voted overwhelmingly against the proposal.

It isn't known exactly how many of the shorter poppies agree with these Divisional leaders, but a survey was done in Hobart in the last week of June, just after staff there first found out about the Schacht proposal, which showed 95 per cent of them opposed to the idea. Hobart staff also staged an all-night work-in and a march in protest on Wednesday July 14 (see story page 3).

CSIRO staff in Canberra had staged a protest outside Parliament House the day before (see page 8) and both events attracted media coverage.

Senator Schacht's proposal to Cabinet includes as an option (though not his own favourite) the taking of AIMS into CSIRO. According to an information paper prepared by interested staff, this is the option now preferred by CSIRO in the event that Cabinet does decide on a new combination of marine research bodies.

The paper says ' ... if there is a merger, the most effective one will be AIMS into CSIRO, basically because of the [otherwise] severe disruption to our greatest strengths as a large, multi-disciplinary organisation which has responded powerfully and effectively to national needs.'

The paper offers arguments against the setting up of a separate institute, amongst which is that it would mean high dollar cost for the Australian taxpayer — currently estimated at $7 million for establishment of the institute

But taking anything from the CSIRO ... is a bit like borrowing a bone from a Rottweiler.

Julian Cribb, *The Australian* 14 July 1983

Service with a wintry smile?

On Friday, August 6, the staff at CSIRO's Limestone Avenue site in Canberra, the old headquarters, held a mid-winter Christmas party, and Chief Executive John Stocker gave a speech. There are cold, steely winds blowing in Canberra at the moment, and his speech had ice, and metal, in it. The following is an edited extract.

'When icicles hang by the wall,
And Dick the shepherd blows his nail,
And Tom bears logs into the hall,
And milk comes frozen home in pail,
When blood is nipp'd,
and ways be foul,
Then nightly sings the staring owl,
Tu-who;
Tu-whit, tu-who, a merry note,
While greasy Joan doth keel the pot.'

Nothing like a piece of Shakespeare to break the ice and start a winter party.

Winter and Christmas go together for the Stocker family. My kids were born in Basel, in Switzerland, and every year just about Niggi Näggi time, which is when Santi Klaus comes in Switzerland, we used to go out into the cold air together.

Niggi Näggi time in Switzerland is the sixth of December, and Niggi Näggi is the name Swiss children use for the saint their parents call, when they're being very polite, Sankt Nikolaus. In Australia we call him Santa Claus, and it takes him until the 25th to reach us here.

Anyway, what we used to do as a family was go down from our house, with a sled, to the village to pick up the Christmas tree. The atmosphere was fantastic on those early mornings, crisp and biting. We would drag the sled back up the hill, the sled weighed down with the tree, the tree weighed down with the snow, and our feet slipping on the icy road. It was great.

So that winter song from *Love's Labour's Lost* reminds me of those times. But it has another reminder of Basel for me too. Shakespeare was talking about winter in terms of servants. And talking about servants, like Dick the shepherd, greasy Joan, washing the pot in the scullery and all that, makes me think of us all in CSIRO.

Throughout our recent discussions we were told many times that the government governs, and CSIRO serves. Well, that's true; I think we do serve, and I believe that we've served the nation pretty well since 1926, and will continue to do that. And it's an incontestable statement that the government governs and CSIRO serves.

But I'd just like to give you a bit of evidence, from Basel again, that even servants can organise themselves to make their opinions heard, and I think that the activities of the last few weeks and months indicate that this organisation, in its delivery of service, wants to have its voice heard, and is able to have its voice heard, when it's necessary.

In Basel the power of servants working together was manifest in the sixteenth century.

Many of the old, beautiful houses of that city were built on the banks of the Rhine, rising straight up out of the river, and all of them, of course, employed servants.

In the sixteenth century those servants were getting pretty browned off. Not perhaps for the reasons you might think of, but because the poor people had to eat salmon four or five times a week.

So they got together, and there's a statute of the city of Basel, which, the way the Swiss go about things, is probably in force to this day. It decrees that no landlord, or person hiring servants, may serve salmon more than three days a week.

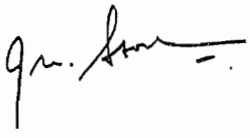
I think we've probably, in the last few weeks, demonstrated that we can effectively convey our views about just how much salmon is healthy in support of our quest to serve Australia.

From a personal perspective, it's been immensely gratifying just to see the support throughout our Organisation, and around it, for what people thought was a reasonable and due process in these matters.

I think what we say as an organisation is important. What people say about us, and around us, in terms of industry groups and others, is probably even more important in this particular situation. In a way that mightn't have happened even a few years ago, we've had a terrific ground-swell of support and direct communication from people who care about CSIRO and got in touch with the Government to explain how important our work is to them, and to national well-being.

I'd like to say that the support for that effort has been nothing short of magnificent.

Winter is still with us. The quality of the spring will depend on our own efforts.



John Stocker
Chief Executive

Letters to the Editor

The Schacht debate

Dear Editor,

I think *CoResearch* is the right place to record my admiration for the great commitment shown by CSIRO staff during the recent public debate on the possible loss of two of our Divisions.

It was a grass-roots driven campaign, and I hope the government realises this.

The work-ins and protests could never have been management-driven — it was the fire in the belly of the rank and file that really had the impact we needed, and still need.

Wendy Parsons
Institute of Natural Resources and Environment

Dear Editor,

Canberra-based CSIRO staff — non-union and union members alike — have been active in opposing the recent AIMS and ANSTO proposals, or at least the way in which the proposals have been propounded. I would like to outline here two concerns which go beyond direct impacts on individual members of staff.

In the first place, the proposals were put forward as if they were *faits accomplis*: the normal science-policy process was bypassed, and there was no more than token consultation with CSIRO management or staff.

The concern for CSIRO is that Senator Schacht and his advisers have ignored the emphasis which CSIRO itself places on the outward-looking aspects of research planning. Some readers may think it perverse to celebrate CSIRO management's never-ending chewing-over of the Organisation's role in relation to Australian industry and environmental affairs, but that masticatory process is in effect CSIRO's way of thinking for itself — and I would suggest that thinking for ourselves is our best guarantee of institutional independence and an essential underpinning of excellence in our research. It is very worrying to see this capacity ignored.

Secondly, many people have been disturbed by what appears to be a serious misapprehension of the nature of careers in science and engineering.

Senator Schacht was keen to assure CSIRO staff that the AIMS and ANSTO proposals would leave the Organisation on balance larger rather than smaller.

Did any *CoResearch* reader take comfort from that statement?

The point here of course is the threat which any re-organisation poses to existing research staff, given the specialised nature of scientific education and experience.

Some unkind things have been said about Senator Schacht in the past few months, but as the proverbial curate might have said, the Minister has shown at least that he takes science seriously — it only remains to convince him to take the science community seriously!

Perhaps we can take heart from a recent *New Scientist* report (August 7), which seems to indicate that the Minister is capable of changing his mind. The report follows rumours that scientists in agencies such as CSIRO were to be placed on individual employment contracts, and states that the Minister (evidently following discussions with the PSU) now 'has given an unequivocal assurance he is not proposing such contracts'.

The subject of individual contracts has arisen in the current enterprise bargaining negotiations, and I recommend the enlightenment granted to our Minister — together with the merits of our current 'transparent' reward system — to CSIRO Human Resources Branch.

The ACT Sub-division of PSU-CSIRO is continuing to make representations to the Minister about the matters discussed here, and we would welcome comments from *CoResearch* readers.

Yours sincerely,
Mark Horn
Honorary Secretary, ACT Sub-division
CSIRO Division of PSU

PPE again

Dear Editor,

I enjoyed your plea, in the last *CoResearch*, for crisp, intelligent and argumentative letters to the Editor. I, sadly, am simply sending a

continued on page 6

A CSIRO diary from the front line

David Edwards works, for the moment, for CSIRO, as an Electronics Engineer with the Division of Oceanography in Hobart. He is also the President of the Tasmanian Subdivision of the CSIRO Division of the Public Sector Union, and has been in the thick of the current battle to keep our two marine Divisions, Oceanography and Fisheries, as part of CSIRO. Indeed, he has been one of the principal thickeners. He has written this personal account of events so far specially for CoResearch readers. For the sake of space, it has been radically shortened, but the longer version is available from CoResearch for anyone who would like it.

Wednesday, June 23 1993
Heard about the proposed changes to Marine Science by Senator Schacht when our oceanographic research vessel, the RV *Franklin*, berthed in Cairns after a three week cruise to Papua New Guinea. Greeted with 'So you're moving to Townsville!'.

Monday, June 28
Arrived back at the Marine Labs — rumours flying thick and fast. Brought up to date on the union position by my colleague Paul Boult, Federal Councillor for the union. Union meeting already organised for tomorrow to discuss the issue, so Paul and I drafted a motion expressing concern over the proposals and supporting Chiefs in their efforts to oppose it.

Tuesday, June 29
Motion passed unanimously.

Wednesday, June 30
Paul Boult, Nick Elliott (Division of Fisheries delegate), and I met with Senator Schacht for over an hour. Very interesting, but not very productive; seemed to be at cross purposes much of the time. Paul and I have been fearing lack of interest in issue except among local members, but Things Have Been Happening! Divisional Office has been organising a phone conference for Monday, July 12, with participants from around Australia, including some from AIMS.

Tuesday, July 6
Strong rumour that a cabinet meeting at which our fate will be decided is about to take place, and that it would enhance our cause if we were to generate some publicity. Morning tea meeting set for tomorrow.

Wednesday, July 7
Morning tea meeting ran for two hours. Motion condemning the Marine Science Amalgamation passed and faxed to influential Labor pollies.

Saturday, July 10
Things have been a bit quieter on the Schacht front. Soccer with the kids, about to go off to the shack for the weekend, when got call from Paul saying local pollies have been on the news talking about the Marine Science proposals. We've both been asked to do an interview for ABC TV news on members' attitudes to the proposed changes. Nervous. Most of our knowledge is still based mainly on rumours, can't get hold of any union colleagues to get approval, neither of us has ever been interviewed for TV before, and we are both worried about making commitments! In spite of Tasmanian two-headed jokes, decided that if we both did the interview we would at least be in it together.

Monday, July 12
Relief! It's Monday, we still have our jobs, and the Divisional Secretary from the union is still talking to us! Inter-union discussion, with colleagues from Marmion, Cleveland, CSIRO-Public Service Union head office in Melbourne, as well as potential new colleagues from AIMS: no definitive outcome. Piece of good news — Canberra members are planning industrial action.

Tuesday, July 13
CSIRO Board met with Senator Schacht in Canberra. Demonstration organised by Robyn Foster (Canberra branch of the union) at very short notice. Industrial style demo, with placard-waving demonstrators in white coats. The press loved it. Paul and I heard that a decision on the Marine Science issue was to be made by the Expenditure Review Committee on Friday July 16. Committee meeting decided on a work-in for Wednesday night. This was endorsed unanimously by a general meeting of members.

Wednesday, July 14
The Burial at Sea
Fisheries research vessel *Southern Surveyor* leaving on a research cruise early this morning. Managed to delay the sailing a little, and put our 'HELP KEEP CSIRO AFLOAT' banner on it! Christian Peterson organised media, the workshop knocked up a coffin, a CSIRO flag was found, the members were told to gather on the wharf, and, hey presto, we were able to 'Bury CSIRO at Sea'. After several practices for the cameras, the deceased boarded, the vessel sailed, and the funeral commenced. The coffin was duly launched down the stern ramp, and proceeded to sink, slowly. The media interviewed everyone in sight. After they left, the coffin was duly recovered via the attached float, and is now in storage ready to be recycled. (Or kept for the next time they threaten to take Divisions away from us?)

The Work-in
Organisation of the work-in then proceeded at high speed. The canteen staff worked-in, and the union agreed to pay the cost of ingredients, so that dinner, all night coffee and snacks, and breakfast could be provided for members. Pam Powell organised a roster to staff the phone and the reception desk. I wrote a petition, with help from Prue Bonham and Vivienne Mawson. Stuart Swan hired a megaphone, then planned and obtained official approval for a march into town on Thursday. Graham Wells organised a roster of informative videos for screening in the auditorium. Mark Raynor produced two standard letters, one to the Prime Minister and one to Senator Schacht. All you had to do was add your name on the back, and stick a stamp on the front. Ray (Santa Claus) Saunders even rang up and volunteered to come out of retirement and be night watchman for us. His offer was gratefully accepted. In between co-ordinating all this, I was repeatedly interviewed by TV, radio and print media journalists. Similar work-ins were planned for Marmion, Cleveland and the Division of Atmospheric Research in Melbourne, and our tireless media man Christian Peterson organised an 8:00 p.m. phone conference. Almost all staff (union members, prospective members and non members) just stayed on at work after the normal knockoff time. We set up a desk at the front door, with copies of the petition for members of the public to sign, and letters to take away and post. There was great interest in the TV news at 6:30 p.m. and 7:00 p.m., as we all wanted to see how much coverage our funeral had got (lots!). At 8 p.m. we all trooped into the auditorium, and lo and behold, we could talk to all our colleagues throughout Australia, including John Stocker, who was at the Division of Atmospheric Research in Melbourne. Local politicians of all flavours started to arrive, along with the public. There was much intense lobbying, from the chiefs and from staff at all levels. Members of the public were still arriving at the front door at midnight, and our pile of completed petitions was growing nicely. I managed to conduct a scientific experiment involving bean bag, sleeping bag and bright fluorescent lights for about 2 hours. Then, a quick shower, and off to relieve Phil Morgan at the door. After yet another interview on the phone, followed by breakfast, it was time to finish the work-in at 8:40am, and start work again.

Thursday, July 15
The March
Police permission arrived for our march, so we picked up our banner and walked. Our first stop was at Parliament House, where local MHA John White joined us. Then it was off to federal MP Duncan Kerr's office to deliver petitions, and then to Senator Coates' office to deliver more petitions. All the time I'm out in front with what seems to be a 100-kilo megaphone slung round my neck, and a lot of very vocal scientists behind me. It's only when we get back to the Marine Labs that I'm able to look back and see how big my tail of marchers is. At least a kilometre! When we got back we learned that the cabinet decision had been delayed till after the weekend, but were all too tired to do anything else, apart from arranging for our banner to be displayed on the *Franklin* as it berthed on Saturday morning.

Friday, July 16, and on ...
The End
When cabinet finally did consider the Marine Science issue, our protests, allied with those of others throughout Australia, proved to have been successful. Senator Schacht's plan has been put on hold, while a review process is carried out. I understand that one of the decisive elements was the contribution of the Public Sector Union nationally, and the ACTU. At this stage, I thought that the active involvement of Paul and myself would end, but then we weren't counting on having to prepare the CSIRO-PSU submission to the review, were we?
With hindsight, I guess it was all worth while. Union membership has increased, and everybody is convinced that joining the Public Service Union was a great idea. However, every time I walk through town, I worry about being accosted as 'that radical scientific unionist who organises work-ins', and all the Albuera Street Primary School soccer players keep saying 'I saw you on TV, Mr Edwards'.

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Above, staff of CSIRO's marine Divisions in Hobart march in protest against Science Minister Chris Schacht's proposed changes to the Organisation, including removal of them into a new marine institute. Photo by Thor Carter.

New travelling exhibition for CSIRO — fast take-away knowledge of food

Nancy Mills, for some years Communication Manager for the CSIRO Institute of Animal Production and Processing has just left us, to become Public Relations Manager for the NSW Coal Association. Her last big project was the organising of publicity, internal and external, for CSIRO's next big travelling display. As a parting gift, she offers CoResearch readers this account of the planned display.

Food is basic to our survival. It is a source of endless fascination to many people, and a topic of conversation to rival sex, politics and religion. It is also the subject of a major CSIRO travelling display now in preparation.

The main aim of this display will be to show consumers that CSIRO research is directly relevant to their everyday lives and to reassure them about the security of the Australian food chain. It will be based on the different stages of the food chain, 'from paddock to plate', and will address school curriculum issues. It will also supply answers to the questions people most often ask about food — according to an analysis of enquiries received by the CSIRO Divisions of Human Nutrition and Food Science and Technology.

Down on the farm

What happens down on the farm determines the quality of the food products that finally reach the consumer. It also has implications for the environment — just how 'clean and green' can we be? Food processing is Australia's largest manufacturing industry; its further potential for increasing our exports to the rapidly expanding economies of the Asian region is strongly backed by government and industry initiatives.

Also relevant are CSIRO's own deliberations on small to medium sized enterprises, a significant number of which are in the food business. And yet another hot issue that could be tackled in the display is the use of genetic engineering techniques in food production.

What do we want?

So what do Australians want, as far as food is concerned? Whether our eating habits are dictated by our palates or our pockets, we all want a delicious, nutritious and varied diet of food that is safe to eat — and cheap to buy. We are interested in food safety, health and nutrition, food quality and costs; and concerned about chemicals and food additives, loss of nutrients and what happens generally in the processing of foods.

We also like to hear about import-replacement initiatives, particularly where Australian food products can increase employment.

Fresh food is considered very desirable, and we are currently experiencing a revolution in packaging — to prolong shelf life, for example — and in good quality, safe convenience foods. (We want our food good and safe, and we want it now!)

Who's doing what?

The display is being developed by a steering group with members representing most areas of CSIRO. All members have specific responsibilities in addition to their contribution to the overall shaping of the display, and assistance from other areas of CSIRO expertise will be keenly sought. Central co-ordination will be provided by Beryl Morris, head of CSIRO's Information Network.

Display ideas are currently being collected from Divisions by Malcolm Paterson of the Film and Video Centre.

Once the steering group has decided on the final themes, the development and construction of the displays will go ahead full-steam (if we finish ahead of schedule we can claim to have the fastest food display in town!)

Still hungry?

All interested parties will be fed regularly with progress reports on the display. For further information, please contact the steering group co-ordinator, Beryl Morris, CSIRO Information Network, Sydney, by phone on 02 413 7527, or fax on 02 413 7635.❖

CSIRO's Australia Telescope hits the airwaves

If you were trying to publicise a radio telescope, which medium would you choose to do it through?

A local tourist radio system has been installed in the town of Narrabri, NSW, to draw visitors' attention to CSIRO's Australia Telescope and other local attractions.

The broadcast, powered by a 10-watt transmitter, can be heard up to 10 km outside Narrabri.

'The response has been very good,' said Roxanne Edwards, Manager of the telescope's Visitors' Centre at Narrabri. 'People have been coming out of their way, or stopping when they otherwise wouldn't have stopped.

'And they comment on the message. They like the fact that it's not repetitive and it's not too commercial.'

A similar system will be installed in the Parkes area to draw attention to CSIRO's Parkes Telescope and other sites around Parkes.❖

Real scientists never complain ...

The Federal body in charge of paying out on workers' compensation claims, Comcare Australia, has reduced the annual insurance premium it will charge CSIRO for this financial year to about half the public service average.

