A breakthrough in drug dependence, providing valuable information on the interaction between opiates and the control of movement from the brain, has been made by Paul Brent, Professional Officer at the University of Newcastle's Faculty of Medicine.

Mr Brent's studies outlined in his doctoral thesis entitled 'Neurochemical and Behavioural Effects of Morphine and Morphine Withdrawal in Guinea Pigs', forms part of a continuing investigation into the physiology and pharmacology of the action of opiates such as morphine, on the central nervous system.

The work was carried out under the supervision of Dr Loris Chahl, Senior Lecturer in Clinical Pharmacology, Newcastle, who has published extensively in the opiate and pain fields. The thesis work has led to four publications with one other under revision and four more in the preparation stage. Results of this research have been presented by Mr Brent at eight national conferences as well as two international meetings.

Mr Brent said the work has highlighted the importance of neurotransmitter interactions in regions of the brain which control emotion, motivation and movement control.

Neurotransmitters, or chemicals which are released from nerve endings, are responsible for making humans move faster and slower.

Mr Brent's study identified the interaction between morphine and the neurotransmitter, dopamine, in guinea pigs.

'What I have identified is the part of the brain where morphine acts and where withdrawal occurs,' he said.

'This will be useful in future for studies on the treatment of movement-oriented diseases such as Parkinson's disease, and psychiatric and schizophrenic disorders.'

Mr Brent said future studies may eventually lead to an explanation of the phenomena of craving for drugs and to an understanding of the mechanism underlying the powerful pain-relieving action of opiates such as morphine.

The University will play a leading role in the establishment of a Key Centre in Strategic Management Through Quality.

The Key Centre, which will be composed of the Department of Statistics at the University of Newcastle, the Queensland University of Technology, Bond University, the Queensland TAFE system, Queensland Quality Centre and the Queensland Government, will be located at the QUT in Brisbane.

The Federal Government has decided to fund 10 more Key Centres, bringing to 25 the number established since May, 1988. The Key Centre in Strategic Management Through Quality is the second national Key Centre to come to the University. The first was the Centre for Industrial Control Science, which is located within the Department of Electrical Engineering and Computer Science.

The Federal Government has allocated $176,000 to the Key Centre and this annual grant will be supported for the next six years, subject to a performance review after three years.

The Queensland Government has agreed to contributing $300,000 to enable a Chair in Quality to be established.

The Key Centre will initially focus on two major research areas: quality and human resource management. Chairs will be established in each area to develop research and teaching programs.
Recognition

Mining Machine Bears Professor's Name

In recognition of his achievement in inventing a radical flotation machine for processing minerals, Newcastle University Professor, Graeme Jameson, has had the machine named after him.

The Jameson Cell was developed by Professor Jameson in his laboratory in the Department of Chemical Engineering, with assistance from PhD and Master's students.

In an agreement, TUNRA has given MIM Holdings Limited exclusive rights to market the Jameson Cell world-wide.

At the launching of the new technology in the Faculty of Engineering in July MIM Holdings Limited's Manager, Marketing of Technology, Mr Bob Greenelsh, described the Jameson Cell as ‘very interesting and exciting, and a winner’.

Mr Greenelsh revealed that MIM was installing units in its lead concentrator at Mount Isa, its export steaming coal mine at Newlands and the new mine at Hilton near Mount Isa and carrying out tests on similar installations at other mines in Australia.

A pilot unit was installed at a copper concentrator in Arizona in August. Tests will be carried out soon in South America.

‘Our people in the United Kingdom are at present lining up the European market,’ Mr Greenelsh said.

The Jameson Cell will also be shown to 120 technical experts during a metals industry conference in Adelaide and Broken Hill.

MIM Holdings’ Executive General Manager – Metals Processing, Mr Tony White, predicted that the Jameson Cell would make a significant impact on mineral processing world-wide.

‘It improves the efficiency of mineral recoveries and cuts costs sharply, and this is what the mining and mineral processing industry needs today,’ he said.

Professor Jameson said the machine separated lead, zinc, coal and other minerals from rock, clay and other impurities by a process using air and water.

‘The feed material is thoroughly mixed with air and water and the machine creates bubbles onto which the minerals are collected, and the impurities, or tails, are washed away,’ he said.

