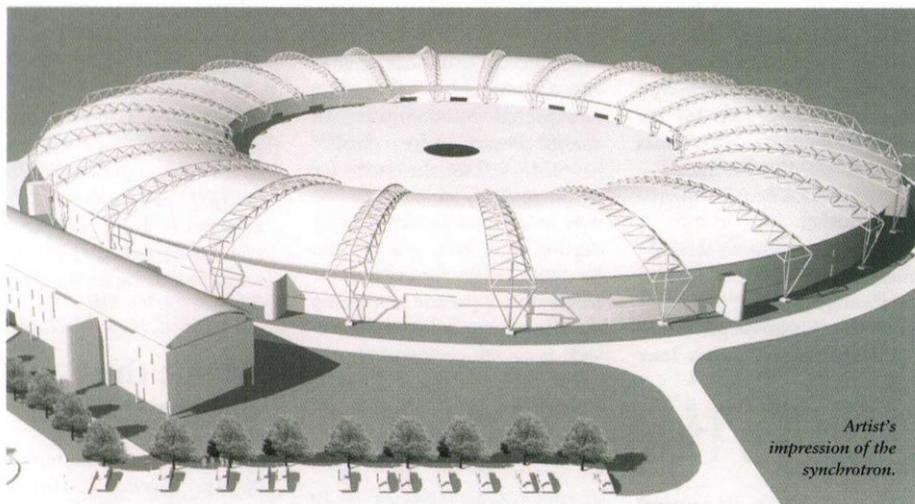


eCHO

THE NEWSLETTER OF THE CULHAM SCIENCE CENTRE & HARWELL BUSINESS CENTRE

APRIL 2000

New £500m synchrotron comes to RAL



Artist's impression of the synchrotron.

Science minister, Lord Sainsbury, has announced that the new synchrotron source will be built at CCLRC Rutherford Appleton Laboratory at Chilton. This world-class facility is a collaboration between the UK government, the Wellcome Trust and the French government, involving an initial investment of £175 million. It will create around 200 jobs and involve a total of £500m investment over the next 20 years.

The new source will sit alongside the spallation neutron source, ISIS, the central laser facility, and other major scientific facilities, to provide an unparalleled combination of research capability at the RAL site.

In simple terms, the synchrotron is a bright source of

X-rays which is a powerful analytical tool for probing the basic structure of matter at an atomic level. The investment will place British science at the forefront of global research helping the development of new medicines, plastics, textiles and environmentally friendly processes.

At the same time Lord Sainsbury announced a potential multi-million investment in the North West to support the region's science base and stated that the existing synchrotron at the CCLRC Daresbury Laboratory would continue in operation for seven years.

CCLRC's chief operating officer, Gordon Walker, said, "We hope to play a pivotal role in the design, commissioning and operation of the new synchrotron which will be sited at RAL. It is a great prize for the research scientists around the country who have been pressing the case for many years. We'll be working closely with them to ensure that their needs are met by the new source."

Welcoming the news, Stan Gordelier, director of UKAEA's Southern Division which manages the Harwell site, said, "The decision to build this

continued on page 2



Success for RAL at Chilton.

STOP PRESS Harwell Innovation Centre announced. *See page 3.*

This Month

Cleaner diesel



Perfect day



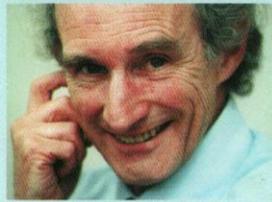
Bermuda project



Alarm offer



Next Royal Society president named



Sir Robert May, chief scientific adviser to the government, has been nominated as the next president of the Royal Society. He succeeds Sir Aaron Krug OM in November.

Australian-born Sir Robert is Royal Society research professor in zoology at Oxford University and a fellow of Merton College. He spent some months at Culham in the 1970s working with Chris Lashmore-Davies co-writing a report which appeared in 1972 in "Physics and Fluids". Barry Green, who worked on JET for many years and now works at the Naka ITER site in Japan, knows Sir Robert from the 1960s, when he was one of his students at the University of Sydney. Barry met up with Sir Robert recently in Tokyo where he was lecturing on organising science and found that he hadn't lost any of his excitement about science.

