SCIENCE RESEARCH COUNCIL

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The Science
Research Council
was created in 1965
to support research and
post-graduate
education in
universities in science
and technology. It is one
of five Research Councils
responsible to the
Secretary of State for
Education and Science
from whom it
receives an annual
grant of more than
£40 million

Opposite page: Ariel III, then known as UK3, was launched in May 1967.
UK4, structurally similar to Ariel III, is due for launch by NASA in 1971

Research and post-graduate education

The Science Research Council provides funds for research and post-graduate education in science and technology at universities, colleges and similar institutions. It also provides, in its own six laboratories, and through the Space Research Management Unit, national research facilities which are available for use by university research workers. The Council ensures access to international facilities through membership of international scientific organisations, notably the European Organisation for Nuclear Research (CERN), the European Space Research Organisation (ESRO) and the joint project with the Australian government for the construction of a 150-inch optical telescope at Sidings Springs in Australia.

Policy is decided by a council of 16 part-time members drawn from universities and industry who meet monthly under their full-time chairman, Professor B. H. Flowers, FRS. The council is assisted by three boards—one concerned with Astronomy, Space and Radio, one with Nuclear Physics and one, the University Science and Technology Board, with post-graduate education in all scientific subjects and the support of research in biological, physical and engineering sciences. The responsibilities of the three boards are shown in the chart opposite.

Professor B. H. Flowers, FRS

Responsibilities of the boards

University Science & Technology Board (Chairman: Professor Sir Ewart Jones, FRS)

Post-graduate studentships and fellowships in all subjects covered by the Council. Research grants in:

Biology
Chemistry
Computing science
Mathematics
Physics
Metallurgy
Materials science
Cybernetics
Aeronautical engineering
Civil engineering
Chemical engineering
Electrical engineering
Mechanical engineering
Production engineering
Systems engineering
Experimental psychology

Atlas Computer Laboratory

NATO science schemes

Nuclear Physics Board (Chairman: Professor D. H. Wilkinson, FRS)

Research grants in nuclear physics

Rutherford High Energy Laboratory

Daresbury Nuclear Physics Laboratory

CERN (European Organisation for Nuclear Research)

Astronomy, Space & Radio Board (Chairman: Professor Sir Bernard Lovell, OBE, FRS)

Research grants in astronomy, space and radio

Royal Greenwich Observatory

Royal Observatory Cape of Good Hope

Radcliffe Observatory Pretoria, South Africa

Royal Observatory Edinburgh

Radio and Space Research Station

Astrophysics Research Unit at Culham Laboratory

ESRO (European Space Research Organisation)

Anglo-Australian telescope

The Council makes research grants

to investigators who need greater resources for their work than can normally be provided from university or college funds. In 1968 there were some 2,000 current grants involving an expenditure of about £8 million. These give help to research workers in universities and similar institutions in initiating researches, by supplementing for limited periods the universities' own resources. The researches must be of timeliness and promise, this being widely interpreted and judged by the committees and boards composed of scientists and technologists from universities, industry and government.

Support is normally given by grants for approved projects, providing for staff, equipment, essential travel and other services. Grants may also provide for major capital facilities, research groups or 'institutes', i.e. inter-disciplinary organisations within a university, or co-operative projects between several universities, or between universities and industrial organisations.

Applications for research grants are considered by specialist committees of the three boards, which select for support the research proposals which appear most timely and promising.

A booklet, *SRC Research Grants*, explains the details of the research grant scheme and is available on request.

The Council has made a grant of £221,975 to Professor D. Michie at Edinburgh University for research into machine simulation of learning, reasoning and memorising. Professor Michie and his team have already designed a computer which 'converses' in a language called POP-2. Below: Professor Michie seated at the console of POP-2.