The national science organisation had already been paying below-average premiums because of its low number of claims. A further 25 per cent reduction in these over the past financial year has now brought the premium down to 0.87 per cent of total salary, compared to a Commonwealth average of 1.6 per cent.

This Commonwealth average is itself much lower than in past years. Comcare recently announced an over-all reduction in its premiums from 2.6 per cent of total salary to the present 1.6 per cent since 1988, when the compensation body underwent a massive overhaul because of unacceptable cost increases.

Comcare head Ms Jenni Neary attributed the scheme's success in this regard to increased emphasis on rehabilitation, and especially to getting people back to work quickly after sickness or injury. Ms Neary said the scheme's 85 per cent return to work rate was the best in Australia.

The picture in CSIRO is similar, but with an even steeper percentage improvement over a shorter period.

The bulk of Comcare payouts are for stress, repetitive strain and back injuries, all areas in which CSIRO employees make relatively few complaints and take relatively little time off work.

CSIRO's Deputy General Manager of Human Resources, Gary Knobel, was pleased with the new Comcare assessment. 'We've had a big return on our occupational health and safety investment,' he said.

'When the 'hidden' costs of lost productivity, retraining, and replacing staff are taken into account, our financial analysts tell us, the potential savings for CSIRO are close to $5 million for this coming year alone.'❖

New research into lead in unborn babies

CSIRO's Division of Mining and Exploration is searching for minerals. Not surprising, but this time they're exploring in uncharacteristic terrain — womens' bodies.

The technique they'll be using, however, is the same as they've been using for prospecting in the Australian outback. Not picks and shovels, but the sophisticated lead isotope 'fingerprinting' technique already successfully developed by the Division's Dr Brian Gulson and his team.

Dr Gulson is Project Manager of a consortium involving CSIRO, the Garvan Research Foundation at St Vincent's Hospital, the Queensland University of Technology, the Hunter Area Health Service and the University of Adelaide. Funding is being provided mainly by the National Institute of Environmental Health Sciences in the United States.

The team will use the isotoping technique to find out whether lead is leached from womens' bones and passes to their children during pregnancy and lactation. Research by CSIRO and others has established that even small amounts of the mineral can retard intelligence. The research will make it possible to distinguish between lead that comes from long-term stores in the body and lead from environmental sources such as food, water and air.

Because they need test subjects with isotopic fingerprints totally different from those of the current Australian population, the team is seeking women from Bulgaria, the former Czechoslovakia, CIS, Germany, Greece, Hungary, Italy, Poland, Portugal, Spain, the former Yugoslavia, and the USA and Canada. They want 100 women, aged between 18 and 35, who are settling in Sydney and intend to have children.

If you know anyone who fits the bill and might be willing to take part in this very important study, ask them to contact Brian Gulson or Karen Mizon on 02 887 8666.

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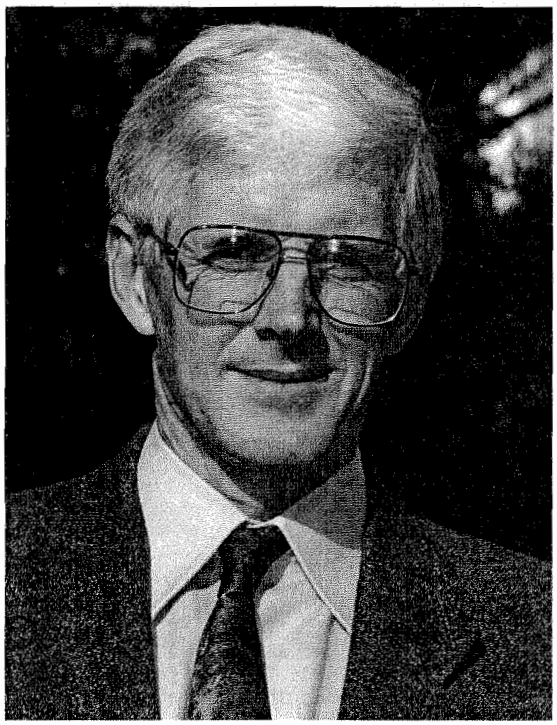
David Smiles wins Farrer Medal

Dr David Smiles, former Chief of the CSIRO Division of Soils, has been awarded the Farrer Memorial Medal for 1993.

Announcing the award earlier this month, Farrer Memorial Trust Chairman and NSW Agriculture Director-General, Dr Kevin Sheridan, said the Trustees were most impressed by Dr Smiles' outstanding contribution to agricultural science in research and management.

'Dr Smiles is recognised as an international authority for his pioneering contributions to soil physics,' Dr Sheridan said. 'His work is characterised by masterly integration of sound mathematical theory and precise experimentation.'

The Medal will be presented to Dr Smiles at a ceremony at the University of Sydney on September 30, after which he will deliver the 1993 Farrer Memorial Oration. He will speak about the obligations and opportunities facing agricultural scientists as society becomes more



conscious of the need to manage land sustainably as well as profitably.

Dr Smiles is still with the Division of Soils, as a Chief Research Scientist, but he stood down as Chief about a year ago for personal and health reasons.

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Friendly fumigants

by Sue Kingsland

Last month scientists at the CSIRO Division of Entomology's Stored Grain Research Laboratory (SGRL) patented a potential replacement for the ozone-attacking fumigant methyl bromide, currently in use around the world.

CSIRO's new fumigant, carbonyl sulphide, is plentiful, bio-degradable and will not cause the problems methyl bromide has caused.

Although it occurs commonly, even in the backyard compost heap, and has been extensively studied, the gas has always been overlooked as a possible fumigant. It was Dr Jonathan Banks, head of the SGRL, who first saw its potential a couple of years back.

Since then, a team led by the laboratory's Dr Jim Desmarchelier has been looking into and developing that potential. Their tests have shown that carbonyl sulphide will control a wide range of pests such as beetles, fruit flies, moths, termites and nematodes.

CSIRO scientists have been working on finding substitutes for the destructive methyl bromide for some time. For certain uses, such as stored products, they have effectively developed the use of nitrogen and carbon dioxide as fumigants.

However, up till now they had been unable to find a gas that could be used as a substitute quarantine fumigant, which would make it possible to reduce the use of ozone-depleting chemicals worldwide. Carbonyl sulphide has many properties that make it more suitable for such a role.

Last month's patenting made carbonyl sulphide the first new fumigant to be registered since the 1940s.

Development of the new fumigant was funded by CSIRO, the Australian Wheat Board and the state Bulk Handling Authorities.

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Above, Dr Jim Desmarchelier of the Stored Grain Research Laboratory tests CSIRO's new ozone-friendly fumigant.

CSIRO marine scientist wins Pew Scholarship

Dr Bob Johannes, a marine biologist with the CSIRO Division of Fisheries in Hobart, has become the first Australian ever to be chosen as a Pew Scholar.

The awards are given annually by the Pew Charitable Trusts, based at the University of Michigan in the United States. Their purpose is to honour leaders in conservation and research, whose careers reflect a commitment to both scholarship and environmental action.

Dr Johannes said, 'the collision of traditional cultures with the modern world is resulting in a progressive loss to the world of invaluable traditional ecological knowledge'.

'I work to help stem this loss in tropical small-scale fishing communities in the South Pacific and Southeast Asia where such knowledge abounds, and to help put this knowledge to better use in marine resource management.'

Dr Johannes defines small-scale fishers as those whose average investment in boats and fishing gear is less than $2,500. 'It surprises many people,' he said, 'to learn that these fishers account for almost half the world's catch of food fish, and that there are roughly 12 million of them — about 25 times as many as there are engaged in large-scale fishing'.

'One doesn't hear much about them, however, because they are usually poor, live in small third and fourth world villages, and lack the political clout to call attention to their needs.'

He said that it was some of these people, rather than the large-scale fishers, who were putting most of the harvesting pressure on coral reefs.

'We must work with them,' he said, 'if we are to sustain the biodiversity, beauty, biological yield and ecological integrity of these and other tropical marine communities.'

'Without their strong support and active collaboration government resource managers have little hope of succeeding in this task.

'Time is of the essence. The modern world has put the traditional ecological knowledge, as well as traditional natural resource management systems, under siege.

Dr Johannes said he found the work exciting especially because of its inter-disciplinary nature. 'It transcends the boundaries between the biological and social sciences, between western scientific and indigenous cultures and knowledge bases, and between government and village institutions.

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CSIRO training film wins international award

Who would think that a training film for vets would woo the critics? Well, CSIRO's Australian Animal Health Laboratory has won national and international recognition for its new video 'Screw Worm Fly'.

The video won an American 'Gold Apple' award in the Health category at the National Educational Film and Video Festival held in California during May this year. Now it has been voted Australia's best instructional and training video for the year with the Australian Teachers of Media awarding it the highly regarded 'Atom' award.

'Screw Worm Fly', produced by Sonya Pemberton and directed by Wain Fimeri, uses imaginative graphics, imagery and scripting to explain the dangers of screw-worm fly to the Australian livestock industry. It ensures that vets and animal health workers know how to identify the fly and prevent it from becoming established.

This video, and other vet training programs produced by AAHL, are now being used around the world and have received wide commendation from vets, veterinary training schools and animal health authorities.

Screw worm flies are parasites of warm-blooded animals. The maggots eat live meat, causing large gaping wounds that can lead to dramatic loss of condition and death among livestock. ❖

Matter of Opinion

No prize for guessing the topic of this month's Matter of Opinion. The writer is John Finnigan, Head of CSIRO's Centre for Environmental Mechanics, who has been a vocal critic of Senator Chris Schacht's plans to rearrange CSIRO's features.

Deeper lessons for CSIRO from the Schacht fight

Many of the problems facing Australia, particularly those to which scientific research and development can contribute, require a long-term view, often as long as ten to twenty years. If we require convincing of this we need only look at the strategies of our economically successful Asian neighbours. A long-term perspective joins with other essential ingredients like the viable strands of basic research that underpin strategic work and the fostering of excellence, to define a healthy R&D culture in which application and innovation can thrive. This is the nature of science; it is not the nature of politics.

As the national flag carrier for R&D, CSIRO has the responsibility to take the long-term view, recognising what is essential for the national R&D effort. This is a responsibility it has accepted in the past and will in the future, but one it can only carry if it remains a viable and unified body.

CSIRO has remained unified so far while similar bodies like DSIR have been dismembered, not only through natural inertia, but also because it is widely perceived as greater than the sum of its parts. This perception flows largely from our ability to harness the vast range of skills we possess in project teams or multi-Divisional programs, with minimal administrative cost or cultural conflict. Horizontal cross-linkages are the necessary counter-balance to the neat vertical cleavage planes that the sectoral alignment of Institutes introduced into CSIRO. They are among our greatest strengths and our best argument for remaining unified.

At a time when CSIRO's management structures are again being examined at many levels, we should keep these considerations at the forefront of our minds. My personal view is that the most important management question to address is how to minimise or remove barriers to free movement of staff and expertise between Divisions and Institutes.

The Minister's proposed rearrangements betray an ignorance of four key things: the fact that science, particularly environmental science, is organised, more and more, around problems with groups of researchers coalescing into the cross-disciplinary teams that the problems dictate; that any structure that erects barriers to this process is a backward step; that both commonality of culture and conditions strongly foster the crucial process of team-building; and that mutual respect, common standards and *esprit de corps* are not optional extras but essentials.

Among the many cogent reasons to oppose Minister Schacht's Marine Institute is that it will erect barriers to this free exchange. The arguments against his proposed arrangements and the precedent they set have hardly begun. If it and future arguments are to be won it will require all CSIRO staff who value the unity of our organisation to foster and promote the values that reinforce it. ❖

Letters to, and from, the Editor, continued from page 2

letter of enquiry.

Page 5 of the last *CoResearch* contained a blue box entitled 'PPE: some good news, and some bad news' which I feel raised more questions than it answered. The suggestion is that, should you score below 'effective' as your PPE grading for two years in a row, you will 'not only lose your increment, but stand to have quite a large excrement imposed on you'. So my questions are:

- Were tender procedures correctly carried out for the provision of this excrement?
- Is there a separate charge code for excrement to facilitate tracing through corporate accounts?
- Have HRB perhaps purchased in bulk, or is this item received on consignment at Corporate Centre as required?
- How is excrement then delivered to Divisions?
- Or perhaps this excrement will be produced corporately? Maybe later this duty could be devolved to Divisions who could then be responsible for producing their own?
- On a more personal note, do I have to score below 'effective' to get my share, or can I petition my Chief and request under EEO that my share be delivered direct to my back garden at home?

Awaiting a response. Carmel? Regards

Wendy Jacobs
Personal Assistant to the Chief
Division of Mineral and Process Engineering

PPE, some good news and some bad news — and some false impressions?

The June issue of *CoResearch* carried a blue box with some information on the recent changes to the PPE process. While I am assured by the Human Resources Branch that all of that information was correct, there were apparently a couple of ambiguities.

First, some readers thought that the pun on the possibility of receiving excrements instead of increments in their future pay packets had originated with the Human Resources Branch. This is incorrect: the decision to use the joke, the writing of the article, and the initiative to run the article in the first place, were wholly mine. (I would gladly claim the pun as 'wholly mine' too, but in fact it first appeared in the *CoResearch* Caption Competition in 1991, at which time it gave, so far as I know, no offence and some delight. I stole it to leaven an otherwise dull though important item.)

A second misunderstanding came from a statement made in the same issue in a letter to the Editor from Carmel Macpherson, head of CSIRO's Human Resources Branch — and emphasised by my repetition of it in the blue box .

In that letter Ms Macpherson had said 'The explanatory booklet was ... sent to Divisional Personnel Officers in early May.'

Some readers mistakenly took this to mean (as indeed I did) that the booklets would be made available to staff.

Ms Macpherson has told *CoResearch*, 'this copy was made available to Human Resources Managers and Personnel Officers for information'.

'A PPE information kit is currently being published and a number of copies will be distributed to each site. These will be accessible to staff through their Human Resources Manager or library.

'Should Divisions wish to purchase extra copies they will be able to do so.'

Caption Competition

All of the best entries came from Barrie Hunt of the Division of Atmospheric Research in Melbourne. Perhaps it's a case of the threat of separation from CSIRO concentrating the mind wonderfully. Anyway, he sent five, and they're all lovely, so I'm breaking a precedent and printing them all. Here they are:

'I don't care what you say, I still think this is a stupid way to make love.'

'When I started on this hormonal treatment you didn't tell me a side effect was that I'd grow a pair of horns.'

'All I can hear is 'moo'.'

'My regular hairdresser never did this.'

'O.K., it's removed my beard. Stop it before it gets at my hair.'

But there were lots of nice ones. Kris Jacobsen, from the Division of Forestry, sent 'That feared and hated device, the 'Brain Drain' claims yet another CSIRO staff member'. Margie Enfield of the Corporate Library and Information Service sent 'A certain member of Education Programs using her mental floss' and Lynn Pulford herself submitted 'Feeling stressed? Off-load some tensions with SIROPUFF'.

There were a lot of entries on brains — 'With brain dialysis, writer's block and other forms of cerebral failure are a thing of the past', from David Briese of Entomology; 'Research indicates that there is excellent correlation between intelligence, size of brain, and airflow pressure difference between the ears', from Arthur Williams of Building, Construction and Engineering; 'NEWSFLASH: Aliens captured CSIRO scientists to obtain vital technology information. Method used to obtain this information was a brain-sucking machine'.

Others were on what the brain does rather than the organ itself, like the one from Nick Goldie of Public Affairs, 'In one ear and out the other? NO NO NO! It's in <u>both</u> ears at once!', and the one from Vasanthe Vithanage of Horticulture, 'At last, the external floppy tube to enhance memory'. Sue Pacers of Manufacturing Technology sent 'Telecom? Optus? I really can't tell the difference', and Kathy MacKendrick from Information Services sent 'Excuse me, Darling — what did you say? My genetically engineered ears don't fit very well'. Here's another photo to work on, from David Edwards, (see page 3).

Research priorities decided for 1994

The CSIRO Board has decided on research priorities for the Organisation for the next triennium, which begins on July 1, 1994.

The specific projects to receive priority funding will not be decided on until December, but the areas of research and the amounts they will receive have been decided.

From the $5.5 million Priorities Fund (raised annually across the Organisation) three of the designated research areas will be given $1.5 million each. These areas are Mineral Resources, Manufacturing Industries, and Information and Communications.

Environmental research will retain it's present level of allocation from the Priorities Fund, $1 million a year, under the two headings of Environmental Knowledge (basic and strategic environmental research), and Environmental Aspects of Economic Development (environmental management and pollution problems, mainly).

The chosen priority projects will be required to find matching funds, with limited exceptions for special circumstances, bringing the total priority funding to a maximum of $11 million a year, or $33 million over the triennium.

In addition, the Board is intent on making sure that priority-setting by Institutes and Divisions will lead to much greater amounts being directed to these priority research areas.

During the current budget negotiations, CSIRO will also be stressing to government that any extra recurrent funding for the second triennium will be allocated according to the Board's priority decisions.

In CSIRO's first priority-setting exercise, in 1990, minerals and the environment were the two areas to attract internal priority funding. This time, the Board said that CSIRO continued to rate minerals, environmental and rural research highly, but that the manufacturing and information and communications areas had inadequate research resources in relation to their importance to Australia.

CSIRO's Executive Committee, which carries out the priorities scoring exercise, has also again produced a detailed assessment of what it believes should be the order of research priorities for the nation as a whole. The shifts in those priorities since the 1990 assessment are shown in the graph below left.

CSIRO's own priorities, while not identical to these, are mainly driven by them, with notable differences.