UKAEA appointments

Dr John Crofts has been appointed as UKAEA director of safety and environment. He is currently director of safety for Hunting Brae. Dr Richard Peckover will take up the new post of chief safety adviser to ensure that his knowledge and experience continues to be available to the company.

Children's Promise

Thanks must go to everyone who generously contributed to the Children's Promise appeal. Staff throughout UKAEA donated the equivalent of an hour's work in the Millennium Final Hour appeal and raised an outstanding total of £3,628. Children's Promise will distribute the funds between seven major UK children's charities.

Correction

The March issue included a feature about work to clean up a small chemical pit. This involved access over part of the East Hended estate and not Chilton as stated.

Laser cuts steel costs

Steel producers could save millions of pounds by identifying problems during metal processing rather than waiting until the batch has cooled. Tonnes of steel with the wrong properties is being produced because, until now, no equipment has been able to withstand the extreme heat during production.

As part of an EC-sponsored project, AEA Technology has been working with metal producers in the UK, France, Sweden and Finland to develop a laser system that collects data from hot metal without the need for contact. Promising prototype results have led the Swedish Institute of Metals Research (SIMR) to award a contract to AEAT to develop the system further.

Different grades of steel are produced for specific applications ranging from car body panels to offshore oil platforms. The AEAT system uses a laser



Laser in place to analyse steel sheet on rollers.

fired directly at the hot steel to create ultrasonic waves that are interpreted by computer to analyse the steel in great detail.

SIMR will use the system for academic study and for hire to steel mills before universal introduction in all mills. It could also be used in the production of nickel and copper and to speed up the inspection of other equipment such as aircraft components.

Chairs benefit charity

A West Midlands charity will benefit from the donation of chairs by UKAEA from the



recently closed Harwell social club. Stan Gordelier, UKAEA's southern division director, is pictured here (right) presenting the chairs to Dan Mistry who works for UKAEA at Harwell and is also heavily involved in the Asian Evangelical Church (AEC) in Wolverhampton. The chairs will be used at the Bilston Resource Centre which provides information, guidance and counselling for any members of the community who have been made redundant and are looking for new employment.

North Gate reopens

The North Gate has reopened with a revised layout similar to the Main Gate arrangement. The changes will result in improved security and safe operation, and allow more effective use of constabulary manpower. In addition the building has been designed sympathetically to fit in with the surrounding ex-RAF buildings. Gate opening times

remain unchanged and are contained in the site rules and regulations.



from page 1

important new facility confirms RAL's future as a leading world centre for research. It also reinforces our plans to develop Harwell as an international centre for science and technology. Together we represent one of the most important scientific business communities."

Professor George Radda, chief executive of the Medical Research Council, said, "The new synchrotron facility will play a vital role in the future of biomedical research in the UK. Synchrotrons have become an essential tool for biologists in their quest to understand the structure of biomolecules. This in turn leads to a better understanding of cellular processes and is essential for the new computer assisted design of drugs and therapies for many diseases."

About the synchrotron ...

Synchrotrons are the highest X-ray power sources available in the world today. Synchrotron light is produced when a beam of electrons is bent by magnets as it travels at very high speed. The light includes many different wavelengths, from the infrared through the visible spectrum to ultraviolet and X-rays. The narrow beam of light produced by the new source will have a brightness that is about a million, million times brighter than a standard X-ray tube.

Since its first use in experiments in the UK in 1967 synchrotron light has become essential to a wide range of research areas including chemistry, physics, biochemistry, engineering, medical and materials science. The stream of technological innovations already benefiting from the information generated ranges from catalysts and semiconductor materials, through new magnetic storage devices to polymers, enzymes and drugs.

Announcing Harwell Innovation Centre

The largest 'business incubator' centre in Oxfordshire will be located at the Harwell International Business Centre. Due to open in May 2000, the Harwell Innovation Centre will be housed in B173 following a complete refurbishment. Enquiries from prospective tenants are invited in the lead up to its official opening next month.

