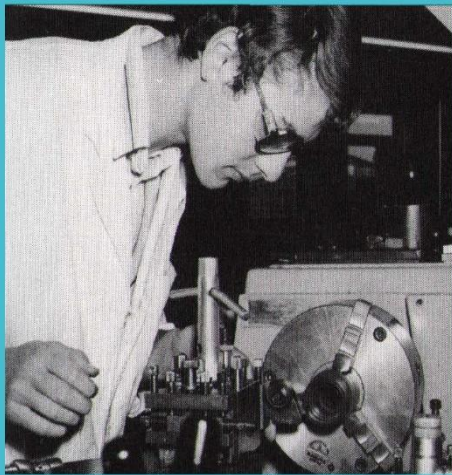
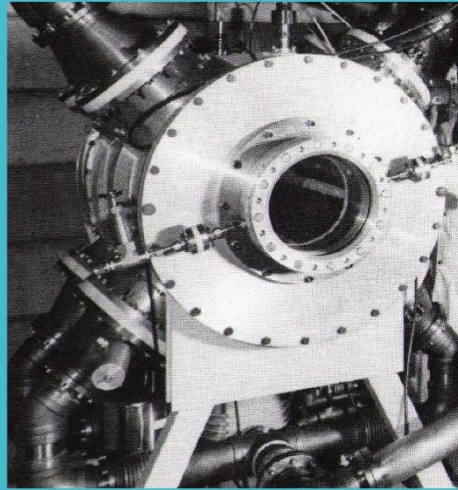
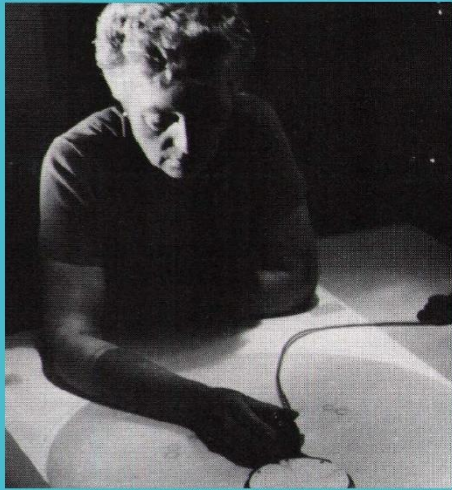
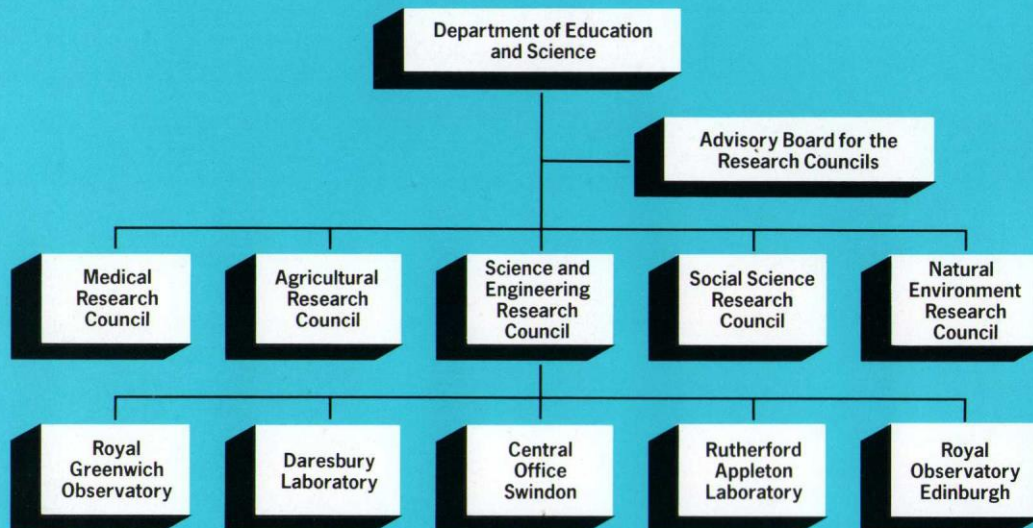
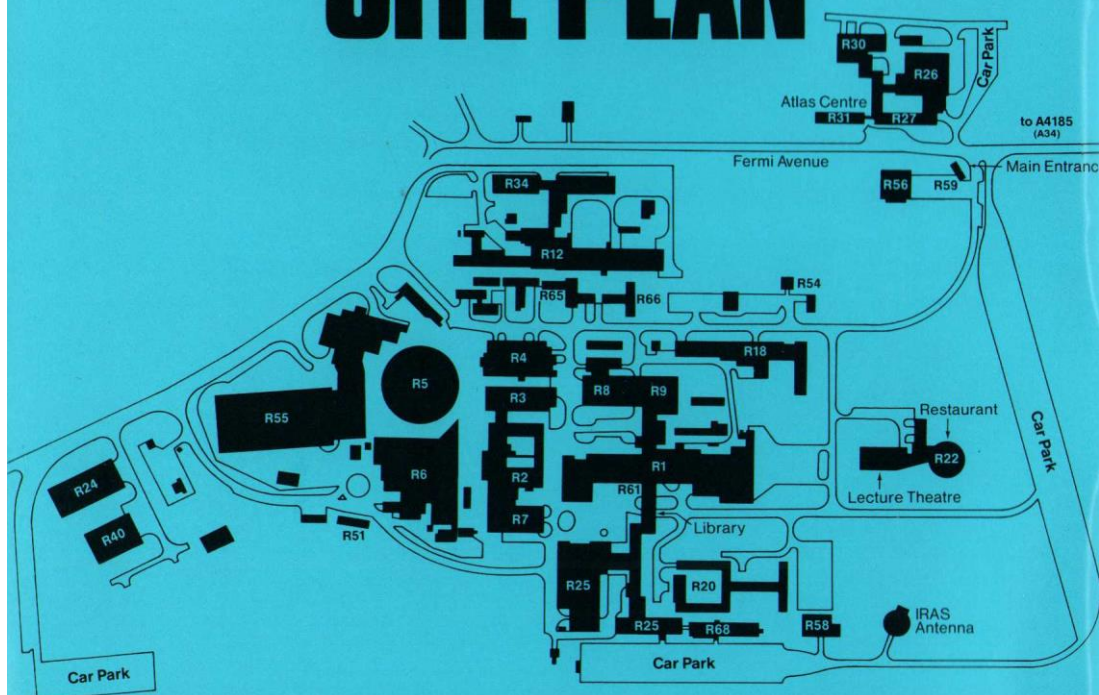