The technology is simple and robust and has the distinct advantages of a reduced capital outlay and lower operating costs.

The machine is a quarter of the height of a conventional flotation column and takes two minutes to separate solids from impurities, compared with 16 to 30 minutes in a conventional column.

Professor Jameson said his device was vindication of the University system of research. He had been given time to explore, learn and work with colleagues.

The Vice-Chancellor, Professor Keith Morgan, said the University was extremely proud of the development of the Jameson Cell, which started out as fundamental research and had been successfully developed for use in industry.

Research will continue at the University into other possible applications for the cell, such as extracting oil from waste water.

Professor Jameson said the licensing agreement with MIM would allow him to act as a consultant to the company and would transfer funds to the Faculty of Engineering for a lecturer to be appointed for three years.

Continued from Page 1

The Department of Statistics' contribution will encompass expertise from several of the Department's and NewStat's specialities: quality management, statistical quality control, quality assurance in health and medicine and statistical aspects of quality improvement in heavy industry.

Dr Dennis Sinclair, Senior Lecturer in Statistics, will play the main role in the University’s involvement in the Key Centre, and Associate Professor Bob Gibberd will make input into the health and medicine area.

Dr Sinclair said he believed there was a growing realisation in Australian industry and Government that by improving the quality of products and services productivity would increase and Australia’s long-term competitiveness would be enhanced.

He said that statisticians fully understood the techniques necessary to assist decision-making and achieve quality. However, the big question was how to provide for the techniques to be implemented by management.

Dr Dennis Sinclair

'The Key Centre will be concerned with the improvement of Australia's management in order to develop Australia's capacity to compete in the world economy.' Dr Sinclair said that the Key Centre would employ a research assistant to work with him at the University and he would make regular visits to GUT to plan initiatives in his areas of interest.
Innovation

Computer Concept Reaps Rewards

A new concept using computers to solve problems such as plagiarism, and the age of written work, developed by Newcastle University Professor, John Burrows, has led to the establishment of the Centre for Literary and Linguistic Computing at the University.

The Centre has been established after 10 years of research by Professor Burrows and his colleagues, which has resulted in new and valuable methods of computer-assisted textual analysis.

The Centre, headed by Professor Burrows, has been established with the help of the Australian Research Grants Committee.

The computer-assisted textual analysis makes it possible to discover differences between the writings of different historical periods, between male and female writers, between the early and late work of a writer, and between the authentic work of given writers and those texts where someone else has revised, or has tried to imitate their work.

Professor Burrows has given invited lectures in various other universities, including Oxford, Cambridge, Edinburgh, and Yale, numerous major conferences. Since 1983, he has published a book and many articles on textual analysis. The book, whose subject is Jane Austen's novels, was published by the Clarendon Press, Oxford, in 1987 and has had highly favourable reviews. One eminent English reviewer described it as 'the most accomplished "close reading" to date of Jane Austen's dialogue, and the most stylish book written on Austen since ... 1939.' Another described it as a 'model of how to use statistics and of how to write about the conclusions with an elegance and penetration to rival those of its subject.'

Other contributors to the work of the Centre are Professor David Frost, Dr Hugh Craig, Dr Wayne McKenna, Mrs Alexis Antonia and Mrs Nicole Cox.

Architecture student is award winner

Mr Chye Tan, an Architecture IV student, is the winner of the $1,500 James Peddle Award.

The award was made by leading architects, planners and designers, Peddle Thorp and Walker, for the best project in a competition for the design of a major commercial office building on a prominent site in George Street, Sydney.

The James Peddle Award was initiated by Peddle Thorp and Walker for each of the four Faculties of Architecture at New South Wales universities as part of the firm's centenary celebrations.

The Faculty of Architecture at the University of Newcastle included the competition in the syllabus for Architecture IV to provide students with practical experience in major building design.

Announcing the awards at a special function in the Faculty of Architecture, Mr Tony Rossi, a Director of Peddle Thorp and Walker. Praised the high standards shown by Mr Chye Tan in winning the James Peddle Award. He said the winning entry provided a comprehensive design solution for the George Street site that demonstrated a strong understanding of the practical requirements involved in building design and documentation.
Institute brings ‘diversity and new skills’

Dr Les Eastcott, Deputy Principal of the Hunter Institute of Higher Education, talks about the implications of amalgamation and the future path of the amalgamated university. In the time of the interview, Dr Eastcott was Acting Principal, in Dr Doug Huxley’s absence.