A joint agreement between Oxford Innovation and UKAEA forms the foundation for the new 28,500 sq ft development, which will initially create as many as 250 potential new jobs. As the tenant companies expand it is hoped that up to 1000 staff will be employed by businesses that grow in and out of the centre by 2010. Occupiers will also benefit from the established infrastructure, amenities and transport links in place at Harwell, together with the right commercial and professional environment.

Innovation centres are designed to provide premises for small companies in a supportive environment. Oxford Innovation's centres offer occupants a hands-on relationship with centre management and actively encourage business viability and centre growth.

David Kingham, Oxford Innovation MD, comments, "The Innovation Centre will provide premises for science and technology-based start-up companies within a community of like-minded entrepreneurs.



Ian Rodham and Philip Leo, commercial manager of Oxford Innovation Ltd, outside B173. The building was originally an RAF mess, also a UKAEA hostel (Icknield Way House), and latterly offices for UK Nirex.

Part of the centre will be managed by Thames Business Advice Centre specifically for non-technical companies."

Ian Rodham, UKAEA commercial manager, said, "Harwell is one of the few sites in Oxfordshire capable of supporting both small-scale businesses in an Innovation Centre, as well as very large scale developments.

Indeed we hope that many embryo companies will stay at Harwell as they grow. The county is already renowned for its dynamic hi-tech enterprise centres and the area's reputation for research and development makes it an ideal location for small science and technology business start-ups."

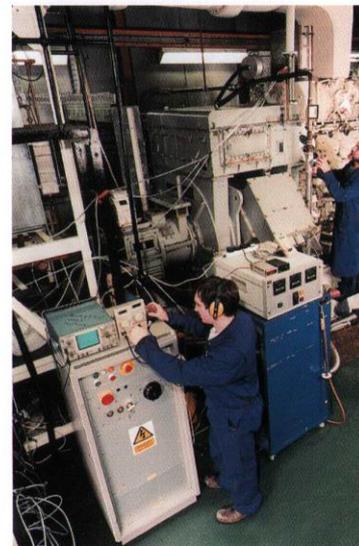
Navy combats air pollution



The Royal Navy is cutting down on harmful diesel emissions of NOx and particulates with the help of AEA Technology.

A contract worth £1 million has been awarded to AEAT's Products & Systems business to test a new non-thermal plasma system for the reduction of the emissions. Under the terms of the agreement, the Royal Navy has secured rights to use part of AEA Technology's extensive portfolio of ELECTROCAT™ intellectual property. This includes a range of plasma-catalyst technologies for emissions control. The plasma system could help the world marine industry meet increasingly tough emissions regulations.

AEAT will produce a demonstration model, one tenth of the size of a typical naval diesel generator. Initially the AEAT system is being considered for use on future warships with indicative designs covering the full range of possible applications including frigates, submarines, mine hunters and carriers where diesel generators



Alan Leonard (left) and Bob Airey of AEAT carry out feasibility tests at the Royal Navy engineering school, HMS Sultan.

provide on-board power. If legislation dictates that the marine industry considers retrofits, the Royal Navy has many ships that could benefit from the new technology which is equally applicable to diesel propulsion systems.

MAST update

Good progress has been made on MAST, with plasma currents of up to half a megampere achieved. Double null plasmas with elongation of over two allowing detachment of the plasma from the central column have been produced. High density plasmas have also been achieved which exceed the usual limiting densities. Thompson Scattering measurements of the temperature support earlier findings that the confinement is good and exceeds expectations.



Our photo shows Alan Sykes (right) describing MAST operations to Sir Eric Ash (centre) and Dr Chris Lashmore-Davies. Sir Eric was addressing the Fusion Theory Colloquium at Culham last month on the future climate of nuclear energy.

Out & About

Walk for wildlife

Enjoy the beauty of spring in the leafy lanes and beechwoods of the Chilterns and raise funds for nature conservation in Berks, Bucks and Oxon. The annual sponsored 'walk for wildlife' organised by BBOWT takes place on Sunday 14 May. Choose from three circular routes of 8, 13 and 18.5 miles. Tea and cakes available at the finish. Prizes for the individual and team raising the most money. Telephone 01865 775476 for registration and more information.

