A nine exciting nine day tour of Hawaii with the fascinating title “Hawaii Volcanoes in the Sea” leaves Newcastle in January 1993.

Arranged by the University of Newcastle Department of Community Programmes and led by Joe Whitehead, Lecturer in Earth Science in the Department, the tour promises to be a study tour with a difference, exciting and informative yet relaxed and informal.

The tour will visit the three islands of Oahu, Maui and Hawaii to investigate volcanicity, volcanic landforms and environmental geology. Awesome scenery abounds and this is combined with the opportunity to study volcanoes at close quarters, to walk across the floors of both extinct and dormant craters and to see active lava flows both by day and by night.

The tour will include opportunities not afforded the holidaymaker or independent traveller to visit the Mauna Kea Science Reserve Astronomical Observatory and an operating Geothermal Power Station. These visits will allow participants to hear at first hand from local scientists and engineers of the progress of current research projects.

The weather in Hawaii in January will be warm with temperatures in the mid 20’s, sometimes humid along the coasts but with more refreshing breezes at higher altitudes.

A balanced view of environmental issues will highlight the sometimes conflicting interests in geological hazard management, geothermal energy development, tourism, education, the management of National Parks, ocean floor mining, protection of the natural environment and the interests of the local community and environmental groups.

Accommodation is in comfortable hotels and the large minibus transport, with ample leg room and high seating for commanding views, allows access to many localities inaccessible to coaches. Inter-island flights should ensure spectacular views of the volcanic landscape and coastlines.

Cultural and historic aspects of the islands are not neglected with some time being set aside for visits to Pearl Harbour, Waikiki, the Captain Cook Monument and for shopping. Members of the tour party may choose to extend their stay in the Hawaiian islands and arrangements for a later return flight can be made.

The tour leader, Joe Whitehead is an Environmental Geologist with wide experience in conducting geological field excursions in the USA, UK and Australia and has undertaken numerous visits to the Hawaiian islands. On a similar visit earlier this year participants had both professional and amateur interests in volcanoes and ranged in age from those in their 20s to retired folk in their 70s. Joe describes the tour as “fascinating, hugely exciting, competitively priced and not too far from home; find out more about volcanoes, environmental geology, geothermal energy - a learning experience of a lifetime!”

For further information contact the Department of Community Programmes, University of Newcastle, NSW, 2308, telephone (049) 215551 or (049) 216019.

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Front Cover

Rosaleen Joseph has captured the beauty of the Australian bush in her pastel, *Angophora costata*. Inset: *Kookaburra* - watercolour by Amanda Wilson and *Eucalyptus maculata* by University demonstrator in plant and wildlife illustration, Genevieve Wallace. Rosaleen and Amanda are enrolled in the Graduate Diploma in Art (Plant and Wildlife Illustration).

Editor
Sonja Duncan

Information and Public Relations Unit

Contributing Writers

Kim Britten
Sonja Duncan
Cae Pattison

Design and Artwork
Gill Hughes
WITH POWER COMES RESPONSIBILITY

A word of warning was conveyed to University students and staff at the Campus Environment Week. During a lunch-time address, National Parks and Wildlife Service officer, John Dengate, indicated that unless our environmental problems are solved soon, animal species will continue to disappear. In NSW alone, 20 mammals are already extinct, he said.

John studied Zoology at Sydney University and taught Environmental Science for the Australian Museum. He has been with the National Parks and Wildlife Service for 10 years and has developed a great understanding of the environment. John suggests that Australians look towards an "intelligent compromise".

"We simply cannot go on developing our nation at the expense of our fellow travellers on planet earth," he told listeners.

John outlined the changing attitudes to the environment in Australia since white colonisation 200 years ago. He described the destruction of our ecosystem as an "historical accident", saying that we settled this country in an age of technology with the assumption that "we had the God-given right to do anything".

"When white-man came here it was basically full-on exploitation," John explained, adding that the major concern of the time was to "tame the land".

And tame it we did.

Within a matter of years the rugged beauty of the colony's coastal fringe was destroyed. By 1803, only 15 years after colonisation, the widespread problem of erosion prompted Governor King to issue a general order forbidding the removal of trees from riverbanks.

Further development and the desire to "progress" resulted in a changed landscape. By the mid 1800s the once abundant 40-metre-tall blue-gums had disappeared from the valleys around the colony. During his address John quoted colonial writer Louisa Meredith who in the 1830s wrote: "Unless a settler can see an expanse of bare, naked, unvaried, shadeless, dry and dusty land around him, he fancies his dwelling as wild and uncivilised".

Along this road of destruction, however, a new voice was emerging. "The first conservationists started to appear by the late 1850s," John said, explaining that early groups, known as "acclimatisation societies", were interested in the preservation of wildlife.

In 1872 with the establishment of the world's first National Park (Yellowstone, USA) a new consciousness emerged. The Royal National Park was established in NSW in 1879 and in the same year the Animal Protection Act was introduced. It took another 88 years before the National Parks and Wildlife Service was founded. To this day the organisation promotes and encourages the preservation of habitat and the protection of all native animals.

But did this come about too late? Were we overzealous in our attempts to "tame the land"?

John told of the large scale destruction of Australia's ecology. "By the 1980s about half of Australia's ecosystem had been seriously affected; one third of our trees had been destroyed," he said.

The news is not all bad. With the continuing damage to the environment there has grown an increased concern for the protection of our plants and animals. John explained this as an "inverse relationship": the more we destroy, the more aware of the destruction we become. "I guess that this, in a way, is positive," he added optimistically.

So what can we do?

"We are now faced with a range of different futures," John said. "The concern for the environment will continue, but so too will our ability to wreck things!"

According to John, education, communication and expertise will save our nation and our planet from total destruction. "We have the power to destroy or save this planet. With power comes responsibility. It remains the responsibility of each one of us to ensure the survival of our planet and of life as we know it," he said.

John's concluding remark: "We don't inherit the earth from our parents, we borrow it from our children" serves as a haunting reminder that the future lies in our hands.

ENVIRONMENT WEEK

Pleasant spring temperatures and a brilliant blue sky marked the opening of the University's Environment Week. The Vice-Chancellor, Professor Keith Morgan officially opened the week's program by planting a tree, saying that although the Environment Week is a first for the University, an awareness of environmental issues has long been a focus of the University community.

"A sense of the environment is an implicit part of this University," he said.

"We can thank our founding fathers for their good judgement in choosing the site for this campus and for preserving its natural environment."

Professor Morgan says that he, like all of us working or studying at the University, should enjoy to the fullest, the opportunity of working in "such a splendid environment".

"Each of us must contribute positively to this environment and continue to strengthen the environmental policies of the whole University in years to come."

K. Gillman (I) and Professor Morgan
ENVIRONMENTAL COMPLEXITY

The global environment of planet Earth is exceedingly complex. With the clear dominance of humanity as a species it is now imperative that natural resources management be taken seriously for regions, countries, sub-continents and throughout the globe.

The environment is more than we think. In fact, it can be argued that nature no longer exists due to the extent of influence of human populations. If we are looking at managing nature or our natural resources we need to isolate particular land use impacts and these stem from established populations in cities and towns, public sector activities, politics and industrialisation. The factors which have influence over nature include the diverse nature of society and the economic and political reality of our times.

Nature can be construed as water, air, soil, biota, rivers. But all these elements are influenced by a range of anthropocentrically focussed activities. Industry, urban development, rural expansion, energy generation, political change and nuclear accidents all have import for allocating and managing a natural resource base. Many of these areas are studies on their own but they indicate that our survival on this planet is certainly dependent on our actions as they effect our natural resources.

Our ecological stability problems for example can be visible such as an oil slick at sea, dead fish, a red frothy stream, widespread land degradation and salinisation, or protests by action groups about sewerage pollution of coastal waters. Ecological problems can also be invisible, such as a stream looking quite pristine but having toxic elements and heavy metals adhering to channel sediment.

In looking at the natural environment we need to work out which management problems confront us. To work this out we need to look at a range of questions. These include, what do we really want with our natural environment? We can no longer kid ourselves that we need to model a natural environment according to its pristine state. There probably never was a pristine state in the evolution of the Earth and we are certainly not capable technologically of restoring to pristineness. What we can do is decide what environment we want, and construct that environment within ecologically sustainable parameters. This raises the problem of what is sustainable and what is balanced in the ecology. But it remains that we must ask the question, what alternatives do we need to choose from when we are managing environments? Do we want a pristine lake? Do we want three pristine lakes and two polluted ones? Do we want to rehabilitate the entire coastal zone? Why? Or just several parts of it? Why? What can we afford to do? These are the questions that need to be considered by society.