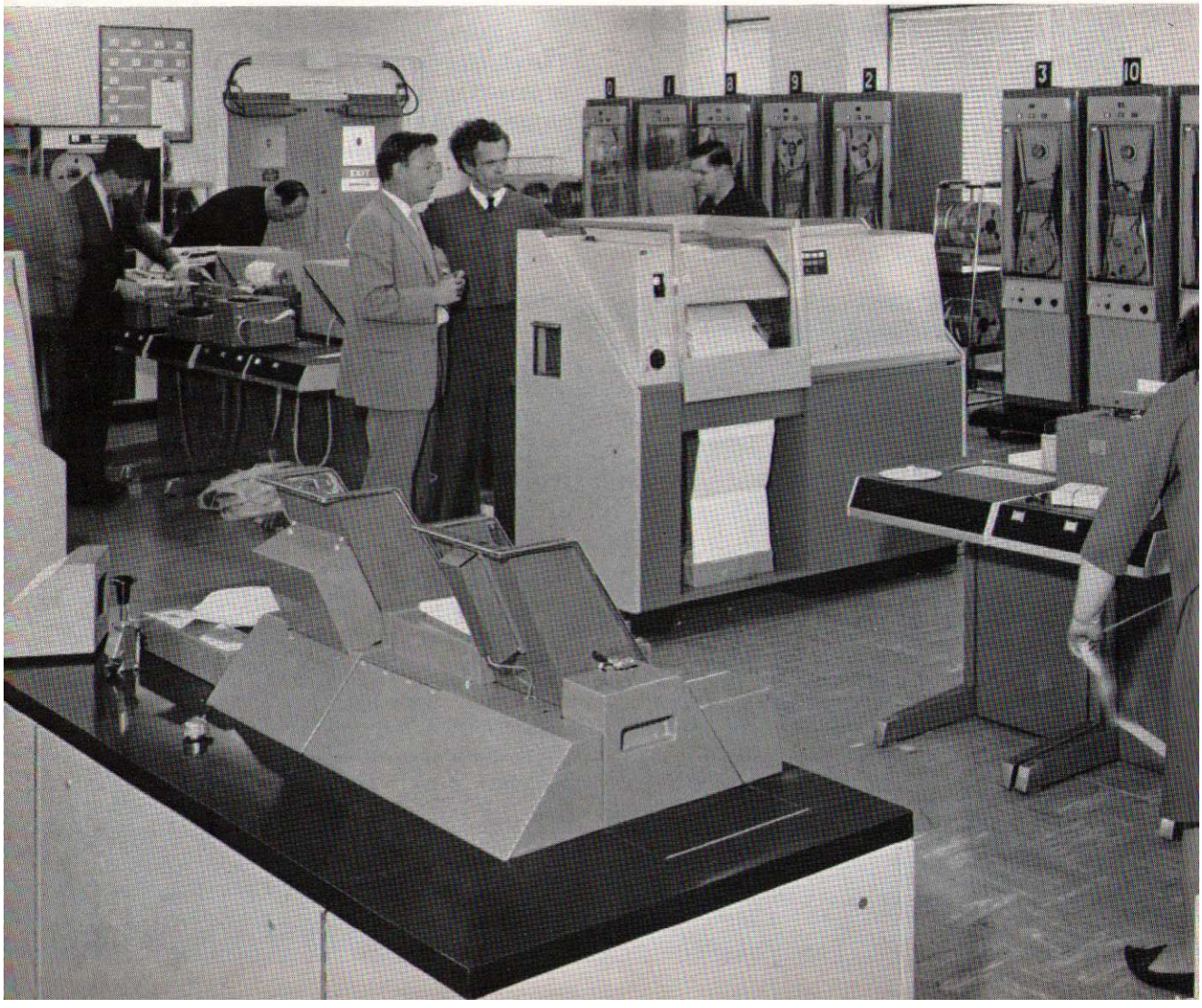
Some university research projects assisted by SRC grants

