Birth control plan for feral pests

Feral animal populations in Australia could be significantly reduced—even eliminated—by a radical new approach to population control.

Two Monash researchers believe that antifertility compounds, developed for human use, could rapidly cut down the numbers of introduced pest species such as foxes, mice, rats, and cats. Professor Roger Short and Dr Yan Gao, of the Department of Physiology, are proposing that compounds such as methyl testosterone and antigestagens like mifepristone (RU486) could be used to limit or even eliminate feral animals, particularly on islands, by blocking their reproduction.

Australia has more problems with introduced feral animals than almost any other continent. Mammals that evolved in other parts of the world have flourished in the absence of their natural predators and diseases, displacing or destroying native animals and endangering native plants.

Professor Short said the population control idea was inspired by the success of sterility techniques in controlling certain insect pests. "It made us wonder why we have been so slow to develop contraceptives for animals," he said.

"There are chemosterilants that will permanently sterilise male or female mammals, but we have plenty of fairly long-acting, reversible contraceptives that have come out of human family-planning research and development.

"RU486 will abort rats, mice, rabbits, and dogs (and hence presumably dingoes) but it has no effect on marsupials or birds. To have a drug that will abort introduced pests but which does not affect native species would be quite a staggering breakthrough."

RU486 is an antigestagen, which binds to specialised receptors in the endometrium, the lining of the uterus to which the placenta attaches. By competing for the receptor for the natural hormone progesterone, RU486 prevents the hormone from doing its normal job of maintaining the uterus in the pregnant state. Within a day or two, the uterus contracts, expelling any implanted embryo.

The androgen methyl testosterone can be used as a unisex contraceptive. An orally active form of the male hormone, it blocks ovulation when administered to females, and above a certain dose, suppresses sperm production in males.

Professor Short recently returned from a conference in Kenya on the fertility of the world's largest terrestrial mammal, the African elephant. Ivory poachers have devastated wild elephant populations, but animals brought into the relative sanctuary of specialised game reserves have bred prolifically, destroying large areas of woodland by browsing and so ruining the habitat for other species.

In parks that cut their animals by shooting, elephants avoid human contact, and in parks where there is no culling, they move freely among human visitors. Professor Short believes that drugs like RU486, which induce abortion, could be used to humanely manage populations in the reserves (see story page 6 for more details).

The timing and method of administration of fertility control drugs would need to be carefully keyed to the reproductive biology of each species. "The ideal way to tackle something like the mouse or rat would be to use a poison first, to get the population down to the lowest number, and then to use chemosterilants when the population was at its lowest ebb, to make sure it couldn't rebound," Professor Short said.

Laboratory work by Dr Gao, a Chinese-born postdoctoral researcher, has shown that a very low dose of methyl testosterone effectively suppresses breeding in rats and mice through its impact on female infertility. If these results were to be duplicated in the field, the exponential population growth that leads to plagues could be prevented. Mouse plagues occur once every four years on average and cost Australian farmers about $100 million in lost production.

He said foxes, because of their breeding behaviour, would be highly vulnerable to antigestagen baits. "Visitors come into season only once a year, around July or August, so if you put down baits in August or September you could abort all the pregnant
NOW & THEN

25 YEARS AGO

A letter from H.P. Shoenheimer in the Faculty of Education draws attention to the "misnomer" of Departmental News of General Interest. He writes: "I have just waded through scores of items informing me that innumerable people whose names I have never heard of gave (no doubt intensely interesting) lectures on extraordinarily esoteric aspects of sub-disciplines that I did not know existed."

25 YEARS AGO

Senior law lecturer Dr W. Weerasooria has resigned to take up an appointment as a permanent head in the Prime Minister's Department in Sri Lanka. Only seven months before, he was arrested in Colombo, his passport confiscated and placed under virtual house arrest. For alleged participation in the publication of a satirical cartoon-booklet attacking the former Sri Lankan Prime Minister.

5 YEARS AGO

The Monash workforce includes a higher percentage of women than the workforce as a whole but women still hold less than 30 per cent of full-time academic posts, according to the university's Equal Opportunities Coordinator, Dr Margaret James. A new Centre for Women's Studies was launched to foster research into "issues which have affected women since antiquity."

THIS MONTH LAST YEAR

A classroom study by Faculty of Education lecturer, Dr Ilana Suyer, has found that students using computers write more effectively than those using pen and paper. Monash is to lead an international research effort to uncover the 'fauces of sudden infant death syn­drome' (SIDS). Australia's first full-time SIDS research facility was established at Monash Medical Centre.

Graduations go to students

Monash's largest ever offshore graduation ceremony took place in Malaysia in July. At the Shangri-La Hotel, Kuala Lumpur, 163 graduates received their degrees. Of these, 57 per cent were from the Faculty of Economics Commerce and Management (ECOM), and more than 20 per cent graduated from the Faculty of Business. A further 62 students graduated two days later in the university's first Singapore ceremony. The Singapore graduation, held at the Mandarin Hotel, also reflected the popularity to Asian students of an ECOM degree. More than half of those graduating wore the faculty's peacock blue hood.

The Malaysian Minister for Education, Datin Dr Sulaiman Daud, gave the occasional address at the ceremony in Kuala Lumpur, which was attended by more than 500 parents, relatives and friends of graduating students, and media representatives.

In his address, Dr Daud, who visited Monash earlier this year, said that Malaysia was fortunate to have such a close relationship with Australia's top tertiary institution.

"It is well acknowledged that Monash University has reached the pinnacle ... in Australia," he said. "Amongst the world's universities, Monash has for many years enjoyed an unmatched relationship with Malaysia."

He said as well as producing a great number of scholars, researchers and graduates in varied fields and disciplines of knowledge, a more significant feature of Monash's international contribution was the thousands of graduates in Malaysia who had passed through its doors.

Montage

Uni first in work scheme for the disabled

Monash has taken the lead in a new work experience program for disabled people.

The university is the first Victorian employer to take part in a Department of Employment Education and Training (DEET) initiative that offers people with disabilities the chance to gain experience in a normal work environment.

Although the program was established in March, no employers had come forward until Monash's Equal Opportunity Office responded to a request from the Disability Employment Action Centre to provide work experience for Mr Shane Russo, who has spina bifida.

As a result, the university is looking to establish an ongoing program.

Ms Jean McCalloch of the Equal Opportunity Office says that taking on disabled people should be seen as a positive experience.

"The program benefits all those involved," she said. "It is designed to improve and develop the work skills and capacity of people with disabilities and to promote their competitiveness in gaining access to further employment and training opportunities. At the same time, the employer gains an extra staff member, funded by the Federal Government."

Mr Russo, 23, who has difficulty walking long distances, standing for lengthy periods of time and understanding new work concepts, will be working for the University's human resources and student administration sections for eight weeks.

Mr Russo, who has been educated in specialist schools, has the equivalent of a Year 9 qualification. He has also completed a computer course at the Western Metropolitan College of TAFE, and worked for the CES, Safeway supermarkets, and as a cleaner.