What should we do? What can we do with limited resources and within political and institutional flexibility? Also, who should do it? Modern environmental conflicts and planning strategies revolve around who is responsible for certain actions in terms of management or cleaning up problems. Many disputes arise in this area where responsibility is shared. The questions above galvanise many researchers and policy makers in the environment field. And where they don’t, they should.

Our environment is certainly complex and one factor alone shows this. If we take air quality we can see that there are a number of influences which at first hand don’t seem possible. They include the research and perceptions of scientists about our air quality. They include the law in terms of the pollution control standards and criteria. Government policies and licensing conditions also affect air quality. We also have the health aspects of air quality, the smell aspects, the effects of fallout in polluted city air on both the soil environment and even on washing which is of particular interest to consumer groups.

We have visible pollution which makes air quality seem an important issue. But we also have invisible air quality deterioration which is also important. This is why perception plays a large role in determining our air quality problems and their management. Councils and community action groups are very closely involved in metropolitan air quality management, as are transport and industrial groups.

Certainly air quality management issues...
have expanded over the years. With the development of a new EPA (Environment Protection Authority) in NSW there is an increased monitoring network of air quality in Sydney, Newcastle and Wollongong.

In air quality we also need to be aware of the wind factors that change throughout the seasons, the politics of central government, the type of planning philosophy of government departments, and the political influence of industry in terms of its output, financial stability, and equipment chosen. All these factors indicate that the management of air quality can be exceedingly complex.

DEGRADATION OF NATURAL ENVIRONMENTS

There is widespread degradation of global air, soil, biotic, and water environments. What is more problematic is the level of social complacency in relation to the deterioration of our natural resource assets. There is certainly much action on behalf of humanity to manage natural resources, but management in this sense really only gives lip service to real environmental change. Examples include the Murray Darling catchment which encompasses over one seventh of the Australian continent where 50% of the native vegetation has been cleared since European settlement. Another example of widespread change is the sheep/wheat belt of Australia where 9% of the original vegetation now remains. Also the Murray-Darling basin, where 10 plant species and 20 small mammals have become extinct since European settlement. This in no way approaches the widespread extinction of species globally.

IS MANAGEMENT IN PARTNERSHIP WITH NATURAL RESOURCES?

It would seem that management of our natural environment is not wholly in partnership with knowledge of our natural resources. After all, some societies are not really interested in sustainable management practices. Certainly government must develop policies, management structures and monitoring in accord with the key issues of the time.

But management decisions do not rely solely on data. This can be seen, for example, in the wetlands of the irrigation areas of the Burdekin River in northern Queensland. Here wide-scale clearing and destruction of wetland complexes is going ahead even though there is research looking at the management prospects for such wetlands. Such studies, while partly funded by government, need more recognition by government as it allows clearing of these wetland areas for sugar. We have some conflict of interests in this case.

CONTAMINATION

Society now has a major problem with energy development and industrialisation. There is a waste stream. This waste stream is enormous and it has potential for severe dislocation of ecosystems and the water supply on which we depend. The nuclear reactor at Lucas Heights in Sydney, NSW and the surrounding waste depot areas present one interesting study of waste in the environment. It is posited by consultants for the NSW Department of Housing that the Mill Creek tributary which runs through the Lucas Heights waste areas is contaminated from leaching from the two waste depots and a major land fill site. Despite this extreme possibility the state government wants 70% of Sydney's waste to be deposited at this site. The presence of phenols which have carcinogens in them, as well as herbicides and PCB's which contain dioxin, have all been found in leachate downstream from these storage sites.

This chemical contamination has potential for even more change and this is not surprising when we look at the open nature of hydrological systems and the inability of resource managers to actually close these systems to the dispersal of contamination. Other toxic problems include the sewerage releases on the Hawkesbury River where multiple sewerage outfalls occur although the water is treated, and also the major toxic problems of removing waste and having it contained in the USA and across Australia.

Even at the Chernobyl site in Russia the development of large cracks on the concrete sarcophagus which surrounds the exploded unit mean that even more steps will have to be taken to contain this radiation. It seems that containment of radiation is very difficult indeed and the decommissioning of the Windscale nuclear power plant in England shows that there are a lot of issues that have not been technically overcome in this process. It all looks a bit feeble for technology. When one looks at the attempts to contain radiation after the damage was done at Chernobyl one really begins to wonder about how much we can control our nuclear energy and nuclear future.

THE POSITIVE THINGS: WHAT WE CAN DO FOR THE FRAGILE EARTH

Individuals count in change. This may be the presence of an inspiring teacher for students in primary or secondary education or it may be an individual who has gained prominence for the development of views on important environmental matters. One can not neglect the important influence one individual can make in creating change or bringing issues forward for better management of the environment. Examples are Rachael Carson, David Suzuki, David Attenborough, and Paul and Anne Ehrlich.

Education is also an important contributor to the management of our fragile Earth. Education can be through tertiary education, through curriculum development in primary and secondary schools or from the inspiring teacher, colleague or media personality.

Recycling can also be used by the individual. Recycling is important. It is now moving from putting your vegetable scraps on the garden at home and collecting used paper at work, to recycling major waste streams in cities. This is happening in Sydney to some extent, and also in western Europe. However, there is a lot more to do in recycling and much of this is uneconomic at present.

One thing we can do for ourselves and for others is to increase the awareness of environmental issues. This is done very effectively by television, radio and the print media and also by prominent environmental figures in their books. But it is important to increase our own awareness of particular issues as this can lead to our increased participation in change to obtain more balanced objectives in environmental planning.
CONSERVATION GENETICS & AUSTRALIA'S FAUNA

Dr Michael Mahoney, Department of Applied Sciences and Technology

We hear a good deal about species extinction, but less about the other dimension of the biodiversity crisis, the continued degrading of genetic variability, more recently referred to as the biodepletion crisis (Myers, 1992). Total extinction is a major concern, but in the future even those species that survive are likely to have lost many of their populations, so their gene reservoirs will have been greatly depleted. This will in turn reduce their capacity to respond to environmental pressures.

When thinking about conservation, people mostly relate to the field of biology known as ecology, and do not consider the role that other fields play. The field of genetics, for example, has a vital role to play. This should not be surprising because this is the area of biology that deals with the mechanisms of evolution. Species formation, survival and extinction are the matter of evolution, and geneticists have built up a great deal of information in this area.

Topics such as genetic variability, critical minimum sizes of gene stocks, the effect of isolation in small areas (island biogeography), reductions to very small populations during the history of a population (bottleneck constraints), and population abundance in relation to population persistence and modelling predictions of ecological change, are ones that now must be applied to dwindling natural populations.

From the conservation point of view, it is critical when studying species to have an understanding of inter- and intra-population genetic variability, stasis and drift of genetic composition. Approached this way, genetics can be a valuable tool that aids in conservation management.

MODERN GENETIC TECHNIQUES

Modern genetic techniques have one great advantage, they require tiny amounts of living tissue (theoretically from as little as one cell). Thus it is not necessary to kill or remove specimens. A second advantage is that only a small sample of individuals from a population is necessary to obtain information that applies to the majority of individuals in the population. This is because each individual has two copies of every gene and when information is gathered on many genes per individual, this is as effective as studying many individuals for a small number of genes. Genetic studies are cost effective when compared to other types of zoological analysis because they sample the genome directly, and once tissue samples are stored they can be used many times.

THE DECLINE OF POPULATIONS OF FROGS

Since the arrival of European man on the Australian continent a total of 20 species of birds have become extinct. Public awareness of the level of devastation wrought by human activities was not fully appreciated until the 1960’s, when television documentaries presented the grim picture. Until this time there was the strong perception, that within the vastness of Australia, animals would live on in some far flung corner or remote place, and they would always be there when we wanted to see them. It came as a surprise to most Australians that such a high proportion of the unique fauna was already extinct and an even higher proportion endangered or vulnerable.

At this time, it appeared that the devastation among the mammals and birds was not apparent among the reptiles, amphibians and fishes. However, there is now evidence that our perception was poor. With the same complacency with which we approached the decline of specific mammals in the middle of this century we are now witnessing the disappearance of frogs from specific regions, and the decline of many species throughout their distribution.

Recently a sinister environmental event has been noticed in Australia and in other parts of the world, and that is the decline of frog populations at a rate not previously detected. Up until 1980 no Australian frogs had disappeared, although some were known to occur in very restricted habitats. Since this time however, four species of rainforest frog have disappeared from areas along the east coast of Australia, and another nine have declined markedly. Species found in alpine habitats and at high altitudes are also in marked decline.

The loss of any species is a severe indictment on our approach, but it is even more frightening when the species that disappear, such as the gastric brooding frogs, are unique in features of their biology. In Australia, zoologists who study frogs are still coming to grips with documenting and describing the fauna; in the last two decades one twelfth of the total Australian frog fauna has been described (that is, twenty species out of a total of approximately 160). Even less is known about the ecology and habitat requirements of these animals.