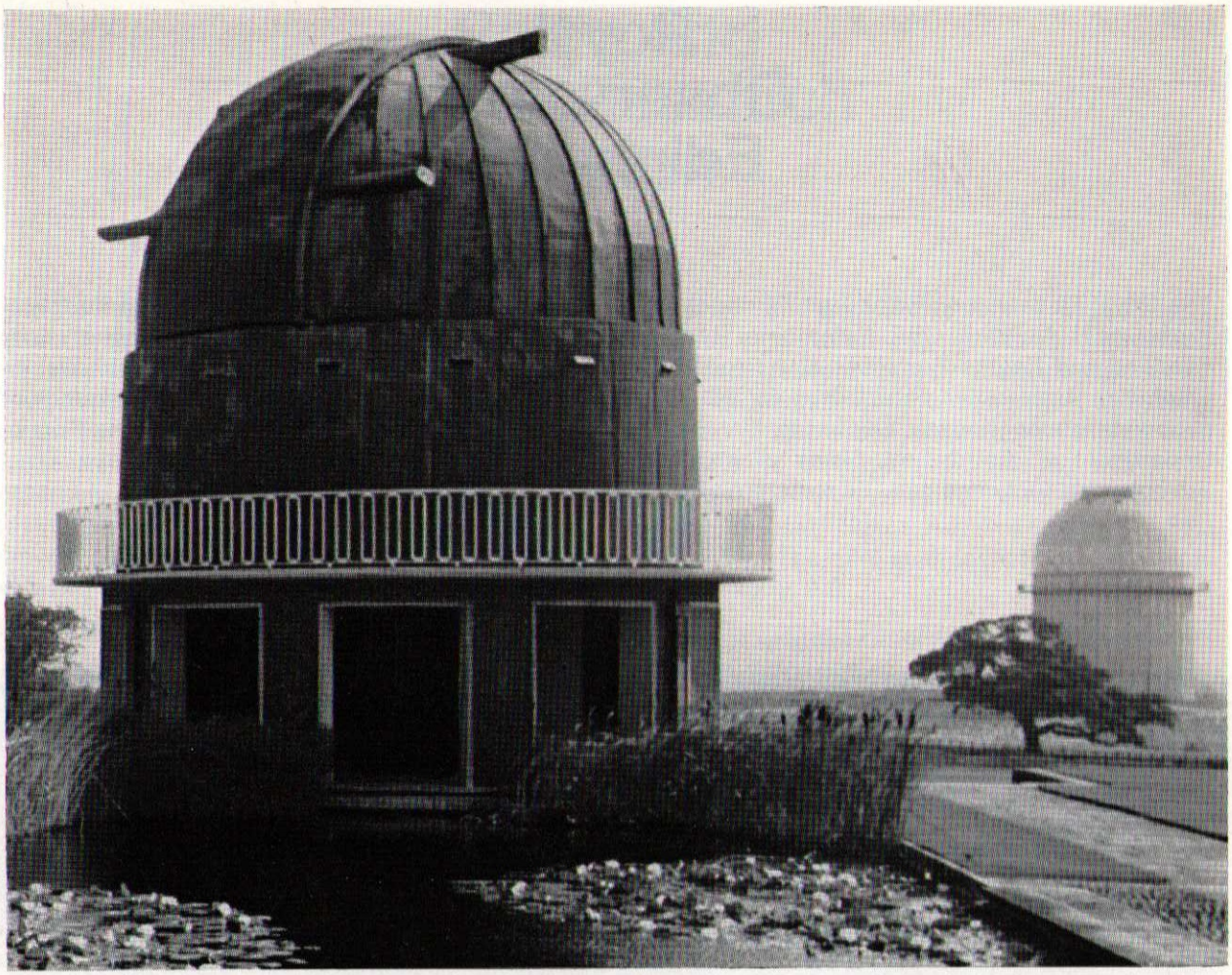
Radio-astronomy at Jodrell Bank (Manchester University) and Lord's Bridge (Cambridge University).	Automatic control of manufacturing plant by computer; a co-ordinated programme of research at Cambridge, London and Manchester Universities.
Space research using both rockets and satellites. In this work the Council collaborates closely with the European Space Research Organisation (ESRO) and the United States National Aeronautics and Space Administration (NASA).	Cryogenic engineering at Oxford University. The studies centre around the production, engineering problems and mechanical properties of materials at extremely low temperatures as well as investigations of solid state and superconducting devices.
Mechanism of the brain function, proceeding from a study of the visual and tactile memory systems of Octopus at University College, London, and the Marine Station, Naples— the studies involve touch discrimination, learning ability and retention in the memory.	Continued support for research into organic fluorine chemistry at Birmingham University. This important area of chemical research has led to industrial applications which include refrigerants, aerosols, fluoro-plastics and rubbers, waterproofing agents and hydraulic fluids.
Work on problems fundamental to the advancement of desalination technology is being supported by major grants to Glasgow University and the University of Strathclyde. Theoretical data of thermodynamic and hydrodynamic studies relating to desalination is being checked against operational data obtained from laboratory and industrial pilot scale plan. The research programme and associated advancement course provides valuable training for post-graduate students from this country and overseas.	High energy physics, particularly the analysis of the results of bubble chamber experiments carried out on the 28 GeV accelerator at CERN, and on the 7 GeV accelerator at the Rutherford Laboratory; research in nuclear structure physics, using low energy accelerators operated by universities.

Atlas Computer Laboratory

The Atlas Computer Laboratory at Chilton, near Didcot, Berkshire, was set up in 1961 and is directed by Dr. J. Howlett. The ICT Atlas computer processes about 3,000 jobs a week for university research workers, for government departments, including the Meteorological Office, for the Research Councils and for the Atomic Energy Authority. It also carries out its own research programme on computer applications and the improvement of techniques. The staff numbers about 100.