Question: What will be the benefits to the amalgamated Newcastle University when it includes the activities and courses from the Hunter Institute of Higher Education?

Dr Eastcott: Well, I would prefer to answer that by rephrasing the question to say: How will the Hunter Region benefit from the amalgamation of the two parties? The Hunter community will get a greater diversity of courses. What we will bring to amalgamation is methodologies in the design and development of courses, in consultation with representatives from the community, industry, business and professional bodies. We’re very proud of our applied research structure which enables us to design courses which are wanted and needed by the wider community.

Once new courses are offered and students are enrolled, we commence a program of review to ensure that we are constantly meeting the needs of the students. We have external review committees made up of academics and representatives of appropriate industry and professional bodies who examine the course and its appropriateness. We’re constantly refining our courses.

We believe this method of design and review will be valuable to the community and students of the amalgamated University.

‘Business Course approach new to Australia’

Question: Can you give an example of a course which has been designed and offered using this methodology?

Dr Eastcott: The Bachelor of Business course is one which has attracted students of high calibre. Our Bachelor of Business course emphasises management and takes a problem-solving approach, in particular focussing on business problems. It was developed in response to a demand in the community for a different degree to that which is being offered in other institutions.

In fact our problem-solving approach in the Bachelor of Business course is new in Australia and is being used as a model. We have had many requests for information on the course from universities and colleges.

Question: How will this course affect the Bachelor of Commerce presently offered by the University of Newcastle?

Dr Eastcott: It doesn’t detract from the Bachelor of Commerce degree and addresses a different market. I understand that the Bachelor of Commerce degree has an annual intake of around 700. We had an initial intake of 50 in the Bachelor of Business at a very high HSC cut off without going through the UCAC (Universities and Colleges Admissions Centre) system. There seems therefore to be a strong demand for this kind of degree.

Question: Do you believe the courses presently offered by you will be retained by the amalgamated University?

Dr Eastcott: Institute will bring lustre to the amalgamated University.

Dr Eastcott: I believe the bulk of courses already offered will be retained. However, the greatest worry of my academic staff is that the diversification of programs offered to the Hunter community, will be reduced as a consequence of amalgamation.

Mavis Stone, first year Visual Arts student at the HIHE, loads pottery into a kiln.
'University Will Have Nine Schools'

*Question*: Do you know what kind of academic structure the amalgamated University will have?

*Dr Eastcott*: We believe that, in the short term, our four schools will be added to the five schools of the University.

*Question*: What are your four schools?

*Dr Eastcott*: Health, Administration and Technology, Education and Visual and Performing Arts. The Schools are relatively new in their present form have established fine reputations. As an example our Visual and Performing School has in fact, received major recognition as one of the premier schools of its kind in the country. Many of the the tutors and lecturers in that school are renowned as leaders in their artistic fields, and we believe this, along with the activities of the Conservatorium, will bring a particular lustre to the amalgamated University.

*Question*: Apart from courses, what initiatives will you bring to the amalgamated University?

*Dr Eastcott*: We have a demonstrated strength in fundraising. In 1990 we will generate $1.75 million and in 1991 $3.2 million from full-fee paying students. We believe our ability to generate extra funds will be a major benefit to us all as an amalgamated University.

The School of Health, which includes nursing studies and occupational therapy, will complement the School of Medicine. It is planned that Newcastle will become the second major health school in New South Wales, after the Cumberland College of Health Sciences which has been amalgamated with the University of Sydney.

On the student level, we have established an Aboriginal Centre, the Wollatuka Centre, which is supported by a strong infrastructure to facilitate entry and success of Aboriginal students. Our Special Education Centre has an international reputation.

