

A new look at space – ANU in a 'first' for world astronomy

An ANU Research Fellow is a member of a three-man international astronomy team which recently brought a new dimension to world astronomy by making the first observations of the ultraviolet radiations of the remnant of an exploding star.

Dr Michael Dopita, Research Fellow in the Mt Stromlo and Siding Spring Observatories of ANU's Research School of Physical Sciences, says this type of observation, made from a satellite, gives astronomers a new window on space, just as the optical telescope and then the radio telescope did in the past.

'What we are going to learn from this', he says, 'is a whole lot of new physics.'

Dr Dopita has been working for nine months on ultraviolet spectrophotometry of supernova remnants with Dr Piero Benvenuti of the European Space Agency, and Dr Sandro D'Odorico, of the Astrophysical Observatory, Asiago, Italy. (An exploding star is called a 'supernova' and the shock wave resulting from its destruction is called a 'supernova remnant'.)

The team was using its first allocation of time on the European Space Agency/UK Science Research Council/NASA International Ultraviolet Explorer satellite, launched from the United States at the beginning of March, when Dr Benvenuti made the observations on 9 April.

He immediately telexed details of the observations from his control centre in Spain to Dr Dopita at ANU's Mt Stromlo Observatory.

In agreement with calculations made beforehand by Dr Dopita, the satellite picked up radiations from the shock wave travelling through space as a result of an explosion of a star.

Interstellar gas is heated by the shock of the explosion to about 250,000 degrees Centigrade and because of this very high temperature, the gas emits 97 per cent of its radiation in the far ultraviolet wavelength region.

All but three per cent of radiation readings in this wavelength range are impossible from earth because the atmosphere blocks them out, but now, with the use of a satellite, astronomers have a physical probe into the inter-stellar shock-heated gas of very high temperature.

'We hope to be able to measure all the quantities of all the important elements which tell us how our galaxy has evolved chemically', Dr Dopita says.

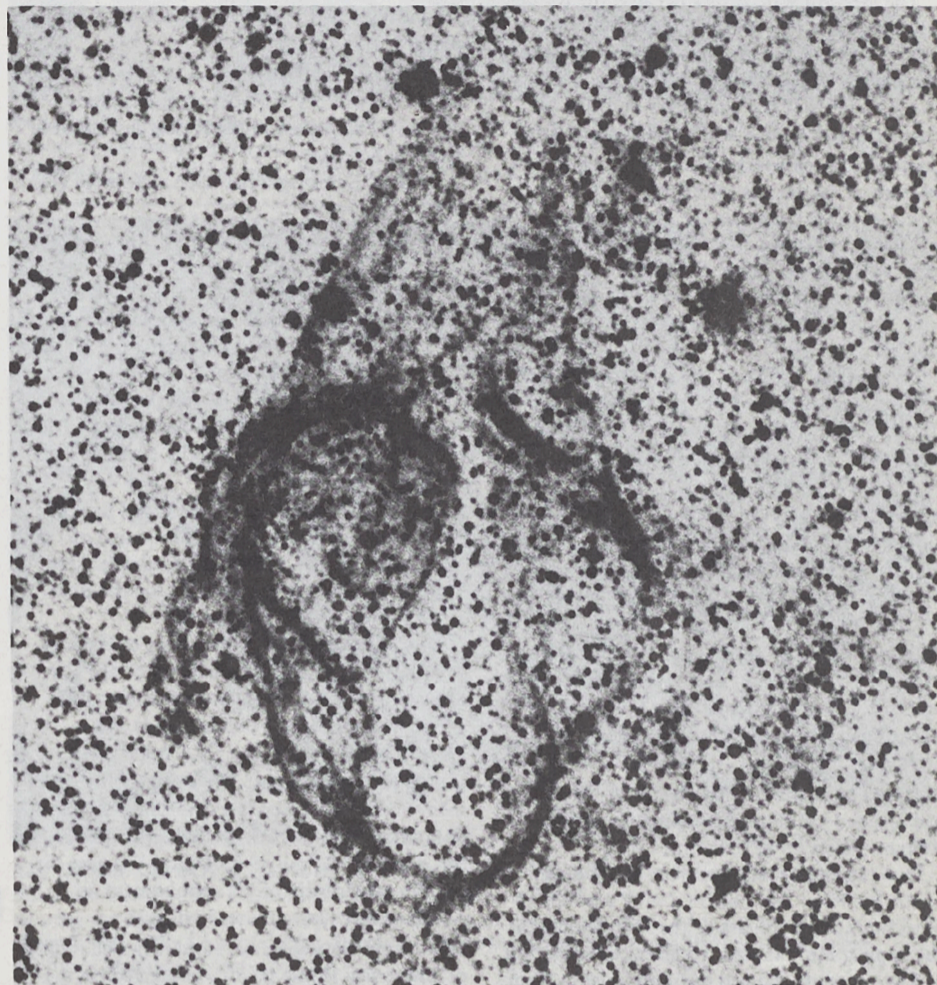
'This is important for a true understanding of how our planet might have been formed. Supernova remnants are very significant because we think that most of the elements of which the earth is composed had their origin in exploding stars.'

The shock wave observed on April 9 is emitting radiations of hydrogen, helium, carbon nitrogen, oxygen, silicon and neon.

From the several hours of observations made on that date it is also possible to calculate that the shock wave resulted from a supernova about 20,000 years ago and is still rumbling through space about 6,000 light years away – 'astronomically speaking, just about in our back yard'.

It has also been possible to calculate that the force of the explosion which destroyed the star 20,000 years ago was equivalent to about 1,000 billion billion megatons of TNT.

