discoveries in the district, he went on to stress the wide possibilities of local research in the various fields of archæology, geology and geography for piecing together the history of the Sudan, and also the need for research on modern aspects of Sudanese life, such as local industries and crafts, place-names, languages, customs, etc. Finally, there was the necessity for an adequate museum and library to consolidate and display the results of such research.

This presidential address seems to have been taken up by the members of the Society, for, during the year, papers were presented dealing specifically with the Sudan on the following subjects: archæological finds in local caves; manuscripts relating to the early Muslim period; distribution of types of soil and discoveries of fossils; relation between soils and local vegetation; Turkish administration during 1823–37; agricultural research; history during 800 B.C.—A.D. 350; and archæological finds (this last being another address by the president). Other papers which were of rather more general interest included such topics as transport, light reading in the Middle Ages, welfare and development, examinations, rates of evolution, and forestry. The Society is to be congratulated on a successful year and on its increase of membership to more than a hundred. The officers for 1948–49 are: *President*, Dr. J. Smith; *Vice-President*, G. W. Ogden; *Honorary Secretary*, A. W. Ireland; *Assistant Honorary Secretary*, L. S. Cobley; *Honorary Treasurer*, G. C. Wood. The address is the Secretary's Office, c/o General Post Office, Khartoum.

Limiting Factors in World Development

In his address, "Limiting Factors in World Development, or What is Possible", to the Associated Scientific and Technical Societies of South Africa at Johannesburg on August 11, 1948, Sir Harold Hartley suggested that a primary cause of our present troubles is the failure to realize that in the twentieth century, with the exploitation of the virgin lands, the slowing down of the growth of population and the disappearance of 'easy money', a new technique is required to give a dynamic impulse to international trade and stimulate both production and purchasing power. The future depends on increasing both production and purchasing power, and Sir Harold then examined more particularly the limiting factors in agricultural production. Of these, water comes first, and he stressed the importance of irrigation, draining and soil conservation. Climate comes next, and here we have the problem how far science can overcome the handicap of temperature extremes by improved living conditions, diet and clothing. Soil presents a very intricate and difficult scientific problem; but great advances are being made, although we are only now realizing the delicate balance in the top few inches of soil on which fertility depends. Next comes man-power and human skill, involving questions of education, physique and incentives if production is to be improved. Diseases and pests have been a major limiting factor; but here we have immediate reason for optimism in recent discoveries and developments both for protecting the individual and for the eradication of carriers of disease and destruction of pests themselves.

Transport is another determining factor by making possible the exchange of commodities and the movement of individuals, and Sir Harold stressed the value of air transport in opening up undeveloped regions. This factor is intimately linked with the economic factor of energy and power and the corollaries of equipment and capital, and in this connexion he said there must be a growing emphasis on the processing of farm and forest products; this is a great new field for the agriculturist and the chemical engineer. Finally, an orderly solution of the problems of production in any area depends on a survey of its natural resources, human geography, economic structure and capacity for production and consumption. The technique of making such surveys is in its infancy, and Sir Harold stressed the contribution of the aeroplane and of wireless. Moreover, the value of such national surveys would be enhanced by some clearing house through which the results could be made available for all countries. In human engineering, however, man is the limiting factor, and we are fighting once more for the freedom and ethical standards of Western civilization. Nevertheless, men with vision and imagination, with the power to foresee what modern methods can achieve, with confidence in the future and with human interest in the backward peoples and determination to improve their lot, will be the pathfinders in the quest of plenty.

National Research Council (Canada): Review of 1948

The "National Research Council Review, 1948" (N.R.C. No. 1[illegible]. Pp. 216. Ottawa: King's Printer, 1948. 75 cents) describes the work of the Council during the year ended December 31, 1947, and gives more detailed information regarding the work of the laboratories than is contained in the annual report, the last (thirty-first) of which covered the year ended March 31, 1948 (see *Nature*, November 6, p. 748). Besides the more specific accounts of work in progress, the Review includes a full list of scientific staff, arranged by Divisions, now totalling 2,682 persons, with details of the representation of the National Research Council on outside committees. In addition to statistics of scholarships and fellowships awarded in 1947–48 and their distribution, there is an analysis of those awarded during 1917–48. Reports from the various Associate Committees list the members of those Committees, while the value of the reports from the Divisions of Atomic Energy Research, Applied Biology, Chemistry, Applied Chemistry, Mechanical Engineering, and Radio and Electrical Engineering is enhanced by the inclusion of lists of publications of the Divisions during the year. The Review is thus a most useful annual reference work on the work of the Council. Reference has already been made (*loc. cit.*) to features of the work of the Council during the year. It can only be added here that besides giving a clear picture of the organisation and activities of the Atomic Energy Research Division, the Review refers to a development unnoticed in the annual report—the establishment of a new company, Canadian Patents and Developments, Ltd., with a board of directors of representatives from industry, the universities and the National Research Council. The primary purpose of this Company is to make available to industry through licensing arrangements the inventions, new processes and improvements in processes, developed by the scientific workers of the Council. It is anticipated that the Company will eventually have charge of all Government-owned patents which can be made available to industry, including some 1,300 enemy patents now held by the Custodian of Enemy Property. The Company is also intended to provide a channel for the flow to industry of new developments by scientific workers in the universities.