# *Working at* **-RAL-**





# SITE PLAN





## FOREWORD

Due to the nature of the work it undertakes and the services it provides to universities and polytechnics, Rutherford Appleton Laboratory (RAL) receives many research workers from academic institutions and industry. Some come for just a day or a few hours, others work on site, pursuing their research, for much longer periods. This booklet is aimed at giving longer-stay visitors and new employees an appreciation of services that are available on site. The opportunity has also been taken briefly to set in context the work of all the divisions.

# INTRODUCTION

Rutherford Appleton Laboratory (RAL) with about 1600 employees is the largest of the Science and Engineering Research Council's research establishments. The present Laboratory is composed of three establishments that have merged over the years: Rutherford High Energy Laboratory, The Atlas Computer Laboratory and the Appleton Laboratory (formerly the Radio and Space Research Station). From that can be gained some idea of the spread of interests within the establishment.

The Science and Engineering Research Council is funded by the Department of Education and Science to undertake and to support research and advanced training in science and engineering, which it does by providing grants to universities and polytechnics and by funding national facilities for use by research workers from the academic institutions: these facilities are located at the various SERC establishments. At RAL, for example, there are the Electron Beam Lithography Facility, the Laser Facility, and the latest machine for research using neutron scattering techniques, the Spallation Neutron Source which will be ready for use in 1984. Some 1500 university scientists work in close collaboration on RAL's range of research and development projects.

The Laboratory also acts as co-ordinator for the UK research effort at such overseas research centres as the CERN particle physics centre in Geneva, the Institut Laue Langevin in Grenoble where there is a high flux reactor, and at DESY in Hamburg where the Petra colliding beam machine is housed. There is also collaboration with North American research centres and, indeed, with many countries throughout the world.

The Laboratory is organised on a divisional basis (see overleaf) though there is a considerable amount of work on projects involving more than one division.

# LABORATORY

## DIRECTORATE

Director:	Dr G Manning
Deputy Director:	Professor J T Houghton, FRS
Associate Directors:	
Astronomy, Space and Radio :	Professor J T Houghton, FRS
Engineering :	Dr D B Thomas
Nuclear Physics :	Dr J J Thresher
Science :	Professor A J Leadbetter
Technical Services :	Dr G Manning
Laboratory Secretary:	Dr J M Valentine

## ADMINISTRATION DIVISION

General (including financial) and administrative services for the Laboratory, for visiting scientists and for the UK participation at

research facilities overseas. Laboratory health and safety services.  
Division Head: Dr J M Valentine

## COMPUTING DIVISION

Operation of the Laboratory's central computer including provision and maintenance of a wide area network between universities, other research centres and the Laboratory. The provision of interactive computing facilities for

universities and other establishments via multi-user systems installed in universities, and high powered single-user systems.  
Division Head: Professor F R A Hopgood

## ENGINEERING AND BUILDING WORKS DIVISION

Provision of electrical, mechanical, building and environmental services. The Division includes the Council Works Unit which caters for

other SERC establishments as well as RAL.  
Division Head: Mr R Tolcher

## GEOPHYSICS AND RADIO DIVISION

Experimental and theoretical research into atmospheric, ionospheric and magnetospheric science including remote sounding

of the atmosphere from space and the application of ionospheric knowledge to radio propagation.  
Division Head: Mr J T Delury

## HIGH ENERGY PHYSICS DIVISION

Experiments in particle physics and nuclear physics in collaboration with university groups. Support for teams of scientists from the

UK and abroad, and supervision of UK involvement in the CERN and DESY programmes.  
Division Head: Dr J J Thresher



# ORGANISATION

## INSTRUMENTATION DIVISION

Design, development and construction of special items of experimental apparatus. Mechanical and electrical engineering support to scientific

divisions. Control of central workshops and outside manufacture. Support for energy research. Division Head: Dr T G Walker

## LASER DIVISION

Experimental and theoretical research in laser-plasma interactions, laser compression and other applications of high power lasers in

collaboration with university groups. Development of high power laser systems. Division Head: Dr A F Gibson, FRS

## NEUTRON DIVISION

Support for neutron scattering research by universities using reactors and the electron linac at Harwell and the reactor at the Institut Laue Langevin, Grenoble. Participation in experiments and the

development of instruments and techniques. Provision of experimental facilities for neutron scattering on the Spallation Neutron Source. Division Head: Professor A J Leadbetter

## SPACE AND ASTROPHYSICS DIVISION

Planning, co-ordination, engineering and technical support of scientific satellite projects; provision of satellite ground control and space data processing facilities; solar and cosmic

astrophysical research at ultra-violet, infra-red and X-ray wavelengths; laboratory astrophysics research. Division Head: Dr A H Gabriel

## SPALLATION NEUTRON SOURCE DIVISION

Development, construction and installation of the Spallation Neutron Source.