The 9 April radiation readings were the first involvement by ANU in satellite observations and an extension of the ANU Observatories' space program began last year when Dr Harry



Meet N86, the 'Lionel Murphy' supernova remnant in the Large Magellanic Cloud photographed on its continuing trip through space. It was the ultraviolet radiations from a shock wave such as this which were recorded for the first time on 9 April. The N86 shock fronts (the dark lines) show a remarkable resemblance to the Pickering caricature of Mr Justice Murphy of the High Court of Australia.

Hyland made observations in the far infrared wavelength from NASA's Gerard-Kuiper Airborne Observation flights out of Melbourne.

Mt Stromlo and Siding Spring Observatories plan to develop this type of observation – in

the far infrared and ultraviolet spectrums – very soon.

It is possible that a future astronomical satellite may carry an ANU-developed instrument package.

A second 'national institution of learning' for Canberra

Canberra is to get a second 'national institution of learning' – the Casey University-Australian Defence Force Academy.

Defence Minister, Mr Jim Killen, announced details of the new university in Parliament recently.

ANU's Vice-Chancellor, Professor Anthony Low, has said the establishment of a second university within the ACT is obviously a matter of significance to this University and he is considering making a public statement about the matter.

ANU Reporter today presents a slightly edited version of Mr Killen's second reading speech on 12 April:

'This Bill provides for the establishment and incorporation of an institution which will be both a university and defence force academy.

'The basic aim is to replace, with a single institution, those activities of the three service colleges at Duntroon, Point Cook, and Jervis Bay which involve study for academic degrees.

'The new institution will provide a balanced and liberal university education concurrently with a program of military education and training.

'The concept has had bipartisan support over the years. It was first envisaged under a previous Coalition Government following the report of a committee set up under Sir Leslie Martin, by the then Minister for Defence, Mr Fairhall. It was endorsed by the Labor Government in 1974, when Mr Barnard announced plans to establish a defence force academy.

'In October 1976, I announced that the present Government had decided that the institution would be established to provide a university education in a military environment for selected members of the defence force.

'I informed the House yesterday that the institution would bear the name Casey University.

'This title recalls the achievements of Baron Casey of Berwick who was as able in the highest levels of administration as he was gallant in battle.

'Casey University will aim to achieve, in its products, that same amalgam of intellectual and military qualities.

'The full title, Casey University-Australian Defence Force Academy, spells out that the new institution will be both a university and a military academy.

'In its academic function, the academy will be an independent university in its own right, so staffed and managed as to sustain the scholarship and research which are the hallmarks of a university.

'As a military academy, it will be required to sustain an environment appropriate to the induction of cadets into the discipline and values of the profession of arms, and give them

their first training before they go out to their chosen arm of the defence force for specialised training in that service.

'The Academy will have two chief executive officers of equal status, a Commandant and a Vice-Chancellor. Each will be separately responsible to the Council for his own defined sphere of responsibilities. They will be jointly responsible to the Council for other matters relating to the administration of the academy.

'The Academy Council will be responsible for maintenance of an appropriate military environment at the academy, and for military education and training conducted there to meet the requirements of the Chief of Defence Force staff.

'The Commandant will be the chief executive officer responsible to the Council for the functions and activities of the institution as a military academy. He will command the members of the defence force, both staff and students, posted to the academy and in exercising the command function he will be responsible to the Chief of Defence Force staff.

'As far as the academic functions and activities of the academy are concerned, the Council will have the same kind of authority and responsibilities as does the council of any other university.

'The Vice-Chancellor will be the chief executive officer responsible to the council for academic functions and activities.

'The Minister for Defence will be responsible for administering the Act, and funds for the operation and maintenance of the academy will be appropriated from the

defence vote. The academy will have its own budget which will encompass both academic and military activities, and will separately identify the costs of each.

'By arrangement with my colleague, the Minister for Education, I will be seeking the advice of the tertiary education commission on the level of funding appropriate to the university function and activities of the academy.

'Advice on the funding of the military functions and activities of the academy will be provided by the Department of Defence.

'Arrangements will be made to ensure that these sources of advice co-ordinate their activities so that the Minister for Defence is provided with integrated advice to accompany the presentation by the Council of its decisions and recommendations.

'In initiating this Bill to establish the defence force academy, I should record my particular gratitude to three universities which, to serve a national purpose, have made special arrangements over the years to provide university education to a significant proportion of officer cadets of all three services, and which have agreed to continue to do so until the academy opens.

'These services are indebted to the universities for these arrangements and would have been the poorer without them.

'The University of Melbourne has, since 1961, maintained a group of staff from its faculty of science at the RAAF Academy, Point Cook, to teach cadets studying for the university's science degree.

Standing Committee of Council meeting

At its meeting on Friday 14 April 1978, the Standing Committee of the Council of the Australian National University considered those items mentioned below.

Student representative on Council. Voting papers are being issued today for the election of an undergraduate student representative to the University Council.

Voting closes on Friday 9 June 1978.

The election is necessary because the former representative, Mr John Ball, ceased to be a student at the University on 14 March, making him ineligible to hold the position.

All students of the University enrolled for undergraduate studies will be entitled to vote.

Convocation representatives on Council. Nominations of candidates for election as Convocation representatives on the University Council will be invited on Friday 12 May 1978 and will close on Tuesday 6 June 1978.

Voting papers will be issued on Friday 30 June and voting will close on Tuesday 22 August.

The terms of office of the current four members of Council elected by Convocation end on 29 September 1978. The four are Ms Bettina Arndt, Mrs M.Y. Coleman, Dr M.F.C. Day and Mr R.C. Refshauge.

