

recording on wire, tape or a drum is semi-permanent. Mr. G. E. Thomas described a magnetic-drum system in use in Manchester, and Mr. A. Tutchings spoke of some work in progress at the Telecommunications Research Establishment.

When a sub-routine is incorporated in a programme, it is often necessary to modify some of the orders according to their location in the main programme. Mr. Wheeler described how this is done at Cambridge; at the time the sub-routines are taken into the machine, the orders are modified by means of a sequence of 'co-ordinating orders'. Dr. Kilburn and Prof. M. H. A. Newman explained a different system used in the machine at Manchester, where an extra adding circuit is associated with the control system in such a way that one of two numbers (as the programmer may choose) can be added to the numerical part of each order (the address) before it is executed.

Much of what has been said about electronic machines applies also to relay machines; but since a single relay can carry a number of contacts, and since problems of interaction are not so serious as with

valves, more elaborate circuit arrangements are possible without increasing the size of the machine unduly. On the other hand, relays suffer from contact bounce and from transient faults caused by dust between the contacts.

Miss K. H. V. Britten (British Rubber Producers' Research Association) presented, on behalf of Dr. A. D. Booth (Birkbeck College, London), a paper on relay machines, and described the automatic relay calculator which is now nearly completed. This is a parallel binary machine with a magnetic-drum store, and is notable for its small size; it contains only about eight hundred high-speed relays. Numbers contain twenty binary digits and a sign digit. Dr. A. van Wijngaarden described a somewhat similar machine under construction at the Mathematische Centrum at Amsterdam. Dr. S. H. Hollindale gave some information about a relay machine being built at the Royal Aircraft Establishment. This is a true decimal machine, using stepping switches for the registers, and has a floating decimal point. Another relay machine, under construction in Sweden, was described by Mr. G. Kjellberg. M. V. WILKES

NEWS and VIEWS

Newcastle upon Tyne and District

IN preparing a handbook for members of the British Association attending the Newcastle meeting, the local committee has reverted to the older scheme of a publication embracing all aspects of natural history and botany as well as industries of the city and district entertaining the Association. "The Scientific Survey of North Eastern England", which is to be given to each member attending the meeting, is most successful and should find ready acceptance. Physiography, geology and climate are specially notable, while iron and steel, shipbuilding and engineering, of course, command full notice. Broadly speaking, the area covered is Northumberland and Durham, with the northern part of the North Riding of Yorkshire, which Prof. G. H. J. Daysh, who writes an introductory note, points out is a clearly defined region with a character and individuality of its own, though with great and contrasting interests within its boundaries. At least two new towns, Newton Aycliffe and Peterlee, fall within the programme of development of the region. The survey is well documented and has adequate maps, including an ingenious one showing forms of rural and urban buildings in the area.

Sir Gilbert Blane (1749-1834)

GILBERT BLANE was born at Blanesfield, Ayrshire, on August 29, 1749. After studying at Edinburgh and graduating M.D. at the University of Glasgow in 1778, he sailed to the West Indies in 1779 as private physician to Admiral Lord Rodney. His ability and coolness in action won him the Admiral's friendship and the appointment of physician to the Fleet. On his return to London he was elected physician to St. Thomas's Hospital. When Blane was a boy of four, James Lind recommended the use of fresh fruit and vegetables for the prevention of scurvy. At forty-seven, Blane, as commissioner for sick and wounded seamen, succeeded in getting Lind's pioneer suggestion officially adopted by the Admiralty. The disease at once disappeared from the

official sick-returns. Other naval reforms effected by Blane were the ventilation and cleansing of ships, the supply of soap and medical necessities, and the introduction of hospital ships to take the place of shore hospitals. He also advised on quarantine legislation, on the prevention of prison fever, and on many other public health problems. He became a baronet in 1812 after his return from Walcheren, where he had arranged for the transport of the sick following government acceptance of his advice to withdraw the disease-stricken troops from that unhealthy island. Physician-in-ordinary to George IV, and a Fellow of the Royal Societies of London and Edinburgh, his most important book was "Observations on the Diseases Incident to Seamen" (1785). Blane's health began to fail in 1821, and he died on June 27, 1834. Because of his austerity he was nicknamed "Chilblain"; but in the annals of history he lives as the 'Father of Naval Medical Science', whose memory is honoured by the Royal College of Surgeons in the annual award of the Blane Gold Medal.

Standardization

AT the recent forty-eighth annual general meeting of the British Standards Institution, the president, Lord McGowan, referred to the greatly increased interest during the past year, both by industry and Government, in the extension of voluntary standardization on a national basis. Under the chairmanship of Sir Ernest Lemon, the investigations by the committee for standardization of engineering products, which was set up by the Ministry of Supply, have substantiated the view, long held by British industry, that the principles under which the British Standards Institution works are effective and can be considerably extended. The Anglo-American Productivity Council has recently stressed the importance of standardization and simplified practice, and Lord McGowan submitted that there is probably no more effective means for increasing productivity. Another significant development during the past year has been the co-operation of the great nationalized

industries with the Institution, and the increase in the collaboration among large industrial users with the view of assisting manufacturers to reduce the number of types and sizes. This progressive standardization will greatly assist the economy of Great Britain by enabling manufacturers to introduce longer runs and better production methods in their operations. In conclusion, Lord McGowan said that the British Standards Institution is the pioneer national standards organisation, and collaborates with thirty-four other standards bodies overseas, and that with the continued growth in the number of export and import controls exercised by various countries national standards are becoming increasingly important.