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TUNRA offers industry research and consulting services, drawing on expertise available from the following faculties (and departments) of the University of Newcastle:

- Architecture
- Arts (Classics, Drama, English, Geography, History, Linguistics, Modern Languages, Philosophy and Sociology)
- Economics and Commerce (Commerce, Economics, Law and Management)
- Education
- Engineering (Chemical/Materials, Civil/Surveying, Electrical/Computer and Mechanical)
- Mathematics (Mathematics, Statistics and Computing Science)
- Medicine
- Science (Biological Sciences, Chemistry, Geology, Physics and Psychology)
Community Health

Industry Donation for Maternal Health

Chemplex Australia has donated $17,000 to the University of Newcastle’s Medical Faculty’s Maternal Health Research program.

The program has already won world recognition for its work.

Chemplex recently took over Australian Fluorine Chemicals, a former joint venture between Monsanto Australia and CRA, which operates a plant on Kooragang Island.

General Manager, Mr Don Roberts, said that the company was currently involved in its own research and development and recognised the need for financial input to community-based research programs.

Chemplex is investigating the possibility of producing aluminium fluoride at Newcastle, a compound presently imported by the aluminium industry.

Mr Roberts said the company had been informed of the outstanding research being undertaken by the University and the Lord Mayor’s and Lady Mayoress’ Committee which helped raise community awareness of the funds needed for the research had been canvassing industry interest.

I understand that the research team has already won world recognition for its work in identification of likely causes of mood changes in pregnant and new mothers,’ he said.

While there is Government funding for this work we realised that its likelihood of continued success depended on the team’s ability to employ the technical expertise needed to work with the companies.

The team spokesperson, Professor Roger Smith, said the research was aimed at predicting when a new mother might suffer mood changes.

The team had already generated information which was a first in the world in establishing a connection between mood changes and the hormonal ‘beta endorphin’.

Professor Smith said almost half new mothers suffered some change in mood with a much smaller percentage suffering postnatal depression.

‘We have developed an approach to identify low and high risk cases and are trying to develop a system of predicting likely cases of mood changes so that they can be treated in advance,’ Professor Smith said.

‘A number of social issues also influence the research including the shorter hospital stay of today’s new mothers.

‘Many women go home two or three days after delivery and if there are no medical problems need not see a doctor for some time. During this period it is possible for a severe mood change to occur and its very effect can prevent a woman seeking medical aid.’

Mr Roberts said Chemplex was very pleased to be associated with the research which would help employ trained nurses who would have the regular contact with the women taking information and blood samples.

Grant for University Health Initiative

A $450,000 grant has led to the establishment of the Health Services Development Group in the Hunter Region, a combined initiative of the University of Newcastle and the Hunter Area Health Service.

The grant, made jointly by the New South Wales Department of Community Services and Health and the New South Wales Department of Health, will enable the group to develop national approaches towards funding, planning and quality of delivery of hospital services.

The Director of the Health Services Development Group, Professor Bob Gibberd, said funding for health and hospitals, in particular, was now subject to cost containment and there are more government requirements ensuring that funding is allocated equitably and that quality is improved.

The group will make use of the hospital data bases maintained by the Hunter Health Statistics Unit to produce statistical indices that will provide tools for funding and quality assurance.

The funding is to encourage better management of resources by improving the level of analytical and interpretative skills, leading to the use of data-based decision-making in hospitals,’ Professor Gibberd said.

‘The research will focus on the “products” of hospitals, referred to as DRGs, which can be developed for hospital cost accounting, quality improvements and planning.

‘The development of these tools will be piloted in Hunter hospitals.’
Professor Alan Roberts has been awarded the AGM Michell Award in recognition of his outstanding service to the profession of Mechanical Engineering.

The award, made annually by the College of Mechanical Engineers (a division of the Australian Institution of Engineers), perpetuates the memory of an Australian, Anthony George Maldon Michell, an outstanding mechanical engineer, responsible for a number of studies in the field of lubrication, for a design of a crankless engine and, in particular, for the invention and development of the tilting-pad thrust bearing. He was one of only two Australians to have received the James Watt International Medal, awarded by the Institution of Mechanical Engineers to a person who has achieved international recognition and worldwide eminence in Mechanical Engineering.

Professor Roberts' contributions to Engineering (especially Mechanical Engineering) have been many and varied. He has helped establish Australia as an acknowledged leader in many areas of bulk solids handling technology.