Division Head: Mr D A Gray

## TECHNOLOGY DIVISION

New techniques in information technology. Operation of an Electron Beam Lithography Facility. Development of computer aided design software. Research into new

methods of networking computers. Design and manufacture of advanced electronics. Tropospheric radio propagation studies. Division Head: Dr D B Thomas

## THEORY DIVISION

Research into the theory of elementary particles – their scattering, decay and reaction mechanisms – with special emphasis on

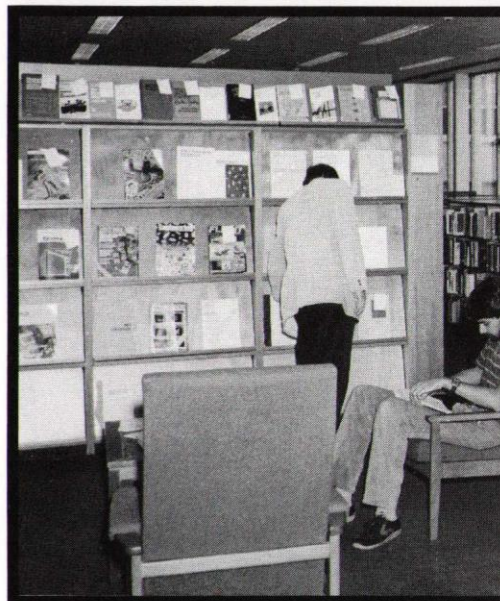
phenomenological analysis of experimental data. Division Head: Dr R J N Phillips

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# ADMINISTRATI

Divisional Administration Officers (DAOs) are normally the first point of contact when information on services is required. Where there is no DAO, information can usually be provided by the Division Head's secretary. DAOs are able to advise new staff and visitors on the necessary procedures in operation within the Laboratory, and on general administrative matters, typing and reprographics services and travelling arrangements. A limited range of stationery is usually held by the DAO; there is a large stationery store in the basement of building R1.

Another useful source of information is the internal telephone directory, copies of which are available from DAOs or from the Accommodation Office in building R1.



## LIBRARY

The Library in building R61 holds a wide range of books, periodicals and scientific reports related to the work of the Laboratory. Other material not in stock is available through inter-library lending. Arrangements can be made for foreign language translations, abstracts and literature searches. For full information, telephone 6668.

A Branch Library, specialising in computing sciences, is located in the Atlas Centre (building R27, telephone 6226)

## TELEPHONES AND TELEX

Full details of telephone and telex services, including tie lines to other establishments, are given in the Laboratory's internal telephone directory.

## TECHNICAL SERVICES

Maintenance and modifications to main Laboratory services are undertaken by the Engineering and Building Works Division. For the appropriate telephone numbers consult the internal telephone directory.

## MEALS AND REFRESHMENTS

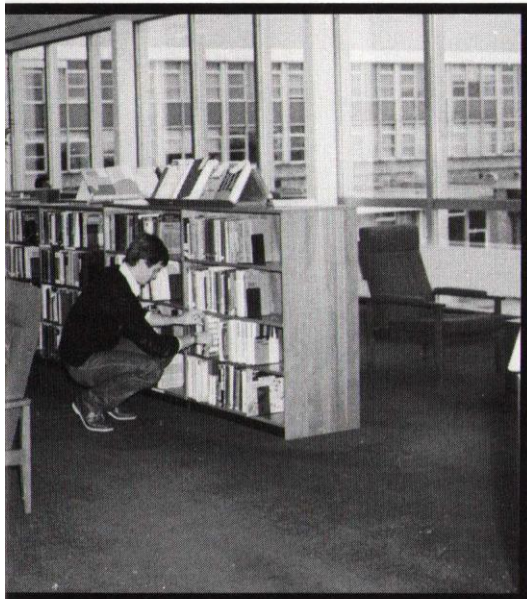
The Restaurant is in building R22, adjacent to the Lecture Theatre. It is open as follows:

Lunch 1145–1345 Monday to Friday  
Evening Meal 1700–1900 Monday to Thursday

There is a coffee lounge in building R22 with a snack bar serving light refreshments. Coffee is also served in the lounge on the first floor of building R1, near the Library.



# ON & SERVICES



## SHOPS

The Rutherford Appleton Laboratory Shop, next to the Restaurant, sells newspapers, periodicals, confectionery, stamps, cigarettes, tobacco and some grocery items. It is open from 0815-0930 and 1130-1345 Monday to Friday.

The AERE shopping centre includes a newsagent, general supermarket, butcher, post office, dry cleaner, hairdresser (appointment only) and a branch of Lloyds Bank which provides a full range of banking services. A bus runs between the shopping centre and Laboratory during the lunch break. It leaves the front entrance of building R1 at 20-minute intervals from noon until 1320 hours. A routine bank service is provided by Lloyds Bank at the Cash Office in building R20 every Wednesday from 1215-1345 hours.





# ADMINISTRATION & SERVICES

## LECTURES AND CONFERENCES

The Lecture Theatre in building R22 is used for major lectures, seminars and presentations including film shows and the regular RAL Lecture Series on subjects of general scientific interest. There are conference rooms in several buildings and some special events are arranged at The Cosener's House in Abingdon.