THE CAUSES OF THIS DECLINE

In many instances the causes of decline can be easily identified. They revolve around habitat destruction. These situations can be addressed and appropriate measures put into place. This is a social issue; if we understand the imperative of biodiversity that our survival is connected to the survival of other organisms, then we have their continuance in our hands. Not so simple is the disappearance of frogs from pristine environments, the very national parks that were established to protect the unique assemblages of organisms within them. This is no less a social issue, but it requires specific scientific study and action.

The first step is to identify the species present which then enables their distribution to be determined. To the uninstructed this may seem an obvious and perhaps easy task. Unfortunately this is not always the case, especially among organisms like frogs that have a conservative structure, (compare for example the similar form of most frogs with the considerable variation present among mammals). Conservation management begins with this step, because priorities are determined by knowledge of the distribution, abundance and systematic importance of any particular species.

THE DANGERS OF LITTERING

Few people realise how dangerous littering can be to the environment.

In a speech delivered at the Campus Environment Week seminar, Environment Protection Authority (EPA) officer, Michael Antrum, said litter was far more dangerous than people think. Litter is the second highest cause of injury to wildlife in Australia, with string and plastic being swallowed or getting caught in beaks and feet and broken glass causing injuries. Thousands of native animals are killed by litter each year.

"Litter can be blown or washed into a water course, creating a threat to the aquatic life. Bottles can break and become a hazard to humans, wildlife and stock," Michael explained, adding that, contrary to popular opinion, discarded fruit skins and cores are not always good for the environment. They can provide new breeding grounds for fruit fly and other vermin before they start to rot away.

"Unfortunately some drivers and passengers think their small wrapper, can or bottle won't make much of a difference, but it will. Litter does not just go away or degrade."

Throwing cigarette butts out of car windows caused 175 bushfires in NSW last year, Mr Antrum said. It too is a major problem, destroying property and natural habitats.

As EPA's co-ordinator for litter campaigns, Mr Antrum said that while the Do The Right Thing anti-litter campaign had succeeded in reducing litter by 70%, there was still a lot of litter lying by the roadside.

"We want to put litter in the context of global environmental problems. It is time to find out what makes people litter, to bring in Behavioural Science and Psychology, as we are dealing with a much more environment conscious generation," Mr Antrum said.

The new EPA campaign will move away from the aesthetic motive for reducing litter and try to put it in a global context. The new strategy will have community consultation as its prime focus, holding regional forums on roadside litter to involve diverse groups in an attempt to solve the problem of littering.

"The regional forums will involve everyone, from Greenpeace representatives to members of political parties, academics, representatives of Government departments and the general public, to facilitate the community coming up with ways to control litter themselves," Mr Antrum said.

Roadside Litter - You're in the driver's seat will be the focus for the new campaign, which will include billboards, posters, stickers and advertising to get the message across. Mr Antrum said there was not as much money being spent on items that would add to the waste stream as there was in the Do The Right Thing days. The EPA wants
to avoid the embarrassment they felt at seeing their own Do The Right Thing plastic car rubbish bags, of which they produced 4 million over the duration of the campaign, littering the roadside.

The EPA are planning to "get hip" in an attempt to get the anti-litter message across to the teenage group, with a series of fluoro posters and stickers with variations of the theme: Surf, Skate, Dance, Rap, Boogie, Rage, Recycle till ya drop. For the office wall there is the soothing, tasteful Earth Is My Garden posters and for general release, a poster of a typical Australian landscape littered with rubbish entitled How could anyone rubbish our beautiful environment?

"I recently heard, on a trip to Japan, that Australia is considered the second most environmentally aware country in the world, after the Netherlands," Mr Antrum said. "We are now adopting a more expensive view in the campaign against littering, telling people why they shouldn't throw it on the ground and trying to change their behaviour."

The roadside litter campaign aims to achieve a reduction in litter within 12 months by educating drivers and passengers of the impact of their roadside litter and by encouraging the provision of more efficient and easily seen means of disposal.

The Northern Region Manager of the NSW Environment Protection Authority (EPA), believes The University of Newcastle is well placed to become a Centre of Excellence in environmental management.

Speaking at the Campus Environment Week seminar, Brian Gilligan said no other university in the state was better placed to lead the way into the future for environmental management training, due to the range of activities going on around Newcastle and the diversity within the campus.

"The first step down the path for the University is to become an example of excellence in environmental management itself," Mr Gilligan said. "There is a niche for the University to take a wholly integrated and wholistic approach to environmental management that takes account of the communication and information technologies required to make management techniques and practices work," he added.

The University should apply a draft environmental management scheme and make sure it conducts its affairs in an exemplary manner and, through its links with industry groups, other institutions and government agencies, reach into the community and exemplify good environmental management, Mr Gilligan said.

Speaking to a small gathering at the seminar, Mr Gilligan discussed the role of the EPA, only formed in March this year, and the difficulties involved in environmental protection. He said the EPA has a dual role, firstly as educators and mediators guiding community-wide environmental protection and secondly, in policing pollution legislation.

While policing had become more effective, with fines of up to $1 million for corporations found polluting the environment, and fines of up to $200,000 and prison terms for individuals, Mr Gilligan saw the community role as the EPA's main focus. Describing involving the community in environmental protection as "incredibly difficult", Mr Gilligan said the EPA is committed to ensuring success in this area.

Mr Gilligan said that in the past, people have blamed others for environmental problems and looked to the "experts" for solutions, but the complexity of variables involved in most modern issues means the solutions are not simple.

"Essentially the EPA and other Government agencies are going to inform at a household level," Mr Gilligan said. "That form of environmental management requires different training and tertiary excellence than is currently available."

"I would welcome the opportunity for a continuing close association between the EPA and The University of Newcastle."

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WORKING TOWARDS SUSTAINABLE DEVELOPMENT

Peter Stevens, Curator of Grounds, The University of Newcastle

Recent works on campus have highlighted the fragility of the local environment, with the demands of human interaction laced within the natural fabric of a bushland campus.

Whilst rapid growth and resource constraints have made the translation of sound environmental practices extremely difficult in the recent past, there remains the opportunity for a concerted co-operative effort to retain the vital character of the grounds and to develop surroundings which are diverse and inspiring.

It is heartening to hear expressions of concern in relation to the many issues involved in land care. With the regeneration of our soils and landscape it is suggested that many opportunities will be available for positive input of ideas, labour and resources towards an exemplary bush campus. With this in mind, all members of the University community are invited to contribute to the processes of rejuvenation and management.

The newly created curatorial position is intended to assist the existing community to focus local efforts within the global context. Whilst in this role, I would encourage all those with an interest in the "environmental future" of our educational body to actively and positively contribute to ongoing development by sharing ideas and concerns, generating good will and respect for the natural environment and assisting those who are dutiful in its care; aiding in the reduction of wastes, litter and motor vehicle excesses; and supporting initiatives for appropriate resource utilisation and ongoing rejuvenation programs.

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UNIVERSITY COULD LEAD WAY
“As a society we have to develop more alternate sources of energy, including tidal, wind and photovoltaic.”

Standing from left: Paul Ebert, Dr Phil Clausen, Dr David Wood, Front: Christoph Meyer and Paul Peterson

ALTERNATIVE ENERGY FOR THE HUNTER

With an ever increasing demand being placed on the world’s energy resources, the necessity to develop alternative sources of power is of paramount importance. Researchers at The University of Newcastle, aware of the effect that energy consumption is having on the global environment, have designed a unique wind turbine system aimed at providing an environmentally benign power supply to remote areas.

Dr David Wood and Dr Phil Clausen, from the Department of Mechanical Engineering, in collaboration with Shortland Electricity and the Centre for Industrial Control Systems (CICS), are developing a wind turbine which will generate up to 5kW of power. The prototype turbine will be 5 metres in diameter and will be located close to the electrical substation on the eastern edge of campus.

The wind turbine is being designed and built in the Department of Mechanical Engineering. The two 2.5 metre long blades will be made from fibreglass using moulds manufactured by a final year student in the Department’s Numerically Controlled Machining Centre. The blades act like a “reverse propeller” and, in conjunction with the rest of the system, are designed to get as much power out of low windspeed as possible. “The system will have a built-in control strategy which will ensure that the wind turbine is operating at optimal capacity relative to the conditions at all times,” Dr Wood said.

Dr Wood explained that extending the electricity grid to an outlying house costs as much as $15,000 per km. “We estimate that our wind turbine system will look financially attractive,” he said.