Machine room, showing tape decks and closed-circuit television





The Equatorial Group at Herstmonceux

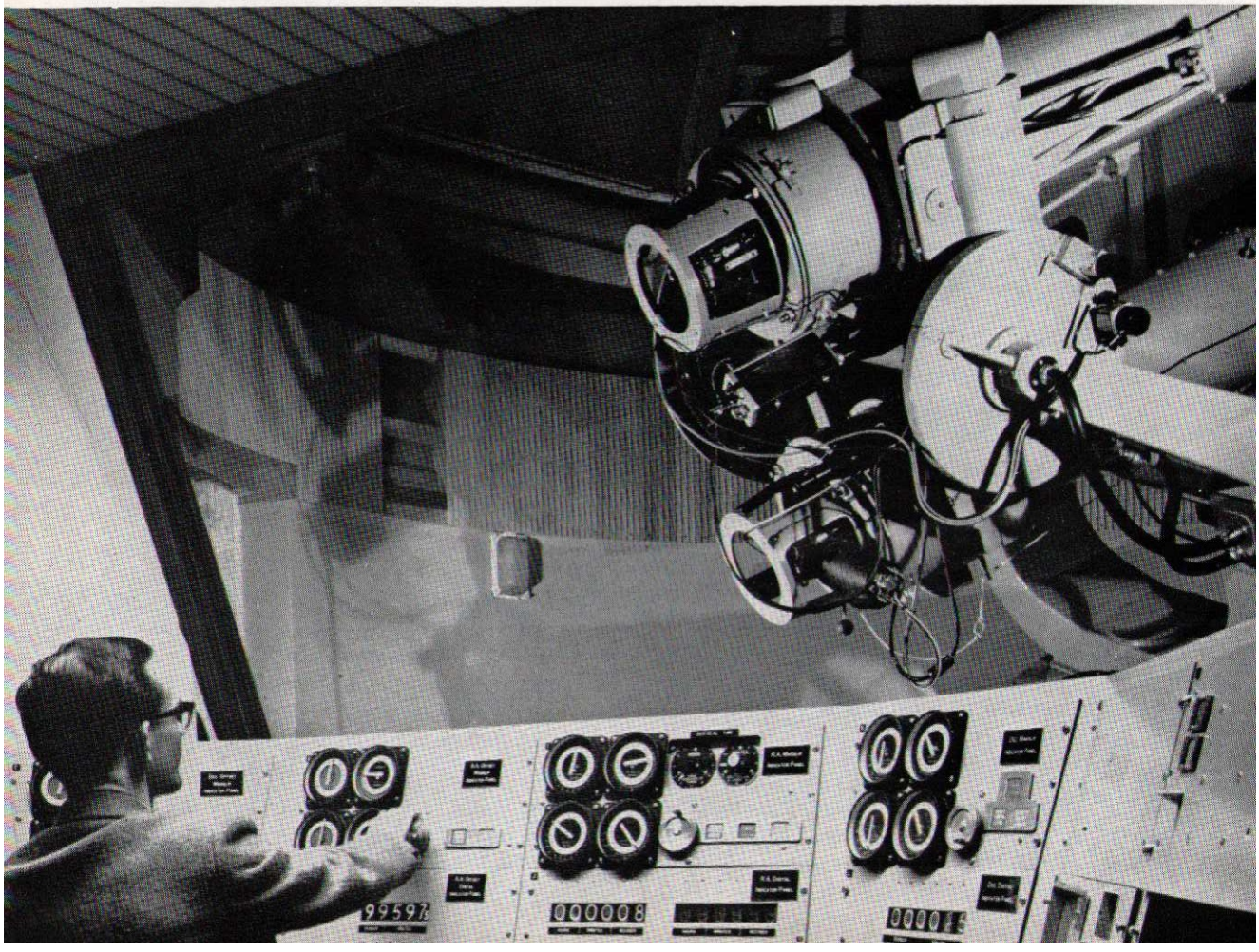
Royal Greenwich Observatory

The Royal Greenwich Observatory at Herstmonceux, Sussex, is directed by Sir Richard Woolley, OBE, FRS, the Astronomer Royal. Founded in 1675, it studies the evolution and nature of the stars and is responsible for our national time service (the Greenwich 'pips'). The 98-inch Isaac Newton telescope, which was inaugurated in 1967, is the largest optical instrument of its kind in western Europe and will be used by university as well as Herstmonceux astronomers. An important part of the observatory is HM Nautical Almanac Office which, through its almanacs and ephemerides, renders a vital service to navigation and astronomy. The RGO is also responsible for the Royal Observatory at the Cape of Good Hope, South Africa, and, under an SRC agreement with the trustees, the Radcliffe Observatory in Pretoria. This possesses one of the two largest telescopes in the southern hemisphere at present and provides excellent facilities for British astronomers. The staff of the RGO and its associated observatories numbers about 270.

Royal Observatory Edinburgh

The Royal Observatory, Edinburgh, is directed by Professor H. A. Brück, CBE, Astronomer Royal for Scotland and Regius Professor of Astronomy at Edinburgh University. Established in 1818, the observatory also houses Edinburgh University's Department of Astronomy. Fields of study are astrophysics, including galactic structure and evolution, the design of advanced astronomical instruments and space research. The observatory runs a satellite tracking station in Peebles-shire and in 1967, in collaboration with the University of Rome, opened a new outstation at Monte Porzio, in Italy, equipped with a Schmidt telescope. Total staff numbers 70.