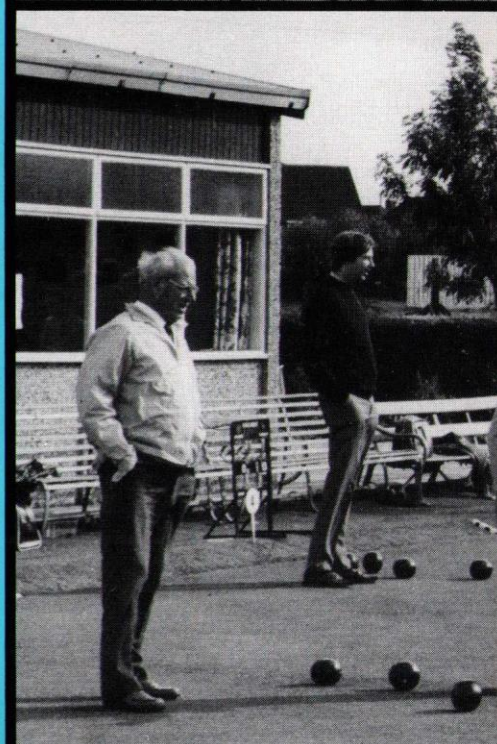
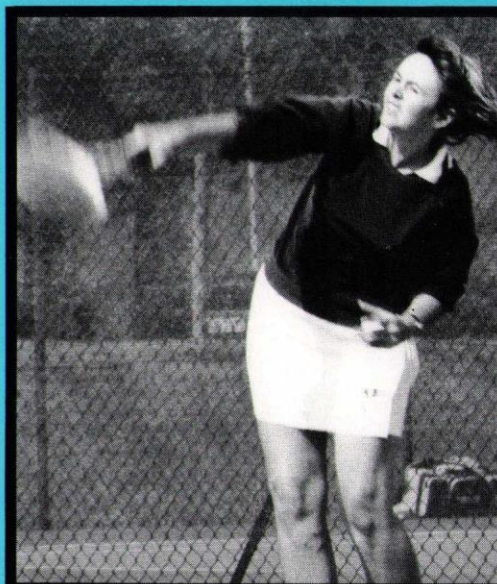
DAOs will assist in booking conference and meeting facilities.

## HOUSE JOURNAL

Current news of scientific and general interest to people working in or associated with RAL is published in the fortnightly "Bulletin of the Rutherford Appleton Laboratory." Each issue carries a list of forthcoming seminars, meetings and social events.

## RECREATION

Clubs catering for a wide range of sporting, cultural and leisure activities are active in or near the Laboratory. A full list with the names and telephone numbers of club organisers is available from the Personnel Group in building R20. Staff (and research staff working on site) are encouraged to join the RAL Recreation Society (so becoming members of the Civil Service Sports Council). Each year, apart from local events, there are three main days in the SERC sporting calendar: indoor sports day, outdoor sports day and a golfing tournament. These are organised on a federal basis by the SERC Sports and Social Association and RAL usually features strongly at such events.





# ADMINISTRATION & SERVICES

## TRAVELLING TO WORK

Extensive bus services are provided by arrangement with AERE for staff travelling to and from work. Services cover a wide radius and include most local towns and villages and timetables are arranged to fit in with Laboratory working hours.

Full details of these services can be obtained from the Transport Section in building R54 or from the Personnel Group in building R20. Bus season tickets can be arranged through the Personnel Group in building R20, and occasional tickets for single journeys can be bought at the Cash Office in building R20. Tickets cannot be bought on the buses. There are services outside standard hours for shift, overtime and weekend working and details are available from the Transport Section in building R54.



## CAR PARKING

Ample car parking space is provided in the sites on the perimeter of the Laboratory.

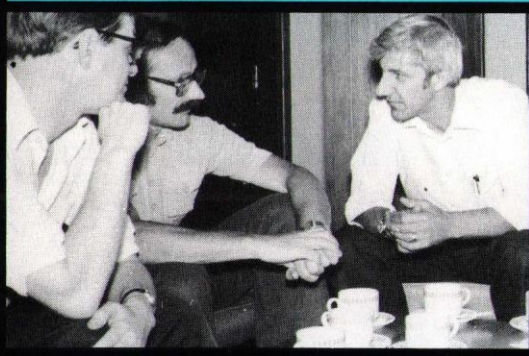
## ACCOMMODATION

The Cosener's House in Abingdon provides accommodation for use by visitors and bookings are arranged by the Manageress, telephone Abingdon 23198. Individual hotel bookings, when required, are handled by Divisional Personal Secretaries.

Other hostels at Abingdon (Rush Common) and at AERE Harwell are available for Laboratory staff requiring accommodation. Bookings are arranged through the Personnel Group, in building R20, or through the Accommodation Office in building R1. Some furnished and unfurnished accommodation is available to certain eligible staff to rent; further details can be obtained from the Accommodation Office in building R1.

## POST

Messengers collect and deliver both internal and external mail. Private mail will be accepted for the post but must be stamped by the sender. The internal mail service provides several collections and deliveries throughout the day.





# CONDITIONS

Copies of the SERC Conditions of Employment for both Industrial and Non-Industrial employees are available for reference in the Library and in the Personnel Group.