Engineers at CICS are currently developing the generator control system. Drs Clausen and Wood expressed their gratitude to Shortland Electricity for their involvement in obtaining the ARC Collaborative grant and to CICS for “getting the project off the ground”. Dr Wood stated that the initial support of CICS turned the project “from a daydream into reality”.

“We plan for the system to be built by the end of this year,” Dr Clausen said. “Our collaborative grant will enable us to conduct 18 months of field testing, so that we can ‘iron out’ any problems we may encounter,” he added.

While they acknowledge that their wind turbine will never contribute significantly to overall energy supply, Drs Wood and Clausen emphasise the importance of looking at alternative sources of energy and applying the right source of energy for the task in question. “As a society we have to develop more alternate sources of energy, including tidal, wind and photovoltaic,” Dr Wood said, adding that such alternative sources will have a beneficial effect on the environment in the long run.

Dr Wood indicated that the potential for interaction of various sources of alternative energy within the system is large. Combining wind generated power with photovoltaic cells may prove to be an extremely useful combination, particularly in non-coastal areas. A microprocessor would be built into the system to control input, avoiding the production of excess power, with possibly a diesel generator providing back-up. Thus, wind, solar and diesel power generation would form a single, integrated system.

According to Dr Clausen the wind-turbine has potential for export to the South Pacific Islands and Asia. “We hope to market it to areas where massive power stations and large electrical infrastructures don’t exist,” he said. At a more local level, the wind turbine is likely to be used in the Hunter Valley to provide an alternative source of energy to remote areas.
Each year the United Nations Information Service in Geneva runs a three week Graduate Study Program called, *International Response to Global Issues*. The 1992 program was attended by 65 graduates from all over the world, countries ranging from Sierra Leone in Africa to the United States of America, from New Zealand to Norway and from Nepal to the Netherlands. I was fortunate enough to attend this year’s program.

The Graduate Study Program was established to introduce graduates to UN activities and operations and provide an opportunity to understand the various difficulties encountered in the international negotiation process. The program consisted of two major elements. Firstly, formal presentations from various UN agencies, such as United Nations Development Program, the Department of Humanitarian Affairs, The UN High Commissioner for Refugees, the General Agreements of Tariffs and Trade, United Nations Conference on Environment and Development, to name a few of the 30 or so presentations. The second element was the requirement to produce, within a specific working group, a document that was to be adopted by consensus and submitted to the UN itself.

The formal presentations illustrated the variety of UN activities and operations and highlighted several of the problems facing the organisation in the 1990’s. The UN was originally established in 1945 in order to promote international peace and security and to facilitate international co-operation in economic, social and humanitarian affairs.

Until the 1990’s the UN’s effectiveness was limited by the restrictions placed on international co-operation through the political sensitivities of the Cold War. With that period now over the UN is faced with a new era of international responsibility at a time of both incredible political insecurity and alarming global problems, such as the transboundary nature of environmental pollution, diminishing natural resources, drought, famine, warfare, etc.

Although these issues are not particularly new, the degree to which they are effecting the conditions of life for millions of people leads to the assumption that the earth perhaps has never been in times of greater uncertainty. Such pressure calls for new notions of, and new responsibility in, international peace keeping, peace making and humanitarian relief.

These increased responsibilities in times of a global recession are barely being realised. It appears the burden of previous warfare, over-consumption of resources and extensive drought in the Horn of Africa are only small obstacles compared to the stubbornness of some countries in recognising the international dimension of humanity’s current predicament and reluctance to commit itself to international co-operation.

The working groups were perhaps more valuable than the formal sessions. Three working groups; Environment, Development, and Human rights, were established and it was required that each group prepare a two page document that would be adopted by consensus and presented to the UN. I was in the working group on the environment.

Two pages in two weeks seems to be a reasonable request. However, although the sessions were conducted in English, without interpretation, English was the first language for only 6 of the 25 people who were in this group. Effective communication was a limiting factor. Each person came from a different country and from a variety of educational backgrounds ranging from PhD’s in Atmospheric Chemistry to Arabic Languages and International Relations.

Our goal was to ensure that the paper reflected the aspiration and values of most people and that our message could be constructive. Having set the guidelines, all we had to do was match the values and aspirations from people who came from Kuwait, Zambia, Czechoslovakia, Finland, Australia, France, Sweden and the USA into some sort of cohesive document.

Despite times of despair and frustration it was inspiring that, for the most part, there was relative consensus as to the issues that require priority. We ascertained that poverty alleviation, the integration of environment and development policies and the role of appropriate technology are the three critical areas requiring serious consideration by the international, national and local community.

Most importantly we had a strong conviction that in order to effect the required changes there must be an increased responsibility at all levels to ensure that the environment no longer suffers through poor management practices and wasteful consumption patterns.

It was a privilege to attend such a program, but more importantly to be able to contribute in a constructive manner to the discussions and to the outcomes in the form of the Final Document. I believe Australians have a very unique contribution to make to such debate. We have the luxury of a relatively progressive educational system; the freedom to choose what path our future will take; and we have, in the most part, compared to other countries anyway, a very tolerant and diverse society in which we can gain a broad range of experience.

We are far from being isolated in terms of international relations, and I believe Australia has much to offer in terms of international effort to contribute to a more positive future. Universities are breeding grounds for such contribution and it is here that we all must consider the big picture whilst concentrating on our individual efforts to initiate change and improvement to the present state of human affairs.
I n a world of diminishing frontiers, there are very few genuine wildernesses left, but a University of Newcastle science student spent last summer in one of them, Antarctica. Martin Ebert, a physics student who completed his Bachelor of Science degree last year, was chosen as part of a scientific team to work on Australia's Davis Base.

The Physics Department has logging equipment in all three mainland Australian bases in the Antarctic, and some on islands off the coast, to record variations in the earth's magnetic field. The equipment measures the effect of the charged particles caused by the flaring of the sun entering the magnetic field of the earth at the polar caps. The Space Plasma Waves Group from Newcastle actively participate in several international scientific programs, providing the main southern hemisphere contribution to these global studies.

Martin Ebert applied to maintain and upgrade the instruments at all the Antarctic stations. He left Hobart, Australia on the Aurora Australis on December 1 last year, cruising for about 8 days before sighting ice. After 14 more days of slowly pushing through thickening ice, the Aurora stopped 60 miles from Mawson, and Martin was taken to the base by helicopter. While he didn't get seasick on the journey, Martin was less enthusiastic about helicopter travel. "I got helicopter sick, especially the way the pilots do things there fly. I think they like to give people a thrill," he said. But Martin was less than thrilled with helicopters after one crashed while trying to land in a "white out", fortunately not injuring anyone.

Martin was ambivalent about his time in Antarctica. While relishing the opportunity to experience the beauty of the environment, he was loathe to contribute to the human intrusion in an unspoilt habitat. "It is so untouched and remote," Martin said. "I have never experienced any place where people have had no major influence.

"The wildlife was incredible, there was heaps of it and because the animals have never known humans to do anything terrible to them, they have no reason for fear." Martin assisted biologists at Davis in a study to determine the diet of penguins. The penguins were caught, weighed and "vomited", Martin explained. "They stand about 40cm high and while they look really cute, they can bite and flap so hard with their flippers they can break your fingers if your hand is bare," he said.

Co-operation between the 70 workers and researchers who "summered" at Davis was widespread, with regular Saturday clean-ups of the base involving everyone from the station leader to scientists and tradesmen. Martin took several field trips, on foot or by helicopter, to huts within a 30km radius of the base and while he found the environment harsh, he relished the opportunity to explore it. He described elephant seals, another prominent species around Davis, as "the grossest creatures on earth" and was impressed by the sight of a killer whale swimming up a fiord, seen from a helicopter.

But he, and the other Australians at Davis, were less than impressed when a Japanese whaling vessel, flouting international laws prohibiting commercial whaling, came close to the base. A Greenpeace representative, at Davis to monitor the impact of the settlement on the environment, went with journalists in a helicopter to film the whalers.

"When you're down there, you can't help but feel attached to the wildlife," Martin said. "It's all so wild and pure and you try to have a minimal impact on the environment. The Australian bases do have a minimal impact compared to some of the other bases."

While the "winterers" at Davis live in a well equipped building and have a room to themselves, the summerers stay in shipping containers with doors cut in the side, four to a container. Martin found the 24 hour daylight a bonus, being able to work whenever it suited him, but tried to stay to a normal routine. The temperature averaged about 6 degrees but did get as high as 10 degrees on New Year's Day, when Martin says they all ran around in T-shirts. Christmas dinner was lavish, with lobsters, oysters and trout on the menu. When Martin turned 21 on January 15, he was given a "little boy's party" in honour of him being the youngest person on base, when the tables were raised up high and they all dressed as school children.

On the return journey, near Heard Island, Martin saw an aurora. "It was fantastic, bright green and hung in curtains around the sky, drifting very slowly and lasting for about an hour and a half," he said.