He says he is capable of offering as much to the positions as a fully able person. "It's difficult to find work, and when I do it is usually for a short time only," he said. "I hope that after the program is finished I will be able to gain some full-time work with the skills I have learned here."

Offshore business degree opens in '93

Singapore-based students soon will be able to study for a Monash business degree without ever setting foot in Australia.

The School of Accounting and the Singapore Institute of Management (SIM) recently signed an agreement allowing students holding Bachelor degrees and accountants registered in Singapore to undertake a Monash Master of Business (Accounting) program.

The course - to commence in January next year - will be developed, taught and assessed by Monash staff, with the SIM responsible for providing facilities, administration, and advertising.

Professor Janek Ratnatunga and Associate Professor Claudio Romano, of the School of Accounting, were instrumental in negotiating the joint venture and will continue to coordinate the course.

Professor Ratnatunga believes the School of Accounting is offering a product unique in the Singapore education market: one that is well in keeping with the university's move into the international education arena.

"Over the last couple of years Singapore has been flooded with numerous foreign universities offering masters degrees," he said. "We have chosen to offer a specialisation masters degree through an independent, not-for-profit organisation."

The SIM has a reputation as the country's leading management organisation. "SIM approached the School of Accounting as it has both a successful postgraduate program, and one of the highest concentrations of PhD academics within any academic department in Australia," he said.

Speaking at the signing ceremony, Pro Vice-Chancellor Professor Leo West said that the agreement was a major initiative for both the university and the SIM. "It reflects Monash's dedication to expanding educational programs in South-East Asia, and indicates the high esteem with which Monash is regarded," he said.

"Monash has 20 other twinning arrangements with institutions in Asia. This course will be taught mostly on a structured learning basis, with Monash academics flying to Singapore twice in each unit for intensive teaching.

As part of the agreement, Monash will also design, teach and assess the first year of the SIM's postgraduate diploma. Students with this diploma may advance into the Monash Master of Business (Accounting) program.

Dr Romano, the program's course director, believes that many masters students will also come from the 6000 accountants registered in Singapore. "The course has such a flexible entry and exit point that it will attract individuals who hold Bachelor degrees and professional accounting qualifications," he said.

Research is in the blood

Brother and sister researchers Carol and Peter Delaney.

Brother and sister Peter and Carol Delaney have much more in common than their family ties.

Blood unites them in more ways than one because the Delaneys, who are both undertaking their PhD studies at Monash, are bound by diabetes.

Mr Delaney has been taking insulin for Type 1 diabetes since she was 11. Her brother Peter developed the disease when he was only five. Their form of diabetes results from an absence of insulin, in which the immune system mounts an attack on the body's own insulin-secreting cells.

For her PhD in physiology, Carol is studying the lesser-known Type 2 diabetes which affects thousands of Australians without them even being aware of it. In this form of diabetes, the body is unable to respond to insulin - even though it may be producing higher levels than normal. Its effects on the human nervous system are being investigated with the help of a species of Israeli desert rat: Psammomys obesus may prove to be a model for how the disease - slower in onset and more difficult to diagnose than Type 1 diabetes - develops in humans (see story in Research Monash).

Peter's PhD project to develop a new type of laser confocal microscope was featured in Monash last year. The first commercial microscopes - worth about $50,000 each - have just been sold to Imperial College, London, and Stanford University, California.

Developed by the small Dandenong company HBB Industries, in association with Monash and ROS Fly Ltd, this miniaturised and more flexible version of the confocal microscope has attracted worldwide attention and looks set to establish a major export industry.
An uneasy marriage: academia and the media

by Helen Trinca

A couple of weeks ago the executive producer of Radio National's Late Night Live, Janne Ryan, rang a Sydney academic and organized an appearance for him on the program. He was enthusiastic.

So she was surprised when he phoned the next day and started backing away - fast. News of his forthcoming interview had spread like " wildfire" around the department and he was anxious about going ahead. A senior member of his school, it seems, had advised him to spend more time on his research and his students rather than on radio.

Was it a lack of recognition of the power of the media, or an absolute recognition of the power of the media which led to this particular piece of career counselling? Was it jealousy about a relatively junior member or the department which attracts the intellectual high-fliers on a nightly basis? Or was it a genuine case of believing that the time invested in preparing for a radio interview was, in fact, a waste of time?

When I phoned the academic involved - the junior one - he insisted it was not jealousy which was going ahead. A senior member of his school, it seems, had advised him to spend more time on his research, and in return offers a contribution to the system argues for more, not less, public support. But the advice had prompted the reaction but seemed unable to...
A species of Israeli desert rat is providing important clues about the causes of an insidious form of diabetes. Research student Ms Carol Delaney, a diabetic herself, is trying to determine if these rats can be used to show how the disease develops in humans.

Thousands of Australians suffer an insidious form of diabetes without even being aware of it. Victims of non-insulin-dependent diabetes mellitus (NIDDM) are at risk of suffering irreversible damage to their health because some doctors may not be alert to its early symptoms.

People with NIDDM, otherwise known as Type 2 diabetes, may suffer complications including the formation of cataracts in the eyes, problems with small blood vessels of the retina and kidney, impaired resistance to infection and healing of wounds, and problems with nervous and circulatory systems.

Ms Delaney who has been studying NIDDM for her Ph.D. project, has been taking insulin for Type 1 diabetes since she was 11. She has been alternating her work between the Department of Physiology and the International Diabetes Institute in Caulfield.

NIDDM has proved difficult to study because of the lack of a suitable animal model for the disease in humans. But in the 1980s scientists discovered such an animal by chance. The Israeli sand rats (Psammomys obesus) have turned out to be most engaging subjects for the study of NIDDM, the insulin-resistant form of the disease. In their natural desert habitat, the Israeli rats eat a low-calorie, high-salt diet. If fed on standard rat chow under laboratory conditions, some of the rats rapidly develop the classic symptoms of non-insulin-dependent diabetes in humans: their serum insulin levels soar, their insulin receptors throughout the body stop responding to insulin.

Feedback mechanisms cause the body to over-compensate by progressively secreting much higher levels of insulin, in an attempt to force the failing receptors to respond. Because insulin mediates the cellular uptake of glucose, the cells are starved of blood glucose, reaching toxic levels that cause tissue damage.

There are several forms of diabetes, but the disease is broadly defined as a condition in which the blood glucose content is elevated, in the presence of inadequate production or impaired action of insulin. In NIDDM, the action of insulin is impaired; the body's is unable to respond to insulin, even though it may be producing higher levels than normal.

Type 1 diabetes in humans is thought to be caused by an autoimmune reaction, resulting from an interplay of genetic and environmental factors. Ms Delaney's brother Peter, whose own Ph.D. project on the development of a new type of laser confocal microscope featured in Monash last year, developed Type 1 diabetes when he was only five.