The Personnel Group is situated in building R20 and is divided into sections dealing with the following subjects:

- (a) Conditions of service; superannuation; annual, sick and special leave (telephone 5495 or 5501)
- (b) Recruitment; probation; promotion reviews; Council vacancy notices (telephone 5510)
- (c) Travel within the UK and overseas (telephone 5575 or 6184)
- (d) Claims for travel and subsistence (telephone 5585 or 5228)

Advice on any of the above subjects may be obtained by telephoning the extension quoted or by visiting the Group. Personnel Group staff are also available to discuss personal problems at any time.

## PAY

Your rate of pay is given with your letter of appointment. Queries should be referred to Salaries Section (telephone 5395) for monthly paid employees and to Wages Section (telephone 5385) for weekly paid employees. Pay cards for weekly paid employees should be signed by your Supervisor and handed in to your nearest collecting point by 0900 hours each Friday morning. Special arrangements are made prior to public and privilege holidays.

## HOURS

Normal Laboratory working hours are:  
0830–1710 Monday to Wednesday  
0830–1700 Thursday  
0830–1600 Friday

Some employees may be required to work different hours.

## LEAVE

The annual leave year runs from March to February.

Your annual leave allowance is stated in your letter of appointment. Application for any period of leave is made on a leave card (usually kept in Divisional Administration Offices or by Supervisors) and must be approved by your immediate Supervisor or Group Leader before any leave is taken.

Special leave may be granted in exceptional circumstances. Applications should be made to the Personnel Officer.

## SICK LEAVE

In all cases of illness or incapacity, staff must inform their supervisor as soon as possible. Staff returning from sick leave should complete the appropriate sick leave form (obtainable from DAOs) and send it to the Personnel Group. Sick absences of more than seven consecutive days must be covered by a doctor's statement.

## OFFICIAL TRAVEL

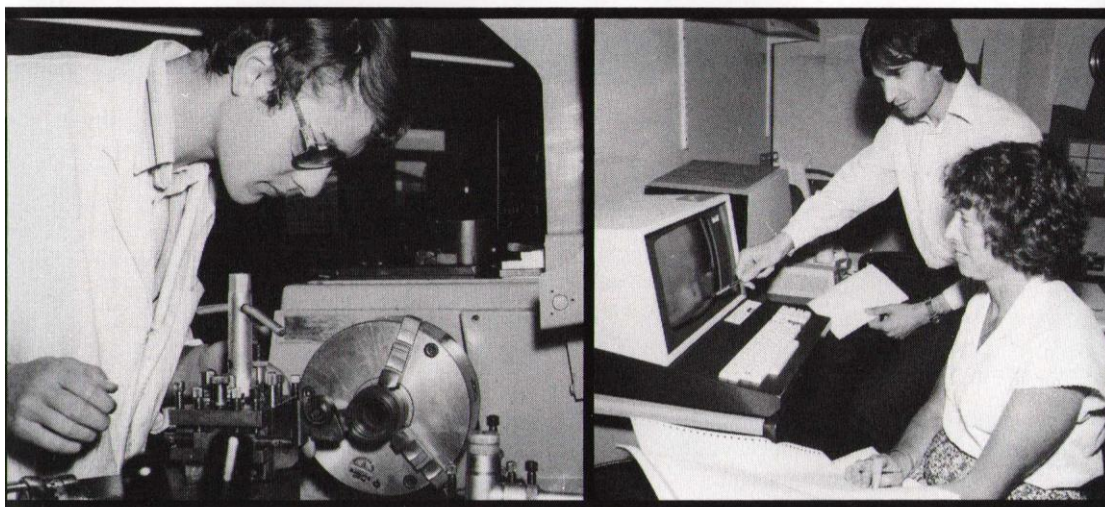
For local journeys, self-drive cars and vans are available to permit holders, who must have had a full driving licence for twelve months. Applications to become a permit holder are made through Group Leaders to the Transport Officer, building R54. Booking sheets are held in DAO offices for allocated divisional vehicles and in the Transport Office for all other vehicles.

In certain circumstances, employees may use their private cars for official business and claim a mileage allowance. The conditions upon which the allowance is paid are set out in official SERC notices available in Divisional Administration offices.

Airline tickets, foreign hotel reservations, visas and other foreign travel arrangements are handled by Travel Section in building R20 (telephone 5575).



# OF SERVICE



There are fixed rates of payment of travel and subsistence expenses to staff required to travel on official business or who have to work away from the Laboratory. Further details, rail travel warrants and claim forms are available from DAOs. All claims should be submitted within one month to the Claims Officer in building R20 (telephone 5585).

## **SAFETY**

Safe working practices and safe systems of work are regarded as pre-requisites of good management. All staff are encouraged through publicity, training and safety codes to develop safety awareness as an essential ingredient of their everyday work.

All employees are required by law to take reasonable care for the health and safety of themselves and of other persons at work, and to co-operate with the employer in their safety duties. All new entrants are required to attend a safety course run by the Safety Officer. Refresher courses and special instruction are also organised by the Safety Section. The primary responsibility for safety is vested in line-management; safety committees monitor safety

performance; and the Health and Safety Group advises on safety and radiation protection. Further information is available from the Safety Officer (telephone 5329) and the Radiation Protection Officer (telephone 5253).

## **TRAINING**

Staff training in RAL is intended to improve the quality of the employee's work for the Council and assist in developing his/her career. Junior employees are encouraged to continue their education, particularly in areas relevant to their work. Support is given for part-time courses, usually those leading to Technician Education Council (TEC) or Business Education Council (BEC) qualifications although other courses may be used as appropriate. Employees who show high academic potential may apply for support to enable them to attend full-time or sandwich degree courses. All employees are expected to attend management courses at appropriate points in their careers and to attend technical short courses as the need arises. Employees should discuss their training needs with their supervisor and/or with the Laboratory's Training Officer in building R20 (extension 5266).



