

logical bibliography has not of late been noteworthy, and for twenty years the only literature list covering Great Britain has been one compiled in the Library of the United States Geological Survey and published by the Geological Society of America. At the British Commonwealth Scientific Official Conference on Geology and Mineral Resources in 1948, it was resolved that each Geological Survey should produce an annual volume of abstracts covering its home ground. Most Commonwealth countries have now fulfilled this obligation, but there is not yet available any systematic compilation of abstracts covering the 300 or so papers on the geology of Britain published each year. In current international conversations on abstract journals in geology, it is to be hoped that this British domestic responsibility will not be overlooked.

Time Measurement

It will come as a surprise to many people who take their modern time services for granted to read that the first mechanical clock was made in the fourteenth century and that in earlier times the sundial and water-clock were the chief time-keepers. The Science Museum, South Kensington, has recently published the fourth edition of Part I of its Handbook of the Collection illustrating Time Measurement (pp. 60 + 12 plates. London: H.M. Stationery Office, 1958. 5s. 6d. net). Compiled by Dr. F. A. B. Ward, it traces the history of time measurement from its beginnings through the development of mechanical clocks and watches to chronometers. Chapters are devoted to electric clocks, including the Shortt free-pendulum and the synchronous motor clocks, to the quartz-crystal clock and to the atomic clock. Two chapters on chronographs and on various accessory mechanisms conclude the Handbook. Three hundred years ago, when the first pendulum clock was developed by Huygens, the maximum accuracy attainable was an error of ten seconds a day. To-day, the caesium atomic clock has an error not exceeding one second in three hundred years, an improvement compared with Huygens's clock by a factor of one million. Indeed, the measurement of time is the most precise measurement of any physical quantity yet attained. This high accuracy is far beyond that required for civil purposes, and astronomers and geophysicists are likely to derive the most important benefits from the extreme accuracy now available. Those who are less interested in modern developments than in the history of science will welcome this descriptive Handbook for its account of the mechanical and electrical inventions which have contributed to the improvement of time-keeping.

Basic Biodynamics

In a recent publication, E. J. Kempf (*Ann. N.Y. Acad. Sci.*, 73 (4), 871; 1958) discusses current ideas on the interplay of genes and cytoplasm in relation to tissue and organ differentiation of multicellular organisms. After pointing out defects in existing explanations, he postulates six basic laws of biodynamics which he believes will "provide the biological sciences of genetics, cytology, embryology, biochemistry, physiology, psychology and sociology with a formulation of the basic natural processes involved in their special fields of investigation. These laws will clarify and facilitate the further development of secondary laws of the sciences of living behaviour". This somewhat extravagant claim is put

forward in a singularly obscure and cumbersome style. Nevertheless, the paper contains a number of novel and stimulating ideas, and is worth close study.

Instruments in Industry

EVANS ELECTROSELENIUM, LTD., Colchester Road, Halstead, Essex, has issued a series of twenty leaflets, each applicable to a particular industry, entitled "Instruments in Industry", which form a comprehensive guide to the various determinations that can most usefully be carried out using EEL photoelectric instruments. The fields of application include agriculture, ceramics, food, glass-making, medicine, photography and printing, plastics, sewage and water analysis, and textiles. The company has also produced a series of detailed method sheets for use with the EEL absorptiometer, the EEL flame photometer and the EEL colorimeter.

Textile Institute Scholarships

THE Textile Institute is offering the following scholarships, for which applications should be made before April 30. The Textile Institute Cotton Industry War Memorial Trust Scholarship is intended to enable the holder to follow a whole-time course of study in textile technology at an advanced level (preferably, though not necessarily, a degree course) and/or obtain industrial training and experience of a special character at home or abroad for a period of three years. It has a maximum value of £300 for each of the first two years and £350 for the final year. The Peter Coats Scholarship is for two or three years to a value of not more than £100 per annum, for students at present studying in a public, grammar, or secondary technical school, or attending a part-time course at a technical college, who wish to take a course leading to a college diploma or other qualification in subjects connected with the cotton industry. The Rowland Spencer Scholarship, established in memory of the late Rowland Spencer of Helmshore, Haslingden, Lancashire, is open annually for training or research, to young persons of British nationality by birth who intend to enter and make their career in the textile industry and who are in their last year at a public, grammar, or secondary technical school or attending a technical college, or who have already qualified in textile technology, either as university graduates or as associate members of the Textile Institute. There is an annual grant of £100 during the period of this scholarship.

Canadian Society of Plant Physiologists

THE Canadian Society of Plant Physiologists was founded at a meeting held in Saskatoon, Saskatchewan, on October 27, 1958. The new society grew out of a series of annual research conferences on plant physiology that had been held at various Canadian universities and research institutions during a period of eight years. The officers of the new Society are: *President*, Paul R. Gorham; *Vice-President*, E. R. Waygood; *Secretary-Treasurer*, D. Siminovitch; *Eastern Director*, R. O. Bibbey; *Western Director*, Stewart A. Brown. Correspondence can be addressed to the Secretary-Treasurer of the Society, Chemistry Division, Canada Department of Agriculture, Ottawa.

Biochemical Engineering

THE various biological industries, including the large-scale production of citric acid, antibiotics, vitamins and other pharmaceuticals for both human and animal consumption have developed extremely