Their form of diabetes results from an absence of insulin. The immune system mounts an attack on the body's own insulin-secreting cells in the endocrine part of the pancreas, called the islets of Langerhans.

Type 1 diabetes can be mimicked in laboratory rodents by chemically ablating the beta cells of the islets of Langerhans. However, duplicating non-insulin-dependent diabetes is more complicated because the underlying cause is not the failure of insulin production, but the progressive failure of insulin receptors throughout the body to respond to insulin.

Feedback mechanisms cause the body to over-compensate by progressively secreting much higher levels of insulin, in an attempt to force the failing receptors to respond. Because insulin mediates the cellular uptake of glucose, the cells are starved of blood glucose, reaching toxic levels that cause tissue damage.

Ms Delaney is particularly interested in nerve dysfunction resulting from NIDDM. Victims suffer impaired sensitivity to heat and cold, and to vibration. Nerve transmission slows down; with the peripheral nervous system being most affected. Patients suffer sensations like tingling in the fingers and toes, numbness and pain.

"The thing about Type 2 diabetes is that a lot of people have the condition without realizing it," Ms Delaney said. "It's onset is slow and insidious, whereas the symptoms of Type 1 diabetes catch you in the face."

"A person can have Type 2 diabetes for years without knowing it. Its effects are reversible to some extent if they are detected and treated early, but the longer somebody goes on without knowing they have it, the more lasting damage it can do to the body. Diabetes generally starts off with reversible, short-term nerve dysfunction, which can later result in structural damage."

The problem develops in all types of nerve fibres. Myelinated nerves are covered with an insulating sheath of the protein myelin that ensures that the current carrying the nerve impulse does not leak out of the nerve body. In diabetes, the myelin sheath can break down or even peel away from the body of the nerve, preventing the transmission of impulses. The thinner, unmyelinated fibres do not show much obvious structural change - even under electron microscopy - but their chemistry is altered and function impaired.

The ability of peripheral nerves to sense heat is one of the first functions to change. Ms Delaney performs a heat-sensitivity test on humans, aimed at detecting the early signs of small-nerve fibre dysfunction due to NIDDM.

Her supervisor, Dr Rod Westerman, says critical biochemical reactions mediated by the nerves also begin to fail. When a person suffers any injury or infection which would normally cause pain, the nerve releases neurotransmitters that relay the information back to the brain.

At the same time, the sensory end of the nerve releases neuropeptide factors that bring cells from the immune system swarming to the site. The cells secrete growth factors which stimulate other specialised cells to grow and divide, healing any injury.

"Thus, slow healing and poor resistance to infection in diabetes patients are ultimately a consequence of their impaired nerve function. However, nerves damaged by diabetes can repair themselves. Dr Westerman says diabetes patients exhibit a mix of damaged and regenerating nerves. If the damage is detected early, it can be reversed."

"The proof lies in operations in which patients with insulin-dependent diabetes received a kidney-pancreas transplant," Dr Westerman said. "When their diabetes was cured, all their complications were reversed."

But what causes Type 2 diabetes? Ms Delaney says the cumulative effects of stress, poor diet and deranged fat metabolism all are important factors.

Stress alters the body's hormonal balances, which can in turn alter eating behaviour and the body's balance of fat to lean tissue, perhaps because their ability to respond to insulin is declining. Many people with NIDDM are overweight or obese, particularly in the abdominal region.

"The proof lies in operations in which patients with insulin-dependent diabetes received a kidney-pancreas transplant," Dr Westerman said. "When their diabetes was cured, all their complications were reversed."
**TECHNOLOGY**

**Blending polymer alloys**

Since ancient times, metals have been blended to produce alloys of greater strength and durability. In our era, this alchemy has been applied to plastics. A new Monash research centre is adding momentum to the search for these materials of the future.

Unknown technologists somewhere in the Middle East or in China some 3500 years ago made a happy discovery when they mixed the soft metal copper with small quantities of tin. It yielded a gold-coloured alloy, harder and more durable than either parent metal bronze. Throughout the 20th century, marriages between other metals have produced a host of unusual alloys with properties that could not have been predicted from those of the starting materials.

Only recently, plastics technologists have begun to follow suit, mixing familiar plastics with the aim of producing plastic alloys with novel properties. Such alloys are the focus for one of the new cooperative research centres, announced earlier this year.

The Department of Materials Engineering is one of the research partners in the new Cooperative Research Centre for Polymer Blends, which will be coordinated from premises within the Faculty of Engineering.

The other partners in the centre are the CSIRO Division of Chemicals and Polymers, the Royal Melbourne Institute of Technology's Polymer Technology Centre and its Rheology and Materials Processing Centre, ICI Australia,Chemplex, and the Materials Research Laboratories of the Defence Science and Technology Organisation. The Plastics Industries Association and the supercomputer company, Cray Research, are affiliates.

The Director of the Polymer Blends CRC, Dr Ezio Rizzardo, says the centre's work will cover five areas:

- design and production of polymer blend components;
- processing and properties of polymer blends;
- computer-aided technologies in polymer blend technology;
- recycling and environmental control; and
- education through higher degree programs, mainly by research, but perhaps by course work as well.

The centre will study polymer blends and polymer alloys. Dr Rizzardo says there is no clear divide between the two types of material, but a blend is generally a mix of two or more polymers with useful properties, while an alloy is a more highly engineered mix of polymers, which uses a compatibilising agent to join two normally immiscible polymers.

Polymers vary widely in their properties and tend to be highly incompatible when mixed, segregating into lumps unless a compatibilising agent is used. Dr Rizzardo says molecules of a single polymer have a natural affinity for each other, and will cling to each other in preference to linking up with molecules of a second polymer.

A compatibilising agent is, in essence, a molecule with a head that binds to one polymer, and a tail that binds to the other, to produce a firmly integrated dispersion between the otherwise incompatible partners.

Such agents are normally a deep trade secret; companies will sell polymer blends with the agent already mixed in, rather than risk somebody analysing it in pure form. Developing new compatibilising agents is more trial and error than educated chemistry, and the centre will be trying to change general principles that could lead to a more rational approach to the design of new compatibilising agents.

"One aim in generating new polymer blends is to upgrade the properties of conventional polymers like polycarbonate (PC) or polypropylene, so that they can be used in new applications," Dr Rizzardo said.

"Another is to make very expensive, high-performance polymers cheaper by adding low-cost polymers as extenders. Some high-performance polymers have properties that exceed requirements: they don't need to be so strong or so tough in certain applications."

Developing new polymer blends or alloys from existing polymers is usually much cheaper than developing a new, pure polymer - a homopolymer - for specialised applications. Dr Rizzardo said. A company might need to invest tens of millions of dollars in new plant to produce a new polymer, whereas it can use existing plant to produce a blend with the required properties.

The explosion in interest in polymer blends is only a decade old, and progress has been slow because mixing polymers has proven far more difficult than expected. Dr Rizzardo says the CRC is relying on the expertise of its commercial partners, ICI and Chemplex, to identify market trends or opportunities that can be pursued by research programs.