'No Greater Gift' Downland Passion Play

As part of the Millennium celebrations, people from 17 Downland villages are working together to produce what should be a very moving outdoor production of the passion play. Eric Saxton from East Ilsey, who is directing this specially written production, has brought together a very talented and enthusiastic cast of people.

The play will be performed on Easter weekend, and early May Bank holiday weekend 2000, starting at 8pm.

Fri April 21st and Sat 22nd
Easton House, East Hendred

Fri April 28th and Sat 29th
Hampstead Norreys (the meadow alongside the village hall)

Programmes will be sold in advance, although you can just turn up on the night. No tickets will be sold, but donations are welcome. For further information contact Sheila Craig on 01635 201303, or Liz Dymont, Harwell, ext 4205.

Hagbourne fun run

The 11th Annual Hagbourne Fun Run and Walk will take place on May 1 2000, starting from the village hall, East Hagbourne, near Didcot at 11am (registration for runners by 10.15am please). The course is 4.5 miles long taking in West Hagbourne, Upton, Blewbury and East Hagbourne, mostly on footpaths. Proceeds will be divided between the Ovarian Cancer Screening Project and Hagbourne Millennium Fund.

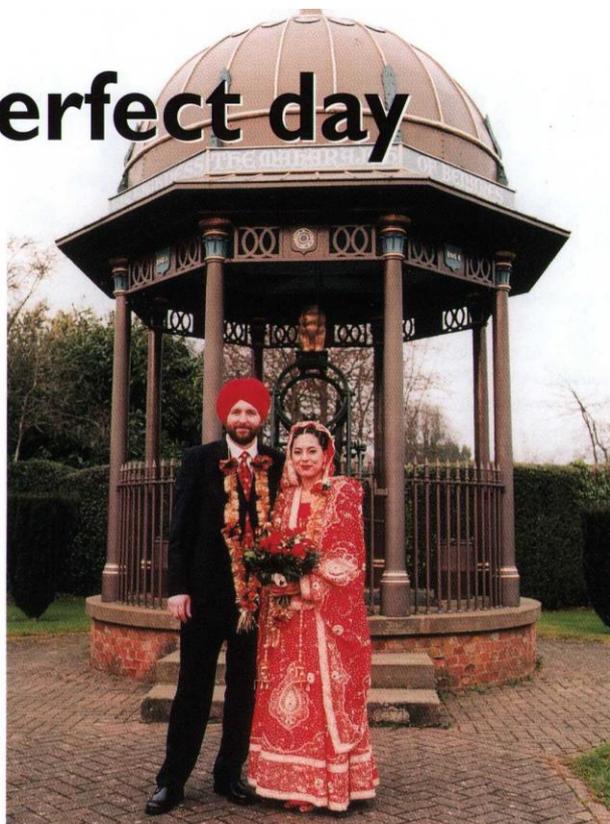
The entry fee is £2.00 for adults and 50p for children. Light lunches will be available after the event. Details from Jenny Smith (01235 815897) or John Lawson (01235 812726).

Just a perfect day

Allan and Charanjit May achieved their dream - a wonderful wedding day combining a colourful Indian ceremony and traditional English reception and it lasted nearly 24 hours! Allan works as a department manager in AEAT health physics and Charanjit was a manager in clinical studies in B551, leaving Harwell about two years ago.

The unforgettable day began at 5am when Charanjit began her three-hour transformation into a beautiful Indian bride. The hairdresser used a hundred pins, beauticians decorated Charanjit's hands with intricate henna patterns and she wore the heavily embroidered red and gold wedding dress. Allan had grown a beard for the occasion and wore a turban.

The marriage took place in a Gurdwara, or Sikh temple, in Reading. They drove to the reception in an open top car complete with tin cans and "just married signs", much to the amusement of local Saturday shoppers. Continuing the Indian connection the couple had photographs taken at the 'Maharajah's Well' in Stoke Row - a real well donated to the villagers by the Maharajah of Benares in the 1830s. A wonderful reception at the nearby Crooked Billet lasted until 2am when it was time to take out those 100 hairpins!