Appointment. Dr C.B. Osmond has been appointed to the second Chair in Environmental Biology in the Research School of Biological Sciences. He was formerly Senior Fellow in the Department.

Second Chair of Mathematics. Standing Committee approved the taking of steps to fill the second Chair of Mathematics in the Department of Mathematics, Research School of Physical Sciences.

Membership of student bodies. Four students had claimed exemption from membership of student bodies up to 4 April.

One claimed exemption from membership of the Students Association on the grounds of objection to the policies of the Association but the application was rejected after consideration.

Two students claimed exemption from membership of, and payment of fees to the Students Association on welfare grounds but these applications, too, were unsuccessful.

A student who claimed exemption from membership of the Sports Union on the grounds of inability to use the facilities for medical reasons had his request granted.

Six students who have paid the full fees due,

have said they intend to appeal against membership of one or other student bodies but none has yet done so.

Three students have offered to pay, or have already paid all fees due, except for \$2.50 which is the amount paid by the ANU Students Association to the Australian Union of Students for each member of the Students Association. One other student, who has paid all his fees, has asked that \$2.50 be withheld from the amount paid by the University to the Students Association. Each of these four students stated that they had an objection to compulsory membership of the Australian Union of students.

One student so far has not paid fees on the grounds of objection to the principle of compulsory payment of fees.

Plasma Research Department. A Plasma Research Laboratory with departmental status has been established in the Research School of Physical Sciences.

Dr S.M. Hamberger has been appointed Head of the Laboratory.

New name for department. ANU's Department of Astronomy and the Observatory Services Unit have been merged under the official title 'Mount Stromlo and Siding Spring Observatories' and will be a department of the Research School of Physical Sciences.

The head of the Observatories will have the title Director of the Mount Stromlo and Siding Spring Observatories and will be head of the department.

RSSS Review Committee. The Vice-Chancellor reported that Mrs Jean Floud, Principal of Newnham College, was no longer available to serve on the Review Committee for the Research School of Social Sciences.

Dr Clark Kerr, former President of the University of California and Chairman of the Carnegie Commission on Higher Education had agreed to serve on the committee in Mrs Floud's place.

UNESCO appointment. The Federal Government has been advised that the University will hold vacant Professor R.O. Slatyer's Chair in the Research School of Biological Sciences for the three-year term of his appointment as Australia's Ambassador to UNESCO.

Honorary Fellowship. An Honorary Fellowship of University House is to be conferred on the Governor-General, Emeritus Professor Sir Zelman Cowen.

Obituary. Standing Committee recorded Council's appreciation of the service given to the University by Dr O.R. Byrne, Senior Lecturer in the Department of Botany, SGS, who died on 11 March 1978. Dr Byrne had been a member of the University staff since January 1962.

PASTEUR: THE SCIENTIST AND THE MAN

Dr Marie-Louise Hemphill will give a public lecture, 'Louis Pasteur: the scientist and the man', in the Becker Hall of the Australian Academy of Science on Monday 1 May at 8pm.

Dr Hemphill is the daughter of Pasteur's assistant and nephew, Adrien Loir.

Loir spent the years 1888-1889 and 1890-1893 in Australia on Pasteur's behalf, working on a possible biological means of controlling rabbits.

Growing the ACT's forests on computer

A computer-based growth model for ACT pine forests being prepared by ANU's Department of Forestry for the Forests Section of the Department of the Capital Territory can be expected to become the basis for quick and accurate predictions of the growth of the forests under various silviculture and management regimes.

The leader of the project, Dr Ian Ferguson, Senior Lecturer in Forestry, says the application of particular kinds of statistical methods to forestry data, such as the team is undertaking, involves advanced and relatively new techniques. It will take into account several variables, including those affecting growth in a particular plot, like age and rainfall, and those which express differences between plots, such as inherent soil productivity and stocking.

'The forest environment', Dr Ferguson says 'is a very complex system. Only by taking

Bursar answers criticisms of use of Halls of Residence

The Bursar, Mr John Coleman, has refuted suggestions, made in Parliament recently, that the ANU was setting up 'business enterprises, masquerading as educational facilities' in making the facilities of its Halls of Residence available to visitors and conferences.

Mr Coleman said there was nothing new in the offering of facilities in this manner. This has long been the practice in both the ANU and other universities in this country and world-wide.

Taxpayers' funds provided for educational purposes are not used by the Halls of Residence or any of the University's other trading activities, Mr Coleman said. These activities are required to generate working capital from their own cash-flow. Interest at commercial rates is charged on advances to individual activities from this cash flow.

The University requires its Halls of Residence to break even, after covering operating and administrative costs and making provisions for the maintenance and repair of buildings and the repair and replacement of equipment. Deficits in any particular year must be offset by surpluses in other years.

SEMINARS ON HUMAN HAPPINESS

Every individual and organisation has its blind spots. Dr Nic Haines and Dr Geoff Caldwell have been thinking about the research into the affairs of human beings, and been trying to identify some of the blind spots or 'Seriously Neglected Topics' which the academic community has ignored, forgotten or dismissed. One of these, they feel, is human happiness.

'Considering how much money and effort is devoted to academic activity, and considering how much money and effort is devoted by individuals in the search for happiness, there is very little congruence between the two.'

One academic community, then, might

ABORIGINAL RIGHTS LUNCHEON

Mr Stewart Harris, formerly Senior Research Fellow in Anthropology, will speak on the land rights and other claims of the Australian Aborigines at the next luncheon for Convocation members of the University on Wednesday 17 May.