ICL has already identified opportunities in the market for polyolefins like polyethylene and polypropylene. One idea is to recycle the polypropylene bumper bars on many modern vehicles. The material used in the bumper bars is already a blend of polypropylene mixed with about 5 per cent of a rubber toughening agent, which imparts flexibility to the normally brittle plastic.

"One of the key issues is that if you recycle used bumper bars, you lose some of the properties of the original material so that it no longer meets the specifications for re-use in bumper bars," Dr Rizzardo said. "It would be very desirable to re-use the material, and the motor industry is now looking at employing it in less critical components inside and outside the vehicle."

"However, an alternative might be to generate a new blend with the right properties for a bumper bar, which doesn't degrade when it is recycled. This is an important concept, looking at the whole life-cycle of polymers."

"It is attracting a lot of attention in the Plastics Industry Association, both from an economic and environmental viewpoint. Recyclable plastics are becoming increasingly important, but after the fiasco with bio- and photo-degradable plastic bags, nobody wants to go down that path without knowing precisely what they're doing."

Another application for polymer blends in motor vehicles is for internal components like the dashboard and fascia. These components are formed from a mix of three polymers called ABA (acrylonitrile, butadiene and styrene), which has less than ideal resistance to distortion at high temperature.

Dr Rizzardo says the solution may be to blend ABS with a fourth polymer with very high heat-distortion resistance. Australian car manufacturers are also exploring the use of an ABS-polycarbonate for hub caps. The material has very high impact and abrasion resistance, and good resistance to distortion.

Some cars have their polymer bumpers painted with polymer paints, which is difficult to remove when the bumper is recycled. One solution may be to develop a new polymer paint that would blend in with the recycled material of the bumper, without compromising its properties.

Dr Rizzardo says more and more plastics today are being designed for recycling. In fact, the desire to do so is still running ahead of the community's ability to establish viable recirculation programs; there are still problems with segregating and collecting recyclable plastics.

Polymer blends could be used to improve the performance of quite mundane materials. Margarine containers can be made from polyethylene, which is easily formed into tubes. But polyethylene is very brittle, and tends to soften by absorption of fats from the margarine. Using a rubbery polyolefin, such as polyethylene or polypropylene, could prevent cracking and also prevent softening.

Similarly, the polymer insulation around electrical cables sometimes comprises a PVC layer around the copper core, with an outer nylon coating for abrasion resistance. Zits often chew through the insulation, and although PVC and nylon are not fusible individually, they form an explosive combination when used in close proximity. Dr Rizzardo says new polymer blends could solve both problems.
Transporting the future

Melbourne's much-maligned public transport system actually does quite a good job of moving commuters in straight lines between the city and suburbs. But getting around away from these tracks is a different story, and funding is not being spent where it is most needed.

The demise of the horse as Melbourne's main mode of transport was hailed at the time as an environmental breakthrough. The several thousand horses plying Melbourne's streets in the 1880s each produced an average of 16 kilograms of solid waste and 8.5 kilograms of liquid waste per day. By 1890 Melbourne already had in place the greater part of what is today one of the most extensive train and tram networks of any city in the world; not as a result of enlightened planning for the commuters of the new century, but to provide a profit to land speculators on the urban fringe.

Professor Ken Ogden, professorial fellow in the Department of Civil Engineering, says it was this rail and tram network that set the city's growth and land-use patterns fully 60 years before the motor car began to cause serious traffic congestion.

"It is a myth that the motor car produced the urban sprawl," Professor Ogden said. "The rail network did that. We had a strongly radial transport system with a highly centralised city. The two were, and still are, compatible and mutually reinforcing.

"One feature of such an extensive public transport system was that it went out a very long way. This meant that there were very large wedges of open space between the radiating rail lines."

At the rise of the motor car in the 1950s, manufacturing industry's need for increasingly large sites, and the evolution in the outer suburbs of suburban retailing, office development, and education and research facilities, it was inevitable that the wedges of open land would be filled in by development.

Professor Ogden makes these observations in a Civil Engineering working paper titled 'Has public transport a future?', which he presented earlier this year to a forum on the future of public transport, organised by the Conservation Council of Victoria.

His paper makes it clear just how much the past has influenced, even dictated, the present and the future of Melbourne's public transport system, and the city's design and patterns of economic activity.

Despite the increasing criticism levelled at the public transport system, he says, "We are all too fond of criticising our public transport system in this town, but we really must acknowledge its strengths, and certainly the vast extent of the tram and rail network is one of them."

Public transport dominates the central city commuter market, powering over half the daily commuter trips into the central business district; by world standards, a very high percentage for a low-density city. Public transport is built around radial travel into the central city, particularly for work trips. Because it is so successful, it is obviously competitive and will continue to be so while Melbourne has a large central-city workforce.

But Professor Ogden says planners need to consider what public transport can do for non-centrally oriented travel, dominated by private motor vehicles making random point-to-point trips. It is this pattern of travel that produces Melbourne's increasing road congestion.

Melbourne's extensive train network was not a result of enlightened planning for commuters; rather, it provided profit for land speculators on the urban fringe in the late 19th century.

The key to improving Melbourne's public transport system, he believes, is to encourage it to develop market-responsive entrepreneurial activity. The financial climate surrounding public transport works against this aim.

Public transport expenditure, via both capital investment and operating subsidy, absorbs a significant proportion of the State budget. Most of the benefit of the subsidy goes to upper and middle income groups, which raises equity issues. The practice of directing the subsidy at the operator, rather than the traveller (particularly the low-income traveller) only perpetuates the status quo.

Another significant aspect of public transport is that while the radial, city-centred network was designed to serve the inner-city worker, work trips account for only 30 per cent of all travel. The city centre accounts for only 12 per cent of Melbourne's jobs, and only 50 per cent of inner-city workers commute by public transport.

Multiplying these figures together, it turns out that the radically designed public transport network today caters for a mere 2 per cent of all the trips undertaken by Melburnians each day.

Professor Ogden says the number of people using public transport is much higher than this statistic might suggest, because the network also carries large numbers of people who are not going to work, and whose destination is not the city. Buses cater for the much larger market for cross-suburban travel (trains and trams provide some, where the routes are convenient) but overall, public transport provides only 11 per cent of all suburban trips.

While demand for cross-suburban public transport is much greater than for city-centred public transport, there is a very large imbalance in the allocation of the public transport budget. The buses that provide most of the trips account for only 22 per cent of the public transport budget; the other 78 per cent goes on trains and trams.

The answer depends on what sort of trips are likely to be made in future, and what proportion of those trips could be provided by public transport. In the short term, the abundance of inner-city office space is likely to generate more trips to the city.

He points out that Melbourne's inner-city workforce has remained almost static for several decades; the growth in office space has merely provided more livable space for the same number of workers.