While Martin values his experiences of Antarctica and would love to return, he felt the brightly painted blue and orange huts at Davis were an intrusion on the unspoilt environment. "I couldn't help but feel we shouldn't be there, that our presence was completely out of place," he said.
Newcastle University graduate, Alan Hayes has come a long way since dabbling in his grandmother's herb garden. His column, "Healthy Alternatives" is syndicated in 156 newspapers around Australia and his eight books are read in Australia, the USA and the UK.

Alan's studies of "medical herbalism" in the 1970's were met with scepticism by his friends and colleagues. "People considered me to be a crazy, eccentric person living on a farm," Alan recalls. "At that time, the trend towards natural medicines wasn't there," he explained.

Alan did not let the doubt and ridicule of others thwart his own desire to learn more about natural therapies and in 1985 he published his first book entitled Country Scents, which he says, is still selling today.

"The book is like an evergreen, with more copies being reprinted annually," Alan proudly states.

Although Alan had always had an interest in alternative or natural therapies, his father encouraged him to "get a proper job" and so at the age of 19, Alan found himself selling insurance - a job he kept for 11 years.

Upon "retiring" from the insurance game, Alan was convinced by a friend to help set up an advertising company. "We did OK, but it became a headache, so in 1988 I sold out."

In search of a new career, Alan enrolled in an Associate Diploma in Visual Arts at the former CAE and switched to a degree in Visual Arts in 1989. Alan's sculptures can be seen outside the University's Visual Arts building.

During his studies, Alan's passion for natural therapies continued to blossom and he had vision of becoming self-sufficient on his 12 1/2 acre property in the mountains of the Central Coast.

Alan's property is set up in the style of a cottage garden. He hopes to establish a nursery and a studio/gallery featuring artwork (his own and that of other local artists), as well as displaying an interesting range of herbs and skin-care products.

Alan smiles as he recalls testing his skin-care range on the students at Newcastle University, and emphasises in a tongue-in-cheek manner that his products were not tested on animals.

Making herbal products is according to Alan, "fun, friendly and inexpensive".

"The whole concept of this product is that it is totally natural and affordable," Alan says, adding that his products are "almost in the supermarket price range."

"It annoys me when I see people paying for expensive packaging and advertising," he says.

Alan's products will be sold in slip-cast ceramic jars which will be cleaned and re-filled after use, making the whole exercise very environmentally friendly.

"I have a great feeling for the environment and it really distresses me to see what we have done to our environment in such a short time."

"Following World War II we became a disposable, throw-away society in search of better products. We destroyed the ecological chain in the process," he added.

In an attempt to make people aware of what they can do to prevent further destruction of the environment Alan has written a book entitled, Reclaim, Recycle, and Reuse: Natural Products to Save the World.

The book deals largely with energy efficiency - the use of the sun for heating and cooling; and with the use of herbal products for gardening and pest control. The chapter on recycling gives the reader a clear understanding of how to recycle in the home.

The book gives a detailed account of environmentally friendly household products which the reader can make at home. The
products range from shoe polish and paint to bubble bath, disinfectants and clothes dyes. In fact, almost every conceivable household product can be found in the book.

Alan points out that the products are extremely inexpensive to make. A year’s supply of washing powder can be made for just $3.00.

“Not just are you doing something that is environmentally friendly, you don’t have to go out every fortnight and spend $4.00 on washing powder,” Alan points out.

Alan describes his book as an “incredible compendium which deals with every facet of daily life”. He is very excited and relieved about the switch to natural therapies and herbal alternatives.

“In the past, herbalism was considered to be steeped in mystery and witchcraft” Alan says with a twinkle in his eye. “Now we understand why plants heal. We know about vitamins, minerals and enzymes, only now we create all these things synthetically.”

Alan has written eight books which include the following titles; Recipes for Health and Beauty; Healing from the Garden; Beauty from the Garden; Healing Power of Essential Oils and It’s so Natural (to be released in December).

Alan lives on his Central Coast property with his wife and two children. His advice to readers: “Live naturally, live healthily and be happy”.

### Simple Moisturising Cream

15g of Beeswax (natural)
75ml almond oil
40 ml Herbal Infusion
8-12 drops lemon juice
5-6 drops fragrant oil.

**Herbal Infusion**

In a ceramic bowl add 300 ml boiling water to 1 teaspoon each of chamomile and elder flower. Leave overnight and then strain through a cloth.

**Moisturising Cream**

Melt beeswax in a double boiler over medium heat.
When liquid stir in warm almond oil and herbal water. Mix well.
Pour into ceramic bowl, add lemon juice and fragrant oil. Beat until creamy.

**Note:** Use only enamel or stainless steel bowls and wooden spoons. Store in sterilised jars.
“A man’s home is his castle”, or so the saying goes. This home is very different, more like a castle than most, owing to the fact that its walls are a third of a metre thick and it's definitely not built to conventional modern-day standards. Earthways, a large mud brick house in the Hunter Valley has been the venue for several field tours conducted by the University’s Department of Community Programmes. The field tours have provided an insight into an alternative building style as well as the self sufficiency and respect for the environment of its owners.

Cae Pattison from the University's Information & Public Relations Unit gives a very personal view on Earthways, an odyssey of creativity, effort and sheer determination, built as part of a search to achieve a uniquely satisfying lifestyle for its owners.

The unique aspect is that Brian and Sally Middleton are two such people, and together with their infant son, Toby, share a lifestyle that is not only idyllic but relatively self sufficient.

Brian and Sally are the owners of Earthways, a 140 hectare property located near the small Hunter Valley town of Wollombi. Situated on the property is a magnificent mud brick house, an honest house with real style and loads of integrity. The unique aspect is that Brian and Sally have built this house (with a little help from their friends) with their own hands, from the ground up, using huge mud bricks, heavy timbers, western red cedar windows and doors, with not one power tool used in its construction.

I have known Brian and Sally for about 10 years, a meeting by accident when looking for another place. The relationship is one of people with very different lifestyles and viewpoints and one with a decided learning curve for me.

On my first visit there about 10 years ago, I found the shell of the house built and the couple living in a sort of lean-to construction nearby. This was really roughing it, but all for a purpose as work on the house proceeded at a slow but steady pace. Visitors learned to enjoy sleeping in a teepee (homemade of course) gaining a new respect for the beauty of nature and an even healthier one for the wombats.

Weekend workshops over the years have seen many people learn the finer points of mud brick making and construction, happily lifting the ‘big mummas’ as Sally calls them, into place. Many of these people have gone on to construct their own mud brick houses while others are still dreaming.

Brian is a thinker, an innovator and a doer. He lives as he believes, simply and practically. His and Sally’s home reflect these values and proves what can be done if you believe in what you are doing.

A qualified architect and former lecturer at Oxford School of Architecture, Brian changed direction 17 years ago, opting for an alternative lifestyle which was more in tune with nature. The house is tangible evidence of his view that building with mudbricks not only stimulates creativity and resourcefulness, but can save up to 80% of building costs.

It feels good, this house of mudbricks, cool in summer, warm in winter. Expansive spaces and extensive use of timber and stained glass creates a wonderful atmosphere which is added to by the simple philosophy of its creators. “If it’s not natural, then don’t use it”.

These days, life is a lot more comfortable with the recent acquisition of a solar power electricity supply. Brian and Sally have installed a bank of voltaic cells which follow the direction of the sun and produce enough electricity to run all the standard household equipment. A self composting toilet provides fertilizer for a forest of paulownia trees, a fast growing hardwood which Brian will mill when they reach maturity.

Although this style of living or the effort required to attain it is not for everyone, you can’t help being impressed by Earthways. It is an outstanding example of two people’s respect for the environment, practical skills and vision for a healthier, more satisfying lifestyle.

**TECHNICAL DETAILS**

The soil for the mudbricks is dug from the property, packed into moulds with straw and left in the sun to dry. Soil with a clay content of 30 to 80 percent is usable although the higher range is preferable and more resistant to erosion. Bricks vary in size from 300mm x 300mm x 125mm to 300mm x 200mm x 125mm, the larger size being used at window and door openings to offset the bonding.

Foundations are very important as the base for the construction, the mudbricks used here being stabilised with cement or a bituminous emulsion. Floors as well as walls are made of mudbrick while hardwood rafters support a tongue and groove ceiling. Previously a sod roof supported a flourishing herb garden, although now it is a slightly more con-ventional steel roof.

Walls inside are smoothed with wet sacking and coated with wallpaper size to prevent dusting while walls in wet areas like the kitchen, bathroom and the exterior walls are finished with linseed oil.
WHERE ARE THEY NOW?