Control room of the automatic 16-inch twin telescope used for measuring the relative brightness of the stars

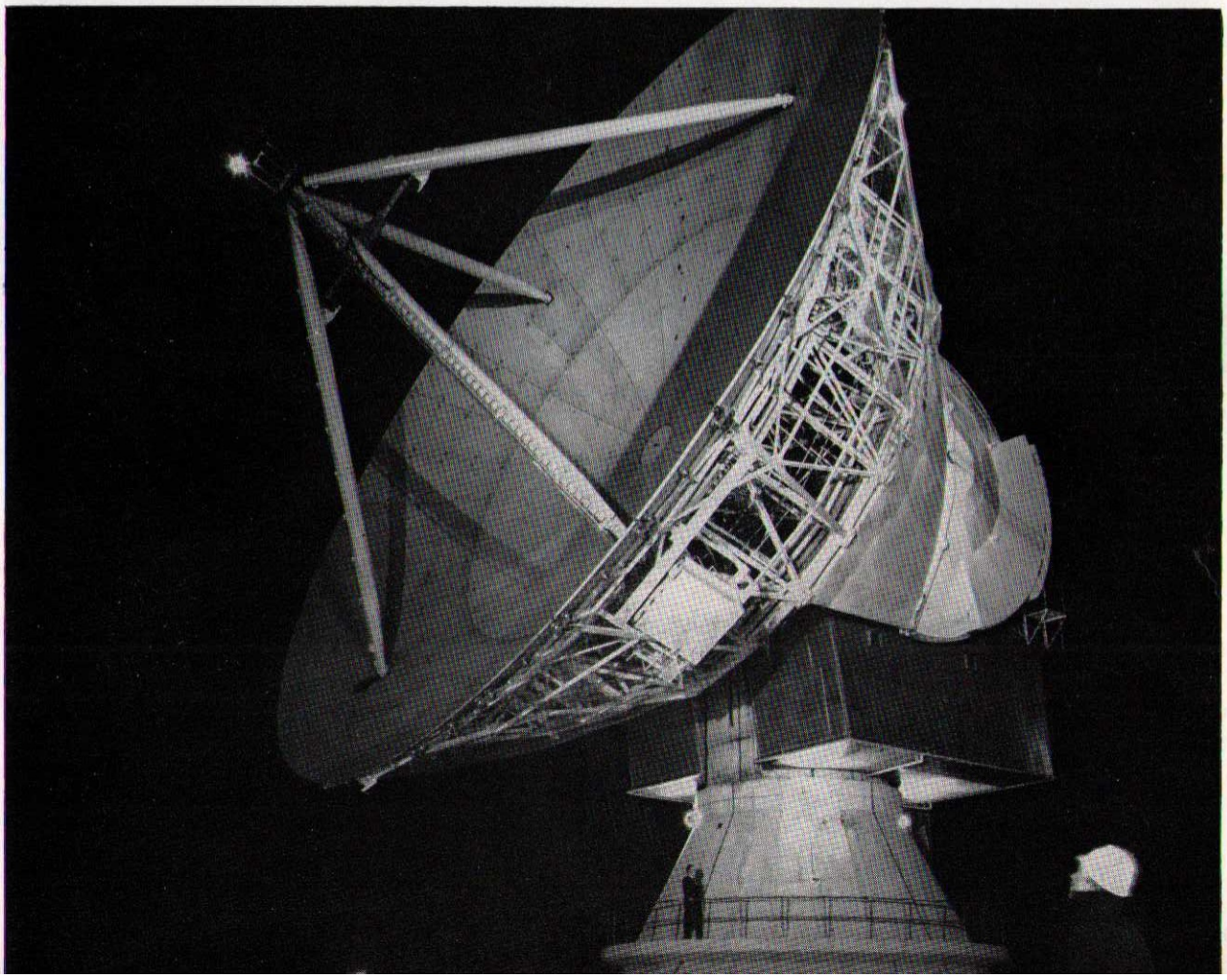


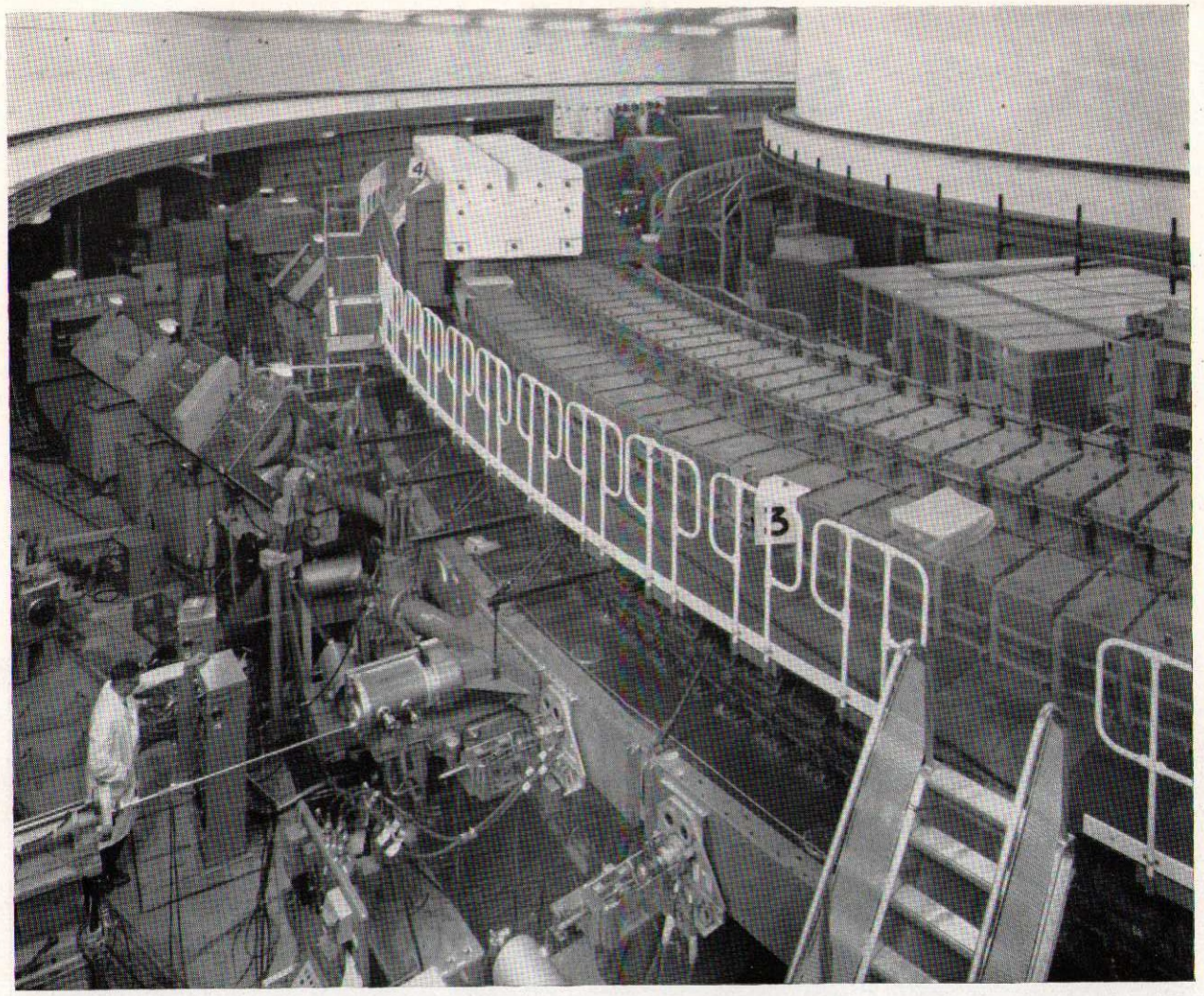
Radio and Space Research Station

The Radio and Space Research Station at Ditton Park, Datchet, near Slough, Buckinghamshire, is directed by Dr. J. A. Saxton. Established in 1928, the station has three outstations—at Singapore, Port Stanley in the Falkland Islands, and Lerwick in the Shetland Islands—and operates a steerable aerial at Chilbolton, Hampshire. The main field of study is the propagation of radio waves through the atmosphere, including a detailed experimental and theoretical study of the ionosphere and the effects upon it of radiations from the sun. About half its work is concerned with space research, partly experimental, using rockets and satellites for observations, and partly provision of space services including the running of a satellite tracking and telemetry station at Winkfield, Berkshire, belonging to the National Aeronautics and Space Administration (NASA) of the USA. The total staff, including outstations, numbers about 270.

The 82 ft dish-type steerable aerial at Chilbolton

(Photograph by Barnet Saidman, FRPS, FIBP)