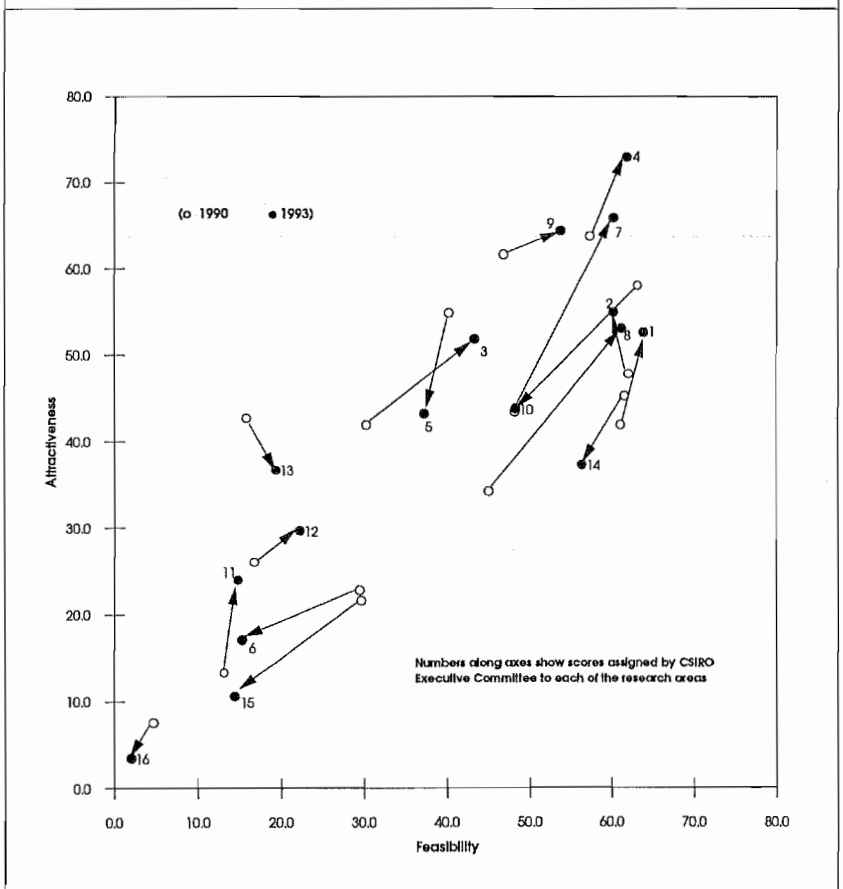
For example, on the national priorities scoring, Environmental Knowledge has taken a nose-dive, but CSIRO has maintained its internal funding for this area.

The national research priorities are decided on the basis of their attractiveness and feasibility in respect of the returns they are likely to offer the nation on its investment dollar (see the two axes of the graph below left; the numbers along the vertical and horizontal axes show the scores assigned to the various research areas by the Executive Committee).

A full report on the 1994 priorities is available from the office of Dr Don MacRae, Corporate Planner, at CSIRO, Box 225, Dickson ACT 2602, or phone 06 276 6177.❖

Shifts in CSIRO's national priorities between 1990 and 1993

Return to Australia from R&D, 1990 and 1993

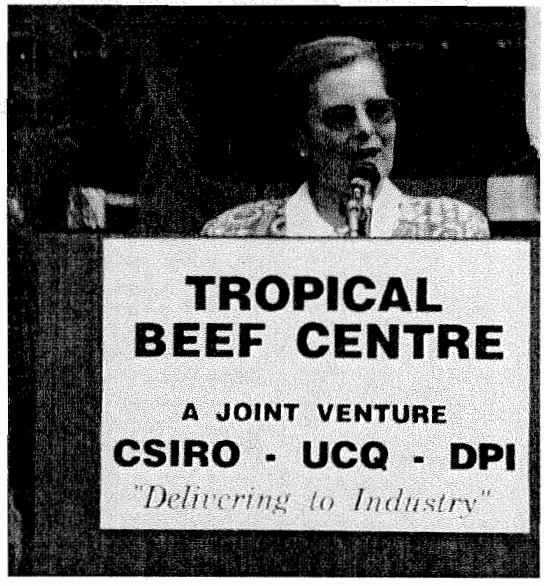


Key to CSIRO's research areas ('Research Purposes')

1 Plant Production and Primary Products
2 Animal Production and Primary Products
3 Rural-Based Manufacturing
4 Mineral Resources
5 Energy Resources
6 Energy Supply
7 Manufacturing
8 Information and Communications
9 Environmental Aspects of Economic Development
10 Environmental Knowledge
11 Transport
12 Construction
13 Commercial Services
14 Health
15 Defence
16 Community Services

The above graph is taken from 'CSIRO Research Priorities: 1994–95 to 1996–97', a paper produced by CSIRO's Corporate Planning Office, and available from them. (See article above.)

New Tropical Beef Centre for Rockhampton



Above, CSIRO Chairman Professor Adrienne Clarke speaks at the opening of the new Tropical Beef Centre in Rockhampton on August 3. The Centre will draw together $50 million worth of facilities and the staffs of three organisations in an ambitious joint venture aimed at sharpening Australia's competitive edge in the beef industry. CSIRO's Dr John Vercoe, Director of the new Centre, said that the concept had developed from CSIRO's review of animal production in the tropics, part of its Divisional Review. CSIRO staff at Rockhampton had put forward the proposition in 1991, the Review had endorsed it, and Dr Donald, Director of the Institute of Animal Production and Processing, had pursued the idea with the other partners with great vigour ever since. The upshot is the Tropical Beef Centre, with a staff of more than 80 and an annual budget of around $10 million. The three organisations joining forces are CSIRO, the Queensland Department of Primary Industries and the University of Central Queensland. More on the work of the Beef Centre in later issues. ❖

CSIRO—sky tracking across the universe and our television screens

by Alex Wallace

Filming began in June on *Sky Trackers* — a new children's television series and a new television concept, aimed at making science more appealing to children. Starring in the series will be the enormous radio telescope antenna at CSIRO's Australia Telescope National Facility at Narrabri in NSW.

In one early episode young viewers will get to see what it's like to roller-blade in the giant receiving dish of the telescope itself.

In reality the telescope is dedicated to radio astronomy, but in *Sky Trackers* it will also do duty as a station for tracking satellites and space probes.

The 26-part adventure series revolves around two families living and working at the Kaputar Tracking Station. The kids are scientists' children, going to school in a country town nearby. They face the ordinary problems of growing up, but lead extra-ordinary lives at the telescope, which offers them a window to the universe.

'The series takes the exciting qualities of science and creates story lines that are fantastic, mysterious and thrilling,' said Ms Patricia Edgar, Executive Producer of *Sky Trackers*.

'The characters follow deep space probes, search for aliens, solve mysteries through computer technology, fly into space, live, love, fight and laugh together.'

The series also offers international interest. Many overseas high-school students come to the tracking station and board in a nearby homestead while conducting space-related experiments.

CSIRO staff have had a constant and vital role in the creation of *Sky Trackers*. Apart from lending the world-class facility to the production team, they made themselves available as consultants throughout the development of the scripts, as did NASA, America's space organisation.

Ms Edgar said that recent government reports had shown that students believed science to be boring and 'for nerds'. 'There is also the perception,' she said, 'that the science world is a male world.'

'The series seeks to break down these negative views and to encourage children to think about jobs in science areas as a positive option for the future.'

The series, which will go to air in 1994, is being produced by the Australian Children's Television Foundation. It has been sold to the Australian Seven Network and to Spain and Portugal.

(Photo by David James) ❖

Chernobyl kids spend a day at Belmont

Above, Vera, one of the victims of the Chernobyl disaster in 1986, is helped down by Jim Davies after a horse ride at CSIRO's Belmont field station, just outside Rockhampton in Queensland. Six of these radiation-affected children from Chernobyl were recently given a six-week trip to Central Queensland by the Emu Park Lions Club families.

During their trip, they spent a day at the Belmont station, where they petted the cattle, rode the horses and romped in the hay. Russian translator, Mr Stan Wozniak, who was with the children during their stay, said he could not believe how much they had improved in health and attitude to life since they had arrived.

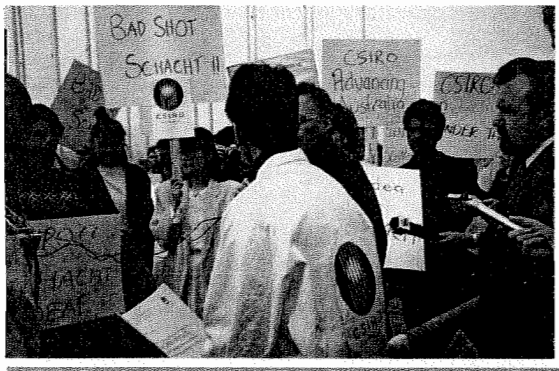
They had stepped off the bus as pale, sick children, he said, and now were happier, healthier kids with smiles and self-confidence.

He pointed out, however, that while many of them now look fairly healthy, most of them are in fact very ill from the effects of Chernobyl radiation in 1986. Mr Wozniak said many of the children would not last long once they returned to their homes, but the trip to Australia had enriched their lives. ❖

CSIRO's Student Research Scheme

Above is one of the cartoons that will feature on the new drinking mugs that CSIRO's Education Programs team will be presenting to all the scientists who take part in the Organisations's Student Research Scheme.

Canberra rally against Schacht proposals



Opposite, Canberra CSIRO staff rally outside Parliament House on July 13 in opposition to Senator Chris Schacht's proposal to make massive changes to the structure of CSIRO. The rally was organised at very short notice by the ACT Branch of the CSIRO Division of the Public Sector Union. There were much larger demonstrations by staff in Hobart, home of the threatened marine Divisions. See stories pages 1, 2, 3, and 6.

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CoResearch

No. 355 October 1993 CSIRO's staff newsmagazine

CSIRO AUSTRALIA

Sir Ian McLennan award to Jonathan Banks for safer, cheaper pest control

Dr Jonathan Banks of the CSIRO Division of Entomology has taken out this year's Sir Ian McLennan Achievement for Industry Award.

The award was presented by Mr Alex Dix, Chairman of the NSW Science and Technology Council, at a lunchtime ceremony at Sydney's Park Lane Hotel on September 29.

Mr Dix said that Dr Banks and his team at the CSIRO Division of Entomology's Stored Grain Research Laboratory had succeeded magnificently in keeping grain free from insect attack after harvest, thus helping to keep the Australian grain storage industry in the forefront of world technology.

'Part of the premium price Australian wheat obtains on the international market is due to its freedom from insects,' he said, 'and this has come about almost entirely as a result of the work of Dr Banks' team.

'Since its inception in 1971 the Laboratory has aimed to reduce industry's reliance on the use of chemicals for grain protection. They've been doing this by developing alternative physical and biological techniques.'

The Stored Grain Research Laboratory has developed several non-pesticide methods of protecting grains.

Dr Banks said that the team had identified worrying pesticide residue levels in the Australian diet in the 1970s, but that these levels had been continually going down as the team's new technologies were increasingly adopted.

Grain had been the main contributor to these pesticide levels.

On the financial side, the work of the Laboratory team has been worth more than $8 million extra a year to the export wheat market.

The various storage techniques developed have also saved the grain industry at least $10 million a year over the Laboratory's 20-year history.

Mr Dix said that Dr Banks had been quick to predict the change in market attitude away from chemical protectants and to help develop to commercial reality the science of controlled atmospheres.

'He was also successful in persuading bulk handling authorities to embark on programs of sealing existing storages,' he said.

'The conversion to properly sealed storage has been so successful in Western Australia that in 1992 and 1993 none of its grain was treated with chemical protectants.'

As part of the Award Ceremony, plaques were also presented to Dr Max Whitten, as Chief of the parent Division of Entomology, and to Mr John Lawrenson, Managing Director of the Australian Wheat Board, as representative of CSIRO's industry partners.

Mr Lawrenson said that Dr Banks had brought tremendous benefits to the grain industry.

'We operate in a very difficult international market,' he said, 'and so every competitive advantage we can get is important to us.

'Being able to sell grain free of pesticide residue is an enormous advantage to us.

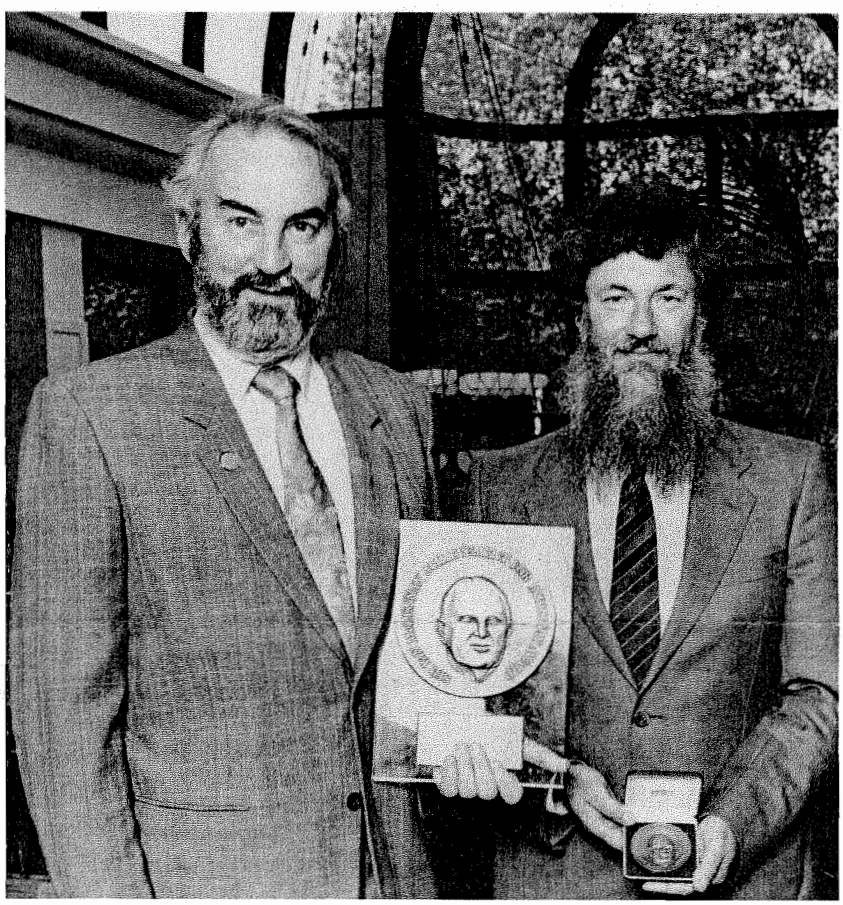
'Without it we would be missing out on key markets like Japan. We simply wouldn't be in the race.

The Laboratory's work is funded partly by CSIRO and partly by its industry partners. These are the Australian Wheat Board and five bulk handling authorities — Grainco in Queensland; NSW Grain Corporation Ltd; Grain Elevators Board of Victoria; SA Cooperative Bulk Handling Ltd and Co-operative Bulk Handling in Western Australia.

In the past few years Certificates of Commendation have also been presented as part of the Sir Ian McLennan Achievement for Industry Award Ceremony, and this year's Certificate went to Dr Robin Bedding, also of the CSIRO Division of Entomology, for his work on nematodes.

Sir Peter Derham, Chairman of the Board of Management for the Sir Ian McLennan Award, said that Dr Bedding had led the world in the use of parasitic nematodes to control a wide range of insect pests.

'His work has had a major impact on the productivity of the national forestry industry,' said Sir Peter, 'and has led to the establishment of a new industry — the export of nematodes for the control of overseas insect pests.' ❖



Dr Max Whitten, Chief of the CSIRO Division of Entomology, displays the Division's 1993 Sir Ian McLennan Achievement for Industry Award Plaque, while Dr Jonathan Banks, on his right, displays the Medal. Dr Banks and his Stored Grain Research Laboratory team won the award for their contrbutions to the grain export industry. Photo by Maria Basaglia.

ASTEC to review 30 per cent external earnings target

ASTEC (Australian Science and Technology Council) has been asked to conduct a review of the operation of the 30 per cent external earnings target set several years ago by the Commonwealth Government for its research agencies CSIRO, ANSTO (Australian Nuclear Science and Technology Organisation), and AIMS (Australian Institute of Marine Science).

The announcement was made by Science Minister Senator Chris Schacht on August 25.

Senator Schacht said the external earnings targets had been very successful in improving the links of government research agencies with industry.

'However,' he said, 'discussions with researchers and small business people have highlighted the fact that these targets have had some unintended consequences.'

The Minister said that in response to these concerns the Government had asked ASTEC to review the impact of the operations of the 30 per cent external earnings target on —

- the level and quality of interaction between the research organisations and industry;
- the performance of core research responsibilities and the balance of research effort within the research organisations; and
- the effective management of staff and other resources within the research organisations.❖

S-COR

CSIRO's commercial practice

On the day of writing this column I hosted a luncheon and had the chance to talk with the Secretaries of some of the principal Commonwealth Government Departments, and to brief them on CSIRO's current issues.

One of the most important of these, and one on which the Board and Executive Committee have spent a lot of time and effort recently, is commercialisation.

Of course, CSIRO is not intending to commercialise everything it does; far from it. We have important — in fact crucial — obligations to the nation in a number of public interest areas of research. But even these increasingly involve us in commercial practice when we enter into contracts with clients who fund research. So if we define commercial practice in the broad sense to encompass all areas in which we incur contractual obligations, this becomes an issue for everyone.

The Board has asked me to take steps to make sure that in such cases CSIRO's own commercial practices are above reproach, and lead to outcomes of benefit to the client and to CSIRO.

There are many pitfalls! For example, not many scientists realise that you can be construed to have entered into a binding contract merely by having a chat, or by exchanging documents as yet unsigned.

While I believe that developing new skill in this area will offer us the chance to play a more important and effective role in the community, and is therefore a very positive move, it's not really something about which we have a choice. Our society, along with the rest of the world, is becoming more litigious, and we're just going to have to get street-wise.

If I had any residual doubt about the need to move with the demanding times it was dispelled by my recent trip to Taiwan, where I attended the 20th birthday party of our sister organisation, ITRI, the Industrial Technology Research Institute of Taiwan. I was able to compare notes with the heads of national R&D agencies from 10 major countries, and it was very clear that the track we're now on in Australia — emphasising external delivery, accountability and transfer of results as our reason for existence — is very much the main road in all these countries. And, in the distance, some of the paving has the gleam of gold.

To address various commercial practice issues, I convened a task force, which has been operating now since May, with the job of examining and reporting back to me on CSIRO's commercial practices, and recommending improvements. Dr Colin Adam, Director of the CSIRO Institute of Industrial Technologies, has been in the chair.

I particularly wanted to look at our compliance with legal requirements, but I also wanted to look at the best commercial practices in other private and public organisations around the world. A number of interesting and important findings have already emerged.

One basic one is the critical need to have in place a set of policies, known and understood throughout the Organisation, that will dictate how we enter, or for that matter refrain from entering, contractual relationships, and how we behave once in them.

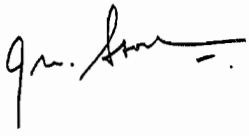
Progress on this has been rapid and careful. From reports prepared by the task force, the Board has now approved a revised statement of CSIRO policy on the commercialisation of technology, as well as a revised statement of the respective roles and responsibilities, accountabilities and delegations for each of the principal line management positions in CSIRO. This includes those of the Chief Executive, the Directors, the Chiefs, the Program Managers, and all the key positions supporting these line managers in the various functional areas.

The Board has also agreed that CSIRO should adopt a 'quality management' approach to its activities, in particular commercial practices, based on the international quality management standard ISO9001, whose Australian equivalent is AS3901.

Though the code numbers make it sound rather bureaucratic, all we're really doing is getting in step with the international business community, as we did with metrication, and for the same good practical reasons. Many of our main clients and customers now work to these standards, and some of them are already stipulating that any outfit providing research for them must do so too.

So, again, we really haven't any choice — it is an imperative; but it is also an opportunity for us to get right up there with the world's best practice. We have to be careful that we don't treat this standard as an add-on responsibility but rather as a useful set of steps to ensure a rigorous approach to commercial dealings.