Dr Maurice J. Harden graduated in 1989 with a BMed. He worked as an RMO for the Hunter Health Service and is now Medical Officer for the Royal Australian Navy Submarine Squadron. Stationed at HMAS Platypus in North Sydney, he is responsible for maintaining physical fitness in the Squadron as well as simulating submarine accidents to check casualty responses. Dr Harden will take up a 12 month exchange posting with the Royal New Zealand Navy from December. The Navy, he said, is currently able to arrange training positions in various streams of Underwater Medicine.

Ms Kathryn Smith graduated in 1974 with a BA and completed a DipEd in 1975. She is currently working as Education Officer for the Territory Wildlife Park at Berry Springs in the Northern Territory. Situated 65km south of Darwin, the 425 hectare park shows native NT animals in their natural habitats. Kate spent several years teaching, at Cootamundra High School and high schools in Gove and Darwin, before spending last year as Interpretations Officer for the Conservation Commission preparing for World War II commemorative year, which is now drawing to a close. Her work involves communicating the protection message to protect native animals from extinction.

Mr Craig Copeland graduated with an honours degree in Biology in 1984. Armed with his degree, Craig worked as a wine waiter in Surfers Paradise before obtaining voluntary work with the CSIRO Division of Tropical Research in Atherton, Queensland. Craig says that during this time, he financed his “research habits” by playing professional football for Atherton. Returning to Newcastle, Craig completed a Dip Ed. in 1986 and worked for Envirosciences Pty Ltd as an environmental consultant. Based in Newcastle, he conducted noise impact studies and investigated the effects of fluoride on vegetation and water.

Craig is now employed by NSW Fisheries at Wollongbar (between Lismore and Ballina) and is responsible for fish habitats in the Northern Region, covering areas from Taree to Tweed Heads in the north and Moree in the west. Craig is also conducting research into the impact of acid water on fish and oysters.

Locally, Craig is the Chairman of the Ecology Group of the Ironbark Creek Total Catchment Management Committee. The group, which includes academics and students from The University of Newcastle, has completed a study of the existing flora and fauna in the catchment. Students at the University have completed a comprehensive study of the vegetation of Hexham Swamp and compared their findings to those of a survey conducted in 1976.

NSW Fisheries is also involved in the Kooragang Island wetlands project currently underway.

Dr Peter Newton graduated in 1972 with an MA (Geography). He completed his PhD in 1976 at the University of Canterbury. Dr Newton is currently working as Senior Principal Research Scientist for the CSIRO in Melbourne. His work involves infrastructure planning and collaborative research. He is also Co-Director of Telecom's centre for expertise in geographic information systems and analysis, researching how best to mobilise Telecom’s infrastructure, for instance where to put fibre and the optimisation of the cellular mobile network to ensure supply meets demand.

So where are you now? We would like to hear from members of Convocation. Don’t be shy. Please let us know where you are and what you are doing these days. Phone us on (049) 21 6464.
Summary

In the process of preparing a book on the plants, animals, landscape and ecosystems of the campus grounds at The University of Newcastle, NSW, it has been necessary to compile accurate lists of the flora and fauna, and to analyse these taxonomically and ecologically. The 130 hectares of grounds, notwithstanding the numerous buildings, roads and parking areas, reveal a surprising biotic diversity. The University is one of the few remaining islands of naturalness in an ever-expanding sea of suburbia, and management practices must be implemented to sustain both the diversity and aesthetic values of this small, but important refuge.

Introduction

Late in 1991, a small Committee was established to work towards the production of a book on the flora and fauna of the campus grounds of The University of Newcastle. A support group of the University, known as the Friends of the University, undertook to provide the funding for this project, and the following people commenced the process of writing the text, and providing paintings, drawings and photographs for the publication: Kevin McDonald (Convenor) Department Applied Science & Technology; Christine Sanders, Department Design; Roger Dunstan, Department Design; Dr Keith Russell, Department Design; Associate Professor Max Maddock, Department Education; Andrew Atkins, Department Design; Genevieve Wallace, Department Design; Gary Weber, Electron Microscope Unit and Dr Don Morris, Retired University Planner.

The Ecosystems of the Campus Grounds

The campus grounds of the University comprise some 130 hectares of a former dry sclerophyll open forest area, dissected by several minor watercourses, draining to an area now known as the University wetlands. The original eucalypt-dominated plant association was that of Spotted Gum (Eucalyptus maculata) and Ironbark (E. paniculata and E. fibrosa), with Small-fruited Grey Gums (E. propinqua), Mahoganies (E. acmenioides and E. umbra), Red Bloodwood (E. gummifera) and Rusty Gums (Angophora costata) also represented.

The understorey of this original vegetation comprised a well-developed shrub layer, mainly of xerophytic shrubs, and a ground cover of native grasses (such as Kangaroo Grass, Themeda australis) and various herbs, vines and creepers.

As a rather fortunate accident of history, this open forest area, established on the typical agriculturally intractable clays and gravels of the Newcastle area, had largely been untouched by European development, in spite of the fact that the surrounding areas of Jesmond, North Lambton, Mayfield West, and Shortland have long been densely settled. Minor logging for pit props (mainly Spotted Gum) had been carried out in the earlier days of coal mining, and a coal railway line once passed along the southern boundary of the University, virtually parallel to the present University Drive.

Upon establishment of the University on the site in 1966, the inevitable clearing of some of the land began. From humble beginnings, the University has grown to accommodate 13,500 students and 2,000 academic and administrative staff in just 26 years, and many trees and shrubs have made way
for the numerous buildings, internal roads, parking areas, and sporting fields.

Nevertheless, the present grounds continue to provide the “bushland setting” which has long been touted as one of the University’s major attributes. For the purposes of ecological analysis, these grounds may be subdivided into the following ecosystem types:

(a) dry, open forest (occupying the main area of the grounds, particularly the higher areas, and the slopes);

(b) the wet, semi-closed forest (occupying the creek valleys);

(c) woodlands areas between buildings (these “woodlands” are actually an artifact of the modification of the original dry forest, brought about by selective removal of trees, and the conversion of the original shrub understorey to mown grass);

(d) grasslands, chiefly the sporting ovals and surrounding banks (again, these “grasslands” are an artifact brought about by the near complete removal of the original vegetation, the levelling of the areas involved, and the planting of introduced grasses);

(e) the wetlands (yet again, an artifact, whereby “wetlands” have been created by the backing up of creek waters by earthworks).

The Flora of the Campus Grounds

The dominant trees have been described above in broad outline. By far the most common tree on campus is the Spotted Gum (Eucalyptus maculata), easily recognised by its straight, smooth, light grey, spotted and dimpled trunk. This tree gives the essential character of the grounds. It should not be confused with the Rusty Gum, or Smooth-barked Apple (Angophora costata), which also has a smooth, dimpled trunk.

Other large tree types include Ironbark, a Small-fruited Grey Gum, Mahogany, Red Bloodwood, Turpentine and Prickly Tea Tree. The understorey of the dry and wet forest areas is mainly comprised of prickly, sclerophyllous scrubs, including various wattles and other legumes, and such shrubs as Blackthorn and Hopbush. These shrubs are often festooned with vines and creepers, including Wombat Berry and Devil’s twine. Ground cover includes Kangaroo Grass and Blady Grass, with various terrestrial orchids, Bracken Fern and Ivy-leaved Violet.

The Fauna of the Campus Grounds

It is obviously much easier to document the flora of an area in contrast to its fauna. Animals can move and hide, some animals are only occasional visitors to the area, and many animals are very small and cryptic. Campus fauna include mammals (including marsupials and placentals); birds (47 families, or 110 species have been seen); reptiles (tortoises, lizards and snakes); amphibians (11 species of frogs) and fish.

There would be few universities in Australia which could boast such a diversity of flora and fauna, not to mention the feeling of openness which the wooded campus imparts.

Some Highlights of the Campus Flora and Fauna

An aerial photograph of the Newcastle metropolis would reveal that very little in the way of significant stands of natural vegetation remain, following two centuries of European settlement. The spread of suburbia, with cheek-by-jowl houses, bitumen streets, shopping centres, parking areas and industries has seen the near complete removal of the original forests, heathlands and wetlands. There are some exceptions, including the New Lambton Heights ridgeline between Charlestown and Lambton/Jesmond (this area includes the well-known Blackbutt Reserve).

One very small “terrestrial island” of vegetation is that of the grounds of the University campus at Callaghan, which adjoins the Steelworks Golf Course at Shortland. It is still possible to glimpse the nature of the original vegetation of this site by strolling through the wooded grounds. Much of the credit for the retention of the present “bushland character” of these grounds goes to such people as the earlier University Planner, Dr Don Morris, who took much care to retain as many trees as possible in building programs developed from 1965 onwards.