Professor Roberts' achievements include: describing and modelling the mechanics of grain augers; modelling the flow of bulk solids in feeders and transfer chutes; the economic and dynamic analyses of belt conveyors; and the mechanics of adhesion of bulk solids, especially in relation to conveyor belt cleaning.

The College of Mechanical Engineers paid tribute to Professor Roberts' contributions to the profession and industry. He is Founder and Director of TUNRA Bulk Solids Handling Research Associates, which carries out research and development for industry in Bulk Solids Handling. He has travelled widely throughout Australia and the world contributing to conferences, short courses and industry seminars.

Professor Roberts' academic career began 30 years ago at the University of New South Wales Division at Wollongong in 1958. In 1974 he became Professor of Industrial Engineering at the University of Newcastle and has since held the position of Head, Department of Mechanical Engineering; Dean, Faculty of Engineering; and Director, School of Engineering and Architecture. He has also held short-term academic positions at Cornell University, the University of Washington (Seattle), and the University of Twente (The Netherlands).

TUNRA Ltd was incorporated in 1969 as a Company Limited by Guarantee by the Council of the University of Newcastle, to offer a broadly-based research and specialist education service to industry, commerce and the community.

TUNRA's Board of Directors are all current or former members of the University Council or academic staff.

TUNRA is financially self-supporting and does not receive Government grants of subsidies.
Convict Ruins — A Chance Discovery

The earliest ruins of a convict workplace surviving in Australia were discovered purely by chance when John Turner, took his dog, Muff, for a walk in Newcastle East three years ago.

John and Muff together discovered a section of a brick wall, which formed part of the Newcastle convict barracks built in 1822. The barracks were constructed to house convicts working at the Newcastle stockade (on the same site as the barracks), which comprised blacksmiths shops, storage areas and a lumber yard.

Dr Turner, an eminent historian and expert on convict Newcastle, contacted the New South Wales Heritage Council, whose experts claimed the site to be the oldest of its kind in Australia.

The site, directly east of the Customs House, and a stone's throw from Newcastle Harbour, was at the time of its discovery, on land owned by the New South Wales State Rail Authority.

The land was scheduled to be sold in July, 1989, and the New South Wales Department of Land and Environment requested an excavation of the site prior to the sale to ascertain the significance of the find.

The excavation, led by consultant archaeologist, Dr Damaris Bairstow, and historian, Dr John Turner, led to the discovery of substantial ruins, including floors, drains, paving areas and the lower portions of walls.

Dr Bairstow said the site appears to have been constructed as early as 1816, making it the oldest formalised convict workplace in existence in Australia today.

'The excavation has given us considerable information on the kind of activities which were carried out at the Newcastle Stockade. It appears that the tools of the Newcastle settlement were made and housed at the stockade and that there was only a convict barracks or prison, but a convict hospital built on the site,' Dr Bairstow said.

Dr Turner said the site, if it can be completely excavated and preserved, will be a valuable teaching resource.

'It is a rare opportunity to be able to witness first hand, the excavation and preservation of a site of such significance, and we hope that the Newcastle Stockade discovery will be a valuable educational resource not only for students and community members of the Hunter Region, but for a much wider audience,' he said.

The excavation has been funded jointly by the Newcastle City Council and the Heritage Council, and a meeting to decide the fate of the site is scheduled to be held in the near future.

Student Accommodation Approved

Approval has been given for the construction of student residential accommodation worth $4.1 million.

The residential complex will be built near Edwards Hall and International House, and will comprise eight self-catering units, with single study bedrooms for 150 students, including special facilities for disabled students.

Two units comprising 30 single study rooms will be built as an extension to International House.

The International House extension will be the first stage of the project, and is expected to be completed by the beginning of the 1990 academic year.

Six units providing single study bedrooms for 120 students will be erected near the entrance to the Hunter Institute.

The Department of Employment, Education and Training has committed $1.8 million to the project, which will be matched by the amalgamated University. The Hunter Institute of Higher Education has set aside $500,000 prior to amalgamation.

Ms Carol Sjostedt, a member of the Joint Student Accommodation Committee, has welcomed the joint decision.

'This year has been our most difficult in seeking accommodation and if it had not been for a massive publicity campaign last December we could not have placed students from the two institutions.

'The residential complex will help alleviate the growing concern of housing students, as more students seek places in the amalgamated University,' she said.

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