which led to significant improvements in design. At another period he gave his attention to underwater explosion phenomena and among other things predicted the multiple oscillations of the explosion gas bubble, an effect that was observed experimentally many years later. In the early part of the Second World War he was much involved with the problem of the magnetic mine and made big contributions to the successful degaussing of our ships.

Butterworth possessed the ability to apply his mathematics to problems which at first sight appeared unlikely to admit of mathematical solution. He was, however, able to make progress in many cases by introducing judicious approximations to the physical conditions. Naturally, much depends on knowing the right approximations to make, and in this respect Butterworth invariably displayed an unerring understanding of the physical realities of the situation. He also showed ingenuity in devising experiments both to test his theories and to make progress with problems too complex for mathematical treatment. Naval science is often concerned with large-scale effects, where systematic and extensive experimentation is very difficult. In such cases he would aim at devising a model which could be studied exhaustively in the laboratory. He was able to show, for example, that the complicated details of magnetization of a ship's structure under the combined influence of its degaussing coils and the magnetic field of the Earth could be accurately reproduced using an appropriately scaled steel model of the ship. This made possible an enormous saving of effort when degaussing specifications had to be worked out for a variety of ships during the Second World War. In the same way, he was able to study the trajectories and the effects on entering the water of underwater projectiles by means of small models in a laboratory tank, thus reducing the need for difficult and expensive full-scale experiments at sea. In this case the technique which he developed at Teddington many years ago has been followed by other laboratories ever since.

For security reasons it was impossible for Butterworth to publish much of his work, and on this account his general recognition in the scientific world has been much less than it would otherwise have been.

Although one of the most outstanding scientists in the Admiralty's service, Butterworth was a very quiet and unassuming man. His expert advice was sought on all sides, and he was always ready to give it. His colleagues throughout the Admiralty scientific service had deep respect for him, and those young men fortunate enough to work under his direction held him almost in veneration. H. F. Willis

NEWS and VIEWS

The Queen's University, Belfast : Prof. Michael Grant, C.B.E.

Prof. Michael Grant, who holds the chair of humanity in the University of Edinburgh, has been elected president and vice-chancellor of The Queen's University, Belfast. He will succeed Sir Eric Ashby (who takes up residence as master of Clare College, Cambridge, next July) in August 1959. Prof. Grant brings a wealth of experience to his new office. He was educated at Harrow and Trinity College, Cambridge. In 1938 he was elected into a Fellowship at Trinity. During the War he was seconded from the Army as British Council representative in Turkey and he later became deputy director of the European Division of the British Council. In 1948 he was appointed professor of humanity in the University of Edinburgh, and during 1956–58 he had leave of absence from his chair to serve as first vice-chancellor of the University of Khartoum. He filled the office of vice-chancellor at Khartoum with distinction through a period of great political and constitutional unrest. Prof. Grant goes to The Queen's University at a time when it is developing rapidly. He will have the double responsibility of maintaining the University's international status and at the same time preserving the University's close ties with its region. He has high qualifications for this double responsibility, and it is a cause of great satisfaction that university education in Ulster will be under such experienced leadership.

Department of Leather Industries, University of Leeds : Prof. D. Burton

It has been announced that Prof. D. Burton is to retire in September 1959 from the chair of leather industries in the University of Leeds, which he has held since 1951. Since 1955 he has also been director of the Procter International Research Laboratory, where he was at one time the first research assistant. During his tenure of office there has been a considerable expansion of the activities of his Department. The courses have been revised and the research facilities greatly extended; an electron microscope has been installed and put to good use; the experimental tannery has been modernized and re-equipped; a laboratory for microscopy and bacteriology has been opened; and the Atkin–Thompson postgraduate research laboratory added. Among the topics studied has been the nature and material of the Dead Sea Scrolls. Prof. Burton is widely known and respected in the leather industry as well as in academic circles, and a large number of friends will wish him well in his retirement.

Prof. A. G. Ward

Mr. A. G. Ward has been appointed to succeed Prof. Burton. After obtaining first-class honours in physics at Cambridge and working, for a time, in the Department of Colloid Science in that University, Mr. Ward was lecturer in physics and mathematics at the Technical College at Stoke-on-Trent, until the Second World War, when he worked with the Armament Research Department. During 1946–49 he was in charge of research on rheology at the Building Research Station, after which he became the first director of the British Gelatine and Glue Research Association. Apart from his duties as director, Mr. Ward has made notable advances in our knowledge of the properties of gelatine. His authoritative article (with P. R. Saunders) in the recently published second volume of F. R. Eirich's "Rheology : Theory and Applications" is of outstanding merit. Though Mr. Ward's interests cover a wide field of colloid science, and his little book on colloids, published in 1945, has been much praised, he is perhaps

best known as a rheologist. He was president of the British Society of Rheology during 1951–53, his term of office including the Second International Congress on Rheology held at Oxford. As president, he also served as chairman of the organizing committee of this Congress, in which capacity his administrative abilities and keen business acumen were greatly appreciated.