Mr Harris, author of *This Our Land*, which described the Aboriginal situation in 1972, has become closely identified with the political

ANU MAN TO CONDUCT STUDY OF INDONESIAN MARRIAGE PATTERNS

An ANU Research Fellow, Dr Peter McDonald, of the Department of Demography and the Development Studies Centre, has been invited to conduct a training and field study program in Indonesian marriage patterns as part of a joint venture between Gadjah Mada University, Yogyakarta, and the ANU.

Under the project, eight Indonesian scholars will receive intensive training in the topic of marriage patterns. They will conduct their field study in eight villages spread throughout Indonesia, interviewing husbands, wives and marriageable age children in 600 households in each village.

Apart from studying the normal demographic data, the project will observe the effects on marriage patterns of the interaction

into account various inter-relationships can reliable predictions be made for the most effective utilisation of our forest resources. Such an integrated approach has been developed only in the past 10 years and Australia is now well advanced in this kind of research.'

Assisting Dr Ferguson are Dr Geoff Wood, Senior Lecturer, and Dr Les Carron, Reader in the Department of Forestry. They have been given the data collected by the Forests Section for more than 40 years from over 100 permanent plots in ACT forests. Such a large volume of records, they say, is impossible to handle manually. They expect to complete the first major section of the work by the end of the year after which there may be a period of intensive field testing.

The project has been sub-divided into two

The Halls of Residence are also required to generate sufficient external income (eg., from tour parties and conference traffic) to enable tariffs charged in term to students to be stabilised at levels which students can afford.

The University considers that such external income is, essentially, derived from sources such as schools, senior citizens and academic groups which would otherwise be unable to afford to visit Canberra.

Mr Coleman said that the University considers that the use of its Halls of Residence by visitors and conference groups is a proper means of promoting the year-round utilization of these publicly funded building at optimum levels of capacity.

In its Halls of Residence and other trading activities, the University makes a valuable contribution to the economic prosperity of Canberra, he said. In these activities alone, the University provides employment for more than 200 people, with an annual wage bill exceeding \$1.5 million, and spends nearly \$2.8 million, mostly in Canberra, on food-stuffs and other goods and services.

address itself to these issues: What sorts of individuals seem to be happy? What types of conditions encourage a status of happiness? Do the stages of life have much to do with individual's happiness? How much or how little happiness can an individual expect? Is happiness a good thing? Ought academics leave the subject well alone? How much can education contribute to happiness?

Drs Haines and Caldwell intend to do something about a discussion of Happiness. They are proposing a series of informal Friday lunchtime seminars, say at the Staff Club, starting in June.

Would you like to participate, commence or lead a session? Contact Nic Haines (4038) or Geoff Caldwell (2890).

cause of the Aborigines.

The luncheon will be in the Hall of University House, ANU, from 12.30 to 2pm. Each Convocation member is welcome to bring one guest; the cost is \$4.50 per person.

Send cheque (payable to ANU) together with full name, address and telephone number to Convocation Officer, ANU. Acceptances close Monday 15 May and telephone bookings are not taken. Childminding and other enquiries ext.4144/2229.

of traditional relationships and modern forces.

The study will be completed early next year and the results will be published in book form. Dr McDonald says there is evidence to suggest that the age at marriage in Indonesia is going up. This is significant because virtually all countries which have experienced substantial fertility decline in Asia have also had quite substantial increases in the age at which women marry. The findings will thus have significant policy implications for policy makers in Indonesia.

Dr McDonald spent three years in Indonesia from 1973 to 1976 as a consultant at the Demographic Institute of the University of Indonesia under the auspices of ANU and the Ford Foundation. He was involved in teaching and field study. He has travelled extensively in Indonesia and is fluent in the Indonesian language.

main phases in terms of the data and methods to be used. The functions to be estimated will be formulated in the light of biological processes involved, consistent with the statistical requirements. Field testing will form an essential part of the project both to discriminate between alternative models and between alternative forms of a particular model.

Dr Ferguson says the improved financial management resulting from these findings will provide a sound basis for a long term decision making. The resulting model will also help in teaching students by enabling forest growth under various treatments to be simulated. Although the present research is confined to pine forests, the techniques developed will eventually be applicable to other types of forests.

Letters to the Editor

THE NUMERATES VERSUS THE INNUMERATES

In a recent Pure Maths Faculty handout, I have learned that recent changes in NSW and ACT High Schools have adversely affected both the preparation and the incentive of students to continue mathematics at university, and that ANU mathematics departments are planning representations to the Schools asking that their policies be changed.

While such representations do, indeed, show considerable altruism, my own experience with spokesmen for present trends suggests to me that they are unlikely to succeed. A very large number of people do not want to learn any mathematics; what is worse, they have formed themselves into a political pressure group to argue that their innumeracy is a Sign of Moral Worth, and go on from there to vigorously suppress anyone who would argue to the contrary.

I feel that the best policy against such stubborn obscurantism is to allow these people to hang themselves if they so wish. The technological importance of mathematical science, and the benefits in personal welfare of learning it, should be sufficient incentive. If, when faced with the success of those who have learned mathematics, the innumerate still persist in troublemaking and wilful ignorance, our superior technological skills will equip us to suppress them easily.

— Thomas Donaldson

ANU man recalls rigors of expedition

Seven thousand nautical miles in an unheated small yacht, 17 days in pack-ice, two hurricanes which whipped up 12-metre waves and pounded the boat unmercifully. These are some of the memories of Dr Peter Donaldson who went on Dr David Lewis' Antarctic expedition in the 18-metre yacht, *Solo*, recently.

Dr Donaldson, Research Fellow in ANU's Research School of Chemistry, was one of the eight members of the expedition. Dr Lewis had made maritime history in 1974 by sailing to the Antarctic single-handed. His boat capsized three times and was dismasted twice. The latest expedition, according to Dr Donaldson, was no less adventurous and 'we had several close calls'.