# CONDITIONS OF SERVICE

## EMERGENCY SERVICES AND MEDICAL FACILITIES

First Aid, Ambulance and Fire Fighting teams are available at any time (telephone 2222 giving your location and reason for the call).

First Aid Boxes are provided at positions around the site and on all Laboratory vehicles.

Medical and nursing staff are in attendance at the Harwell Medical Centre throughout the working day and provide a comprehensive service for dealing with injury or illness at work.

New employees are medically examined. Thereafter medical interviews are carried out on a three-yearly cycle. Certain categories of employees receive an annual medical examination.

The Medical Branch will always give advice and recommend a course of action for continued treatment for injury or illness (telephone 72-4742 or 4156).

## TRADE UNIONS AND STAFF ASSOCIATIONS

All employees are encouraged to become members of their appropriate Trade Union or Staff Association. The telephone extensions of the local representatives are listed in the internal telephone directory. The following Trade Unions and Staff Associations are recognised:

### Industrial Trade Unions

Amalgamated Union of Engineering Workers (AUEW). Electrical, Electronic Telecommunication and Plumbing Union (EETPU). General and Municipal Workers' Union (GMWU). Transport and General Workers' Union (TGWU).

### Non-Industrial Staff Associations

Association of Government Supervisors and Radio Officers (AGSRO). Civil and Public Servants Association (CPSA). Civil Service Union (CSU). Institution of Professional Civil Servants (IPCS). Society of Civil and Public Servants (SCPS).

All the Trade Unions are represented on the RAL Joint Consultative Committee. Similarly

all the Staff Associations have representatives on the Laboratory Whitley Committee. Both Committees meet regularly and are the main channels for communication and discussion between Employees and Management.

## WELFARE

The Senior Welfare Officer is Mr R A Phelps at AERE Harwell (telephone 72-3061) and the Welfare Officer, with special responsibility to Rutherford Appleton Laboratory staff, is Mrs B Cairns (telephone 72-2128).

The Welfare Branch provides a comprehensive welfare service for all RAL employees. The Welfare Officer is available for consultation at all times in building 363, Curie Avenue, in the Harwell shopping precinct. Close contact is maintained with all local authorities, social services and voluntary organisations.

There is a welfare fund from which help can be given to necessitous welfare cases. The money for this fund comes from voluntary contributions from employees who are able to contribute a minimum of 2p per week or 10p per month. Employees who wish to contribute should contact 72-2128.



# ACTIVITIES OF THE LABORATORY

The Laboratory's activities cover a wide range of science with staff actively participating in the various programmes in collaboration with university and polytechnic scientists. Staff also

provide substantial support for the experiments.

Fuller details of the Laboratory's work can be found in the annual report available in the Library.

## COMPUTING

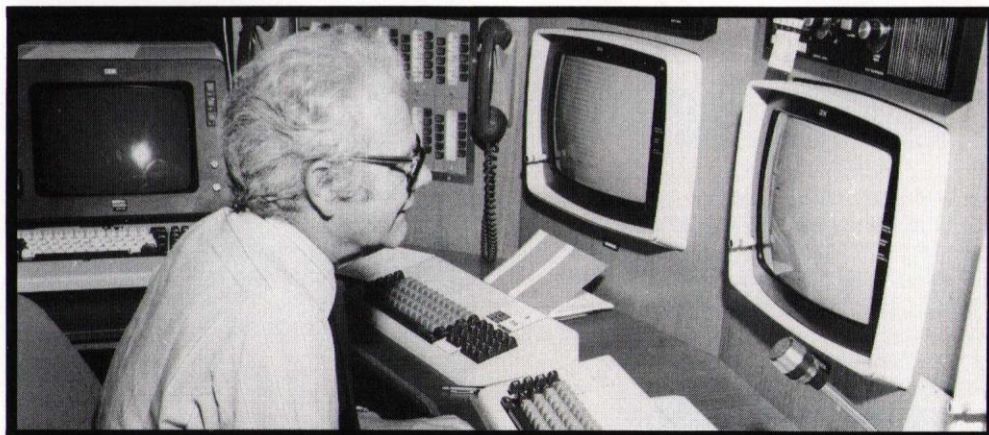
The Laboratory's research and development programmes are supported by powerful computing facilities. RAL provides one of Europe's most powerful batch-processing computer services based on an IBM 3081 with extensive secondary storage and communications links from workstations and from other computers. An ICL ATLAS 10 is due to be added to this complex during 1983. As well as providing facilities for university users, the Laboratory carries out research and development in various aspects of computing, data communications and networks requirements.

The Laboratory manages a national interactive computing facility which links computers distributed among several research

centres in the UK. The facility provides a good interactive computing service to aid creative research and development, particularly in engineering departments at universities and polytechnics. The work involves applications programs as well as hardware, systems networking and graphics software.

The Laboratory is closely involved with the SERC Common Base Policy in developing software tools and providing a national network of powerful single user systems such as the ICL Perq running Unix. It is also involved in the co-ordination and support of academic information technology and robotics research.

Collaborative programmes of research with industry are taking place which, by defining forward looking computer applications, will result in tangible national benefit.



## LASER RESEARCH

A Central Laser Facility operates at the Laboratory to serve university research into the physics of laser produced plasma. The main equipment is a high-power neodymium glass laser system, used for research into laser-plasma interactions and laser compression studies. The work also includes the development of more efficient and new high-power lasers for these and other applications.