It is, of course, a cause for concern that the “growing pains” suffered by the University in recent years have resulted in various environmental problems, not the least of which is the removal of much of the original vegetation, and consequent erosion problems. However, an enlightened administration has now seen the implementation of appropriate management procedures which should protect and even enhance the pleasant ambience of our bushland campus. These measures include bushland regeneration procedures, ecologically sound landscaping operations, policies for protecting the environment against “feral” cars, and educational innovations which are aimed at raising the levels of awareness and appreciation of our precious natural heritage.

The University motto “I Look Ahead” could not be more appropriate in the context of the urgent sense of care now being promulgated amongst members of the University’s burgeoning community of students and staff regarding the practice of the current global environmental paradigm right here in our own backyard.
WARDEN'S COLUMN

FUTURE DIRECTIONS FOR CONVOCATION

Now that amalgamation and all its traumas are well behind us, the time has arrived when Convocation should be devoting much more time and effort to the broad planning of its future roles.

With this in mind, I have asked the Convocation Management Committee to consider the following suggested directions for our expanded membership.

I am not suggesting we should neglect our very worthwhile annual program of activities like our involvement in Graduation, the Newcastle Lecture, Inaugural Lectures, the Newton-John Award, the Convocation Medal, the Student Book Prizes and our sponsorship of the University Art Committee’s Photographic Competition. We should strengthen our commitment to all of these projects.

I am suggesting that the form and role of Convocation has changed dramatically since amalgamation. We now have more than 35,000 potential members and, more than ever before, we need to marshal those human resources for the benefit of our University. We have a very successful shopfront presence on campus and this, too, needs to expand as the demand increases.

As the University itself expands and its demands for increased funding become harder to meet, Convocation’s role will become even more important. In other words, Convocation will need to be more than a friend-raising organisation. We will need to become a major source of University income as well as maintaining our role as a builder of bridges between Town and Gown.

If the above proposition is acceptable, where do we start?

We should start by looking at the expansion of our shopfront both off and on-campus. We have already been looking at the possibility of gaining a shopfront presence in the expanded Watt Space Gallery in Watt Street, Newcastle. Another prospect could be in the old Nesca House Building at the corner of King and Auckland streets if this becomes available to the University.

Investigations into both sites are at a very early stage and the two projects might not eventuate.

Another area we should be looking at is the extension of our membership on-campus. Management Committee has already identified the need for Convocation to get closer to our student population. It is certainly true that we should be looking at our future members so that we can involve them as active supporters of the graduate body and of the University once they receive their degrees.

Another body which should play a more important role in our future is the Association of Post-Graduate Students (APSUN). We have already had talks with the Association’s President, Mr Don Millar, and he has shown that his organisation needs our help and co-operation. We should be offering that help now to encourage our 1,800 postgraduate members to feel part of our organisation.

The University Union is another vital link in our future development. The management of both Convocation and the Union have worked closely together on a number of projects and that association should grow.

We should also be looking in the direction of expanding our international memberships. Convocation has already played an important role in establishing branches of our members in both Singapore and Hong Kong. My predecessor, Father James Bromley, and his Standing Committee did a great deal of work to set up the Singapore Branch and this has been followed up by the University Management. Two years ago, I was able to set up our first membership Branch in Hong Kong and this has been followed up by our Vice-Chancellor, Professor Morgan, who recently attended a well supported dinner meeting of our Hong Kong graduates. Convocation should be working more closely with Mr Brian Freedman’s team in the International Students’ Office to extend our overseas membership even further afield.

The broadening of our links with University Departments should also be high on the priority list. Convocation has always provided an essential link between the University and the community. With the dramatic expansion of the campus and our membership, this link has become more important.

Some time ago, Convocation’s affairs were placed under the umbrella of the University’s Information and Public Relations Unit and this has worked well. But we should also look for a closer association with the Department of Community Programmes.

The above is not meant to be my attempt to draw up a blueprint for future success. It is a loosely woven set of ideas designed to stimulate thought about Convocation’s future.

However, in the meantime, I am pleased to report that Convocation’s sponsorship of the University’s Art Committee’s first photographic competition has proved highly successful. There were 82 excellent entries in the competition and Convocation made available $500 in prize money.

Convocation was also able to take part in a campus tree planting during Environment Week. We made available 100 trees for the planting ceremony and I’m sure we will be able to continue this involvement.

Convocation is now fortunate to have the University’s Project Officer for Waste Minimisation, Mr Kent Gillman, on its Management Committee.

Mr Vic Levi
Warden

YOUR 1992 GRADUATION VIDEO

Copies are still available

Cost: $45.00 (incl. p&h in Australia)

Order from:
Medical Communication Unit
Royal Newcastle Hospital
Newcastle, NSW 2300.
Convocation would like to thank the following sponsors for their support throughout 1992 and ask you to keep them in mind when planning your spare time or a special occasion over the Christmas period.

Action Divers
Airborne Windsports
Balloon Boutique
Concert Crew
Co-op Bookshop
Eastern Creek Raceway
Greater Union Tower Cinemas
Hunter Valley Theatre Company
Irma's Beauty Salon
Madison Motor Inn
My Florist
South Steyne
STA - Newcastle Travel
Sun City Hang Gliding School
University Union
Wangi Queen

THANK YOU
A big thank you to everyone who has written to us or completed the ‘Keeping in Touch’ forms sent out in the last Uninews. The response has been overwhelming and has been an invaluable source of information in tracking down graduates who were ‘lost’. Also a big thank you to the International Students Office and their contacts overseas for providing us with updated register of graduates now overseas.

Many people have enquired about finding old friends who graduated from this University, whom they have lost touch with. Convocation often has a contact address for those people, however to protect everyone’s rights and privacy, Convocation must contact that person and ask them if it is all right to forward their address or phone number on to the person enquiring. I hope you can appreciate this process no matter how innocent your enquiry may be.

AN APOLOGY
A number of graduates living at the same address have requested that only one copy of Uninews be sent to their address. Unfortunately it has not been possible to fulfil this request for this edition of Uninews. We hope this will be rectified for all future mail.

CONVOCATION NEEDS YOU!!

WHY SUPPORT CONVOCATION?
By becoming a contributing member you can support this university. Your University.
Convocation organises a number of social and educational events throughout the year including: Inaugural Professorial Lectures, the Newcastle Lecture, Graduation Balls, and the Convocation Dinner at which the Newcomb-John Award and Convocation Medal are presented. This year these events have been extended to include tree plantings, barbecues, Book prizes and scholarships, and sponsorship of “The University of Newcastle People and Places” Photographic Competition. We are also in the process of planning the first of many Reunions, guest speakers, and a Spring Ball for 1993.

Your membership fee also goes towards special projects such as book acquisitions for the library, library extensions, tree plantings, scholarships and so on. In addition to this, we also raise funds for extensions to much needed on-campus accommodation.

As a contributing member of Convocation, you will receive The Bulletin, a fortnightly publication containing information about research and events on campus and human interest stories; UNINEWS a quarterly publication reporting on academic and student pursuits; personal invitations to major Convocation Events; and a Convocation Contributory Membership Card. We are currently negotiating with businesses to arrange discounts on goods and other benefits to members.

If you wish to assist Convocation in a tangible way, please photocopy the form below and return it, with your contribution, to the Convocation Shop, Hunter Building, The University of Newcastle CALLAGHAN 2308.

Mr Vic Levi
Warden

APPLICATION FOR CONTRIBUTORY MEMBERSHIP

Name: (Mr Mrs Ms Miss Prof Dr)

Former name: ........................................ .

Address: ................................................ .

Postcode: .............................................. .

I enclose cheque/ Money order/ credit card authorisation for:

1992/3 Annual Subscription ☐ $25

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Friday, May 22, 1993
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Please call Dorothy on (049) 21 5700 if you can help contact Biology graduates, or for further information and bookings.

GALA BALL

21ST BIRTHDAY CELEBRATION

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GALA BALL

APPLICATION FOR CONTRIBUTORY MEMBERSHIP
The death of Emeritus Professor Newton-John on the morning of Friday July 3 in his 79th year deprives the University community of one of its best loved and most colourful members.

As an undergraduate in Cambridge in the middle of the thirties Brin was active in the life of his College Câbus and a highly valued singer performing in concerts and oratorios put on by CUMS. Probably his most outstanding performance as a gifted undergraduate amateur was in the title role of the oratorio "Solomon", of which some elderly Dons in Cambridge still speak.