During this expedition, *Solo* travelled further south than a boat of its size had ever been, Dr Donaldson says. It encountered rough seas and wild winds with the barometric pressure falling as low as 950 millibars in one place. The yacht was holed once, requiring repairs in mid-ocean. The wildness and the inaccessibility of various islands meant that they had been rarely visited since their discovery in 1839.

'Scientifically, the expedition, sponsored by the Oceanic Research Foundation, was a success', Dr Donaldson says. 'Although hampered by shocking working conditions, we studied icebergs, collected varied samples for many scientists and regular bird, whale and weather logs. Much careful work is now in progress before the results are published.'

The expedition, which set out from Sydney in December last year, spent 21 days south of the Antarctic Circle. It carried out scientific studies in various locations. Its route included the Balleny Islands, Cape Adare, Antarctica and Macquarie Island.

Dr Donaldson's research at ANU concerns reactions of metal carbonyls and acetylenes, subjects far removed from studying icebergs and wildlife in the Antarctic which was his job on *Solo*. Additionally, he worked as a sound recordist and second cameraman for the Australian Broadcasting Commission during the expedition. So great was the interest raised by the expedition that the ABC sent Mr Ted Rayment, as director and cameraman, to film the trip, a film which is now being edited.

Dr Donaldson says that he developed an interest in wildlife photography and sound recording while studying for his PhD at Alberta University, Canada during 1969-73. He then worked with Mt Everest climber, Sir Edmund Hillary, in New Zealand and Nepal as a sound recordist. In Nepal, he accompanied Sir Edmund to about 20,000ft in the Himalayas - at about the same time when Dr Lewis was battling on to the Antarctic single-handed.

'I would think more than twice about heading south again in such a small vessel', Dr Donaldson now says. But describes the expedition as fascinating. The constant movement and the seasickness took their toll - he returned 13kgs lighter. As for the human angle, it was quite an experience for eight people to be herded into such a small space for a stormy passage. And it was not until the expedition reached Macquarie Island, two months from Sydney, that a change of clothing was possible.

Asked if he had learnt any particular lesson from the expedition which could be of assistance to future sailors to Antarctica, Dr Donaldson replied 'One particular lesson we learnt was not to urinate downwind during a hurricane - such a gale creates a fair vacuum past one's body'.



Dr Pieter Arriens (Copyright)

Preparing to land on Sabrina Island from a rubber dinghy are (from left), Dr Donaldson; the second-in-command of the yacht 'Solo', Lars Larsen, and Ted Rayment from the ABC. In the foreground is Jack Pittar who, at 28, was the youngest crew member.



Mike Finn

The German Democratic Republic recently presented 130 books to the University Library to 'contribute to a better understanding between the peoples of Australia and the GDR'. Pictured viewing the books after the presentation were (from left), a divisional ANU Librarian, Miss Enid Bishop; the GDR Ambassador to Australia, Mr Gerhard Oindner, and ANU Vice-Chancellor, Professor Anthony Low.

New equipment will take some confusion out of nuclear fusion

The installation later this year of a new experimental system, at present under construction in West Germany, in ANU's Department of Physics is expected to provide valuable data on impurity control in nuclear fusion research.

Dr Philip Martin, Senior Tutor, says that impurity control is one of the major hurdles in obtaining high enough temperatures for fusion. The experimental capability of the new equipment, he says, will enable a more comprehensive picture of ion-surface interaction to be built than has previously been possible. Ion-surface interaction is essential to obtain information about impurities which increase radiation losses and dilute the fuel.

Dr Martin has just returned from Max-Planck-Institut fur Plasmaphysik in West Germany where he was pursuing his research interest in impurity release. The institute is one of the largest of its kind studying the physical and technological principles of a thermonuclear fusion reactor for producing energy from controlled fusion of the atomic nuclei of hydrogen isotopes—a phenomenon which occurs daily in the sun. Currently, Dr Ron McDonald, Senior Lecturer in the Physics Department and Head of the ion-surface interaction group, is also at the institute on a research project.

'Nuclear fusion', Dr Martin says, 'unlike nuclear fission which relies on radioactive substances like uranium, is assured of a practically inexhaustible cheap fuel supply. It relies on deuterium (heavy hydrogen) and lithium (light metal) which are distributed throughout

the world in sufficient quantities. There is no chemical pollution from nuclear fusion and there is much less radioactivity. It has a high safety factor and is probably very economic and efficient in converting heat to other forms of energy.'

Fusion relies on the collision of light nuclear isotopes, usually deuterium, to form heavier elements and release energetic neutrons and protons in a reaction which can only occur when the fuel is heated to the temperature of the sun. The heated fuel, plasma, must not be allowed to contact material at a lower temperature before a net release of energy occurs which otherwise would result in a temperature 'quenching' and a release of impurities into the plasma, Dr Martin explains.

Present day machines have demonstrated that fusion temperatures and confinement times can be successively improved on. However, impurity ejection from the first wall of the containment vessel will become increasingly more important as fuel confinement times are improved. From the point of view of fusion technology it is essential that impurities be controlled and diverted away from plasma.

Dr Martin says that there are immensely difficult physical and technological problems still to be overcome and that an economically operating fusion reactor is unlikely for a couple of decades. But nuclear fusion could be the panacea for the energy problems facing the world and both Eastern and Western governments are investing considerable sums of money into basic fusion research.