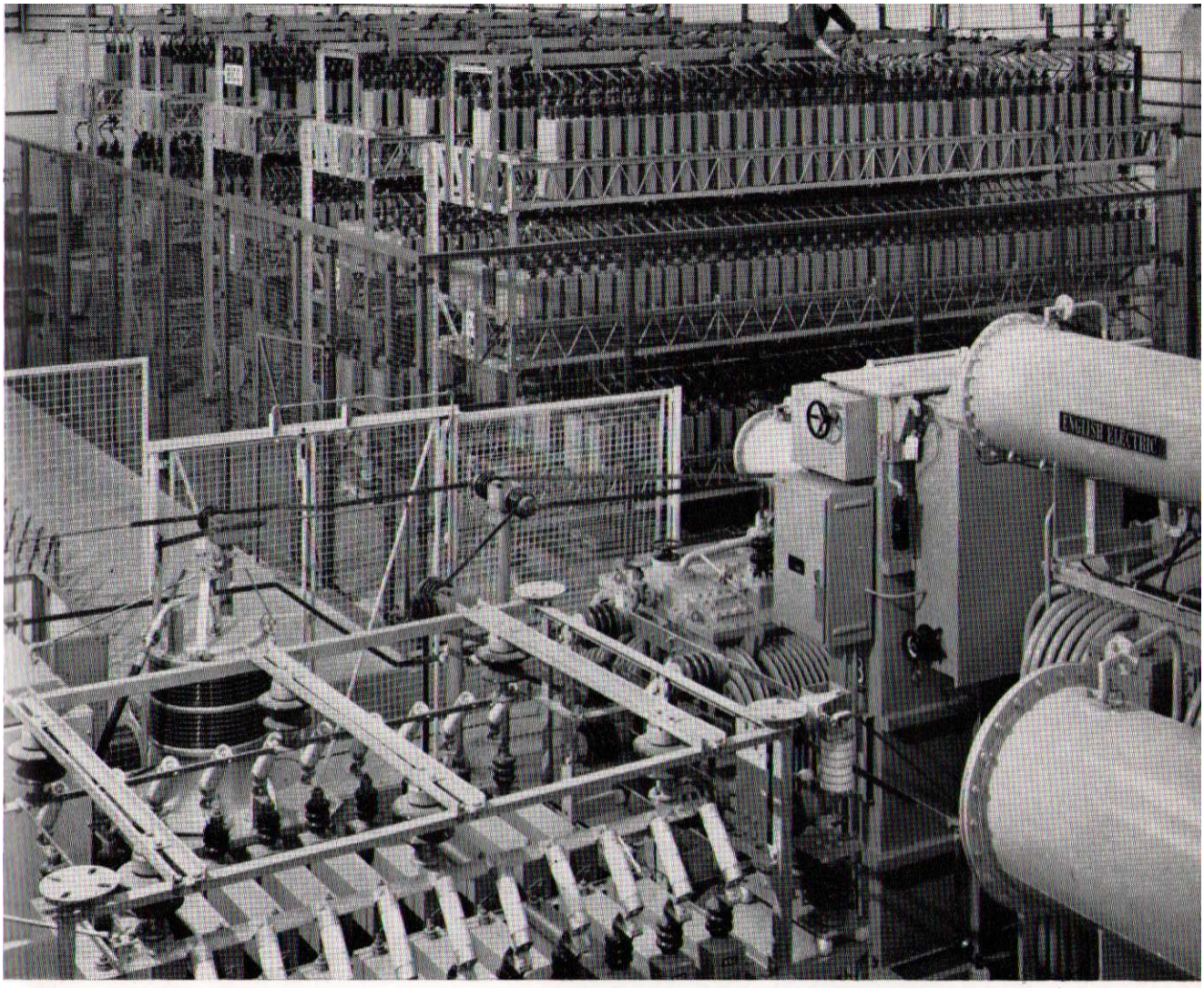




Interior of the Nimrod Magnet Hall, showing beam lines emerging from the vacuum chamber