On going down from Cambridge, Brin accepted a position as an assistant Master under the legendary Headmaster Roxburgh at the newly founded public school Stowe, which Roxburgh had established after the first World War. Given the attempt of the school to develop the personality of the whole pupil, Roxburgh no doubt found his musical abilities as attractive in a new young Master, as his First in Modern Languages and his expertise in spoken German. Whilst at Stowe Brin married the daughter of the famous physicist, Max Born, who had come to a Chair in Britain from Germany. After his War services he returned to Cambridge as Headmaster of Cambridgeshire County High School. A number of his former pupils and retired colleagues still speak of him with much affection.

In 1954 he was determined to try a career in a new country and applied successfully for the Mastership of Ormond College in Melbourne which was then run by the Presbyterian Assembly of Victoria as a Residential College of Melbourne University for men, and also had associated with it the Ormond Theological Hall for training Presbyterian Ministers. As a Welsh Presbyterian by upbringing, Brin found this an attractive appointment and one which gave scope for his development skills and pastoral care of young people. Some years later matrimonial difficulties led him to prefer not to work for a Church Body. He then was appointed, by James Auchmuty, to be the Head of the Division of Arts in the newly developed Newcastle University College, a position to which he was appointed in 1958. Under him it was a pleasure to work as a Department Head in the Division of Arts. However, his greatest achievement in this role before Autonomy was in reconstructing the Humanities course as a distinctive cultural history course run quite differently from the University of New South Wales syllabus, but similarly designed to provide an indoctrination for engineering, architecture, commerce and science graduates in the other of the two cultures.

But even more important than his fine teaching as Head of the German Department and his wise policy regarding Arts and Humanities was his personal warmth. He played an active part in the beginning of student drama in collaboration with the Biggins family and some early members of staff like John Stowell.

An active squash player until a hernia operation cut him out of competitive play, he remained a keen supporter of all University clubs in our early days.

Most significant was his love of Classical music, which was heard belting through the old Arts building every day from his loud speaker system. Many who are still on the staff will recall that day in November 1960 when he opened the still unfurnished Tights Hill Union Building by playing Beethoven's Ninth to a crowd of staff and students sitting on the floor one lunch hour.

In 1965 he married Val Cunningham, a former concert pianist and then manager of our Co-op bookshop. She and their two children still live in Sydney. Both of the latter have obtained excellent degrees at their University. Brin's daughter by his first marriage, Olivia, was fortunately able to visit him only a few days before he died.

With Autonomy he was appointed Vice-Principal and Deputy Vice-Chancellor to assist James Auchmuty in the development of the new University. Consequently other steps had to be taken for the Heads of the German Department and David Mowatt from Alberta was appointed to the Chair, but Brin himself was given a personal Chair in Spoken German. Unhappily his administrative duties much restricted his teaching activity; a matter he much regretted. As Vice-Principal Brin was in charge of student services and was extraordinarily helpful to the Union and Sports Union. It was typical of his affection for his old staff that he came up two years ago for the 70th birthday of his former Amenities Officer, Harry Bradford.

In 1973 Brin felt that he would like to retire early to pursue his own interests. His wife Val was then embarking on a most outstanding career as a consulting psychologist and found she needed to move to Sydney with the children and this led to a decision to separate. Some years ago Brin married his third wife, Gay, with whom he has been extremely happy in a charming flat in Manly overlooking Harbour and Ocean. There, Gay pursued novel and script writing whilst Brin gave many broadcasts on the Sydney FM music program, with splendid commentaries one would expect from so devoted and cultivated a lover of the classical composers.

Brin enjoyed a rich and wonderfully varied life and gave much happiness and encouragement to a large number of people in the course of it. We regret his passing much, but we do so with gratitude and pride. It will be source of happiness to Convocation that he was able to attend this years Newton-John Dinner in such splendid form.
Beyond Recycling

Maria Callinan, Recycling Education Officer, Lake Macquarie City Council

In September, 1979, there was little public awareness of the ancient concept of recycling. A home computer was practically unheard of; there was no such thing as a fax machine or compact disc in everyday life; the VCR was still a remarkable addition to the libraries of more fortunate schools and those who could afford such technology, the videophone was expected to be the "invention of the eighties"; PET packaging was limited; the aluminium can was still a novelty; the average beer bottle was 60% heavier and we were all thirteen years younger.

Within the same time frame it will be September 2005. By then, The University of Newcastle will, together with its neighbouring City of Lake Macquarie, have been responsible for engineering a revolution in waste minimisation and environmental improvement. Through its initiatives in recycling common commodities such as aluminium cans, PET plastics and glass and paper in the early nineties the University will have established a research ethos that allowed it to develop new, fully recyclable or reusable packaging; composting systems that recycle most organic wastes; practical water recycling, desalination and retrieval systems; designs for buildings, transport, landscapes and townscape which conserve resources and provide aesthetically pleasing living spaces.

Perhaps. Now is the time to dream and prepare. The year 2005 will be here before we know it and by then it may be too late. Finances may not always be available, but that should make us more resourceful. The ideas and products should be actively marketed to ensure future research into waste minimisation and resource conservation is possible.

FLUORIDE MIGRATION THROUGH KAOLIN CLAY

Within the Civil Engineering and Surveying Department, Drs David Smith and Scott Sloan are conducting research that should assist the selection of construction materials, and subsequent analysis, of engineered landfills designed to secure waste materials contaminated with fluoride. Fluoride wastes are produced during a wide variety of manufacturing processes including aluminium smelting, steel making and ceramics, and fertiliser and electricity production (via coal fired power stations). While much of the fluoride from industry is emitted in gaseous form and efforts are made by industry to minimise the production of fluoride contaminated waste, or recycle the waste that is generated, almost invariably some fluoride contaminated solid waste is produced. One option for this waste is its temporary storage in an engineered landfill. This raises the question of how best to construct such a landfill so that the performance requirements are met at a reasonable cost.

While many authorities require the use of single and sometimes multiple barriers to impede the migration of contaminants from waste disposal facilities, often these requirements are made in rather an arbitrary way. There are, though, methods emerging for the design of engineered earthen barriers based on sound principles of geotechnical practice. This is happening because of improved understanding of the underlying physical and chemical processes of transport of contaminants through soils and because of the development of numerical methods for the quantitative prediction of the long term behaviour of the contaminant/liner system. The University's Computational Geotechnical Group is developing new finite element models for such quantitative prediction.

To further the understanding of the containment of fluoride bearing waste by an earthen barrier, an experimental investigation of the interaction between fluoride salts and kaolin clay soil is proceeding under the supervision of Drs Smith and Sloan. Data is being collected on the rate of mass transfer of fluoride through the kaolin clay under a variety of experimental conditions, the primary aims being to determine several key aspects of the kaolin/fluoride behaviour, namely, the partitioning coefficient including time dependent effects and desorption hysteresis, and the effect of soil acidity. This experimental program builds upon previous ARC funded research conducted in the Department of Chemistry, primarily under the supervision of Professor William Pickering. The current research is being capably assisted by Janece Slavek from the Department of Chemistry.
The inaugural Tunacl/Convocation Photographic Competition and exhibition was held in the foyer of the Great Hall from August 25 to September 11. The exhibition was very successful, with 82 photographs on display by students and members of staff.

The subject matter reflected diverse interpretations of the theme “University People and Places” with landscapes, architectural images, portraits, montages and candid shots of the campus environment.

The winner of the judged competition, Mr James Ramussen was awarded the $500 prize donated by Convocation for his untitled photograph of the Chancellery at sunset. The photograph was beautifully composed and expertly printed.

Second prize of $200 went to Professor Brian English from the Department of Social Work, with a clever montage entitled “Jo Gaha harassed and harassing Rome 1951”. Third prize of $100 went to Deputy Vice Chancellor (Administration), Mr Lance Hennessy, for his tranquil depiction of the wetlands on a misty morning, entitled “Wetlands 11”.

The judges, Mr Vic Levi, Mr Frank Morgan and Mr David Cubby, also commended three other photographs - a series by Mr James Rasmussen titled “Artist as Individual, 1, 2 & 3, a montage by Professor Brian English “Liane Flynn in 16th Century France” and Soo Heng Foong’s “Tables”.
A "People's Choice" competition was also held during the exhibition, with viewers able to vote for their favourite photographs.

First prize of $500 went to Mr Lance Hennessy for his photo "Wetlands 11".*

Second prize of $200 was awarded to Ms Sandy Leyland, a student, for her photo "University Patterns".

Third prize of $100 went to Mr Scott Kennear Hardy, a student, for his photo, "And I thought the lecture was bad....."

TUNAC and Convocation would like to thank all the photographers involved and everyone who participated in the voting.

TUNAC and Convocation will host a similar exhibition and competition in 1993 and 1994, with the aim of publishing a photographic essay of the University. Hopefully, imaginations will have been inspired by this year's event and the quality and quantity of entries will be even greater.

Why don't you start clicking the camera now.

* Mr Hennessy has donated this money to the Art Acquisition fund.