Melbourne's real job growth is likely to occur in non-central locations, and are likely to be concentrated in recreation, tourism, construction, wholesale and retail, personal and community services, education, research and development, and home-based work. More importantly - from the viewpoint of public transport - the growth in jobs is likely to involve significant growth in part-time work, shared work, shorter working hours, itinerant work and home-based services.

This is likely to lead to a reduction in average work-trip length, an increase in local area travel, a smoothing of the 'peaks' in travel, and an increase in the number and proportion of non-work trips. Overall, this will result in more complex travel patterns, with people combining several destinations and trip purposes in one journey, and a reduced emphasis on long-distance commuter trips to the central city.

Such trends do not augur well for existing public transport technologies, because more and more trips will be short and randomly oriented, rather than focused in particular corridors. Melbourne needs to prepare itself for higher levels of walking and bicycle use, Professor Ogden says.

Professor Ken Ogden: "We are all too fond of criticising our public transport system in this town, but we really must acknowledge its strengths ..."
Dense networks emerge

From Research Monash 3

Paradoxically, these emerging trends in Australia are happening in the port's traditional city-centred role. A strong metropolitan centre requires strong, economically vigorous suburban development: without it, there is little role for a central city, and Melbourne's centre is not strong. The nature of the future? Professor Ogden points to a historic trend for suburbanisation. The suburbs have grown around the nodes or ports, and industry tended to grow around the nodes or along the links.

Diabetes linked to thrifty gene

From Research Monash 2

A plausible theory about NIDDM is that it results from a 'thrifty gene'. Indigenous peoples in many parts of the world have developed NIDDM after changing from a traditional, low-calorie, low-carbohydrate diet to a calorie-rich diet of rats and rice. Ms Delaney says the Israeli rats may also be exhibiting this response when they switch from their salty, low-calorie natural diet to a calorie-rich diet of rats and rice. Because rats are much shorter lived than humans and their life processes are accelerated, it may be possible to track the biochemical and physiological events that lead to NIDDM.

"My primary interest in rats is whether insulin deficiency, whether it is relative or absolute, plays an important role in nerve dysfunction," Ms Delaney said. "In other words, is it high blood glucose that causes nerve damage, or is it insulin deficiency or to a lack of insulin, or the body's inability to respond to it?"

"It would be worthwhile just to be able to answer this question. Even though these animals have been studied since the 1960s, there has been very little study of the complications.

Camera captures all the high-speed action

The high-speed video camera work station is portable and can display action recorded by two cameras at different angles.

The key factors in their growth will not be access to traditional things like ports or cheap land, but to major airports, strong internal road networks (for the movement of goods), and high-capacity, high-speed inter-regional surface transport links.

"But the most important single variable will be the city's ability to attract and hold creative, skilled people. That means ready access to quality education, a rich cultural ambience and the availability of outdoor recreation."

In short, Professor Ogden says, the nature and form of interactions within our cities will be increasingly dependent on 'dense' networks, and notably communication and road networks.

Today's 'sparse' networks will not be redundant, because people will still require intra-urban rail and tram services, but the emergent wealth-creating activities will increasingly be focused on electronic and road networks.

Predicting new polymer blends

From Research Monash 2

The new centre will also be studying new blends, synthesised to improve their processing properties by bringing down their melting points or improving their chemical properties. Part has special expertise in polymer processing and rheology (the science of fluid flow), while Monash's new Materials Research Laboratories have complementary expertise in the physical and mechanical properties of materials, including tensile strength, abrasion resistance and toughness.

"We may be able to contribute its supercomputer software and its expertise in computer modelling. The new CRC will try to develop computer models of polymer behaviour, which may allow researchers to design compatibilisers, based on a knowledge of the contribution of individual polymers to the mix."

"We would like to be able to predict what happens when we mix A and B, but we can never really be sure what will happen because it depends not only on the basic physical properties of the polymers, but on the conditions under which they are processed," Dr Rizzato said.

"There are so many permutations that it is a huge challenge, and progress worldwide has been very slow. We want the CRC to be at the forefront. Having a body like the Science and Technology Industry Association as an affiliate means that we have access to the expertise and resources of their membership."

"Further down the track, we expect to commercialise the intellectual property the centre will produce to attract Japanese members. At the end of our seven-year funding period as a CRC, we want to be in a position to fund our continuing research ourselves."

The new centre will also be study- ing new blends, synthesised to improve their processing properties by bringing down their melting points or improving their chemical properties.
Mammals that evolved in other parts of the world have flourished in Australia in the absence of their natural predators and diseases, displacing or destroying indigenous species and endangering native plants.

Rabbits and pigs have destroyed huge tracts of vegetation, feral can and foxes have decimated small mammal and bird species, and large populations of brushtails, donkeys, goats and camels are roaming the semi-arid rangelands, causing severe damage to sensitive ecosystems. Rats and mice are often in plague proportions, threatening native birds and reptiles on offshore islands, and causing tens of millions of dollars in losses to grain farmers.

Professor Roger Short and Chinese-born postdoctoral researcher Dr Yuan Gao, both of the Department of Physiology, are proposing a radical new approach to controlling feral mammals in Australia, which would limit or even remove pest species by blocking their reproduction. They believe that new anti-fertility compounds originally developed for human population control -- such as methyl testosterone, the new gestagen Org 5935, and antigestagens like the abortifacient drug, mifepris-tone (RU486) -- could rapidly bring feral animals under control, and could actually eliminate them from islands.

Their idea was inspired by the spectacularly successful program to control the screw-worm fly, a serious pest in the cattle industry. Female screw-worm flies mate with a sterile male, there are no offspring. In Florida, the release of millions of sterile males has exterminated the fly, and it has recently been wiped out in Lord Howe Island, the island's main export.

Dr Gao obtained some wild mice from wheat farms near欧阳, in the Victorian Mallee. He put seven males and seven females in each of four open-air enclosures, with a hay bale for shelter and a liberal supply of the best laboratory rodent chow. Mice in the first cage were given paraffin baits containing a high level of methyl testosterone, the second received a medium dose, and the third a low dose, with the fourth serving as an untreated control.

After four months, there were 31 mice left of the original 14 in the control pen, but in the low and middle dose pens, there had been only two and four mice respectively. The high-dose pen had 33 additional mice, apparently because the high dose made the bait palatable and the mice refused to eat it.

Professor Short believes an ideal strategy would be to allow young females to go through puberty at the normal age of 11, conceive, and then use a drug like RU486 to induce abortion in both sexes, before the fetus is large enough to trigger the maternal bonding reflex. The normal length of pregnancy in the elephant is 22 months; the longest of any mammal.

Every alternate pregnancy was aborted, increasing the interval between births by two years, it would actually reduce the elephant population. The drug would need to be administered to each pregnant female only once every six and a half years.

Dr Gao has been experimenting with new chemosterilants compounded for rats and mice for the past four years, using a type of bait that rats and mice find irresistible -- cereal grains embedded in green-dyed paraffin wax. Rodents apparently enjoy the sensation of gouging on the soft wax, which provides a perfect medium for fat-soluble chemosterilants like steroids. The wax cakes protect the drug against leaching and weathering and, because of their colour, do not attract birds or carnivores.