Mike Finn

It was a nostalgic visit to the ANU Staff Centre by Mrs P.M. Tolson and Mrs M.G. Ward. The two sisters lived there during 1924-29 when their father, Sir John Henry Butters, was Chairman of the Federal Capital Commission and the Staff Centre was Canberra House. The Butters family's more recent association with the University was in connection with the preparation of the entry about the life and work of Sir John for inclusion in the Australian Dictionary of Biography. The family made available to Dr G.J.R. Linge, Professorial Fellow in the Department of Human Geography, RSPacS, several of Sir John's papers. Recently, the Butters sisters were taken for lunch to the Staff Centre by Dr Linge and Professor R.A. Gollan, Chairman of the Governing Body of the Centre. Professor Gollan (left) is pictured pointing out some recent changes around the Staff Centre to Mrs Tolson and Mrs Ward, while Dr Linge looks on.

CYCLISTS CALL FOR CAMPUS BICYCLE POLICY

The Cyclists' Collective within the Campus Environment Group recently held an early-morning mass ride through the University. About 40 ANU staff and students on bicycles pedalled their way around campus and ended up in Union Court for a meeting at which they passed several resolutions. They called on the University to formulate and implement a policy which recognised the contribution made by cyclists commuting to the campus and commuting within the campus. The policy, the cyclists said, should include the rearrangement of obstacles to allow bicycle movement at certain key areas on campus, the improvement of pedestrian/bicycle paths, the construction of pram ramps which did not destroy bicycles and riders, construction of undercover bicycle parking facilities where they were not available in buildings, and a reduction of the maximum speed limit for motor vehicles on campus to protect both pedestrians and bicyclists.



Supplied

Classified

Deadline for next issue: 3pm, Wednesday 3 May. Publication date: Friday 12 May. Note item on charging for classifieds, this page.

For sale

Audio tapes, used 7", 1200', most in fair condition. 50c ea. 4081/3092.

Bicycles, boys 27", girls 27", Speedwell, gd cond. 2297/543421.

Calculator, TI59, PC100A, printer, as new, extra library; \$520. 3753.

Camera Canon AE1 1.4 lens never used, urgent sale. \$375. Chris, 2538.

Carseats, Safe-n-Sound, \$25, basinette restraint, \$15, bouncinette \$4, Karina car harness \$7. 886710.

Chairs, 4 oak, carving, dralon, \$50 ea. 887028.

Desk, 76x167x107cm, 1 cond, \$850. 498673ah.

Diving regulator, Nemrod Snark III twin hose, recently recond. \$500. Terry 2557/480362ah.

Eucalypt mulch for natural ground cover, prevents weed-growth conserves moisture, \$7.50y. 310491ah.

Fur stole, lamb, white, \$30; single bed, ends and base, chrome \$25. Elisabeth 2294.

Household goods, automatic washer, dryer (new), B/W TV, baby cot, car seat. 2557.

Mattress, polyurethane 7'x6'6" brand new, never used. 3642.

Radio cassette recorder, National portable stereo, 6 months old, \$1550. 2171/951960.

Rollei SL35 exc. cond, Zeiss lens, 1.4/50mm telelens 4/135, electronic flash \$300. 4677/865137.

Sony microcassette 60 recorder reward Max Roberts STC Trade Resources. 722127/02 924736.

Stereo record player, separate speakers, recently overhauled, new cartridge and stylus, \$65. Turner, 2656.

Swim flippers, Voit, as new \$9; topographic maps, Snowy area, \$1 ea. Turner, 2656.

Datsun 1600, 1969, mehan sound, 12 months reg, 7100m, \$1700. 810354ah.

Holden HR Kingswood s/wagon 186, 1970, gd cond, \$1350. Reid, 2317.

Holden Premier 68-9, one owner, gd cond, reg Nov, 5 new tyres, wireless, \$1500. 545398.

Toyota Corona SE 1970, 4 months reg, exc cond, going overseas, best offer. 2557.

House, Deakin, 4br, carpets, modern kitchen, large garden, carport. \$40 000. 2435/814576.

House, Macquarie, contemporary 3br, large sunny lounge, dining, family, estab garden, \$48 000. Brennan. 513252.

House, new solid brick, 2br,

rural (close to Canberra) \$28 000, no reas offer refused. 478536.

House, Torrens, 3br, 2 with robes, carport, large block, \$33 000. 732846.

House, 3br, new W/W carpets, drapes, top cond, 24' pool, reduced to \$32 500. 3284.

Accommodation available Aranda, comfortable 2br furnished house with garden, July 78-January 79. 514193.

English country living, large thatched cottage, Hampshire Downs, available August 1978 1978/9. 2331.

House, Hughes, pleasant, 3br, sunny courtyard, 1 July to late Jan. 2179/812397.

House, O'Connor, pleasant, for nonsmoking graduate or postgraduate. 485007ah.

House, Turner, 10 mins walk ANU mid-June-Feb 79. Parker 2710/486441.

Accommodation wanted House/flat, 2br, northside, for MC from late May. References. Turner 2656.

Public notices

Kittens, give away, four months, house-trained. 731342.

Will type essays, theses, scientific papers, reports. Cheap rates. Room 173, Burgmann College, 479811.

Typing, theses, essays, etc. IBM golfball, reasonable rates. 477882.

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Each insertion of 14 words maximum, including telephone numbers and prices, costs \$2. There is no limit to the number of advertisements (each of 14 words only) an advertiser may place.

Advertising is restricted to ANU staff, students and members of Convocation.

Paid advertisements for the 28 April issue of the *Reporter* are now being accepted.

Special ANU Reporter Classified Advertising forms are available throughout the University and at the Cashier's office in the Accounts Branch, Chancery Building.