I've been impressed by the swift, sure work of the task force, whose findings have been endorsed by our new Director of Corporate Business, Peter Bradfield. These findings will soon be widely distributed in the form of a 'commercialisation manual' and detailed statements of our prescribed practices. To complement these, training courses will be provided, of various sorts depending on your needs.



John Stocker
Chief Executive

Letters to the Editor

Dear Editor,

Your front-page article (*CoResearch*, August 1993) dealing with the Government's proposed changes to the CSIRO considerably understates the Coalition's position on this issue.

The Liberal and National Parties totally opposed the Schacht proposals to incorporate ANSTO within the CSIRO and to strip the Organisation of at least two divisions to form a new national institute of marine science.

While supporting the need for a greater focus on marine science and technology to ensure not only a strong national capability in this area, but also the sustainable expansion of what is already a successful mariculture industry, the Coalition believed the Schacht scheme was ill-conceived and developed without consultation with the CSIRO nor the broader community.

In fact, when addressing the CSIRO protest rally outside Parliament House last July (ref. the photograph on page 8 of *CoResearch*), I made it clear that the Coalition felt the Schacht scheme would severely damage the Organisation's world-wide reputation for excellence and outstanding achievement in scientific research.

Following visits to the Divisions of Fisheries, Oceanography and Atmospheric Research and discussions with CSIRO senior management, I announced the Coalition's determination to oppose the original Schacht proposal in the Senate. This decision was certainly a major reason behind the Government's backdown and the subsequent establishment of the McKinnon Review.

We will announce our decision on the results of this Review after its findings are handed down in late October.

In relation to the proposed merger of ANSTO (as it currently exists) into the CSIRO, the Coalition is not satisfied that the Inter-Departmental Committee process has provided the CSIRO with an adequate opportunity to assess the impact of any merger.

The CSIRO is a unique Australian institution and the Coalition will continue to oppose poorly considered and unwise decisions which may damage its operations.

Yours sincerely,
Dr David Kemp
[Federal Shadow Minister for Science]

CSIRO, ANSTO, AIMS ... but could AMISC spell the end of the acronymy between us?

At the time of going to press there is still no information on whether CSIRO will be losing its two marine Divisions, Fisheries and Oceanography. Nor is there yet a decision on whether the Australian Nuclear Science and Technology Organisation, ANSTO, will be incorporated into CSIRO.

The latest word on both is that breath-holding may be hazardous to your health. There has been a five-week delay on the ANSTO review report, pushing its likely announcement date into early November, and the end-of-October date for the marine review is also said to be leaning forward perilously.

There is one substantial piece of news, however. According to an analysis prepared by Dr Angus McEwan, Chief of the CSIRO Division of Oceanography, only 10 of the 112 submissions received by the Marine Science Review support Science Minister Chris Schacht's preferred option of moving the two CSIRO Divisions into the Australian Institute of Marine Science (AIMS).

Dr McEwan's report also says that 44 of the submissions specifically expressed the view that removing the marine Divisions from CSIRO would be damaging or disadvantageous to Australian marine science.

The submissions included many from academic groups and industry as well as from CSIRO, AIMS, and other major Australian science interest groups, and 15 submissions came from overseas.

Dr McEwan's report was weighted to allow for bias, where known, towards CSIRO or AIMS, but offers both the weighted and unweighted statistics.

Overall, the figures show that the most popular option is to keep things as they are, and only slightly less popular is the incorporation of AIMS into CSIRO. Least popular by a long way is the removal of the two CSIRO Divisions into either AIMS or a newly created institute.

Professor Ken McKinnon, who is head of the Marine Science Review, as well as the review into the feasibility of incorporating ANSTO into CSIRO, has been travelling around Australia consulting interested parties from various sections of the community, as well as studying the formal submissions.

CSIRO's own submission to the review, also prepared by Dr McEwan, calls for the creation of an Australian Marine Science and Industry Council (AMISC), to drive federal marine science policy, and a new marine science Institute within CSIRO. The new Institute would combine the two present CSIRO Divisions of Fisheries and Oceanography with AIMS, and would have the proposed new marine council, AMISC, as its formal advisory body.

The submission argues that Australia's marine sectors are marked by a wide diversity of interests and requirements, and that the best way to bring science to bear on such diverse requirements is not by isolating the marine disciplines, but by integrating them within a broader scientific community.

It says the new institute 'would form the core of a powerful new agency already bearing the credibility and reputation of both AIMS and CSIRO in the Australian and international community, and a clear focus of marine science effort within Australia'.

The alternative proposals before the Review — a new, stand-alone institute or an expanded AIMS — would be expensive and would go against the Government's own long-standing science policy of breaking down barriers between institutions and disciplines, the submission argues.

The Chief Executive of CSIRO, Dr John Stocker, said that the proposal was designed to meet the imperatives facing all Australian science over the next decade — cost efficiency, national co-ordination and priority-setting, the targeting of problems and client service.

He said that marine science was emerging as a key national interest, but that it should not be viewed in isolation from other national interests, or from other scientific disciplines and business sectors. 'It is inextricably linked,' he said, 'to coastal zone management and land use; to climate research; to issues of biodiversity; to minerals exploration; and to the emerging information and communication sciences'.

'CSIRO is structured so that multi-disciplinary teams can be marshalled to address national problems,' Dr Stocker said.

'Australia needs an internationally recognised research body large enough to be a significant player in international terms. It has one in CSIRO.

❖❖❖

Some details of the poem on the right are perhaps a little obscure to some of the general CSIRO audience: its author intended it for local consumption only. However, I think most of it is very clear, very clever, and very relevant to the Organisation, as a whole. ('Sir Angus' McEwan handled the CSIRO 'submission' to the McKinnon review, and omitted an 'I' from one of the headings in his final draft.) —Ed.

The submission

by Peter Craig

What inspires the politician,
Acting of his own volition,
(Ignorance no inhibition)
Thinks that he's a skilled physician,
Spurns his patient's fit condition,
Wants to do a full excision?

But, he finds he's in collision
With the chiefs whose apparition
Is of NZ-style partition,
And with staff, whose intuition
Says here's even more attrition.
In all, a powerful coalition
Rises up in opposition
To his hasty proposition,
Till he's forced to give permission
For, at least, a brief remission.

Now Sir Angus gets his mission,
Girds his loins with ammunition,
Leads his knights in expedition
To the Vale of Dark Ambition,
There to save a poor Divis(s)ion,
Or, in words with more precision,
The Aims(!) preset for his commission:
Fashion fusion out of fission.

Though the task is pure perdition,
Publishing is his tradition;
For his CV an addition,
This a neatly bound edition,
With, we hope, sound proposition,
Put in polished composition,
Argued cleanly, no omission,
('Cept an 'I' by his admission).

But, alas, a premonition:
They've no time for erudition,
Granting only recognition
Where it suits their supposition.
Take as proof of this suspicion,
How they've titled his petition —
Seems to say, by definition,
Here is your assigned position:
Passive supine, in submission.

•••

Barry Jones says treat CSIRO right, and think long-term

Barry Jones, one-time Minister of Science and now President of the ALP, was also President of the 62nd Congress of the Australian and New Zealand Association for the Advancement of Science (ANZAAS) this year in Perth.

In his speech he gave his priorities for the advancement of Australian science.

At the top of his list was the creation of a Department of Science, which he said would have great practical and symbolic significance.

'The idea that a scattering across other Departments would create a higher scientific input into policy-making has been utterly fallacious,' he said.

His second priority was brief: 'Treat CSIRO as the great national asset it is'.

He also said people should 'encourage sympathy for science and scientists by talking it up at the highest level', and should 'think for the long term'.

'One reason for the failure of the communication process between scientists and researchers on the one hand and the political, corporate and bureaucratic culture on the other is that they operate in different time frames. Politicians especially look for immediate results, especially for something that is saleable.

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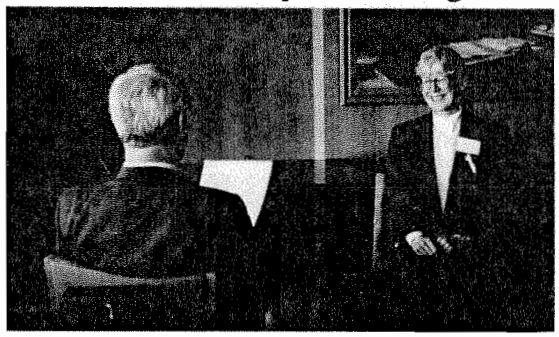
Leadership training



Marie Keir, CSIRO's Manager of Ministerial and Government Business, is put through an aggressive grilling by journalist Paul Lyneham on the topic of current relations with the Organisation's Minister. He said she did beautifully, but in any case it was just the media training segment of a Human Resources leadership course.

New rabbit virus passes early tests

According to AAHL, CSIRO's Australian Animal Health Laboratory, the European rabbit is Australia's most serious vertebrate pest and New Zealand's second most serious (after the brush-tail possum). There are at least two hundred million rabbits in Australia, and the damage caused by them, and the cost of controlling them, accounts for between $75 million and $90 million every year.

They compete with livestock for available pasture. They graze and kill young trees and shrubs. They cause soil erosion by removing vegetation and disturbing soil to build their burrows. They have contributed to the extinction of many native plant and animal species.

Now, at a recent international workshop, Australian and New Zealand scientists, regulators and community groups have given a cautious thumbs-up to control of rabbit numbers by the haemorrhagic disease virus, RHD.

Over the past two years Australia and New Zealand have funded high security tests of RHD at the Australian Animal Health Laboratory to see if the virus might offer an effective means of biological control.

AAHL's early results, which it presented at the workshop, indicate that RHD is highly infectious, but among rabbits only, and that it kills them quickly and quietly.

Morgan Williams of New Zealand's Ministry of Agriculture and Fisheries said, 'Now we need to investigate how the virus behaves outside the laboratory, perhaps on an island or in collaboration with European countries where RHD is endemic in wild rabbits.'

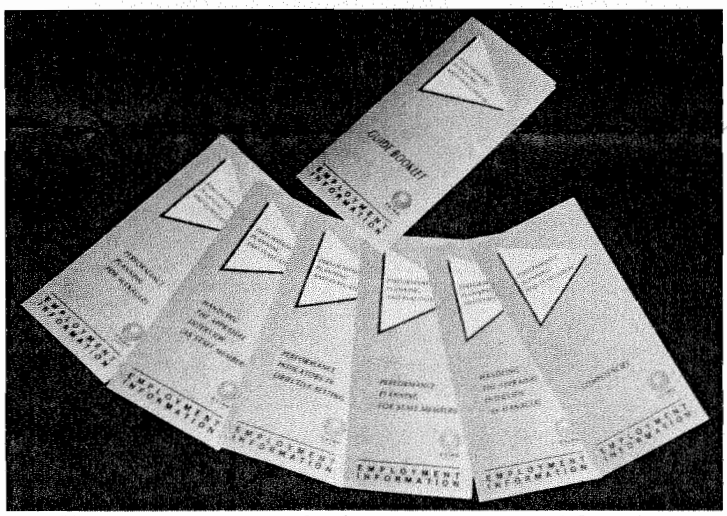
Dr Keith Murray, head of AAHL, reflected the sentiments of the meeting. 'RHD appears to be more humane than current control measures,' he said, 'but we need more information to allow animal welfare representatives to make a full assessment. And we need to integrate the virus into existing rabbit control programs.'

If RHD passes the next round of rigorous evaluation, that will trigger a complex regulatory process involving broad community consultation through a range of government Acts in both countries.

The workshop, held in Geelong from September 16–18, was organised by the BRS (Bureau of Resource Sciences) and CSIRO with the support of the New Zealand Government. Many Australian and New Zealand agencies were represented, including the RSPCAs of both countries, ANZFAS (the Australian New Zealand Federation of Animal Societies), farmer organisations, rural research funders and government regulators.❖

***AAHL STOP PRESS**: Lois the Pig, an AAHL video star, can be seen on 'Talk to the Animals' on Channel 7 on November 7. Lois, star of 'A Pig's Tale' is concerned that Australian farmers are feeding their pigs a swill that may cause an outbreak of foot-and-mouth disease.*

Information leaflets on PPE



CSIRO's Human Resources Branch has just released a series of information leaflets on different aspects of the Organisation's Performance Planning and Evaluation process, or PPE.

PPE was introduced throughout CSIRO two years ago to provide a framework for managing staff performance in a way that would align each person's work objectives with those of the Organisation. The PPE process is aimed at promoting communication and feedback between staff and managers, identifying training and development needs and linking achievements with rewards.

The new leaflets range from the Guide Booklet, which offers step-by-step instructions on how to fill in the PPE form, to guidance on more specific PPE topics.

These topics include objective-setting in Stage 1, use of competencies in PPE, and the Stage 3 appraisal interview. The information contained in the leaflets is flexible enough to be used by CSIRO staff in a wide variety of jobs and should prove a valuable resource.

Some leaflets have been written from the point of view of a staff member, and others from the point of view of a manager, though obviously many people will fill both roles. The leaflets have been kept simple to make them easy to digest.

There are seven leaflets in the series:

- the Guide Booklet;
- Performance Planning for Staff Members;
- Performance Planning for Managers;
- Performance Indicators in Objective-Setting;
- Handling the Appraisal Interview (as Staff Member);
- Handling the Appraisal Interview (as Manager); and
- Competencies.

•••

Your Divisional Personnel or Human Resources Manager can order any of these through the Corporate Services Department Store. For more information phone Anama Morriss on 06 276 6317 or Donna Simotas on 06 276 6316.

A first from Water Resources Symposium

Dr Wayne Meyer, Senior Principal Research Scientist and Program Leader from the CSIRO Division of Water Resources, has been appointed by CSIRO and Charles Sturt University, Wagga Wagga, New South Wales, as the first Professor of Irrigation in Australia.

The appointment was announced at the Division of Water Resources' 1993 symposium - 'The Future of Irrigation in the Murray-Darling Basin', held in Griffith, New South Wales, in August. Dr Meyer will take up his appointment in February 1994, and will be based at Griffith, where irrigation students will be able to take advantage of his extensive industry experience and CSIRO laboratory facilities. Dr Meyer was the chairman of a steering committee that organised the successful symposium that brought Murray-Darling Basin (MDB) stakeholders together to look at ways of creating more profitable and sustainable agricultural irrigation.

Irrigation in Australia is concentrated in the MDB in terms of both water volume and land area. The Basin catchments in Queensland, New South Wales, and Victoria extend through to South Australia. The national importance of the symposium was recognised in letters from the Federal Minister for Primary Industry and Energy, Mr Simon Crean, and the Federal Minister for the Environment, Sport and Territories, Ms Ros Kelly, as well as a number of State Ministers.

A total of three hundred delegates from Australia and overseas attended the three-day symposium. A wide range of eminent speakers delivered speeches, the key-note address being delivered by a CSIRO McMaster Fellow, Professor Gerald Stanhill of the Institute of Soil and Water, Agricultural Research Organisation, Israel. Professor Stanhill spoke about Israel's experience in agricultural irrigation and its relevance for Australia.

The symposium covered a range of broad but topical concerns for the MDB area. Areas of discussion included —

- environmental impacts of irrigation on the riverine aquatic ecology and water quality;
- managing agricultural productivity and the environment;
- application of marketing principles in land and water management planning;
- salinity and its effects;
- irrigation development and how the environment can be protected; and
- how environmental regulation and irrigation can co-exist.

Although the symposium focused on these and similarly serious issues, a lighter moment was thrown in with the guest appearance of the 'Prickle Farmer', Mike Hayes, at the official Symposium Dinner at the Griffith Ex-Servicemen's Club.

Support for the symposium was given by many large irrigation-dependent industries such as sugar cane, cotton, wine grape, rice, oilseed, dairying, livestock, and canning fruit. All have a stake in the MDB's survival and well-being.❖

Dr Wayne Meyer, Program Leader for the CSIRO Division of Water Resources and newly appointed Foundation Professor of Irrigation at the Charles Sturt University.

CSIRO SNAPSHOTS

Starfish threat to Australian waters

CSIRO's Division of Fisheries is sending a scientific team to Japan to conduct emergency research on an introduced starfish, the Northern Pacific Seastar, which is threatening Australian fisheries. The Seastar was probably introduced to Australia through ships' ballast water in the early 1980s and now threatens Tasmania's $85 million shellfish industry. It also poses a much wider threat to marine life, as it has no natural predators and can reproduce in staggering numbers. Its potential marine habitat could extend from Sydney to Perth.

UN conference on clean production

CSIRO, at the request of the United Nations Industrial Development Organisation (UNIDO), is organising an international conference called 'Economic Growth with Clean Production', to be held at Melbourne's World Congress Centre in February next year. The keynote speaker will be Germany's Minister for the Environment, Professor Dr Klaus Töpfer. Dr Töpfer's official responsibilities also include Nuclear Safety, as, by that time, so might ours, if plans to incorporate ANSTO into CSIRO go ahead.

US abandons search for aliens in space

The United States has decided to withdraw funding for a NASA program that was to have involved CSIRO in a world-wide radio-telescopic scan of space for signals that might indicate the presence of other intelligences in the universe. NASA has so far paid CSIRO $300,000 for equipment designed and built by the Division of Radiophysics, and was to have paid a further $1.4 million for use of its telescopes at Parkes and Coonabarabran if the program had gone ahead.

New top staff

CSIRO recently commissioned a report from McKinsey's on how to improve its relationship with industry, and as a result of their recommendations the CSIRO Board is now taking steps to strengthen its business acumen and contacts. One of these is the acquisition to top-level staff of three prominent industry figures, Mr Peter Bradfield, Mr Larry Little, and Dr Chris Mallett. Bradfield, whose experience is in international marketing, business development and contract negotiation, has taken up a newly created position as Director of Corporate Business at CSIRO Head Office in Melbourne, immediately responsible to Chief Executive Dr John Stocker. He will be a member of the CSIRO Executive Committee. Little, whose background is in the Canadian building and construction industry, becomes Chief of the Division of Building, Construction and Engineering. Mallett will begin as new Chief of the Division of Food Science and Technology in December, bringing experience in basic science, food industry research and innovation and food retailing in Europe.

Phonecards to feature SEM images

Telecom Australia will be featuring CSIRO research in its next series of Phonecards, which have become popular collectors' items alongside stamps and coins. The CSIRO technology chosen for the cards is colour Scanning Electron Microscopy, or SEM, which produces clear, detailed images of minute objects such as marine plankton, butterfly eggs and pollen grains.

Big Chinese market for Australian food

Dr Graham Bell, head of CSIRO's Sensory Research Centre in Sydney, said on his return from China recently that his group would be seeking to set up projects in at least two Chinese cities, probably Beijing and Shanghai. Dr Bell believes that there is a large Chinese market for Australian food products. While we think of the Chinese as a poor people, he says, two per cent of the population, or twenty million, are at least as affluent as average Australians.