Dr Gao obtained some wild mice from wheat farms near欧阳, in the Victorian Mallee. He put seven males and seven females in each of four open-air enclosures, with a hay bale for shelter and a liberal supply of the best laboratory rodent chow. Mice in the first cage were given paraffin baits containing a high level of methyl testosterone, the second received a medium dose, and the third a low dose, with the fourth serving as an untreated control.

After four months, there were 31 mice left of the original 14 in the control pen, but in the low and middle dose pens, there had been only two and four mice respectively. The high-dose pen had 33 additional mice, apparently because the high dose made the bait palatable and the mice refused to eat it.

Professor Short says, was that a very low dose of methyl testosterone effectively suppressed breeding through its impact on female infertility. He said chemosterilisation could be integrated with poisoning programs for animals such as rats and mice to prevent the emergence of resistance to commonly-used poisons.

"Fumigating is a more effective way of controlling animals than shooting or trapping, but when you put a poison down, certain animals will always survive," he said. "Mice and rats, if they survive poisoning, will display bait richer -- they will refuse to take that type of bait again. Rats and mice can also develop resistance to poisons. The idea would be to alternate poisons with chemosterilants. Since a chemosterilant steroid mimics the animal's own hormones, the animal cannot become resistant to it."

Professor Short would like to make a quick start on field experiments, pointing out that current CSIRO search projects to develop new techniques of racially targeted immunostere­lants to control foxes and rabbits are somewhat speculative, and at best will not be ready for a number of years. The CSIRO is also investigating the use of tiny worm-like nematodes to control mouse plagues.

"It's also important to note that you can't tackle rabbits without first controlling foxes, because rabbits make up a very large proportion of the diet of foxes," he said. "In the absence of rabbits, foxes would decimate native wildlife, yet CSIRO does not yet have any idea how to control the fox. CSIRO can't tackle the rabbit without first tackling the fox. We could start a fox-control program based on insecticides in early as next year."

Professor Short and Dr Gao have been conducting their research with support from a Melbourne technology company and their methyl testosterone trial on wild mice was funded by the Grain Research and Development Corporation. Although the experiments conducted so far have been successful, Professor Short's research group does not have funds to continue the work.

Meanwhile, he has received inquiries from a number of authorities interested in controlling rats on offshore islands. The Australian National Parks and Wildlife Service is very interested in the idea of using chemosterilants to eliminate rats from Lord Howe Island and Norfolk Island where egg predation has brought two native birds, the green parrot and the hoopoo owl, to the brink of extinction.

"Rats are also threatening the kea palm industry on Lord Howe Island, the island's main export," Professor Short said. "On both islands, rats are exterminating several unique species of indigenous birds."

"Cats introduced onto Ascension Island in the Atlantic have hunted the Widewake Tern almost to extinction, and in New Zealand, ferrets and cats are wiping out albatrosses, and rats are threatening the tuatara (a unique, primitive lizard-like reptile regarded as a living fossil)."

Professor Short says offshore islands would provide natural laboratories for experiments to test the new chemosterilant approach for controlling introduced feral animals.
Celebrating 25 years

Professor Enid Campbell recently celebrated her 25th year at Monash.

Now Associate Dean of the Law Faculty, she joined Monash in 1967. Professor Campbell was the first woman in Australian to be appointed to a chair of law and took a post as Dean of the Law School.

After completing her undergraduate studies in Tasmania, she obtained a PhD in the US. She now concentrates mainly on administrative and constitutional law and is interested in political and legal philosophy and history.

"Over 25 years, the law faculty at Monash has changed a great deal" she said. "Classes are much larger now. The percentage of mature age students is also increasing and the ratio of females to males is almost one to one.

Professor Campbell manages a full-time teaching load, as well as her research into aspects of the law practice and its effectiveness. She also writes for journals, has published books and served on Royal Commissions into Australian government administration, tertiary education and law schools.

Insurance law prize

Final year law student, Ms Elspeth Henster, has won the $250 Consumer Appeals Centre Insurance Law Prize for 1991.

Ms Henster's entry was judged the best of 10 submitted 5000-word essays on a topic relating to a consumer's legal rights.

Presenting the $250 prize, Sh consumer Appeals Centre director, Mr Simon Smith, said: "It's good to see law students coming to grips with the consumer's aspects of insurance law. This is an area which deserves the attention of our universities".

Agriculture medal

Mr Michael Reed, a Monash honours student, has been awarded the inaugural Nancy Mills Gold Medal from the Victorian Government and Department of Agriculture.

The medal is one of a series of prizes for excellence in agricultural science and technology, open to students in each year. Ms Juanita Ferrier (below) won the 1991 Goethe Prize for the best academic result in first year.

Top Oxford award

A Monash graduate and now lecturer in the Faculty of Law, has won the Vinerian Scholarship for top graduate in his law exams at Oxford.

Mr Andrew Palmer, who won the Menzies Scholarship in Law to Oxford, obtained First Class Honours in his Bachelor of Civil Law to win the prestigious mantle of top student, as well as the Rupert Cross Prize for top evidence student.

"I didn't believe it at first and really thought that someone had made a mistake," Mr Palmer said. He joins a select few Australian students who have won the Vinerian prize at Oxford. "Oxford is great place to study, it has an intellectual environment which makes you feel invigorated," he said.

The Menzies scholarship, which is awarded annually to law and medical students, enabled Mr Palmer, accompanied by his wife and two children, to study in England.

He graduated with a Bachelor of Law from Monash in 1989 after completing an English literature degree in New Zealand. He was awarded the Supreme Court Prize for top law student at Monash, as well as several subject prizes, before holding a position as research fellow at Melbourne University.

Polymers centre head

The Monash-based Cooperative Research Centre for Polymer Blends has appointed a director. He is Dr Ezio Rizzardo.

The Cooperative Research Centre (CRC) for Polymer Blends, the only one of its kind in Australia, will develop advanced polymers and skills encompassing the whole product life cycle.

The CRC for Polymer Blends is funded by a $8.69 million Federal Government grant over seven years and brings together leading scientists in a collaborative research project (see story in Research Monash).

"The centre brings together leading scientists and engineers in polymer technology which gives us the opportunity to make significant advances in polymer blends," said Dr Rizzardo. "We will be looking at ways to improve polymer blend properties, reduce costs, how to improve processability of plastics and ways to recycle polymeric materials."

Accounting honour

Dr Claudio Romano, recently appointed an associate professor in the School of Accounting, has been named 1992 Accountant of the Year by the industry publication New Accountant.

He has won international accolades for his groundbreaking PhD thesis - titled The Role of Formal Planning and Control Systems in the Growth of Small Business - It is regarded as a benchmark by US Examiner, Don Sexton, who went as an compulsory reading for his PhD students.