To place an advertisement, an advertiser must use the special form provided. The advertisement is written out in the space provided on the form and the form submitted by mail with payment by cheque or money

order to the Accountant, Accounts Branch, Chancery Building, ANU. Advertisers wishing to pay by cash can present the completed form with the appropriate payment to the Cashier's office in the Accounts Branch.

After the form is imprinted by the cash register it can be left at the Cashier's office or mailed or delivered to Reporter Classifieds, University Information Office, 28 Balmain Crescent, Acton; Advertisements which have been mailed direct to the Accountant with the correct payment will be collected by the Information Office.

All advertisements must be *in hand* at the Information Office by 3pm on the deadline date.

Advertisements not on the special Classified Advertising forms and not imprinted by cash register at the ANU Cashier's office will not be accepted.

Payments can not and will not be handled directly at the Information Office.

The words for the advertisement on the advertising form may be subject to editing.

FIT FOR A KING—A MAD GEORGE NIGHT

When Dr Geoffrey Brennan (Accounting and Public Finance, SGS) leaves later this year to take up a Professorship of Economics at the Virginia Polytechnic Institute and State University, he will have been at ANU for more than 17 years.

To mark his significant contribution to the arts during that period—as Director for many years, of the University Consort, and as a participant in numerous operatic productions—a farewell has been organised for him on the nights of 5 and 6 May in Childers Street Hall. Entitled 'FIT for a King (A Mad George night)', it will be presented by the Theatre Group, STAGE, under the direction of Paul Thom. Essentially the same team which produced the Purcell operas *King Arthur*, *The Indian Queen* and *Don Quixote* (plus such bibulous evenings as *Victoriana*, the original *Hits of the Blitz* and *Australiana*) this time it turns its attention to the Eighteenth Century. The audience will be invited to join in a massed rendition of the Hallelujah Chorus, Rule Britannia, God Save the King, Heart of Oak, and other patriotic favourites. Bawdier ballads of the period will follow the traditional Roast Beef Supper to be provided by the Union.

Singers participating will include Geoffrey Brennan, Lois Bogg, Margaret Sim, Raymond Gorrige and Bryan Dowling. Incidental sketches and tableaux will be performed by Megan Stoyles, Vashti Waterhouse and Allen Mawer. The orchestra will be led by Paul Thom at the harpsichord. Bookings can be made at the Union Shop: tickets \$5 including supper.

RADIOISOTOPE COURSE FOR GRADUATES

The Australian School of Nuclear Technology, located at the A.A.E.C. Research Establishment, Lucas Heights, NSW, will hold a Radioisotope Course for Graduates from 17 July to 11 August 1978.

The objective of the course is to assist scientific, engineering and technical personnel of graduate level to obtain, within a short time, sufficient proficiency in radioisotope techniques to use them safely and efficiently within their individual fields.

Further information and application forms may be obtained from Phillip Brown, School Secretary, ext.2458.

Diary of events

The deadline for diary notices is 3pm on the Wednesday week before publication (3 May for the next issue which covers the period 12 May–28 May). Diary items should be written legibly and sent to *ANU Reporter*, University Information. They cannot be accepted by telephone.

Monday 1 May

Pure Mathematics sem. Prof. A. Stone (University of Rochester), 'A general survey of Borel and analytic sets'. Rm G3, Copland Bld, 2pm.
Psychology brain workshop sem. Dr G. Henry, 'The role of visual cortex'. Rm 210, Physics Bld, 3.30pm.

Tuesday 2 May

Philosophy (RSSS) sem. E. Martin & B. Meyer, 'S for syllogism'. Sem. rm F, Coombs Bld, 11am.
Physical & Theoretical Chemistry sem. Dr J. Mahanty, 'Interaction of neutral and charged particles near a metal surface'. Rm 57, RSC, 11am.
Far Eastern History sem. K. Shum, 'The ascendancy of Mao's line on the united front, 1938–1942'. Sem. rm E, Coombs Bld, 11am.
Biochemistry (JCSMR) sem. Prof. G. Ada, 'Looking at the antigene on the surface of virus-infected cells'. Sem. rm 1, JCSMR, 1pm.

Economics (RSPacS) sem. R. Sundrum, 'Transformation curves of unusual shape'. Sem. rm B, Coombs Bld, 2pm.
Political Science (RSSS) sem. W. Standish, 'Pork, talk and beer, colonial and post-colonial electioneering in Simbu Province Papua New Guinea'. Sem. rm D, Coombs Bld, 4pm.
ANU Film group. 'Stabisky' & 'A Bout de Souffle'. Coombs LT, 7.30pm.

Wednesday 3 May

History of Ideas sem. B. Rose, 'Socialism and the French Revolution'. Sem. rm A, Coombs Bld, 11am.
Pacific & SE Asian History and Far Eastern History sem. Prof. W. Franke (Hamburg University), 'Chinese epigraphy in Southeast Asia'. Sem. rm B, Coombs Bld, 11am.
Earth Sciences sem. O. Bavington, 'The physical behaviour of extruded brines on the sea floor'. Sem. rm Jaeger Bld, 11am.
History (Arts) sem. Mr W. Craven, 'Pico and the Procrustean paradigm'. Room

1133, Haydon-Allen Bld, 2pm.
Colloquium (RSPHysS). Prof. G. Ruffini, 'General relativity and the astrophysics of our Galaxy'. Huxley LT, Computer Centre/Solid State Physics Bld, 4pm.
University House dinner, hall, 6.30pm.

Thursday 4 May

Organic Chemistry (RSC, SGS, CSIRO) sem. Dr C. J. MacDonald (CSIRO), 'Interpreting Meta-stable peaks: some pitfalls for the unwary'. Rm 134, RSC, 11am.