Rutherford Laboratory

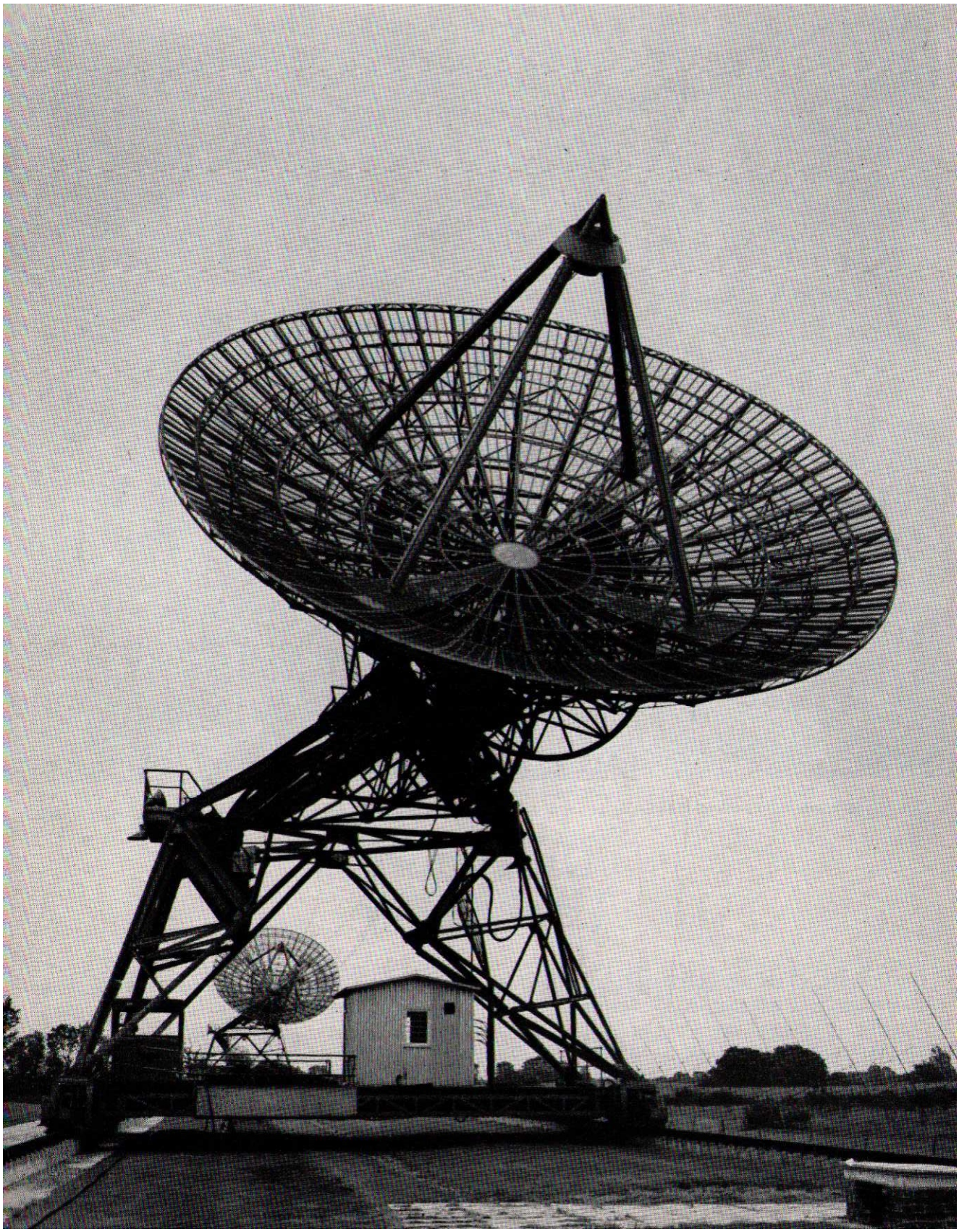
The Rutherford Laboratory at Chilton, near Didcot, Berkshire, is directed by Dr. T. G. Pickavance, CBE. Founded in 1957, this high energy physics research establishment was officially opened in 1964. About 160 physicists from universities, the Atomic Energy Research Establishment and the Rutherford Laboratory itself are working on experimental programmes using two proton accelerators. The first of these to come into operation, in 1959, was the 50 MeV Proton Linear Accelerator. The second was the 7 GeV Proton Synchrotron Nimrod. Experimental equipment includes three large bubble chambers, and an IBM 360/75 computer. Research and development work is carried out on instrumentation important in high energy physics, for example, accelerators, particle beam systems, automatic data handling systems, and superconducting magnets. There is a nuclear and radiochemistry laboratory, with facilities for chemists who use accelerators to irradiate materials. The laboratory has a staff totalling 1,200.



The magnet power supply area of the 5 GeV electron synchrotron NINA *(Photograph by courtesy of British Insulated Callender's Cables Ltd)*

Daresbury Laboratory

The Daresbury Laboratory at Daresbury, Cheshire, is directed by Professor A. W. Merrison and is primarily intended for use by the northern universities. With its 5 GeV electron synchrotron accelerator, the laboratory caters for a different field of research from its sister establishment, the Rutherford Laboratory, and much of the early planning and design work was conceived by teams from the universities of Liverpool, Manchester and Glasgow. These universities, now joined by Lancaster University, are using the high energy beams from NINA, as the accelerator is called, on experimental programmes to study the physics of elementary particles. There are 450 staff.



The Council gives post-graduate studentships

for post-graduate education and training to be undertaken in the United Kingdom and abroad by men and women with good honours degrees in science and technology or equivalent qualifications. Studentships provide both fees and a maintenance grant, whose size depends on the student's circumstances. They are awarded either for one year for advanced courses of study or for two to three years for training in research methods. Studentships are awarded both to new graduates and to those who have already worked in industry or teaching, for whom there are additional allowances. Extra allowances are paid to students who have had industrial experience, and awards are made and held in reserve while industrial experience is being obtained. Some awards are earmarked for research students working on collaborative projects with industry.

Fellowships are awarded for post-doctoral research.

In 1968 the Council awarded about 3,300 new studentships and fellowships including those given under the NATO Science Fellowship Programme. A booklet, *SRC Studentships and Fellowships*, explains the details of the Council's post-graduate and post-doctoral awards and is available on request.

Opposite page: The 'one-mile' radio telescope operated by the Cavendish Laboratory at Lord's Bridge, Cambridge. A 'five-kilometre' (three-mile) instrument is to be built at the same site

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