"At the recent American Marketing Association symposium on marketing and entrepreneurship, held in France, conference adjudicators described the paper as a 'trailblazer' and the editor of Journal of Business Research offered to publish the unabridged thesis in a special edition.

Dr Romano believes an accounting qualification is a solid foundation for many careers. "All entrepreneurs should have an understanding of accounting procedures and practices," he said. In fact, he says banks should recommend that borrowers attend an accounting program.

"Banks lend money out on false security. Their attitude has always been: if you have an asset to mortgage you'll get your money. Instead, banks should look at people and ask if they are capable of managing other people's money. Applying for a bank loan should not be just a matter of filling in a form. Borrowers should be made to attend a program as part of an education process."

Press cuttings

A selection of recent Monash print media coverage

<table>
<thead>
<tr>
<th>August</th>
<th>September 1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. New Scientist - Professor Roger Short, Physiology: Elephants and birth control.</td>
<td>11. Financial Review - Ms Rebecca Smale, Australian Study Centre; Academics talking up the conference cycle.</td>
</tr>
<tr>
<td>9. The Age - Associate Professor Jeffrey Northfield, Education: Teachers, the overworked and forgotten victims of the VCE.</td>
<td>12. The Australian - Professor Mark Walden, Medicine: Foods exports between a wok and hard place.</td>
</tr>
<tr>
<td>10. The Age - Professor Peter Fensham, Education: The way is open for many faiths.</td>
<td>12. The Age - Professor Peter Dixon, Centre of Policy Studies: 'Economic policy is in the right direction'.</td>
</tr>
<tr>
<td>12. Canberra Times - Professor Roger Short, Canberra Times. Eliminating feral animals by controlling fertility.</td>
<td>20. Courier Mail (Brisbane) - Professor Maurice Baldwin, Education: Children run out of control.</td>
</tr>
<tr>
<td>12. Herald-Sun - Dr Simone Duxbury (below) won the 1991 Goethe Prize for the best academic result in first year.</td>
<td>Press cuttings may be found in the Public Affairs Office, Gallery building, Clayton campus.</td>
</tr>
</tbody>
</table>
SEPTMBER

14 Greek, Roman and Egyptian Studies seminar 'Ancient Jerusalem: History, Geography and Archaeology', by Dr Gideon Beger, Tel-Aviv University. 87, Clayton. 1.05 pm.

15 Lunchtime concert 'Searching for the Ark!', by the Melba occasional choir and ensemble. Chisholm Hall, Caulfield, 1 pm.

15 Anthropology and sociology seminar 'The Australian State: Social change in the Gazelle Peninsula', by Dr Peter Keen. Room 1010, Menzies building, Clayton. 12 noon.

15-16 Continuing education seminar 'Team building: group dynamics conflict management', by Mr Robert Hockley. Contact: extn 75 2809.

16 Genetics and developmental biology. 'Development and monitoring of gram negative bacteria with useful catalytic abilities', by Dr Chris Saint. Room 602, Biology building, Clayton. 4.15 pm.

16 Comparative literature and cultural studies seminar 'Ruskin resnnes nature', by Dr Chris Worth. Room 809, Menzies building. 5.15 pm.

16 Symposium seminar by Dr Michael Deeley. Managing Director, ICI Australia. Claytonfield Room, Caulfield. 5 pm.

16-18 Staff development seminar 'Speed reading'. Inquiries: Ms Di Barker, extn 75 6049.

17 Robots and digital technology seminar 'Dynamic motion compensated video coding', by Mr Nick Jam. Room A1.60, Caulfield. 1 pm.

17 Staff development seminar 'Introducing Monash'. Gallery Theatre, Clayton. 9.15 am.

17 Continuing education seminar 'Anger: An occupational hazard for health professionals', by Dr Robert Hockley. Further details: extn 75 2809.

17 Lunchtime concert by the Peter Clinch Clarinet Quartet. The Religious Centre, Clayton. 1.10 pm.

17 Law staff seminar 'Recent developments in labour relations law in the UK and Australasia', by Dr David Lewis. Middlesex University, London. Staff library, second floor, Law building. 1.10pm.


18-22 School of Early Childhood and Primary Education workshop on conflict with 'Children working with wood', sponsored by Mitre Royal Show Grounds. 2.15 pm.

18 Software development seminar 'Hypermedia with Hypercommercants', by Mr Daniel Jitnah. Al.37, Claytonfield Room, Caulfield. 1 pm.

18 Conferenceing seminar 'New light on Masaccio's Frescoes in Florence's Brancacci Chapel', by Dr Nick Eckstein. Room 602, Biology building, Clayton. 9.15 am.

18 Lunchtime concert by Ms Ma. a capella vocal ensemble. The Religious Centre, Clayton. 1.10 pm.

20 Staff development seminar 'Managing yourself in a time of stress and overload'. Inquiries: Mr Di Barker, extn 75 6049.

20 Genetics and developmental biology. 'Second hand chloroplasts: Can protozoans become algae?', by Dr Geoff McFadden, University of Melbourne. Room 602, Biology building. 4.15 pm.

20 Staff development seminar 'Hold the phone please - telephony techniques'. Inquiries: Ms Di Barker, extn 75 6049.

20 Lunchtime concert by Ms Ma. a women's capella vocal ensemble. The Religious Centre, Clayton. 1.10 pm.

22 Accounting and finance seminar 'The provision of other services by auditors: Pricing and independence issues', by Mr Roger Simnett, University of NSW. Room 954, Menzies building, Clayton. 2.15 pm.

22 Staff development seminar 'Feeling less stressed'. Inquiries: Ms Di Barker, extn 75 6049.

22 David Sime Faculty of Business seminar 'The cross-cultural generalisability of the relationship between budget emphasis and related attitudes. A theoretical analysis', by Mr Neale O'Connor, RMIT. Claytonfield Room, Caulfield. 11 am.

22 Staff development course 'Introduction to scientific terminology', by Mr Roger Sousebeek, Training consultant. 9.30 am. Contact: Ms Di Barker, extn 75 6049.

22 'Galac performance', by Monash University Orthodoxy Society and the Greek Orthodox Archdiocese of Australia - Central Youth. 10th year anniversary. Robert Blackwood Hall, Clayton. 8 pm. Inquiries: 650 2488.

OCTOBER

2 Software development seminar 'Persistence programming: An implementation in Eiffel', by Mr Glenn Maughan. A1.37, Caulfield. 12.30 pm.

2 Accounting and finance seminar 'Performance auditing in the Australian Federal public sector: a sustainable model', by Professor Lee Barker. Room 954, Menzies building, Clayton. 2.15 pm.

2 Engineering research seminar 'Industrial design of solar cooker vehicles', by M. Wilken. Lecture Theatre B2.14, Caulfield. 1 pm.

5 Librarianship, archives and records seminar 'Peterwick's contribution to Australian libraries', by Ms Marie Callen. Room 409, Menzies building, Clayton. 2.15 pm.