Feeling like royalty - Allan and Charanjit on their wedding day.

Radio signals hold the key

Ascheme to measure rainfall will be boosted by a £100,000 award from the Radiocommunications Agency (RA) because of its relevance to communications problems.

In wet and snowy weather, microwave and radio signals can be severely weakened. Scientists from RAL will build two high precision microwave links to detect how much rain is falling in the Bolton area which is prone to flooding. By measuring the extent of signal fade, scientists will be able to quantify how much rain or snow is falling and its location.

The Bolton equipment will also help research to discover how much closely-spaced microwave signals interfere with each other. This is a key concern for the RA and other communications system operators who are trying to condense more radio links into an overstretched infrastructure. Commercial pressures will force the most efficient use of the radio spectrum in future.

Oh no! The big 40

Friends and colleagues made sure that Malcolm Smith could not let his 40th birthday pass by unnoticed. Malcolm is UKAEA emergency section manager within the health safety and environment department in B151. To mark the occasion colleagues arranged this photo and joined Malcolm for a celebratory curry.



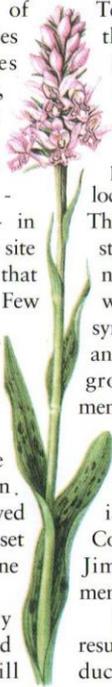
Promise of new orchids at Harwell

One of the joys of wildflowers is their ability to grow in great numbers, but only if the environment is right. This is true of the population of several hundred bee and pyramidal orchids which grow on top of one of the three wartime runways which were used by RAF Harwell. Soil was dumped on the runway to prevent its continued unauthorised use by aircraft after the war and the orchids colonised.

Staff may be aware of several impressive colonies of white helleborines which flower in late May, a conspicuous one can be seen opposite B424. In addition there are over 1000 bee orchids - flowering in late June - in several colonies across the site including some near B521 that were discovered last year. Few nature reserves can boast as many examples of either species and even fewer that can boast that number of both.

Also on site the common spotted orchid can be found and the broad leaved helleborine, both of which set up their flowers in late June or early July.

Dedicated work by AEAT staff member and orchid enthusiast, Bill



Temple, is helping to augment the collection at Harwell.

Eighteen months ago seed of the common spotted orchid (*Dactylorhiza fuchsii*) was collected, with the appropriate permission, from a local BBOWT nature reserve.

This seed was germinated on sterile agar containing suitable nutrients. Some of the cultures were germinated and grown symbiotically (with a fungus) and some were germinated and grown without fungus, by members of the Hardy Orchid Society (HOS). The fungus used to germinate and raise most of plants was first isolated from roots of a Common spotted orchid by Jim Hill (another HOS member), some years ago.

On a Sunday in March the resulting small plants were introduced to their new homes.



An impressive colony of white helleborines.

These specially prepared beds around the lagoons are clearly visible as they are essentially bare, and fenced off. It is possible that a few of the 250 or so planted will produce small flower spikes this year, but they are not expected to produce anything other than their characteristic spotted leaves before 2001/2002. The weather, in particular the rainfall, will of course now have an effect on this.

The Hardy Orchid Society has a website which features photographs of many of the orchids found in the UK at <http://www.drover.demon.co.uk/hos/> Bill Temple has a number of photographs of these orchids on his website and is scheduled to feature them specially in June & July at <http://fp.wtemple.f9.co.uk>

Risks assessed at Bermuda airport

Bermuda's economy relies heavily on its international airport which welcomes tourists on direct flights from major cities including London, New York, Atlanta and Boston.



Bermuda is taking steps to protect its valuable tourist economy.

Although the government of Bermuda has statutory contingency plans in place it has taken a more pro-active step. AEAT's consulting business has won a contract to develop more formal plans to cope with major disasters such as hurricane, fire or flood at the airport.

Two AEAT experts will work with key airport staff, government officials, stakeholders and suppliers to consider potential disruption and contingency measures. Recommendations will then be incorporated into the airport's emergency planning manual.