Molecular Biology in the University of Oregon : Dr. A. Novick

Dr. Aaron Novick, who has been on the staff of the University of Chicago for eleven years, has recently been appointed director of the Institute of Molecular Biology at the University of Oregon. He graduated in chemistry in 1940 and received the degree of Ph.D. in 1943, both in the University of Chicago. Dr. Novick's research has been principally in the genetics and physiology of micro-organisms, reaction kinetics, nuclear measurements and radiation chemistry. During 1943–47 Dr. Novick was with the Manhattan District Project, when he worked in the fields of radiation chemistry, radiochemistry and nuclear physics. In 1947 he was made a research associate with the rank of assistant professor in the Institute of Radiobiology and Biophysics of the University of Chicago. He worked as a Guggenheim Fellow at the Pasteur Institute in Paris during the year 1953–54 before returning to Chicago as associate professor.

European Organization for Nuclear Research

The Council of the European Organization for Nuclear Research (CERN) recently approved contributions from the twelve member States totalling 55,000,000 Swiss francs for 1959 (compared with a budget of 56,000,000 Swiss francs for 1958). Good progress was made during 1958 in the construction of the Organization's two big particle accelerators and of other buildings and ancillary facilities. The first machine, a 600-MeV. synchrocyclotron, came into operation on August 1, 1957. It was recently used to demonstrate, for the first time, the two modes of decay of π-mesons—an experiment of critical importance to fundamental nuclear theory. In view of the rapid progress made at the CERN building-site during 1958, the second accelerator, the 25-GeV. proton-synchrotron, will probably be finished in 1960, the target date originally set. It will then be the biggest particle-accelerator in existence.

Prof. P. Scherrer (Switzerland) and Dr. G. Funke (Sweden) were elected as new members of the Committee of Council. Sir Harry Melville, secretary of the Department of Scientific and Industrial Research of the United Kingdom, was re-elected as member of the Committee. The following were also re-elected : M. F. de Rose (France) as president of the Council ; Prof. W. Heisenberg (German Federal Republic) and M. J. Willems (Belgium) as vice-presidents of the Council ; M. J. H. Bannier (Netherlands) as chairman of the Finance Committee ; Prof. E. Amaldi (Italy) as chairman of the Scientific Policy Committee ; and Prof. W. Heisenberg (German Federal Republic) and Prof. H. Alfvén (Sweden) as members of the Scientific Policy Committee.

Calder Hall Completed

All the reactors at the two Calder Hall nuclear power stations are now working. This stage was reached during the night of December 8–9 when the fourth reactor on the site went critical. The operation was successful and this reactor will now undergo a series of tests while working up to full power in preparation for linking with the grid system to provide electricity. There are two atomic stations at Calder Hall, known as 'A' and 'B'. Work on the first of these started in the summer of 1953 and on the second in 1955. Each station has two reactors and the first of the two in Calder 'A' started operating in May 1956. It achieved full power and was switched into the grid on October 17, 1956, by Her Majesty the Queen. It thus became the first atomic power station in the world to produce electricity on a commercial scale. Both the reactors on the first station have been successfully supplying electricity to the national grid system since February 1957. The power capacity of the four turbo-generators associated with the two reactors is 92 megawatts, of which about 70 megawatts is used by the grid. So far just over 750 million kilowatt hours have been supplied. The first reactor of Calder Hall 'B' started operating in March this year and has been running successfully. Delivery of power was delayed by an accident to a turbo-generator in June, but will probably take place before the end of the year. The last reactor to start operating will start production of electricity two or three months later. The two stations together will have a capacity of 184 megawatts and will supply 140 megawatts to the national grid. A similar station with four reactors is now nearing completion at Chapelcross, near Annan in Dumfriesshire. One of the reactors here is already operating and the whole station will be complete by the end of next year.

Import Duty on Scientific Apparatus and Instruments

In a written Parliamentary reply on December 10, Sir David Eccles, president of the Board of Trade, stated that arrangements are being made for widening the scope of the arrangements for remitting duty on optical and scientific apparatus and instruments. The Board will be prepared to consider such apparatus and instruments imported on and after January 1, which satisfy the definition in the Import Duties Act, 1958, where the rate of duty is 25 per cent or more (minimum chargeable, £50). The President set out a list of apparatus and instruments which will be so considered, provided that they are not obtainable, for the time being, in the United Kingdom.

Josiah Wedgwood and Research

Commenting on the paragraph under this heading in *Nature* of October 25, p. 1130, Dr. A. T. Green, director of research of the British Ceramic Research Association, writes : "This is a striking example of his remarkable foresight, but I should like to point out that the letters between Wedgwood and Bentley, describing the former's efforts to persuade his fellow potters to co-operate in this venture, were rather fully extracted some 28 years ago in the "Wedgwood Bicentenary Volume" of the British Ceramic Society. The fact that Wedgwood, in 1775, proposed the formation of what might have been the first research association, has frequently been mentioned and is a matter of some pride to those of us engaged in ceramic research at the present time".

Northern Advisory Council for Further Education

The eleventh annual report of the Northern Advisory Council for Further Education, which