

cessing of natural materials. In agriculture the production of improved fertilizers, weed-killers, fungicides and insecticides, as well as antibiotics to eliminate disease in man and animals, is still in its infancy, and a vast new field awaits the large-scale application of biochemistry.

Amid so many possibilities, continued Sir Harold, only one thing seems certain—there are not nearly enough chemical engineers for the task, especially in Great Britain: for every chemical engineer now training in Britain there are more than twenty in the United States. It would be of some help if chemical engineering were included in the curriculum of every institution now teaching engineering of the older kind, but urgent action is required. If British industry is to maintain the lead won for it by its engineers in the past, a great and rapid increase in the number of chemical engineers must be regarded as one of the major needs of to-day.

TECHNOLOGY AND THE HISTORY OF MAN

IN his L. T. Hobhouse Memorial Trust Lecture at the London School of Economics and Political Science on October 23, 1951 (Pp. 19. London: Oxford University Press, 1952. 2s. net), Dr. Charles Singer, dealing with technology and history, said that it was largely through Hobhouse's influence that the view that the history of mankind should be considered as a whole and include all major human activities is now a commonplace among the English-speaking peoples. Nevertheless, Dr. Singer continued, despite the limitations of the idea of history that prevailed in the nineteenth century, efforts to integrate the records of the various manifestations of the human spirit can be traced back at least to L. Laurent's "Études sur l'Histoire de l'Humanité", which began to appear in 1855, to J. R. Green's "History of the English People" in the late seventies, and to H. D. Traill's "Social England", the last volume of which appeared in 1897. The United Nations Educational, Scientific and Cultural Organization is now engaged on the preparation of an integrated "Scientific and Cultural History of Mankind", some part of which might be expected about 1958.

One of the difficulties in this task, Dr. Singer pointed out, is that the time-curves of the rise and fall of the different forms of human activity do not always fit each other; and, for the history of technology in particular, the ordinary year-sequences cannot yield a useful framework. Division on a cultural basis appears to be more promising, and Dr. Singer suggested that for the history of technology the most convenient divisions are those made as follows: first, between the fishing and hunting stage (roughly, the Old Stone Age) and the agricultural stage (roughly, the New Stone Age); secondly, between the latter and the great social change which Prof. V. Gordon Childe has named the "Urban Revolution"; thirdly, between the latter and the discovery of gold and copper and the invention of writing; and fourthly, from this to the decline of the ancient empires about 500 B.C.

For the following period, until A.D. 1500, there is at present, said Dr. Singer, neither the knowledge nor the scholar to write an adequate history of Far Eastern technology, and in its place we can only substitute an account of the technology of the civil-

izations of the Mediterranean and the Near East and their medieval successors. The rise of experimental science in the period 1450–1650 gave the fifth great dividing line, and from the latter date self-conscious science began to determine the main direction of technology. There is no comprehensive survey of the history of technology, though for the mid-eighteenth century Diderot and his collaborators in the "Encyclopædia of the Sciences, Arts and Crafts" have provided more detailed and complete information than we have for any other. Dr. Singer concluded with a brief reference to the industry and contributions of C. Frémont and Dr. Henry Dickinson.

BRITISH HYDROMECHANICS RESEARCH ASSOCIATION

REPORT FOR 1951

AT the annual general meeting of the British Hydromechanics Research Association, Viscount Waverley was re-elected president, and a council of eighteen elected with Dr. A. Ivanoff (Hayward-Tyler and Co., Ltd.) as chairman and Mr. H. N. G. Allen (W. H. Allen, Sons and Co., Ltd.) deputy chairman. Mr. G. A. Wauchope (Gwynne Pumps, Ltd.), the retiring chairman, was elected the first vice-president of the Association.

In the fourth annual report of the council, covering the period October 1950–September 1951*, reference is made to the completion of the Association's 14,000 sq. ft. laboratory and to the official opening, on May 24, 1951, by the president. The laboratory was the first industrial building to be erected in the new satellite town of Harlow, Essex. It consists of a large, mainly single-story, building. Sufficient experimental equipment has been installed and workshop facilities provided to enable the Association's staff to commence active research, in addition to maintaining the information and abstracting services to members of the Association. The two-story office block which adjoins the laboratory includes a library, drawing office, dark room and instrument laboratory.

The membership of the Association continues to increase, though somewhat slowly. A list of the ordinary and associate members is given in the annual report. It comprises forty manufacturing and user members, and forty-nine consultants and academic workers. The majority of the eligible companies in the pump industry are now members of the Association, but it is regrettable that, as yet, no financial support has been forthcoming from water-supply authorities, though they are among the principal users of much of the plant and machinery with which the Association is concerned. A grant is received from the Department of Scientific and Industrial Research, and close contact is maintained with the Fluid Mechanics Division of the Mechanical Engineering Research Organization at East Kilbride, Glasgow, and with university and independent research workers in hydraulics. The staff consists of the director of research, Mr. L. E. Prosser, a secretary, five research engineers, two research assistants and one draughtsman, in addition to library, office and workshop staff. It has been strengthened during the year under review by the recruitment of several junior staff.

* British Hydromechanics Research Association. Fourth Annual Report, October 1950 to September 1951. Pp. 28. (Harlow, Essex: the Association, 1951.)