Roel Berendsen of AEAT, says, "We are used to helping industry identify the whole range of risks they face and how to tackle them to maintain safety and avoid unexpected costs. We have a great deal of experience in the field of aviation including work to prepare UK airports and airlines for year 2000."

SAFETY Update

There was one reportable incident at Harwell and none at Culham since the last issue.

Source Incident

During a routine operation on 6 March, carried out by AEA Technology, a medical source used for cancer treatment became partially exposed for a few hours, before being moved into a shielded area.

No-one was exposed to radiation above permitted limits and no members of the public were exposed to any radiation at all. As a precaution, staff left the work area within the building and access was restricted for a few hours. The source was being moved as part of a routine operation to allow it to be repackaged for long-term storage and eventual disposal.

The regulators were kept informed and the UKAEA will carry out an investigation to see what lessons can be learned for future operations. The incident was provisionally categorised as a 'deviation with no safety significance'.



Subscriptions 2000/2001

At the AGM in January it was agreed that subscription rates for 2000/2001 should remain unaltered. The committee asks members to note that, as the use of the social club and the air hall have been lost, the association has, as a result, lost a significant number of members. It is hoped that retaining the current rates will enable the association to maintain financial stability.

Ordinary members (salary deduction)	£3.52 per month
Ordinary members (direct payment)	£42.24 pa
Adult family	£21.12 pa
Junior family (under 18)	£10.56 pa
Junior family (over 18)	£42.24 pa
Associate	£50.68 pa
Reciprocal (Culham rec. members)	£22.44 pa

Members are also reminded that it was agreed at the AGM to review the subscription rate during July 2000.

Membership cards

Membership cards for ordinary members (from 1 May 00 - 30 April 01) will be distributed at the end of April. Any member who subscribes by deduction from pay, and has not received a new card by Friday 5 May, please contact the rec. assoc. office. Other members wishing to renew should submit their card, renewal fee and a forwarding address to the rec. assoc. Contact H3296 with any queries.

Social club clear-out

A one-day sale of the remaining social club equipment will be held in the main hall of the club on Wednesday 12 April from 9am - 5pm. There is a range of bar, catering and general equipment available at 'knock-down' prices. Payment by cash or cheque on removal. For a list ring Tony Betteridge on H3296.

Tennis news

The new season is upon us again and all existing members should by now have received their membership renewal form. If you have not, or you are a new member wishing to join the club, then please contact our membership secretary, Derek Parkinson on N2714. New members are always welcome and we are keen to see as many new ones as possible who are interested in playing or

learning the game. The first club session for the new season will be on Friday 7th April starting at 4.30pm on the Ridgeway Courts. All existing and potential new members are welcome.

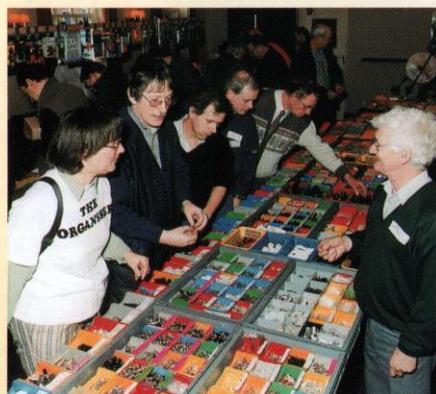
Rounders invitation

Entries are invited for this year's rounders tournament, which will provisionally start on Wednesday 24 May. The tournament will be run along the same lines as last year, with the entry fee remaining at £15 per team. Please note that all team members must be members of the Harwell Recreational Association. Entry forms are available from Sue Tavender (R5399 or e-mail Sue.Tavender@rl.ac.uk), and these must be completed and returned by Friday 5th May. Last year's captains will automatically receive one.

Radio rally

The fourth annual Radio and Computing Rally attracted nearly 600 people from all over the south of England. Traders, special interest groups, private sellers and some craft stalls filled the Harwell social club to capacity, offering everything from the smallest electronic component to large aerials. It was the final event for Harwell Amateur Radio Society in the building where it has met for over 30 years.