New Theory on the Earth's Interior

Sky and Telescope of February contains a brief account of the theory of R. B. Borchers which he advocated in his address as retiring chairman of the Cape Centre of the Astronomical Society of South Africa. This theory suggests that the characteristics of the earth's interior can be described on the basis of variations in condition rather than composition. Assuming a temperature-gradient of one degree for every 90 ft. of depth, he finds that the observed discontinuities in the transmission of earthquake waves at depths of $7\frac{1}{2}$, 23 and 38 miles can be attributed to changes of state due to high temperature and pressure. He describes a transitional region between 750 and 1,800 miles within which depths the temperature and pressure are estimated to increase respectively from $44,000^\circ$ to $105,000^\circ$ C., and from 5,150,000 lb. to 12,300,000 lb. per square inch. The pressure at the centre of the earth is calculated at 50 million pounds per square inch, and in such circumstances an ounce of hydrogen would be compressed into 0.001 to 0.003 of a cubic foot. If $100,000^\circ$ is above the critical temperature for any of the known elements, no pressure applied to these substances at this temperature would cause them to liquefy or solidify; hence he considers that the earth's centre is gaseous, although highly compressed. The gas would be ionized and compounds would produce much higher densities than the known average of 5.52 for the earth. He thinks that iron would lose its magnetic properties under the intense heat at the earth's centre, so the old iron-nickel theory of the earth's core, developed to explain the earth's magnetic properties, cannot be sustained, and in any event is unnecessary if rotating bodies develop magnetism, as has been recently found for stars.

Aeronautical Quarterly

THE Royal Aeronautical Society has produced the first issue (May) of a new publication called the *Aeronautical Quarterly*. The purpose of the journal is to make available reports on new and original work of a scientific nature, and also papers reviewing progress in the various specialized branches of the application of fundamental aeronautical science. The Council of the Society feels that the development of aeronautical science and engineering has now become so rapid that the means of disseminating the knowledge acquired are inadequate; it is intended that the papers in the new journal will present results of original work done in Government research establishments, universities and the industry, not always suitable for presentation before the Society's meetings. Under the terms of its charter the Society is charged, among other things, "to facilitate the exchange of information

and ideas amongst the members of the Society and others", and the editorial board expresses the hope that workers will be encouraged to submit details of their researches, so that the results may be available to others concerned with the development of the many aspects of aviation. A distinguished Editorial Board with the necessary editorial executives have been appointed, and they are advised by panels of referees upon aerodynamics (general, fluid motion, and stability and control), structures, materials, aircraft design, instrumental and electrical equipment, vibration and flutter, aircraft propulsion, air transport, meteorology, flight testing, helicopters and propellers, aircraft accessories, fuels and oils, aviation medicine, performance, and radio and radar. The publication will be available to the public, and contributors need not necessarily be members of the Society.

The Film in Further Education

IN 1946 the Yorkshire Council for Further Education appointed a sub-committee to consider "the use of films in courses held under regulations for Further Education". The sub-committee was made up of representatives of film, theatrical, voluntary and educational organisations. The sub-committee's report has now been published and contains much useful information about the educational, technical and administrative questions which govern the use of the film and filmstrips in various branches of continued education. In the first part of its report the sub-committee discusses the evolution of the film as an educational medium and the uses to which the motion film, filmstrip and lantern slide may be put in educational classes. The second part makes practical suggestions to authorities on how to obtain and make available suitable equipment and material under proper conditions at the proper time and place, at a reasonable cost, and how to train teachers and leaders in their proper use. Because of its concern at the relatively small attention which is given by those concerned with further education to the development of higher standards of criticism and discrimination in connexion with the cinema, the sub-committee has also prepared a section dealing with film appreciation in youth clubs and the organisation of film discussion groups. The appendix contains a valuable bibliography and a list of addresses which will be particularly useful to those beginning classes in film appreciation. Copies of the report may be obtained from 35 Park Square, Leeds, I, price 1s. 9d.

Faraday Society Discussion on Chromatographic Analysis

THE Faraday Society is arranging a general discussion on chromatographic analysis to be held in the Department of Chemistry, University of Reading, during September 22-24. As is usual at the Society's discussions, a number of foreign visitors will be contributing, the countries represented including Sweden, Holland, Italy, Norway, Switzerland and the United States. The papers have been grouped in two sections covering physicochemical principles and applications respectively. Papers will be issued in advance and taken as read, authors being allowed five minutes to emphasize particular points; general discussion will follow. It is hoped to issue papers and discussion as a separate publication in due course. Particulars of the meeting can be obtained from the Secretary, Faraday Society, 6 Gray's Inn Square, London, W.C.1.