Nutrition survey completed

One interesting outcome of a recent survey by Dr Katrine Baghurst of the CSIRO Division of Human Nutrition was that people classified by the surveyors as 'unhealthy eaters' actually scored a little better than those classified as 'healthy eaters' when it came to knowledge of food and nutrition (67 per cent as opposed to 63 per cent). Dr Baghurst said the survey indicated that Australians were generally improving their eating habits but were still not eating enough of some food groups, particularly breads and cereals. She said it was of concern that more than 50 per cent of people surveyed still thought 'starchy foods' were fattening and 41 per cent believed bread intake should be limited to two or three slcies a day. The CSIRO survey, conducted during July and August this year, was of 2,000 randomly selected people over 18.

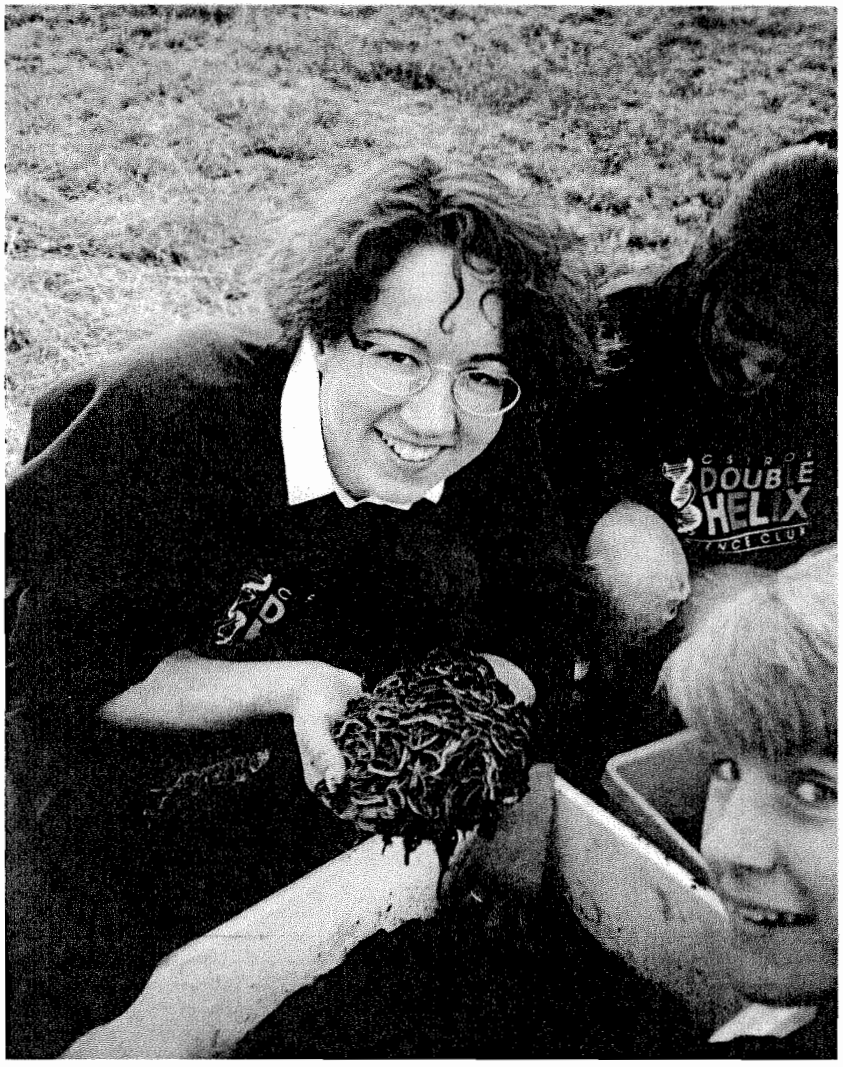
CSIRO scientists advise against banning added vitamins

Both Dr Baghurst (item above) and the Chief of her Division, Dr Paul Nestel, have recently come out publicly against the National Food Authority's proposal to ban the addition of some vitamins and minerals from breakfast cereals. Pressure for the change comes from consumer groups who want to restore the cereals to a natural state, but the CSIRO scientists warn that some groups may suffer, such as children whose diets are already low on nutrients.

Telescope Director honoured

Dr Ron Ekers, Director of CSIRO's Australia Telescope National Facility, has been elected to the Royal Netherlands Academy of Arts and Science as a Foreign Member.❖

Earthworms Downunder



Above, Linda Meisel of CSIRO's Education Programs helps a couple of Double Helix members count and classify their worms. Children all over Australia took part last year in Earthworms Downunder, a CSIRO project designed to help soil scientists by providing them with information on the location, numbers and types of worms around the country. Their work is now paying off. Photo by David Salt.

It worked! They dug. They counted. They grabbed the ones that tried to wriggle away and they even sent them through the post to the CSIRO labs in Adelaide. One and a half thousand kids from CSIRO's Double Helix Science Club have now successfully completed Earthworms Downunder, an experiment that had them all surveying their local soils to complete a national earthworm census for CSIRO's scientists. (See *CoResearch* No. 348, July 1992.) The facts, with the worms, are now in, and the scientists are revelling in a wealth of new information they could never have afforded to collect themselves.

Linda Meisel of CSIRO's Education Programs has been the national co-ordinator of the Earthworms Downunder project. She's excited about its success and about what that success implies for the future.

'We've shown what can be done,' Ms Meisel said. 'We've shown that the Club's members can work with the Organisation's scientists to complete large and valuable surveys at very little cost.

'Everybody wins. The scientists get to study data collected simultaneously from across a much larger area than they could cover themselves, and the kids get a buzz out of doing some real science and knowing that the information they collect will help scientists solve some of Australia's serious soil problems.'

Scientists from the CSIRO Divisions of Entomology and Soils said they were thrilled with the results, and particularly impressed by how carefully the young researchers had recorded what they had found.

Double Helix members are now tooling up for a similar survey experiment early next year. This time they'll be trapping fruit flies and sending them in, again with the help of kits and advice from Education Programs.

And Ms Meisel says it won't stop there. There are twenty thousand members in the Double Helix Science Club, and it's growing fast. She is eager to know of projects around the Organisation that the Double Helix members could help with.

'If you have a survey or simple measurement that needs to be done all across Australia,' she said, 'we may be able to help you out with a few thousand extra pairs of willing, careful hands.'

If that offer sounds appealing, or if you're just interested in finding out more about the project, contact Linda Meisel on 06 276 6485. ❖

International nutrition congress highlights CSIRO research

Every four years there is an International Congress of Nutrition. It's regarded as the biggest event on the world nutrition calendar, a sort of Nutrition Olympics, and this year Adelaide was chosen as the venue. This is the first time in the 40-year history of the Congress that Australia has been the host country. CSIRO played an important part in organising the conference and supplied many of the speakers, sending information about the research Australia is doing in nutrition back to scientific communities around the world.

Dr Richard Smith, recently retired from the Division of Human Nutrition in Adelaide, and Secretary General of the Congress, spoke about his findings on the health effects of white settlement and culture on the Aborigines of the Kimberley region in Western Australia.

He told his audience that Aborigines in this area have made the transition from a long-standing, active and successful hunter-gatherer lifestyle to a largely sedentary and partly urbanised existence, with a mainly Western food supply.

He spoke of the intervening period when many Aborigines were associated with cattle stations, where the main elements of the diet were fresh meat, flour, tea, sugar, potatoes and salt. He said that this experience still exerts a strong influence on their eating patterns.

'Their diet today still lacks fresh fruit and vegetables,' he said, 'and both quality and quantity are limited by economic circumstances. The combination of a changed lifestyle and alterations to diet has resulted in a very high prevalence of diabetes, high blood pressure and heart disease.'

Dr Paul Nestel, Chief of the Division of Human Nutrition, chaired a symposium at the Congress on the prevention of cardiovascular disease by nutritional means.

He issued a warning against over-simplified information on heart disease. Many questions remained unanswered, he said, and the answers when found were often extremely complex.

Because of this complexity, public health messages often became confusing, and seemed to carry self-contradictions. Even when this was not the case, what was true for one person may be false, and dangerously false, for another.

'People respond differently to dietary fats, sodium and other nutrients, so not everyone will benefit from standard advice,' Dr Nestel said.

As an example of this complexity, one point brought up at the Congress was that while obesity is a risk factor for heart disease, and alcohol consumption may add to obesity, moderate alcohol consumption also seems to be protective against heart disease.

Dr Ivor Dreosti, also of CSIRO's Division of Human Nutrition, chaired a symposium on anti-oxidants.

Anti-oxidants have been much in the news lately for their possible use in combating heart disease, cancer and arthritis. They work by countering the action of oxygen-free radicals, which are formed as part of the body's normal metabolism and also as a result of pollution, X-rays and ultra-violet radiation.

Dr Dreosti said that laboratory studies supported the idea that there were health benefits from higher than average intake of anti-oxidants, and studies of disease patterns in humans were adding additional weight to the theory.

Green and orange fruit and vegetables are known to have anti-oxidant effects, as are onions and garlic.

Dr Dreosti said it was possible that plants such as garlic included not only the protective anti-oxidants but other compounds that may, for example, help the cell to repair damage already caused by oxidation.

Dr Peter Baghurst of the same Division spoke to the Congress on the contamination of food with lead and its effects on intelligence.

Dr Baghurst said that studies conducted from the late 1970s onward largely agreed that there was poorer cognitive development among children with the highest levels of lead exposure.

'However,' he said, 'after taking into account other factors which also influenced cognitive development, the deleterious effect of lead appeared to be less.' An analysis of all the research studies in humans, together with information from animal studies, pointed to 'a modest but real effect of lead on intelligence.'

'An important issue is whether there is a 'safe' level of lead exposure, at which there is no apparent effect on development. Unfortunately there is no convincing evidence of a threshold, and health officials may have to be content with goals which are pragmatically attainable rather than absolutely 'safe',' he said.

Dr Barrie Pittock, of the CSIRO Division of Atmospheric Research in Melbourne, spoke on the effects of Greenhouse on the world's food supply.

The greenhouse effect may make the world wetter and warmer, and provide more carbon dioxide for plants, but the overall effect on food production will not necessarily be favorable.

Dr Pittock said that current scenarios suggest future increases in rainfall, and problems with flooding, in northern India, Pakistan and Bangladesh. In contrast, the massive production of grain in the mid-western USA may be threatened by a decline in rainfall in that area. Australia is likely to become slightly wetter, with a rainfall increase of up to 20 per cent in the next 30–40 years.

Dr Pittock has compared five different computer models for simulating climatic change, and the results have been, in general, quite consistent. He said this reflected the rapid increases in the skill and accuracy of climate models and regional forecasts, which make it possible to assess climate patterns in sub-continents rather than whole continents, he said.

He warned, however, of the many traps in forecasting the exact implications of the greenhouse effect on food production. For example, warmer weather may make wheat grow faster, but it can reduce the yield of grain. When the increase in atmopheric carbon dioxide is also added to the equation, it becomes even more complicated. Two out of three varieties of wheat examined by the CSIRO did worse in a wetter, warmer environment with more carbon dioxide, but a third variety did better. ❖

Caption Competition

I'll have to be more careful with my photographs; I'm afraid a lot of the entries were unsuitable for general exhibition on this one. Some were libellous, some obscene, and some an impressive blend of both. Not so the winner, however, which is 'David Edwards has finally mastered his three-wheeler' from Lynn Pulford in Education Programs in Canberra.

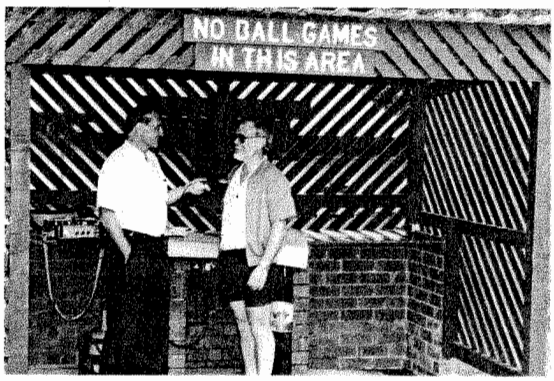
A near runner-up came from Fred de Silva of the Division of Atmospheric Research in Aspendale: 'Macho Genetic Engineer'. Fred also sent 'These jean shears really work!'

Barrie Hunt from the same Division sent 'Are you sure this is the way you use this shoe polisher?' and 'You're joking. There aren't any snakes on board this ship'.

From Jeffrey Tapping, Division of Applied Physics in Adelaide, came 'The picture shows a demonstration of SIROREM, the CSIRO Reptile Evasion Machine. —' ... and if the snake looks like catching up, you just pull on the reversing switch like this, and back over it!'

Gail Veal of the Division of Building, Construction and Engineering in Highett sent 'You've heard of reinventing the wheel? At CSIRO we put in a lot of R & D and reinvented three of them. (But we still don't know what it does!)

Anyway, here we go again; try your brain on the one below ...



Educating Finance and Treasury ...

The staff of CSIRO's Education Programs are taking the promotion of our Organisation very seriously — they've decided to go straight to the people with the money, and hit them at their weakest point.

Last month Linda Meisel, Michelle Deaker and Ross Kingsland took a spectacular whizzing and popping science show to the Departments of Finance and Treasury, throwing in lines about the importance of CSIRO's research between the popular science tricks.

They also planted an insidious seed for future science funding by suggesting to the bedazzled watchers that they should enrol their kids in CSIRO's Double Helix Science Club.

And when did they choose to assault their target audience? At the Friday night Departmental happy hour, of course!

The presentation was part of a larger Education Programs campaign, a concerted program of visits to Federal Government Departments.❖

An interview with Adrienne Clarke, Chairman of the Board

Professor Adrienne Clarke has just stepped, gratefully, back on to Australian soil after a month-long speaking and meeting tour that took her to Japan, Switzerland and America.

She went mainly as scientist, partly as private citizen, and not at all as Chairman of CSIRO. Still, the observations that she made as scientist and citizen have not gone away just because she's resumed her Chairman's hat. *CoResearch* asked Professor Clarke what she sees happening to science in general around the world, and how that applies to CSIRO's current situation.

One thing Professor Clarke saw everywhere in her travels was how much everyone is suffering under the recession, and the sort of pressure this puts on science.

'In some areas,' she said, 'there is a budgetary pressure, but everywhere there is a pressure on scientists to be 'useful'.'

'Governments are responding in the classic way: trying to get scientists closer to industry. All the northern hemisphere countries are doing it.

'Of course we're doing it too, but in our case there's a basic problem — Australia has very few companies with sizeable in-house R&D capabilities, and those are the kinds of companies a science organisation like CSIRO can interact with easily.

'We speak the same language, and there is a good chance of incorporating technology, either for process improvement, for major changes in products, or for entirely new activities.

'A recent estimate of the total of such companies for all of Australia puts it at about 50. If you subtract the cohort of mining companies from that, the number is very small.

'Another interesting finding is that the small to medium-sized enterprises, rather than the giants, are emerging as the major source of new employment in most countries. This is also true in Australia, which means we should be focusing some of our effort to help them thrive.

'The big, established companies are still Australia's main source of export income, and we have a responsibility to use our technology to help them maintain competitiveness — but we also have a responsibility to help the smaller companies that will be growing and producing both new jobs and new export income.

'How to do this? There are no simple answers. We'll have to try a number of different approaches and find the most effective.'

Whatever specific approaches end up being taken, Professor Clarke believes the ability to take a large and long view will be critical to success. Some governments, she says, are better than others in this regard; Japan is well known for its capacity to take a long view. Professor Clarke was struck by how much of its budget the Japanese government was willing to invest in science and technology, through generous support for universities and new technology companies, for example. But she says the support is much more fundamental than that.

'Japan promotes the growth of its science in many ways other than formal budget allocations. There is an impressive amount of support behind the scenes, and, importantly, under the spotlight.'

'Japan promotes the growth of its science in many ways other than formal budget allocations,' she said.

'There is an impressive amount of support behind the scenes, and, importantly, under the spotlight. At an international science congress I attended during my trip, the Japanese Royal Family were not only involved in formal opening ceremonies, but also stayed for the whole of the plenary lectures. That sort of thing sends a powerful message about the status of science.

'Government, industry and technology in Japan are much better integrated and mutually supportive than they are here. There are well-established channels, formal and informal, between them, and money flows along those channels, sustaining economic growth.'

At the more general level of changes in science around the world, Professor Clarke spoke of 'the synergies being generated at the interfaces between traditional disciplines'.

'Providing research bodies with support for minimising artificial structural barriers and improving links between different areas of scientific study has proved to be very productive, and is being fostered.

'Back in Australia, I was struck by 'benchmarking' as a current buzz-word in the business community. I was somewhat surprised at the importance this has assumed in business, only because science has always operated through international peer review — in reality, international benchmarking. It's just part of the way science works, and we're all very comfortable with it. It's certainly no novelty.'

Professor Clarke believes there are many other important cultural differences between scientists and other groups in the community. In a recent address to CSIRO staff in Perth, at the height of the debate over Minister Schacht's proposal to remove the two marine Divisions of Fisheries and Oceanography and add the nuclear agency ANSTO to the Organisation, she alluded to some of those differences.

She said that science was a creative and complex business, and often the factors for its success were not readily appreciated by others.

'On the other hand,' she said, 'the political process is also very complex and often very difficult for the scientists to understand.'

However, Professor Clarke is a scientist, and it is not to be supposed that this even-handed remark means that she thinks the two cultures are equal. In fact, she is sure that scientists have certain advantages, 'by virtue of their style of work', in dealing with problems generally.

'We as scientists,' she said, 'are used to recognising and being comfortable with ignorance. I am constantly surprised at what an enormous advantage this is and how few people in other sectors can comfortably admit ignorance and then set about acquiring knowledge systematically.

'We also have honesty built into our scientific culture, simply because knowledge can only build securely on an honest and disinterested assessment of observation.'

Professor Clarke also told her audience that what she referred to as 'our existing problems' would require them to have another traditional scientific virtue — persistence.

Asked by *CoResearch* this month for a comment on those problems, the Chairman said, 'it has been a very difficult time for the Organisation, and diverted an enormous amount of energy, but clearly everybody has risen to the occasion.

'We hope the review processes will now lead to some sound decisions.

'One very important issue for the people considering the way forward should be maintaining the cross-disciplinary links that CSIRO has been progressively building up, and the very strong record of creative work that has come from these.

'The Board has been very keen to see the Organisation tackle the big problems that are important to Australia, and to bring the creativity of the multi-disciplinary teams to those problems. We have been notching up major successes in, for example, the Coastal Zone Program and the Climate Change Program.

'We must now build on our successes and recognise the value to Australia of focusing on major problems and opportunities with multi-disciplinary teams and all the creative synergies that these teams can generate.'