# ACTIVITIES OF T

## NEUTRON BEAM RESEARCH

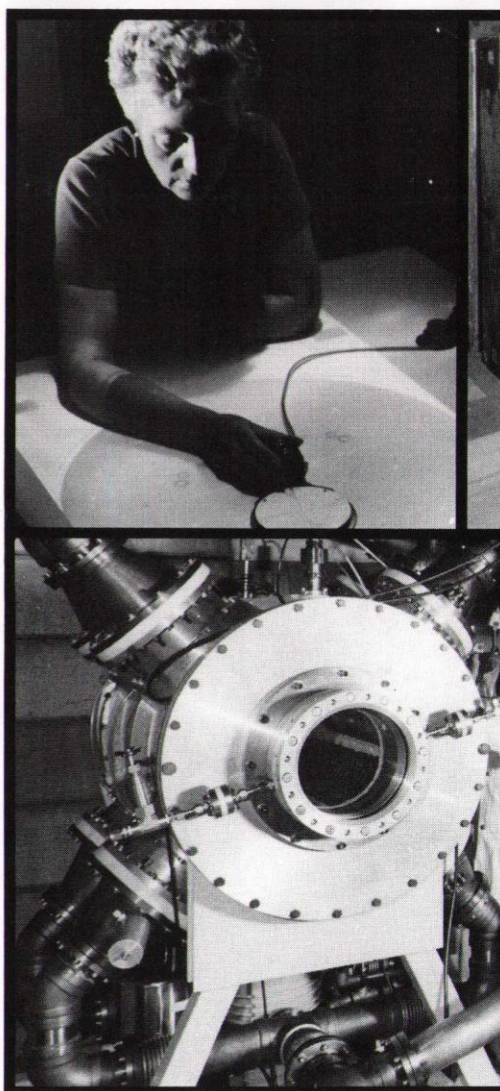
Neutron beams provide a powerful tool for physicists, chemists and biologists to study the structure and properties of matter under a variety of conditions. The Neutron Division supports neutron scattering research by universities using the reactors and electron linac (linear accelerator) at Harwell and the reactor at the Institut Laue Langevin in Grenoble. The Laboratory also develops special instruments and techniques for this work.

A major new facility for neutron scattering research, the Spallation Neutron Source, is currently under construction at the Laboratory. This will provide an intense pulsed source of neutrons. It is scheduled to be available for research in 1984.

## PARTICLE PHYSICS

Particle physics is directed at improving our understanding of the ultimate substructure of matter and of the laws which govern the behaviour of the fundamental particles. The apparatus for particle physics experiments is large and complex, in striking contrast to the sub-nuclear scale of the processes under study; typical experiments take several years to complete. Most UK experiments use particle accelerators located at international research centres such as the CERN Laboratory in Geneva and the DESY Laboratory in Hamburg.

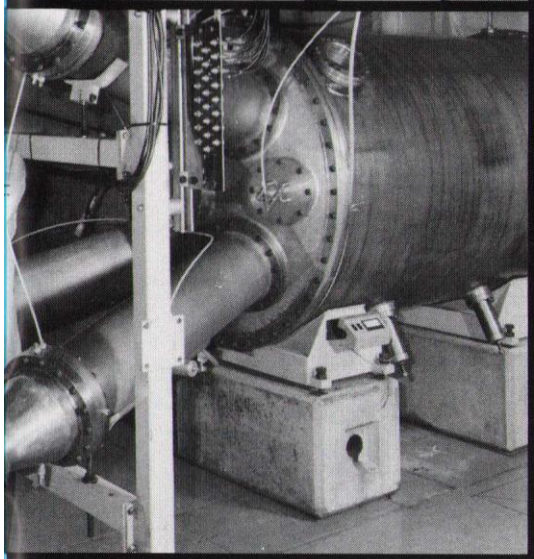
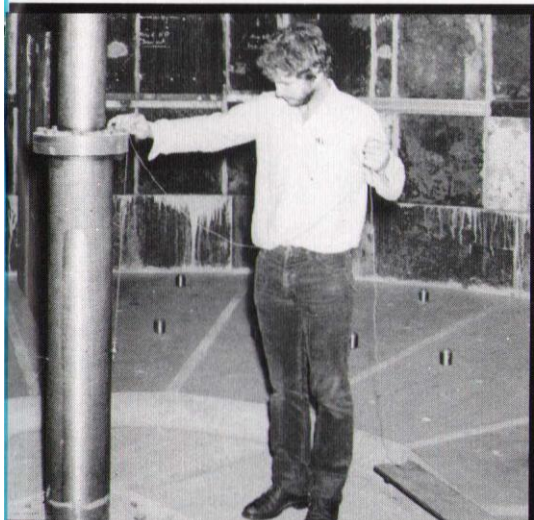
RAL supports and helps to co-ordinate UK involvement in this research. It provides teams of researchers who collaborate with groups from UK universities in performing experiments as well as experts in electronics, mechanical engineering and computing who work together with the physicists to design, construct and commission apparatus. After periods of data-taking at the accelerator centres, the results are analysed using the powerful computing facilities available at RAL.



The Laboratory is also an important centre for the study of the theory of particle physics and the communication between experimental and theoretical physicists provides a powerful stimulus for ideas.