The society will meet in future at the Esso Social Club where new members will be most welcome. Meetings are held on the third Tuesday of every month (details from John Durban on 01235 223250). The rally committee are working hard to find a new venue for the February 2001 rally, spurred on by the success of previous ventures and pressure from traders and visitors alike to continue this popular local event. They hope to find a new venue in or around Didcot.



Pictured left, Ann Stevens and club secretary Mike Stevens.

Dave Codling memorial quiz night

Saturday 6 May 2000

7.30 - 12.00 (quiz starts 8pm prompt) at Drayton Village Hall, Lockway, Drayton.

Tickets £5 to include ploughmans. Available from Culham staff: Chris White, Jenny Gibbard, Judith McDonald, Jenny Waghorn.

There will be a raffle, donations very welcome. All proceeds to Imperial Cancer Research.

Food brought to your door



Sutcliffe Catering is helping to banish hunger pangs from busy workers by running a 'basket' service at a number of buildings on site at Harwell. In place of its 'bun wagon', a range of refreshments including sandwiches, rolls, crisps and confectionery will be available at the following times:

9am	B149 foyer
9.15	B424 reception
9.30	B8.19 foyer
9.45	B528.10 unit 1, foyer
10am	B418.15 reception
10.15	B521 foyer, secondary entrance by IsaT (not main reception)

These arrangements are under constant review depending on demand. Please note that there will be no car horn to alert staff.

For those staff wishing to buy food on their way to work or enjoy breakfast, the Café Ridgeway in B455 is now open at 7.45am.

If you have any questions or suggestions, please contact Dawn Shackelford on H2598.

XiMed – making medical breakthroughs



Prof David Young of XiMed in the laboratory.

In the field of pharmaceuticals there are still some commonplace illnesses or ailments where conventional drugs are less than completely effective. Rich rewards await the company that can find a new solution to these perennial problems.

XiMed, an expanding Harwell business, has identified a number of these 'gaps' and is busy developing new treatments for difficult conditions like, for example, head lice, E-coli infections, chronic obesity and a natural alternative to hormone replacement therapy (HRT).

Managing director, Prof David Young, heads up a team of 15 in B147, with a further 12 staff employed at BioClin, a Cardiff subsidiary. The growth

of the business has enabled £500,000 to be invested in the refurbishment of the labs in Cardiff. To complement the Cardiff facilities further labs have been built at Harwell offering a small-scale manufacturing suite for health care products and the provision of microscopy and parasitology services.

When XiMed patented a new treatment for head lice it was besieged with enquiries

from businesses and concerned parents alike. Most existing products are toxic and use organophosphates as the active ingredient which were implicated in Gulf war syndrome. Worryingly the lice are known to build up a resistance. The XiMed alternative uses naturally-occurring plant extracts that are classed 'food grade'. Clinical trials are planned for later this year and, depending on these results, the product could be available by 2001.

In 1996 when Prof Young sold his Abingdon orthopaedic products company, Protectair,

he set up a new venture, Reductogen and raised finance to search for new drug ideas which offered commercial potential.

Two years later the business was taken over by Energiser which now has five new concepts on board and was renamed XiMed. In essence Prof Young sees his company's role as bringing innovative academic ideas to the commercial marketplace. The current aim is to add two new products to its portfolio each year.

Put **safety** first



Our photograph shows Nicola Hayden, a work experience student from Abingdon College, who has safety on her mind. Nicola is spending 20 weeks in UKAEA's corporate communications department. Corporate communications is currently co-ordinating a scheme to offer UKAEA Constabulary personal alarms at a special discount price. At just £4.99 each of these versatile safety devices are small enough to keep in a handbag and can also be wall-mounted near a door in case of unauthorised entry. For your alarm, simply complete and return the form below with your cheque.

Please send me

UKAEA personal alarms at £4.99 each.

I enclose a cheque for £ payable to UKAEA.

Name

Address

Completed forms and payment should be sent to:

Personal Alarm
Corporate Communications
UKAEA, Marshall Building,
521 Downs Way, Harwell
Oxon, OX11 0RA.



THE COPY DEADLINE FOR THE NEXT ISSUE IS: Friday 14 April for publication on Wednesday 3 May 2000.



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