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With a little help from his friends ...

by Alex Wallace

Mr Reg Henry, a mechanical Laboratory Supervisor from the CSIRO Division of Atmospheric Research, has answered a long-standing need in air-sample storage by designing and constructing a new kind of stainless steel vessel.

Mr Henry has been working on the project since 1991 — trying to manufacture a vessel suitable for the long-term storage of air samples to be used for the Division's future research on atmospheric changes.

'I was trying to develop a vessel that would be perfect for our needs: non-corrosive and totally clean. I also needed to eliminate the occurence of 'out-gassing', or carbon dioxide leaking from the vessel's welded joints and spoiling the air sample inside. I thought that this was a fairly simple process, but each corner turned uncovered a thousand new problems,' said Mr Henry.

During a visit to the Atmospheric Research laboratories, the Chief Executive of CSIRO, Dr John Stocker, asked Mr Henry if he had ever been to the Welding Laboratory at the Division of Manufacturing Technology. Mr Henry thought the trip would be worthwhile and so began a three day journey of discovery.

Dr Nasir Ahmed and Mr Kevin Baughn at the nearby Division were able to discuss the problems Mr Henry was facing at the technical level he needed. He gained some insights from the visit that suddenly made solutions to the complex problems seem nearer. 'After testing sample material by spectrum analysis I found conclusive proof that I was on the right track. I designed a vessel that I felt would suit our purposes and developed a welding procedure and the technique needed for the best results. Sample vessels were produced and special cleaning processes were developed with two co-workers, Dr Roger Francey and Dr Paul Steele,' said Mr Henry.

The finished stainless steel vessels and the designs were submitted by Mr Henry to the Pressure Vessel Group, a part of the Occupational Health and Safety Authority. Approval was granted for the Division to produce the vessels in three different capacities.

Now that the Division is able to manufacture its own vessels, technicians in the laboratory have tighter control over the construction and testing process — guaranteeing a high-quality final product. The savings to the Division are significant — imported American vessels used to cost Atmospheric Research $1,500 each; the Division now hopes the cost may drop to as little as $300 for every vessel.

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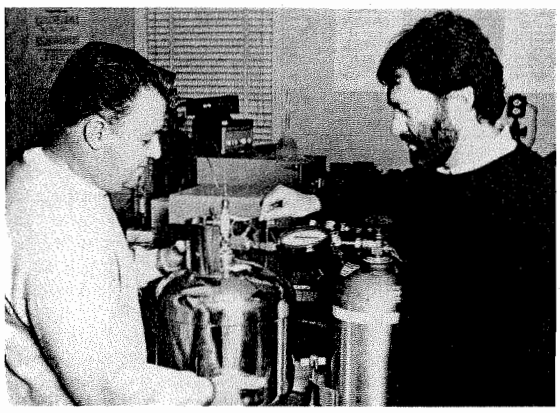


Mr Reg Henry (left) and Dr Paul Steele (right), both of the CSIRO Division of Atmospheric Research, examine one of the new air-storage vessels they recently developed. Photo by David Whillas.

'Marine science ... is inextricably linked ... to the emerging information and communication sciences' — Dr John Stocker.

Profile of an American soil scientist in CSIRO

Rae Fry is a scientific editor for CSIRO's Centre for Environmental Mechanics in Canberra. In the course of her work she recently got interested in the work and personality of an American scientist who was visiting CSIRO on a McMaster Fellowship — one Wilford Gardner. She thought CoResearch readers might be interested in him too, and offers this personal sketch.

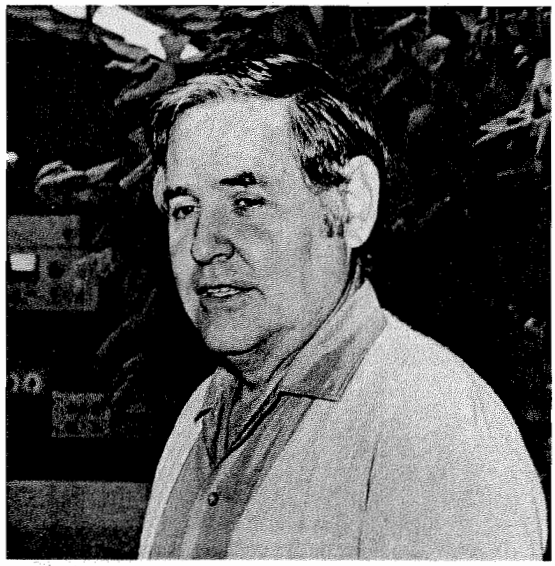
Five minutes into a conversation with Dr Wilford Gardner you get the impression that you're talking to a man who's not only seen it all: he's taken it all in and made sense of it.

Dr Gardner is Dean of the College of Natural Resources at the University of California, Berkeley. He is a distinguished soil physicist and scientific administrator, and a former President of the Soil Science Society of America. Dr Gardner is a champion of the discipline of soil science, and he has a wonderful sense of its history — both his father and his uncle were also soil scientists.

Dr Gardner is modest about his achievements, but never complacent. Over his lifetime he has seen massive changes both in science itself and in the way science is organised and funded. Ecology has changed from a basically descriptive science — where someone who used any equipment more complicated than a metre-rule was labelled 'gadget-happy' — to a sophisticated quantitative discipline requiring an understanding of the interactions between land, sea and atmosphere at the global level.

During the course of his career Dr Gardner has encountered a companion change in agricultural science. In the past they were 'single industry' sciences, directed entirely towards boosting farm production. Now they are environmental sciences, forced to respond to escalating public concern about the harmful effects of farming on food and ecosystems. Much of Gardner's past seven years at Berkeley have been spent facing this new challenge.

Dr Gardner grew up in Utah and did his PhD at Iowa State University, graduating in 1953 — the beginning of what he calls the 'golden era of agricultural funding' (from the 1950s to the 1980s). In spite of his soil-scientist forebears, he went into agricultural research more from accident than ancestry. He had taken a minor in soil physics during his PhD, and expressed some interest in the subject. His Professor made a phone call to Washington DC, and Gardner became the first soil physicist appointed by the United States Department of Agriculture (USDA).



He was sent to University of California Riverside to 'learn something about the subject'. He stayed at Riverside for 13 years, and never made it to Washington. When Richards retired he moved on to a combined academic/USDA research team at the University of Wisconsin, and 14 years later he took up a chair at the University of Arizona — in his words, 'to pay back some of what I'd received in research by being an administrator for a while, and to test my theories on how to build a good research group'.

The theories he tested then are still being put into place at UC Berkeley's College of Natural Resources, which is currently (and conveniently, in his absence, Gardner notes) undergoing major restructuring.

Gardner recently completed a three-month McMaster Fellowship at CSIRO's Centre for Environmental Mechanics, where he welcomed the chance to enjoy writing again, free from administrative responsibilities.

When he retires next year he plans to write a history of soil science: the story of who did what, and the personalities behind the science. Gardner is well placed to write such a history — he has known many of the researchers involved since they were his father's students.

Scientific breakthroughs, however, are no longer on the agenda. Gardner is happy at this stage to let other people do the cutting-edge work.

You get the feeling that Dr Wilford Gardner has adapted remarkably well not only to changes in scientific research and funding, but also to changes in his own life. He says that there are now other things to do.

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CoResearch

No. 356 December 1993 CSIRO's staff newspaper

CSIRO AUSTRALIA

Chairman's Medal to Graeme Caughley

The 1993 CSIRO Chairman's Medal has been won by Dr Graeme Caughley, of the Division of Wildlife and Ecology, for his outstanding research achievements and leadership in the field of vertebrate ecology.

Instituted in 1991, the Chairman's Medal honours the very best in CSIRO research. Prize money of $25,000 and a gold medal are awarded each year to a scientist whose research is of national or international importance in advancing scientific knowledge, technology application or commercialisation.

Dr Caughley is a world leader in his field; his contributions to the study and management of vertebrate communities have been translated into action in Australia, Antarctica, Afghanistan, Nepal, Burma, Africa, Canada and New Zealand. His books are standard texts for most university courses in advanced ecology. He has done much work with wildlife organisations, including helping to ban the trade in African ivory.

Four CSIRO Medals are also awarded each year, three to CSIRO scientists and one to an outside scientist.

Dr Robin Bedding of CSIRO's Division of Entomology, was this year awarded a CSIRO Medal for his remarkable work on the use of nematodes to control insect pests. Dr Bedding was also honoured at this year's Sir Ian McLennan Awards (see *CoResearch* 355) and has figured in the news for his work in helping to make the pesticide industry more environmentally friendly (see page 6 this issue).

Dr Bedding's application of his extraordinary discoveries on the biology of one kind of nematode broke the grip of the sirex wasp on Australia's one million hectares of pine forest.

Dr Bob Winks, also of the Division of Entomology, was another of the medal-winners. In his case the medal recognised an impressive contribution to the Australian grain industry.

Dr Winks developed SIROFLO, the grain fumigation technique that has now become the major grain protection and disinfestation method in Australia. It has already saved the grain industry millions of dollars.

In an entirely different field of achievement, Dr Dick Manchester was given his CSIRO Medal for work in the discovery and interpretation of pulsars.

Pulsars are the collapsed cores of dead stars, a million times heavier than Earth but with diameters of only about 20 kilometres.

Dr Manchester is a scientist with CSIRO's Australia Telescope National Facility. He and his international team (Dr Matthew Bailes, Dr Nicolo D'Amico, Dr Simon Johnston, Dr Paul Harrison and Professor Andrew Lyne) have made a series of exciting discoveries of and about pulsars. These discoveries are improving understanding of the nature of our galaxy, and may lead to extremely accurate new standards of terrestrial time.

This year's winner from outside the Organisation was Dr John Cannon of the School of Mathematics and Statistics at the University of Sydney.

Dr Cannon's CSIRO Medal was for his work in the field of computer algebra.

His main achievement has been the development of computer languages for abstract algebra, number theory and geometry.

Such developments are likely to provide some great intellectual adventures for the 21st century, as chaos theory has already done.

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A few of the winners at this year's CSIRO Medals ceremony held at Melbourne's Rialto Hotel on November 24. (Because of illness, Dr Graeme Caughley, winner of the Chairman's Medal, was not at the ceremony.) Back row, left to right, Dr John Cannon, Dr Bob Winks, Professor Andrew Lyne, and Dr Simon Johnston. Front row, left to right, Dr Brian Walker, Dr Robin Bedding, Dr John Stocker, Professor Adrienne Clarke, Dr Dick Manchester, and Dr Nicolo D'Amico.

CSIRO and Changes

Year's end — a fit time to reflect on just how much change there has been in CSIRO in recent years, and how much is still to come.

While some institutions change their names and little else, with us almost the opposite is true — little remains untouched except our name and what it stands for: the commitment of the staff, the excellence of the research, and the solid reputation those continue to earn.

Changes past ...

Seven years ago, CSIRO was led by an Executive of three full-time members, including the Chief Executive as Chairman, assisted by five part-time members. There were five Institutes and some 42 Divisions.

After the major ASTEC review in 1985 CSIRO was considerably re-shaped. Broadly, the new structure put more emphasis on practical applications of research for the Australian community.

A new, larger Board was created, including a full-time Chief Executive. The new body had legal accountability for the Organisation's strategic leadership, its relationships with business, government, and the general community, and its financial and staff management.

Eminent Labor politician Neville Wran took on the Chairmanship for the first five years of the new regime, with Dr Keith Boardman as the Organisation's Chief Executive.

The new structure brought in the present six research Institutes, and this was a deep change. Under them, Divisions and their scientific projects were aligned to industry sectors rather than to the academic disciplines that had defined their scope and ethos in the past.

Restructuring has continued, on a smaller scale but persistently, with the number of Divisions now down to thirty-four, and a reduction in central administrative staff of about forty per cent.

One of the most striking and significant recent changes shows in the skill profiles of newly appointed Chiefs and other high-level staff. Where before the emphasis in high appointments was almost entirely on scientific achievement, there is now a much larger, and growing, deliberate accumulation of business and management acumen in the top ranks of the Organisation. This has also seen the appointment of commercialisation and business managers throughout the Organisation and the acquisition of more staff with formal accounting skills.

Of course, the Federal Government's requirement that we find 30 per cent of our funds from external sources brought its own enormous changes, some of them very difficult. It was a challenge that CSIRO has met, and the consequences of this change are the subject of a current ASTEC review. In its May 1989 Science Statement the Government balanced that requirement with additional research funds. This was life-blood for our work on such critical programs as Gene Shears, where we are now well on the way to delivering marketable products from that world-leading science. With this project, as with so many others, we have been able to offer a practical demonstration of just how solid an investment CSIRO research is.

The Organisation's new priority-setting process, initiated by the CSIRO Board in 1990, has attracted attention from outside, and is gaining acceptance internally as it increasingly shows its worth as a planning tool. The process requires, and produces, strong links with our business and community stakeholders.

One very recent change has been the moving of CSIRO's headquarters from Canberra to Melbourne in 1992. The new Head Office is small and outward-oriented, with a clear focus on commercial, legal and international matters.

We have appointed a Director of Corporate Business, Peter Bradfield, who has a strong business background. Under his guidance the new Commercialisation Task Force is about to deliver comprehensive guidelines for CSIRO's future commercial activity.

The new award and salary structure for CSIRO staff, won in late 1990, was another advance, giving managers more freedom to reward high achievers and thus compete for talent with the private sector. There is now more focus on career planning and the training necessary for it, particularly in leadership and commercialisation skills.

A particularly striking and pleasing change has been the growth of multi-Divisional projects. There are now 24 major Programs of this sort, making impressive use of CSIRO's unique ability to marshal multi-disciplinary teams to tackle complex problems.

This successful straddling of organisational boundaries is not only internal. The Government's Cooperative Research Centres program has brought together CSIRO, industrial research groups and the universities, with CSIRO involved in 43 of the 51 current CRCs.

This list is far from complete; it merely illustrates an almost incredible five or six years of change. Throughout that period, excellent and relevant research has kept flowing from CSIRO. Developments in polymer products, breakthroughs in influenza treatment, environmentally friendly pest controls, coal-quality analysis, destruction of toxic waste products, and a family of 'smart packaging' approaches are only a few examples.

... and changes future

Perhaps the only certainty is that there will be change, but let's be daring and make a few predictions about trends.

To meet Australia's research and technology needs, CSIRO will keep working towards greater flexibility, agility and user-focus.

Our links with other bodies will grow ever more numerous and varied. We will have more strategic alliances with companies large and small, there will be more staff secondments to them, high levels of involvement with CRCs, and even more inter-Divisional work as part of our commitment to 'doing it better'.

Some of these changes will reflect the outcomes of reviews, such as the recent review with McKinsey and Company of our interaction with small and medium-sized enterprises. That showed up some areas where we need to change, and so we are changing. We will continue to review and respond to community demands in this way.

CSIRO will also continue to walk fine lines between competing interests, especially where environmental and developmental goals are seen to conflict. We will jealously guard our 'honest broker' image, which means not shrinking from putting forward relevant facts and opinions to help inform the political debate.

When it comes to the practical applications of our science, we will acquire a more global outlook, and we'll make sure that CSIRO continues to be one of Australia's best-respected brand names.

More and more, our staff will expect to move around the Organisation, in and out of specialist, multi-disciplinary teams in response to changing priorities; it will become an increasingly common part of a CSIRO staff member's career development to spend time in other organisations, both public and private.

Being a national body, we will retain an Australia-wide presence, but we will keep consolidating and rationalising our sites when this is appropriate.

So, we end where we began. CSIRO has changed. CSIRO will change. But our dedication to serving Australia's broadest environmental and economic needs through excellent and useful research will not change.

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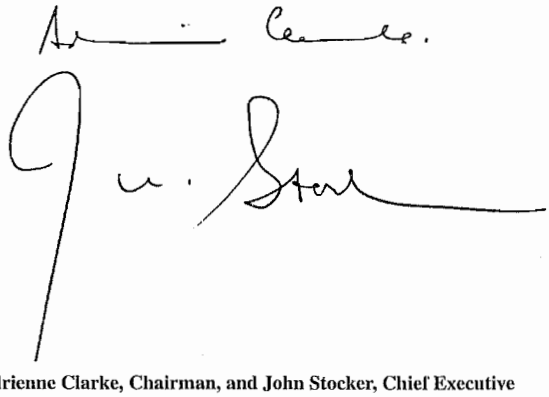
We both wish all of you a refreshing and revitalising holiday over the festive season — may we all return ready and eager for the changes the new year will most certainly bring.



Adrienne Clarke, Chairman, and John Stocker, Chief Executive

CSIRO SHORT SHOTS

Help for sheep farmers

On December 11 researchers at CSIRO's Division of Plant Industry announced the successful release of an introduced plant disease that attacks Slender Thistles. Slender Thistles cost Australian sheep farmers $5 million a year by reducing pasture production and increasing fleece contamination. The Division's Dr Jeremy Burdon said the disease had been extensively tested to make sure that economically important or native plants would not be affected. The program is funded by the Wool Research and Development Corporation.

Hope for non-chemical control of plague locust

The CSIRO Division of Entomology and the Australian Plague Locust Commission are conducting trials using a natural fungus to counter one of humanity's greatest curses, the plague locust. According to the Division's Dr Richard Milner it may be possible to use the fungus in place of certain chemical pesticides.'Overseas it has been tested extensively and shown to be safe to use,' he said. 'Fish and other aquatic life are not affected and the fungus can be used in environmentally sensitive areas such as near water courses.' The fungus occurs naturally in locusts and grasshoppers.

Appointments to Board

Professor Sir Gustav Nossal has been re-appointed to the CSIRO Board for one year, and Mr Mike Forshaw has been appointed for four years, from January 1, 1994. Mr Forshaw is Joint National Secretary of the Australian Workers' Union – Federation of Industrial Manufacturing and Engineering Employees Amalgamated Union, and a Council member of the ACTU. He replaces Mr Laurie Carmichael, who is retiring from the Board.

Computer map to speed up emergency rescues

A new mapping system developed jointly by ARC Systems and the CSIRO Division of Information Technology should help police, ambulance and fire rescue workers reach emergencies more quickly. Dr John O'Callaghan, Chief of the Division, said *ARC-Dispatch* would enable dispatchers back at headquarters to see at a glance where the closest vehicle was and send it to the scene. The system displays the spatial relationships of emergency vehicles to locations on maps complete with roadways and jurisdictional boundaries.

Software tool to assess coastal damage

Maps produced from software developed by Neil Hamilton and Doug Cocks of the CSIRO Division of Wildlife and Ecology as part of the Organisation's Coastal Zone Program have been published in a report released on November 29. The report is called *State of our Surf* and is the result of 14 months of research by volunteers from 40 branches of the Surfrider Foundation, a non-profit coastal conservation and education organisation spread across Australia. SOS reports the startling extent to which our coastline has been affected by development and pollution. Neil Hamilton said the maps were a good example of the capacity of a tool like CAMRIS (Coastal and Marine Resources Information System), which is the name of the CSIRO software. 'Our coast is under increasing pressure,' he said, 'but unless we know what is happening on the beaches we can't plan for the future'.