Inorganic Chemistry sem. Dr M. Gerloch (Cambridge), 'Chemical bonding information from paramagnetism'. Rm 57, RSC, 11am. 'Exchange pathways in binuclear antiferromagnets'. Rm 134, RSC, 2pm.
International Relations sem. Dr J. Weltman, 'Nuclear devolution and world order'. Sem. rm B, Coombs Bld, 11am.

History (RSSS) sem. J. Careless, title to be advised. Sem. rm G, Coombs Bld, 11am.
CRES sem. Dr J. Dalton, 'The effects of urbanisation and roles and social relationships in PNG'. 5th fl., Life Sciences Library Bld, 12.30pm.
Earth Sciences sem. Prof. A. Hales, 'Seismology at the ANU'. Sem. rm, Jaeger Bld, 4pm.

University House public recital. American violinist Jack Glatzer plays solo works by Bach, Bartok and Paganini. Hall, 8.15pm. (Tickets \$4.50, students \$2, at door, includes wine & cheese).

Friday 5 May

Political Science (Arts) sem. I. Lawrence, 'Descriptive models as a basis of administrative evaluation'. Rm 1002, Arts III Bld, 11am.
Development Studies sem. Mr J. Wolfe (Australian High Commission, Port Moresby), 'Some issues in PNG's development at the provincial government and district level'. Sem. rm, I Block, 12.30pm.
Experimental Pathology sem. Prof. A. Albert, 'Current trends in drug design'. Sem. rm 1, JCSMR, 1pm.
Colloquium (RSPHysS). Prof. G. Ruffini, 'Cosmology and the early phases of the Universe'. Huxley LT, Computer Centre/Solid State Physics Bld, 3.45pm.
STAGE presents 'Fit for a King' (a Mad George night) with Geoff Brennan, Paul

Thom, Bryan Dowling, Lois Bogg, Megan Stoyles. 8.15pm, Childers St Hall. Tickets \$5 (including supper) 812684, Union Shop.

Saturday 6 May

STAGE presents 'Fit for a King' (a Mad George night) with Geoff Brennan, Paul Thom, Bryan Dowling, Lois Bogg, Megan Stoyles. 8.15pm, Childers St Hall. Tickets \$5 (including supper) 812684, Union Shop.

Sunday 7 May

University House film. 'Kind Hearts and Coronets'. Common rm, 8.30pm.

Monday 8 May

Inorganic Chemistry sem. Dr J. Powell (University of Toronto), 'Intramolecular reactivity in square planar complexes. Evidence of a dissociative pathway'. Rm 134, RSC, 11am. 'Reactivity of allyl-palladium bonds'. Rm 134, RSC, 2pm.
Pure Mathematics sem. Prof. D. Stone (University of Rochester), 'Some algebraic aspects of measure theory'. Sem. rm 105, Mathematical Sciences Bld, 2pm.

Tuesday 9 May

Far Eastern History sem. J. Cushman, 'The rhetoric of reform: early nineteenth century Chin g-shih (statecraft) scholars and their writings on Chinese overseas trade'. Sem. rm E, Coombs Bld, 11am.
Philosophy (RSSS) sem. E. Martin & B. Meyer, 'S for syllogism'. Sem. rm F, Coombs Bld, 11am.
ANU film group. 'Shanghai Express' & 'Scarlet Empress'. Coombs LT, 7.30pm.

Wednesday 10 May

Medical Chemistry sem. Dr Y. Iwai, 'On the transformation of fused-pyrimidines into fused-pyridines'. Florey L LT, JCSMR, 11am.
University House dinner, hall, 6.30pm.

Thursday 11 May

Earth Sciences sem. Prof. A. Hales, 'The Upper Mantle'. Sem. rm, Jaeger Bld, 4pm.

Friday 12 May

Experimental Pathology sem. I. Roos (University of Adelaide), 'Platinum complexes as anti cancer agents'. Sem. rm 1, JCSMR, 1pm.

Sunday 14 May

University House film. 'The Thirty Nine Steps'. Common rm. 8.30pm.

Continued from page one

'For many years, the University of Sydney has made special arrangements for RAAF officer cadets studying for engineering degrees.

'In 1967, the University of New South Wales undertook to assist the army by establishing a faculty of military studies of the university to provide university courses at the Royal Military College.

'It was planned that an independent institution would take over this role within 10 years. This arrangement with the Government has been extended, on the clear understanding that the university will be relieved of its responsibilities as soon as possible.

'Navy cadets, having studied for one year at the Royal Australian Naval College, under the auspices of the University of New South Wales, complete their courses at the university.

'While acknowledging the co-operation and the scholastic standard which has been maintained by these three universities in the academic teaching of cadet officers, some disabilities have been unavoidable.

'Groups of students and of highly qualified

teachers are isolated from each other: The concept of the three services forming the one defence force is not assimilated early. Student numbers are small, and therefore faculty costs per student are high; courses available to students are necessarily restricted in subjects.

'I am glad to acknowledge the initiative and vision of Mr Barnard who, as Minister for Defence in 1974, did much to crystallise the concept of one academy to serve the needs of all three services.

'I conclude by saying that the Bill does more than provide an apparatus for education and training. Its intention is to create, in one location, a new national institution of learning, which will educate a significant proportion of the officers of the defence force in the years to come.

'Eminence in the profession of arms requires qualities of leadership; it also involves participation in the highest levels of defence management, and provision of policy advice to government.

'It calls for good minds, educated in technological fields and in humanities. It is essential that our defence force is intellectually equipped to meet the challenges of the future to the security of this nation', Mr Killen said.