5 Staff development seminar 'Work organisation and leisure: A comparative study of the work ethic', by Associate Professor Ross Mouer. Room 1010, Menzies building, Clayton. 12 noon.

5 Staff development seminar 'Professional secretaries'. Inquiries: Ms Di Barker, extn 75 6049.

7 Genetics and developmental biology. 'The shortchain alcohol dehydrogenase superfamily', by Dr Zigmint Krowski. Baker Medical Institute. Room 602, Biology building, Clayton. 9.15 am.

7 Comparative literature and cultural studies seminar 'The post-Soviet post-colonial', by Dr Marko Pavlyshyn. Room 809, Menzies building. 3.15 pm.

7-14 Staff development seminar 'Be a better public speaker'. Inquiries: Ms Di Barker, extn 75 6049.

8 Robotics and digital technology seminar 'Images/Implementations of MPEG', by Mr Gary Bell. Room A1.40, Caulfield. 1 pm.

8 Ecology and evolutionary biology seminar 'Pattern of vegetation change on the Bogong High Plains', by Mr Henrik Westrin. Lecture Theatre 88, Biology building, Clayton. 1 pm.

9 Software development seminar 'Logic programming and software engineering', by Mr Leon Sterling. A1.37, Caulfield. 12.30 pm.

9 Psychology colloquium 'Human motion perception', by Dr Simon Croupfer, University of Melbourne. Room 306, Biolog building, Clayton. 1 pm.


9 Accounting and finance seminar 'Equity raising by Australian small business: A study of access and survival', by Ms Li-Anne Woo, University of NSW. Room 954, Menzies building, Clayton. 2.15 pm.

9 Linguistics seminar 'Gender differences: Meaning and interpretation', by Ms Josue Winter. Room 5436, Menzies building, Clayton. 11 am.

9 History seminar 'New light on Masaccio's Frescoes in Florence's Brancacci Chapel', by Dr Nick Eckstein. Room 614, Menzies building, Clayton. 2.15 pm.

9 Staff development seminar 'Working with overseas students'. Inquiries: Ms Di Barker, extn 75 6049.

ARTS & MINDS

THEATRE OFF CAMPUS

THE MALTHOUSE CUBE

The newest Playbox show, The Emperor Regrets by Théreïse Radic is a highly theatrical and provocative play about honour, guilt, responsibility and the Emperor of Japan. The play centres around Hirohito who occupied the Chrysanthemum Throne for 70 years before his death in 1989. As he lies dying, raved by cancer and visited by ghosts in his morphine-induced nightmare, he tries to reconcile his history with the present.

The Emperor Regrets investigates the complicated and often treacherous relationship between Australia and Japan and the unsettled issue of sadism and cruelty in war. The play is directed by Barry Kosky and stars Anthony Wong as Hirohito. The season opens on 3 October.

For further information and bookings phone the Malthouse Box Office on 685 5111.

IN THE GALLERIES

Australian Centre for Contemporary Art


Lewis uses the structure of newspaper pages from 1:E Zero to construct space through his own marks superimposed over the newprint. His drawings are also composed as transcribed images and thought therefore described as a visual sound.

The exhibition opens 4 September and runs till 11 October. For further information call the centre on 654 6422.

Monash University Gallery

The gallery presents the minimalist-conceptual work of distinguished artist Ian Burn until 3 October. His work raises visual questions, critically analysing patterns of perception, convention and the ultimate value of painting.

Commissions: Ian Burn is not a Western Australian, as reported in last month's column. He is from Tasmania.

To kick a cultural event, visit Ms Susie Bourne on ext 75 5328.
Is voting in crisis or just misunderstood?

A USTRALIA IS one of the world's oldest liberal democracies. Elections have been an integral part of this country's political experience since the mid 1800s.

Indeed, between 1856 and 1902 Australia led the way with reforms that abolished property qualifications on franchise. The franchise instituted the process of secret ballots and extended the franchise to women. Australian elections have rarely witnessed the levels of violence and terror that characterise elections in a number of European and Asian states. The results of Federal and State elections enjoy a high rate of acceptability, indicating legitimacy.

The democratic electoral tradition is an integral part of the Australian political culture. But is the claim that there is significant popular respect for the electoral process accurate? A quick flick through newspaper commentators and leader articles written by 'senior' or 'expert' correspondents point to another developing trend. These commentators talk of a growing disillusionment with politics and politicians, with a consequential decline in popular respect for elections.

They claim to speak for a growing public disquiet with the frequency of elections in Australia. They identify the election of independent representatives first in North Sydney and then more recently in Wills as symptoms of a deep malaise in the body politic. They argue that the increasing incidence of informal voting and non-attendance are further signs of a system in crisis.

While public opinion polls may well suggest that there is widespread apprehension about the motivation of politicians (and, if Atti Stevenson's remark that electors get: the governments they deserve is any guide, politicians may well be reflecting something about the community itself), very little statistical evidence exists to prove that the electoral system is in crisis. The persistence of high voter turnout at elections and the relative stability of the pattern of informal voting, particularly in Federal elections, do not bear out the crisis hypothesis.

Critics would, of course, make a number of counter-assertions. They would say that citing participation rates is inappropriate, given that voting is compulsory. Moreover, they would point to the 1984 election result in which the informal vote for the House of Representatives (HOR) leap from a national rate of 2.1 per cent (1983) to 6 per cent, as evidence of something amiss within the system.

In some states the variation was even higher. In Victoria the informal vote of 8.15 per cent was up voting and non-attendance are further signs of a violence and terror that characterise elections in a number of European and Asian states. The results of Federal and State elections enjoy a high rate of acceptability, indicating legitimacy.

The democratic electoral tradition is an integral part of the Australian political culture. But is the claim that there is significant popular respect for the electoral process accurate? A quick flick through newspaper commentators and leader articles written by 'senior' or 'expert' correspondents point to another developing trend. These commentators talk of a growing disillusionment with politics and politicians, with a consequential decline in popular respect for elections.

They claim to speak for a growing public disquiet with the frequency of elections in Australia. They identify the election of independent representatives first in North Sydney and then more recently in Wills as symptoms of a deep malaise in the body politic. They argue that the increasing incidence of informal voting and non-attendance are further signs of a system in crisis.

While public opinion polls may well suggest that there is widespread apprehension about the motivation of politicians (and, if Atti Stevenson's remark that electors get: the governments they deserve is any guide, politicians may well be reflecting something about the community itself), very little statistical evidence exists to prove that the electoral system is in crisis. The persistence of high voter turnout at elections and the relative stability of the pattern of informal voting, particularly in Federal elections, do not bear out the crisis hypothesis.

Critics would, of course, make a number of counter-assertions. They would say that citing participation rates is inappropriate, given that voting is compulsory. Moreover, they would point to the 1984 election result in which the informal vote for the House of Representatives (HOR) leap from a national rate of 2.1 per cent (1983) to 6 per cent, as evidence of something amiss within the system.

In some states the variation was even higher. In Victoria the informal vote of 8.15 per cent was up