Textbooks for secondary students

CSIRO and Cambridge University Press have collaborated to produce a new series of science textbooks for Australian secondary schools, launched on November 25. So far there are eight books, four to be published each year. The first four are — *Water*, by Mitch O'Toole; *Biotechnology*, by Beryl Morris; *Forests*, by Tony Sadler; and *Atmosphere*, by Paul Holper. The next four will be — *Modern Materials; Food for a Hungry World; Energy; and Astronomy.*

CSIRO welcomes Cabinet decision on ANSTO proposal

On November 10 Chief Executive of CSIRO Dr John Stocker announced that the Organisation welcomed the Cabinet decision to maintain the Australian Nuclear Science and Technology Organisation as a separate research institution. He said that CSIRO supported the government's efforts to forge closer links and would be prepared to participate in any priority-setting process. 'We have had a strong and close relationship with ANSTO staff in the past,' he said, 'and we hope to build on this'.

New weapon against viruses

CSIRO's Division of Tropical Animal Production is developing its 'Trojan Bullet' technology, originally designed for livestock, to combat human disease. The Trojan Bullet is a synthetic virus particle that has been constructed so that it does not reproduce itself or cause disease. It uses its natural infective ability to target and penetrate a diseased or infected tissue. Once inside the cell it can produce a vaccine or therapeutic agent. The Division's Dr Peter Walker says the inititial focus will be on vaccines against the human papilloma virus, which causes cancer of the womb, and the Epstein-Barr virus, the agent of glandular fever.

SIROLAN–Laserscan accepted internationally

A CSIRO invention for measuring wool fibres, SIROLAN–Laserscan, was formally accredited by the International Wool Textile Organisation in November as an international standard for wool trading . It was developed by the Division of Wool Technology with funds from Australian wool growers through the Wool Research and Development Corporation.

Student Research Scheme project starts research

Research carried out by a Victorian schoolgirl over a period of four days has led to an $18,000 grant for CSIRO from the Victorian Government's Health and Community Services.

The research revealed unexpectedly high levels of organohalogens, a group of compounds that includes some that may cause cancer. In April this year Patricia Czarny, a year eleven student at McKinnon Secondary College in Victoria, collected samples of water from 25 public pools and spas and analysed them to see if they contained these compounds. Her results were not enough to establish a health risk, but they were enough to justify further study.

Norman Pilkington, a scientist with the CSIRO Division of Chemicals and Polymers, designed the project for Ms Czarny as part of the CSIRO's Student Research Scheme, partly because the Division has an organohalogen analysing machine, and partly because there has been little research in this area. He thought the project would be a good one for a beginner. However, he said that he and his team were surprised at the levels of organohalogens Ms Czarny found in some of the samples.

The initial analysis did not identify individual compounds, and therefore did not determine how many of them might be the possibly cancer-causing ones, but the results were enough to convince Health and Community Services that they should fund further research.

Mr Pilkington's team have now begun this further research and he and his colleagues are already looking around for funds to keep it going when the initial grant dries up.

According to Gary Lewis of CSIRO's Education Programs, who is the national co-ordinator of the Student Research Scheme, such dramatic and useful results are not uncommon.

'Most years,' he said, 'there will be at least one research finding by the students that ends up being published as part of a scientific paper.

'In fact I have another in front of me here, also from this year, where the results have proved to be so useful that they are now a trade secret, and so of course we can't reveal the details. The students in that case were doing research in the CSR Inkerman sugar mill in far north Queensland, developing equipment to measure the height of the fluid in a cane diffuser.

'There were 361 projects completed by the students through the Scheme this year, involving 278 scientists from 97 different scientific institutions.'

The scheme is supported by the Institution of Engineers, Australia, and the Science and Technology Awareness Program, DITARD.

Mr Lewis said he welcomed suggestions for projects for next year. If you have one you should contact him (on 06 276 6639) or your state CSIRO Science Education Centre. ❖

Senior Promotions, 1993-style

CSIRO's ethos is still changing, and still in the same direction. In the old days it was always scientific skills and achievements that won the highest posts. They continue to count, but more and more the highest flyers of all are required to have management, commercial and leadership skills.

The push for this comes from the top, so it's a good firm push, and it shows not only in the recent spate of top-level appointments to CSIRO from outside, which have openly and dramatically favoured business skills, but in the qualities that win promotion to high rank from within.

The Organisation has just completed this year's round of senior promotions – up to or within Levels 8 and 9, or, in Oldspeak, up to SPRS, CRS and Chief level.

The Human Resources Branch says that since Chiefs are promoted on the basis of management and leadership skills anyway, there is no change to be expected in the basis of their promotions.

There does seem to have been a change in the SPRS and CRS levels, however. A quick analysis shows that of the 54 promotions at this level in 1991, 42 were mainly for scientific achievement or ability, and 12 mainly for leadership or business skills, including the ability to attract money to the Organisation for research.

This year the score was Science 34:Business 31, out of a total of 65 promotions.

It's a small sample, admittedly, but it seems to show that business and management achievements have moved, in only two years, from counting for about a quarter as much as straight science to almost level pegging.

So it seems the promise made in 1990 that the new award structure would bring greater rewards for excellence in management and contributions to industry is being kept, at least at the highest levels. (There are no figures for the lower levels.)

But science certainly hasn't dropped off the agenda. A glance through the cases for promotion put forward by those doing the promoting still reveals a lot more words spent on excellence in that area than in any other. And many promotions are still made purely on the basis of excellent science. Work that benefits the community is also still one of the main criteria in promotion cases, along with science and industry, but the figures show there has been no change in the proportions there.

Still, since the general tone and emphasis are changing, it may be worth giving staff a few examples of the sorts of work within the Organisation that are currently attracting high rewards.

Dr Rudi Appels, Division of Plant Industry, was promoted to CSOF8 (3) this year in recognition of his outstanding research achievements in plant genetics.

His research has uncovered new disease-resistance genes, which are currently being introduced into Australian plants.

Assistant Chief of the Division, Dr Bryan Barlow, said Dr Appels' work would also provide new wheat genes that would allow us to change the dough-forming properties of flour, an event of considerable importance to the wheat industry.

Dr Cecily Neil, of the Division of Building, Construction and Engineering, was also among this year's senior promotions, but with work of a very different kind from that of Dr Appels. Dr Neil studies the social effects of infrastructures in different environments.

She is internationally recognised for her work, which has included helping form public policy on accommodation for homeless young people. She has also helped form the policies of mining companies, both on worker accommodation at remote sites and on the management of mine closures.

Another major area of her study has been the impact of technological change on society. Dr Neil has been invited to present her work to virtually all the countries of Europe as well as Canada and the USA.

At the managerial end of the spectrum is Dr Tony Milnes, Division of Soils, who was promoted this year to CSOF8 (3). This was mainly for his successful management of complex research networks and teams within CSIRO — particularly the Minesite Rehabilitation Research Program — as well as of research involving both CSIRO and the Australian and international mining industry.

Dr Milnes also has an excellent record on the science side, with an international reputation for his work on weathering processes and landscape evolution, and a respectable list of scientific publications. ❖

Matter of Opinion

This month's opinion column comes from Dr John Lowke. Chief of the CSIRO Division of Applied Physics until 1988, Dr Lowke is still doing research with the Division. Before becoming Chief he had been a Senior Physicist and then Fellow Scientist at the Westinghouse Research Laboratories in Pittsburgh, USA, and later a Senior Lecturer and Reader in the School of Electrical Engineering at the University of Sydney. This letter, in a slightly different form, has already appeared in the November edition of the monthly newsletter of the Division of Applied Physics, but Dr Lowke thought — and CoResearch agreed — that it might be of more general interest. It deals with the issue of the Organisation's 30 per cent external earnings target, currently under review by ASTEC.

The Minister for Science has announced that there is to be a review of the 30 per cent external earnings target that has applied to CSIRO for the past few years. The target has been helpful in orienting our research towards industry, but I believe it has also some severely detrimental effects. The review gives us a much-needed opportunity to make suggestions to modify it. The points I want to make are not particularly new to people working in Divisions, but they need to be brought to the attention of government policy-makers. They are these:

1. The 30 per cent target is much easier to attain for some Divisions than for others. For example, the Division of Manufacturing Technology, staffed largely by engineers, by focusing on short-term projects with an immediate improvement to a product, should find it easier to reach the target than would the Division of Applied Physics, staffed largely by physicists, who have a larger fraction of strategic research.

2. Government laboratories have a most important role in carrying out strategic research which can never be paid for directly by industry.

a) An obvious example of this is in the establishment and maintenance of the standards for the twenty-odd physical quantities (mass, temperature, viscosity, etc) performed by our Division. Our equipment needs to be capable of the most accurate measurements in the country and also to cover the full range from the very highest to the very lowest magnitudes. Periodic checks need to be made with other standards laboratories overseas.

b) I believe it is also imperative for our country's future in the competition of exports that strategic research be carried out by our government laboratories in as many areas as possible that are relevant to our industries.

Some argue that the research should be done by industry itself, but, having worked in an industrial company myself, I know that competition between companies is extremely fierce. A company that spends resources on strategic research is likely to lose this competition to other companies who concentrate on product development.

Others argue that strategic research is the role of universities. Well, I have also been a Reader at a university, and I know that the other role of universities, namely to teach, is the dominant one. University research is done largely by students; students are just students, and, on completion of their theses, they generally leave the university. Thus the creation of a permanent expertise in universities is extremely difficult.

One of the problems in trying to extract payments from industry for strategic research is that it is not at all obvious which industry will obtain the principal benefit from that research. For example, our research group recently completed a combined theoretical and experimental study on arc-electrode physics. The work was funded by a GIRD grant with two industrial companies as partners; they supported the work entirely on the basis of possible applications in using plasmas for mineral processing.

However, there has been a downturn in economic prospects for mineral processing, and one of the companies is now out of business.

Research results from the project, however, won a prize at the recent Australian Annual Welding Conference for being the best paper presented at the previous year's conference, and the work is now the basis of a further development in welding in a new CRC project.

Furthermore, results of the original project offer strong prospects of external earnings from an overseas multi-national for calculations on properties of arc lamps.

In yet another application, the original project has prospects for making possible a new design and new electrode materials for the use of plasmas for waste disposal.

c) Many further examples of roles of government laboratories that are not possible to fund from external industrial sources can be given. NIST in the USA has compiled a superb data base of the rate co-efficients of all published chemical reactions, which is used world-wide. Our CSIRO Division of Atmospheric Research is taking part in the development of huge computer programs for the prediction of future changes in climate. Our Division of Entomology has a role in compiling and classifying all Australian species of insects.

3. The 30 per cent target has the practical effect of discouraging efforts to do research supporting small businesses. The importance of small businesses to the economy has been highlighted by a recent study by McKinsey & Co. New companies that have as a basis a technological innovation that might give them a competitive edge need all the help they can get. When they are small, they generally go through initial years making a loss and so are incapable of providing external earnings for CSIRO. A still greater problem is to provide research help when they need it most — before they are actually formed. On the other hand, large companies can pay for large grants and are a much better prospect for any Division seeking to reach its external earnings target.

4. Why 30 per cent? I believe that for some Divisions the 30 per cent target is too high. If industry is in recession and, as has been the case recently, GIRD grants demand a very high percentage contribution from industry, it can be quite impossible to obtain 30 per cent in external earnings. Then the whole activity of the Division can be spent chasing non-existent external earnings, reducing the creative output to a ridiculously low level.

These observations of disadvantages of the 30 per cent target are not particularly profound. But they do need to be highlighted so that judgements of performance are not unduly weighted by examinations of whether a Division has met its external earnings target.

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Rural Research

Have you seen CSIRO's *Rural Research* magazine lately? Reading *Rural Research* is a good way to keep up with a wide range of agricultural research issues. The summer 1993–94 issue features many topical articles from mouse plagues and algal blooms to a computer model to predict bushfire spread.

If you would like to know what your colleagues in other Divisions are doing, a subscription to *Rural Research* is a good way of finding out; a yearly subscription of $22 will get you four issues; or pay $40 and receive eight issues. So next time your friends ask you what CSIRO is doing about blue-green algae, chemical residues or genetic engineering, just hand over *Rural Research* and there is a good chance they will find the answer.

If you subscribe to *Rural Research* this year you will also receive a free index covering the years 1975–93. For subscription information ring Tracey Lockwood on 03 418 7265; for other information or comments about the magazine ring the editor, Robin Taylor, 03 418 7205.

CSIRO Chief Executive's Study Awards

Applications are now being invited for the Chief Executive's Study Awards. The closing date for applications is January 30, 1994.

The awards are available to all CSIRO staff on indefinite tenure from CSOF levels 1 through 6. Those who are granted them are able to travel in Australia and/or overseas to increase their knowledge of topics related to their careers.

Conditions of the awards include continuation of salary, return 'best fare' economy class air fares for the award holder, a grant to help with living and incidental costs and assistance with tuition fees, books, equipment and similar expenses.

The awards can be held for between two and 12 weeks, but this is extended in exceptional cases.

For more information contact Jennifer Bean, Human Resources Branch, on 06 276 6432.

Legal matters

CSIRO and Gerard Cassegrain & Co Pty Limited ('GC&Co') announce that they have settled the lengthy court proceedings concerning the relationship that commenced in 1987 and was extended in 1989 to a joint venture company, Cassiro Pty Limited. The relationship aimed at the commercialisation of two new innovative Australian research and development projects, soil slotting and vertical upflow artificial wetlands ('VFW'). The possibility was also envisaged that the relationship could be extended to other projects.

The settlement results from a mediation conducted by Sir Laurence Street. The participants included Dr John Stocker, Chief Executive of CSIRO, and Mr Claude Cassegrain.

The parties have decided to sever their business relationship on mutually agreed terms as part of the settlement. CSIRO will purchase GC&Co's direct and indirect interests in the relevant technologies and resume sole responsibility for their development in the national interest.

CSIRO acknowledges the substantial financial and other contributions made by GC&Co and Mr Claude Cassegrain to the development of the technologies in question, principally the Slotting technology and the VFW technology. The severance of the relationship is not to be taken as reflecting in any way adversely on GC&Co or Mr Cassegrain, and the parties hope the technologies will provide substantial national interest benefits in the future.

Slotting is a technology which can be used to ameliorate soils and also has other potential applications. VFW is a waste treatment technology with application to treatment of wastewaters from small communities and mining sites. The Chairman of CSIRO, Professor Adrienne Clarke noted, on conclusion of the settlement, that

'Soil slotting has particular application to the amelioration of poor soils in many parts of Australia, although the extent of its future use will depend on a detailed long term analysis of its costs and benefits. The vertical upflow artificial wetlands system offers the possibility of an environmentally friendly way of disposing of sewage from rural and isolated communities, rural industries, and urban run-off.'

The relationship has stimulated a number of developments of the two technologies and CSIRO thanks GC&Co and Mr Cassegrain for the contributions they have made.

Letter to the Editor

Dear Editor,
It occurs to me that CSIRO has reverted to being an ivory tower organisation, sort of wedding cake style, with layer upon layer of managers. This enables CSIRO to really stand out from the crowd of industries we are dedicated to serving, most of whom (for some silly reason or other) are trying to achieve as flat a management structure as possible.

In my division, and apparently in many others as well, the job of the project scientist is to define research ideas, get the funding from industry, perform the research, and write up the final reports. What then is the role of our management layers? The answer has become quite obvious. Their role is to report to one another. The good news is that in doing so, they greatly assist the Australian economy by keeping the airline industry and the resort centre industry profitable.

Lately, other management roles have become apparent, i.e. designing corpulent (sorry, corporate) symbols at all levels. For example, in my division, our managers have eliminated individually designed business cards and replaced them by a corporate divisional business card. These present an air of mystery, that is unless the recipient happens to possess a magnifying glass to read the phone, fax, and email numbers. Regrettably, these cards are still too individualistic because they retain individual names and numbers instead of a common corporate number.

It would be churlish to denigrate the efforts of our high level divisional managers who gave so unstintingly of their time to attend meetings to design these cards. But let me suggest an alternative. Why doesn't CSIRO set up a semiotics group in the Corporate Services area to design cards and other corporate signs and symbols? After all, the interpretation of signs and symbols is their area. Why leave it to well meaning amateurs at divisional level? Besides, with the Dawkins inspired crack-down on university humanities departments, I'll bet we could attract Australia's best semioticians to the group.

Speaking of interpretations of signs and symbols, maybe we should move with the new age and set up a division of alchemy? After all, we used to employ astrologers and necromancers under the title of corporate planners. There is a brave new world of excitement ahead.

Respectfully yours
Art Raiche
Division of Exploration and Mining

Board announces approved priority programs for new triennium

On December 14 the CSIRO Board made its decision on which research programs will receive internal priority funding over the next triennium, beginning on July 1 next year.

The broad areas to be funded, announced in September, are minerals, manufacturing and the information and communication industries, each receiving $1.5 million a year over the period. Environmental research will be maintained at about its present level by an allocation of $1 million a year. Institutes receiving these funds will be required to find matching funds, bringing the total CSIRO priority funding to a maximum of $11 million a year, or $33 million over the triennium.

The specific programs are listed below; participating Divisions are also shown, but these are still subject to change.

Minerals

World Class Nickel Deposits — Prospectivity using Geochemical and Isotopic Signatures (Exploration and Mining)

Project AUSTRALIS: Accelerator Mass Spectrometry for Ultra Sensitive Trace Element and Isotope Studies (Exploration and Mining)

Airborne Gravity Gradiometry (Exploration and Mining)

Orebody Delineation by Geophysics (Applied Physics; Exploration and Mining; Information Technology; Radiophysics; and the Cooperative Research Centre for Mining Technology and Equipment (CMTE); the Cooperative Research Centre for Australian Mineral Exploration Technologies (AMET CRC); and AMIRA)

Mine Characterisation and Optimal Recovery (Exploration and Mining; Mineral and Process Engineering; Mineral Products)

Carbothermic Smelting (Manufacturing Technology; Mathematics and Statistics; Mineral and Process Engineering)

Improved Production of Synthetic Rutile (Building, Construction and Engineering; Mathematics and Statistics; Mineral Products)

Manufacturing

Biosensors (Applied Physics; Biomolecular Engineering; Chemicals and Polymers; with Animal Health; Food Science and Technology; and Plant Industry)

Smart Manufacturing (Applied Physics; Chemicals and Polymers; Food Science and Technology; Information Technology; Manufacturing Technology; Materials Science and Technology; Mathematics and Statistics)

Information and Communications

Telecommunications Engineering (Information Technology; Mathematics and Statistics; Radiophysics)

Software Engineering (Information Technology; Mathematics and Statistics; CSIRO Divisions — in all Institutes — undertaking software development; CSIRO–Macquarie University Joint Research Centre in Advanced Systems Engineering (JRCASE))

Environmental Aspects of Economic Development and Environmental Knowledge

Environmental Aspects of Australian Tourism: Indicators and Processes of Sustainability to the Year 2000 (Atmospheric Research; Building, Construction and Engineering; Environmental Mechanics; Fisheries; Information Technology; Mathematics and Statistics; Soils; Wildlife and Ecology; other CSIRO Divisions; Bureau of Tourism Research, Canberra; Department of Tourism, Canberra; Pacific Asia Travel Association; others)

Dryland Farming Systems for Catchment Care (Animal Production; Environmental Mechanics; Forestry; Plant Industry; Soils; Tropical Crops and Pastures; Water Resources; Wildlife and Ecology)

Urban Systems (Atmospheric Research; Building, Construction and Engineering; Chemicals and Polymers; Coal and Energy Technology; Environmental Mechanics; Mathematics and Statistics; Soils; Water Resources)

Climate Variability and Impacts (Animal Production; Atmospheric Research; Building, Construction and Engineering; Entomology; Fisheries; Forestry; Oceanography; Plant Industry; Soils; Tropical Crops and Pastures; Water Resources; Wildlife and Ecology)

Conserving Biodiversity for Australia's Future (Entomology; Forestry; Plant Industry; Soils; Wildlife and Ecology) ❖

A call for members for consumer committees on sunscreen standards

The Australian Federation of Consumer Organisations (AFCO) is the peak body for consumer groups in Australia.