# THE LABORATORY



## SPACE SCIENCE

Cosmic and solar programmes (Space and Astrophysics Division) are prominent in the Laboratory's diverse research activities. Cosmic

space astronomy concentrates on those radiations, such as ultra-violet and infra-red emissions and X-rays, that fail to penetrate the obscuring blanket of the Earth's atmosphere and can be monitored only from instruments on spacecraft. Solar research is important because the Sun is the astronomer's bridge to the study of other stars. It is the only star close enough to study in fine detail and solar astronomy is the basis for our understanding of what happens on all other stars. Radiation and particle emissions from the Sun are the dominant factors influencing the Earth's atmosphere and ionosphere and controlling all aspects of life on our planet. RAL has played a major role in observations of the Sun from space. The interaction of solar emissions with the Earth's environment in space is another important area of investigation.

The Geophysics and Radio Division embodies a wide range of studies of the Earth's atmosphere and climate. In space, they range from satellite-borne methods of investigating the magnetosphere, the comet-like plasma sheath which surrounds the Earth and extends far beyond the Moon, to instruments for the remote sensing of the sea surface from spacecraft.

The ionosphere, the plasma region nearer the Earth, which plays an important part in the propagation of radio waves, is also a subject of study using such waves as an investigative tool.

Additionally there is terrestrial research, where the understanding of the complex interactions between the Earth's atmosphere, land mass, oceans and ice remains a great challenge for science. Observing the Earth from space through remote sounding techniques provides the means for making global measurements which are essential for understanding the Earth's climate system.

Research into the constituents of the middle atmosphere forms another aspect of the G & R Division's programme of work in which experiments both in space and in the laboratory are carried out. Many of these activities interact fruitfully with the work of other divisions, particularly in such fields as instrumentation development and satellite-borne investigations.



## TECHNOLOGY AND INSTRUMENTATION

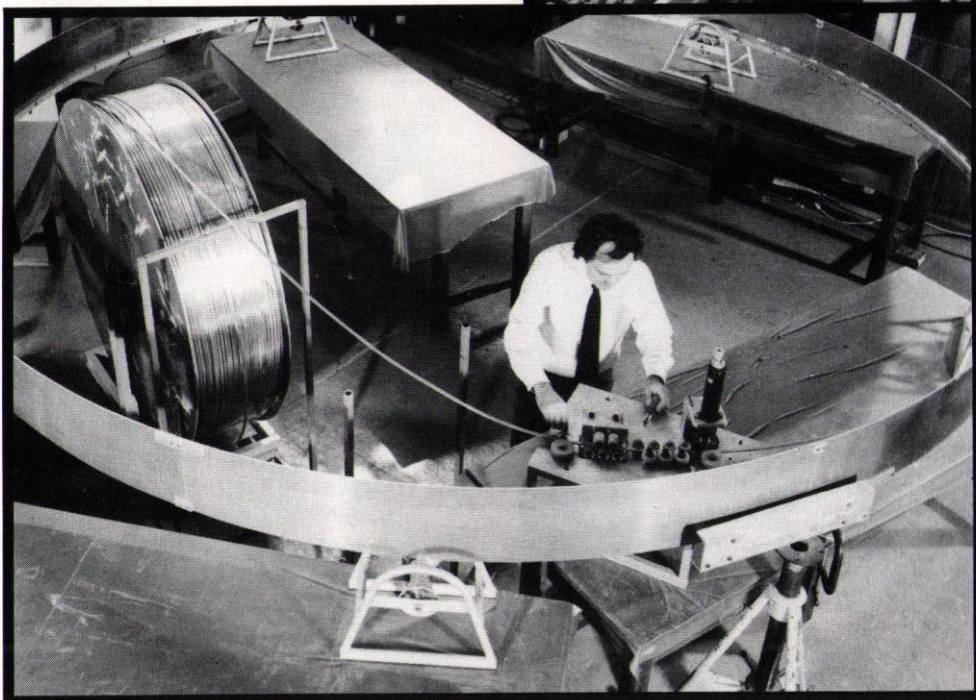
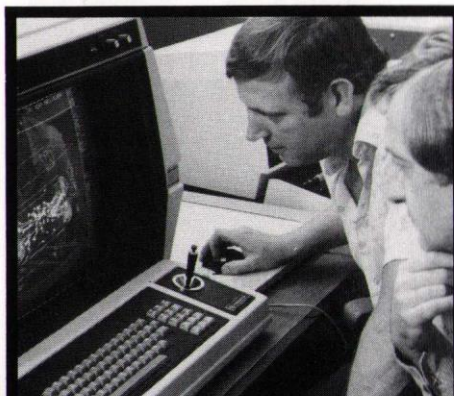
Underlying the multi-disciplined research at the Laboratory is a strong programme of applied physics research and technological development to provide sophisticated apparatus and special capabilities for a wide range of experiments. This work has resulted in a considerable involvement in superconductivity and cryogenics, in instrumentation, data handling and in computing. The Laboratory supports a facility for electron beam lithography.

The increasing importance of information technology has led to increased activity in micro-electronics including custom-designed silicon microcircuits and their application in novel electrical systems and computers.

An energy research support unit offers a service for energy research in the universities. This wide range of activities provides a useful cross-fertilisation between different areas of pure research and provides an additional impetus for industrial development work.

## ENGINEERING AND BUILDING WORKS

Activities in this area include the design and construction of buildings, both traditional and highly specialised, together with the associated mechanical and electrical engineering services. The Laboratory also provides an architectural, engineering and environmental service to SERC as a whole.



Rutherford Appleton Laboratory  
Chilton, Didcot  
Oxon OX11 0QX  
Telephone: Abingdon (0235) 21900