AFCO puts the views of its member consumer groups to government and industry and keeps the public informed of these views through the media.

Standards Australia, a non-profit, independent organisation that works at preparing, publishing and maintaining Australian standards through consultation and consensus, has asked AFCO to provide someone to represent the consumer on two committees, one looking at ways of evaluating the performance of sunscreen products, the other looking at standardisation in fabrics that claim to protect against sunlight.

Anyone interested should contact Judy Stockdale at AFCO, Level 1, 40 Mort Street, Braddon, ACT, 2601. Phone 06 257 6311; Fax 06 257 6469.

'The man of science appears to be the only man who has something to say, just now — and the only man who does not know how to say it.' J.M. Barrie

CSIRO now offers two workshop courses to enable scientists and other staff to develop skills in handling the media and in presenting information to an audience. Both courses last for two days and will be offered in all captial cities in 1994. The course fee is $450, and includes lunches, course notes and a video of each participant's interviews or presentation.

The Media Skills Course

The aim of this course is to enable scientists to exert greater control over their media appearances. It is highly practical, and gives participants plenty of practice at being interviewed by working journalists.

The course covers media releases, conducting a media event, how scientists should work with their communicators, handling the hot issues, and the different needs of radio, television and newspapers. Group size is limited to ten to allow participants to gain interview experience.

'The notes were excellent, the organisation was excellent, the speakers were fluent, clear and knowledgeable.' Course participant, 1993.

The Presentation Skills Course

The aim of this course is to enable participants to communicate their message effectively to a diverse range of audiences. It covers all aspects of addressing audiences ranging from a scientific seminar to a group of farmers in a paddock.

The course is highly practical and includes a number of exercises that culminate with participants each delivering a ten-minute presentation to illustrate their newly acquired skills. It includes a section on creating graphics for overhead transparencies, and the importance of using colour. New methods of projecting images are demonstrated as a way of maximising the impact of the presentation.

'The best part was the interactive approach, working in small groups on a combination of theory and practice.' Course participant, 1993.

SIROCREDIT reaches $100 million

CSIRO's co-operative credit society, SIROCREDIT, has achieved an asset base of $100 million, which represents a doubling in only five years.

The society has also just appointed a new Chief Executive, Mr Richard Cameron. Mr Cameron said the main factor in the success of the credit society was the unusually strong support of its members, CSIRO staff. "The success and spectacular growth of SIROCREDIT is an achievement that all members should take pride in," he said.

He said that SIROCREDIT would soon be announcing a restructuring of its loan rates for mortgage secured loans, with a substantial reduction in interest rates for most mortgage borrowers.

'Future borrowers,' Mr Cameron said, 'will be able to take advantage of some of the lowest mortgage rates in Australia. ❖

Entomology helps business get lean and mean, in green

The CSIRO Division of Entomology has entered a major new collaborative agreement with the pest-control company Ecogen Australia.

The agreement, signed in mid-November, covers a world-leading storage method that will improve commercial viability for the use of insecticidal nematodes as a form of pest control.

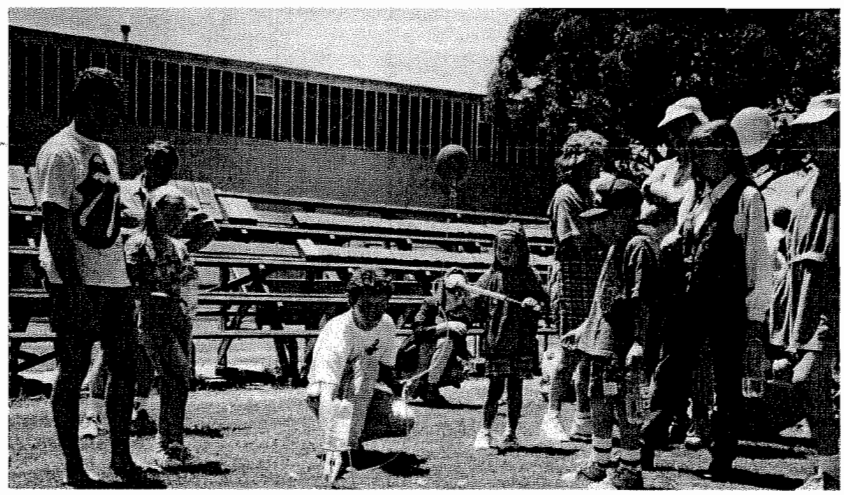
The technology was developed by the Division's Dr Robin Bedding, and earned him one of this year's CSIRO Medals (see page 1). He says it is an important alternative to chemical pesticides. Nematodes are miniature roundworms that attack and kill insects. They do not harm plants, the environment, birds or humans, but are able to control some insect pests.

'Nematodes seek out and attack insect larvae in the soil or in plant stems. They are considered an important biological insecticidal tool because 90 per cent of all insects live in the soil during some part of their life cycles,' Dr Bedding said.

A major factor limiting widespread commercialisation was that certain species of nematodes are very difficult to store, even for a short time, at room temperature. Dr Bedding overcame this hurdle when he hit upon a method that has the potential to extend nematode shelf life up to one year. The new agreement gives Ecogen exclusive rights world-wide to the formulation.

Ecogen Australia exports nematode products from their factory in Hobart, Tasmania. It is a subsidiary of Ecogen Inc., a US-based company specialising in biological control products. ❖

Open Day for Highett CSIROSEC



Above, the most popular event at Highett's CSIRO Science Education Centre Open Day on Saturday November 27 — the PET bottle rocket launch. The open day was for CSIRO staff and families, and about 250 people turned up. There was a workshop on Water (it was Water Week) and one on Construction, and the travelling Science and Technology Show provided some lighter entertainment. Wendy Lawler, Victorian Co-ordinator for CSIRO's Education Programs, said, 'people were captivated by the hands-on experiments'. She also put out a plea to staff for any new ideas for experiment and show segments.

Gardening Down-under

The CSIRO Division of Soils has just produced a book that looks more likely than most scientific productions to appeal to the popular market.

It's designed for practical gardeners who have an interest in managing and improving soils and potting mixes (hence the 'down-under').

The book has a lot of practical information left out of most gardening books, and offers some quick and easy recipes for basics like making good compost, overcoming water repellency, applying water and fertiliser effectively, and changing soil pH.

Some of the information it gives goes against the popular wisdom. For example, drippers, far from saving water, often lead to large excess water bills and leave plants more vulnerable to dry spells.

The author is Kevin Handreck of the Division of Soils in Adelaide. Mr Handreck is one of Australia's leading authorities on soils and soil-less media and chaired the committee that produced the Standard for Australian potting mixes.

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Gardening Down-under, (181 pages; 350 full-colour illustrations) is available to CSIRO staff at the usual discount rate, bringing it from its market price of $34.95 down to $26. Send your order to: CSIRO Bookshop/ PO Box 89/ East Melbourne VIC 3002, or contact them by phone (03 418 7217) or fax (03 419 0459). Visa, Bankcard and Mastercard are accepted. ❖

Mount Haig — a supermarket of environments for the busy science shopper

Roy Green, Director of the CSIRO Institute of Natural Resources and Environment, recently paid a visit to the one of the Organisation's furthest-flung research posts, the Division of Wildlife and Ecology's Tropical Forest Research Centre at Atherton in northern Queensland. While he was there Dr Green was also shown over the Mount Haig 'gradsect', an area remarkable for its extraordinary range of types of environment. He was fascinated, and CoResearch thought other CSIRO staff members might be interested too. Peter Trott, communicator for the Centre, offers this account.

IT DOESN'T have lots of rare species and it isn't number one on the tourist map, but the Mt Haig area inland from Cairns is becoming one of the most studied spots in North Queensland.

Scientists from other parts of Australia and overseas are joining CSIRO scientists from the nearby Tropical Forest Research Centre, Atherton, in a plethora of projects ranging from survey methods to distribution models for plants, birds, insects, reptiles and mammals.

The key to Mount Haig's popularity is its vast range of environments, from rainforest to dry sclerophyll savanna woodland, squeezed into a 20-kilometre line with road access throughout.

This 'gradsect' — or 'gradient-oriented transect' — rises from the sparsely-wooded, dry gullies in the north-western rain shadow of the Lamb Range to its cool, misty peaks where rainforest thick with spectacular Grey Palms and tree ferns gives way to stands with Blue Kauri Pine.

While the annual rainfall along the gradsect ranges from 1,200 millimetres to 3,400 millimetres, the most spectacular change is the extreme range of rainfall seasonality, from places that stay moist through most of the year to those where the meagre rainfall occurs mostly in a limited period and therefore can support only very drought-tolerant species.

From its high point, at 1,274 metres above sea level, the road plunges down through World-Heritage-listed rainforest to the shores of Tinaroo Falls Dam. The 20-kilometre stretch of road, originally a logging access from the days before World Heritage listing of the Wet Tropics, is believed to be the highest formed road in Queensland.

Dr Andy Gillison, who developed the gradsect survey methodology in 1985, initially selected the Mount Haig area as a research site for work on some aspects of the Tropical Forest Information System (TROFIS) project at the Atherton laboratory. TROFIS is now part of the Co-operative Research Centre for Tropical Rainforest Ecology and Management, which brings together researchers from CSIRO, universities and other groups with a common set of goals.

Dr Gillison said that the rapid change in environmental variables along the short, accessible transect through generally uniform geology made it ideal for examining how the distribution of plants and animals in it responded to environmental change.

A set of 77 sites has now been located and mapped using a global positioning system. Other researchers are able to use these maps, and the database, which includes a host of biophysical information including a digital elevation model, vegetation data, aerial and satellite imagery and soil analysis data.

This makes it an ideal area for other researchers to do field work without a lot of preliminary mapping and site selection.

The easy access also cuts back the time spent by field staff locating sites and collecting data.

Some of the projects currently taking advantage of these aspects of the area are surveys of vertebrate groups (including birds, arboreal mammals, bettongs, and reptiles) and invertebrates (including earthworms and millipedes, spiders, ants, termites, and beetles), and field tests of various methods of modelling such distributions.❖

Andy Gillison, of the Division of Wildlife and Ecology at Atherton, checks a pitfall trap on the Mount Haig 'gradsect'. On his left is Guy Carpenter, of the Division's Tropical Forest Research Centre, and on his right is Roy Green, Director of the CSIRO Institute of Natural Resources and Environment.

Animal Health and Animal Production join forces

There is to be an $11.6 million expansion of CSIRO's Prospect site in Sydney's west.

The Division of Animal Health's McMaster Laboratory, currently located at Sydney University, and the poultry research centre at North Ryde, are to be moved to Prospect in a 15-month redevelopment.

The Prospect site was initially acquired by CSIRO in 1946 as a field station for the Sheep Biology Laboratory of the then Division of Animal Production.

The redevelopment will include new laboratories, sheep and poultry facilities, a lecture theatre and an expanded library.

Staff numbers will rise to 230.

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Australian citation rate drops

It seems that Australian scientific work is not getting quoted as often in the international literature as it used to be, in spite of the fact that just as much of it is being published.

Paul Bourke and Linda Butler of the Australian National University's research school of social sciences recently published an article in the newspaper *Campus Review*. In it they compared figures recently released in America on how Australian scientific writing is faring internationally with similar figures compiled in Australia.

They found that both sets of figures seemed to indicate a recent decline in Australia's world share of citations. That is, our share of space in international scientific publications had not gone down, but the number of times Australian papers were mentioned in other scientific journals — our 'world citation impact' — had. The period under review was, in the case of the American study, 1981–1992, and, for the Australian one, 1981–1990, and some of the classifications and measures used were slightly different, but the authors said that overall the direction of the two analyses was still similar.

The authors said that ' ... unlike the British case , the Australian story is not a story of declining productivity and impact but of declining impact alone, as measured by rates of citation.'

In fact it appears that Australia's citation performance over the last 12 years has been at its best in two fields in which publication rates have been comparatively low — engineering and chemistry, though even here citation rates seem to be declining. The fields in which the graphs show us falling sharply below the world average are computer sciences, physics, biology, biochemistry, neurosciences, immunology, and molecular biology.

The American data suggest, according to the authors, that the 'total aggregate decline across the whole period is significantly influenced by the diminishing impact of Australia's biological and biomedical work, fields in which the country has been heavily invested.'

Overall, it appears that Australia's share of citations equalled the world average in the early 1980s, rose to a high of two per cent above world average between 1985 and 1989 and has fallen sharply to 3 per cent below in the period since.

Bourke and Butler suggest that the decline may point to, among other factors, 'difficulty in replenishing the stock of outstanding performance in some sub-fields at the senior and middle level in recent years' and 'the relative retreat from fundamental science of sections of CSIRO'.

However, they offer the caution that while there may be 'some worries' for Australian science, 'these are not yet sufficiently focused to allow solutions even to be considered, much less set in train'. ❖

Len Chung — our link with CSIR — retires

There are so many retirements in an organisation as big as CSIRO that CoResearch has had to adopt a general policy of leaving them entirely to the relevant Divisional or site newsletters, but the case of Len Chung is exceptional, and may be of interest to all staff.

Mr Chung, one of CSIRO's quiet achievers, has made history in the Organisation. When he retired in November, he was the longest-serving staff member to do so, and the ninth longest-serving CSIRO member of all time — having chalked up 47 years and seven months. He joined Head Office in Melbourne in 1946.

Dr John Stocker, Chief Executive of CSIRO, made a special visit to the Division of Building, Construction and Engineering for Mr Chung's farewell.

He remarked that Mr Chung would have been walking in the door on his first day in 1946 just as discussions were taking place on whether CSIR, as it was then, should take on the business of nuclear science.

Dr Stocker reminded him, and the 150 or so colleagues there to say good-bye to him, that Cabinet was right now meeting in Canberra to discuss the same issue.

'The Executive Committee minutes of 1946 record your appointment,' he said. 'They also show concern for areas of science such as fishing stocks, the quality of wool and whether we should be doing more as an organisation to counter the down-turn in the wool industry.

'They could have been the minutes of the last meeting, not the 1946 one.

'Your career with the Division has been a long and distinguished one,' he told Mr Chung. 'Thank you for such a terrific innings and for such a fine contribution to the growth and development of CSIRO.

After short stints in the Divisions of Animal Health and Atmospheric Research, Mr Chung came in 1950 to the Division of Building, Construction and Engineering, from which he has now retired as Laboratory Finance Manager.

Younger staff described him as 'a good and very patient work colleague who never put any pressure on people, never asking for more than he'd be prepared to do himself' and 'a special person of very even temperament, who would always go out of his way to help'.

Len Chung shared some of the memories of his decades at the Highett site — balancing an appropriation budget of $101,618 was one, and another was his pay-day delivery accessory, a Browning .32 automatic pistol on the front seat of the Division's black FJ Holden. (Not that staff past or present could imagine peacemaker Len Chung using such a thing.)

'I believe the role of an administrator is to provide service,' Mr Chung said at his farewell, 'and that's a philosophy for all of us, no matter what our status: to serve others throughout our lives.'

'I trust that under the leadership of Larry Little [the new Chief] the Division will achieve all its aims and become a benchmark Division for CSIRO.

'And for those of you who want music you can really dance to,' concluded Mr Chung, who is also the saxophonist in a three-piece band, 'see me afterwards for my card.'

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Len Chung and his wife Lena show some of the gifts they were presented with at his farewell. At right is Larry Little, new Chief of Mr Chung's old Division, Building, Construction and Engineering.

Why do you never see a green fridge?

by Karen Robinson

Did you know that your home fridge damages the ozone layer and contributes to global warming? That ozone depletion is even worse than scientists predicted? That the fridge is the second biggest consumer of electricity in most Australian homes? That CFCs in most conventional fridges are being replaced by HCFCs & HFCs, both of which are powerful greenhouse gases, and that HCFCs also deplete ozone? And that refrigeration and air-conditioning are now the main uses of these gases?

At least, that's according to the Australian Conservation Foundation (ACF) and the Centre for Design at the Royal Melbourne Institute of Technology (RMIT).

The Green Fridge Quest is a research project run by the ACF and the RMIT. During 1993 tertiary students and professionals from all over Australia have been involved in developing environmentally friendly domestic fridges.

On Monday November 22 a Master Class Workshop was held at the National Science and Technology Centre, Canberra, which provided a forum for the presentation of this work. The Workshop was opened by The Honorable Ros Kelly, MP, Federal Minister for the Environment, Sport and Territories. A panel of experts drawn from the consumer movement, academia and industry gave comments on the work presented, which covered both the technical and the social impacts of technology.

The audience was made up of media, government, industry, community and educational organisations.

The professional presentations included a concept from Wendy Sandilands and Christien Tietz, of Argo Design Co-op, who came up with a plan for a fridge to be 'built in' as an integral part of the energy efficiency of the whole house.

The heat produced from the back of the fridge, for example, which is normally wasted, is used to air clothes in an adjoining compartment, and the water that runs off is collected in a container for various uses.

The fridge is designed not to need replacement.

CSIRO is a financial sponsor of the Green Fridge Quest under its Science and Industry Endowment Fund.

The Fund was established in 1926 under the *Science and Industry Endowment Act* 'to provide assistance to persons engaged in scientific research, and in the training of students in scientific research'. The Green Fridge Quest fitted these criteria well.

Involving students in the use of energy-efficient appliances and heightening their awareness on environmentally friendly issues was seen as an effective way to encourage young people to take an interest in scientific research.

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To all readers, best wishes for the festive season, from CoResearch. Drink carefully.

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