

the Conference report nor the debates in Parliament can leave anyone in doubt as to the value of these imaginative schemes in promoting understanding and goodwill and increasing the supply of trained people, or in developing in responsible men and women the qualities of judgment and wisdom, insight and sympathy, which the advance of civilization increasingly demands.

RIVER STUDIES IN NIGERIA

River Studies and Recommendations on Improvement of Niger and Benue

By Nedeco, Netherlands Engineering Consultants, The Hague. Pp. ix+1000. (Amsterdam: North-Holland Publishing Company, 1959.) 140s.

ACCESS from the sea to the Benin ports of Burutu, Sapele and Warri in Nigeria has given much concern ever since about 1930. These ports constitute the link with the inland navigation of the extensive Niger and Benue river system, which provides a waterway of more than a thousand miles into the continent of Africa. At one time ships drawing up to 20 ft. could cross the bar of the Forcados estuary but in more recent years this estuary, along with the Escravos estuary, has only been able to accommodate ships drawing 12-14 ft. A continual decline in the draught available led the Nigerian Government to call in the Netherlands engineering consultant firm of Nedeco to undertake the Western Niger Delta investigation of 1952-54.

Soon after the Western Delta investigation was started preparations were made for a study of the possibility of improving the shipping conditions on the Niger and Benue Rivers. This eventually led the Nigerian Government to request from Nedeco a full-scale investigation of the Niger and Benue river system with the object of determining how the shipping conditions on these rivers could be effectively improved. The consultants were charged with discovering the characteristic nature and behaviour of the component parts of the river system; the composition by means of aerial and other surveys of a series of river maps covering the rivers downstream from Baro and Guara; of ascertaining the régime of the rivers and the vagaries of channel configuration and depths; and inquiring into the feasibility of possible future projects.

The work was commenced in 1954 and Nedeco has now issued a monumental tome of more than a thousand pages illustrated by several hundred diagrams and maps giving the results of the investigations of a team of twelve expert engineers who were stationed in Nigeria for three years. At first glance the report might be thought to be of interest only to those concerned with the practical problems of river navigation, but closer examination reveals that it will be of great value to many other experts. For the consultants found themselves obliged to consider matters which were not directly concerned with the technical problems of river regulation and river management. Since the Niger and Benue systems drain the greater part of Nigeria, the report effectively becomes an up-to-date account of the geography of Nigeria in which the physiography, geology, climatology and hydrology are all systematically considered as a background to the economic traffic on the rivers. It is these that are largely the life-giving arteries of

the country. Of the various sections the hydrological naturally receives the most detailed treatment as this was, of course, a prime charge on the consultants. The report concludes with an account of the present problems of navigation, defects of navigability and recommendations for their improvement.

Because the report is so comprehensive it will be found of interest to geographers, geologists, geomorphologists, climatologists, hydrologists and hydraulic engineers: it brings together a great mass of new information and incorporates many new ideas. There can be few of these experts who will not find something of immediate interest in the report's thousand pages. The whole publication is beautifully produced and illustrated, and Nedeco is indeed to be congratulated on the appearance of such an impressive report.

The Western Niger Delta investigation during 1952-54 dealt with access to the ports of Burutu, Sapele and Warri and therefore only that part of the Niger Delta was studied and surveyed which lies west of the Bomadi Creek. Having undertaken the main Niger-Benue investigation it was only natural that the Government began to think in terms of a hydrological survey and investigation of the remaining part of the Delta. Accordingly, an agreement was signed in March 1958 between the representative of the Government of the Federation of Nigeria and of Nedeco for an Eastern Niger Delta investigation. Field-work for this is now under way, and the final report is expected towards the end of 1960.

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SOLUTIONS OF ELECTROLYTES

The Physical Chemistry of Electrolytic Solutions By Prof. Herbert S. Harned and Prof. Benton B. Owen. Third edition. (American Chemical Society Monograph Series, No. 137.) Pp. xxxii+803. (New York: Reinhold Publishing Corporation; London: Chapman and Hall, Ltd., 1958.) 160s.

Electrolyte Solutions

The Measurement and Interpretation of Conductance, Chemical Potential and Diffusion in Solutions of Simple Electrolytes. By Prof. R. A. Robinson and Prof. R. H. Stokes. Second edition. Pp. xv+559. (London: Butterworths Scientific Publications; New York: Academic Press, Inc., 1959.) 65s.

The Structure of Electrolytic Solutions

Edited by Walter J. Hamer. (Sponsored by the Electrochemical Society, Inc., New York, N.Y., and the National Science Foundation, Washington, D.C.) (Electrochemical Society Series.) Pp. xii+441. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1959.) 148s. net.

OF the three volumes under review, Harned and Owen's "Physical Chemistry of Electrolytic Solutions" and Robinson and Stokes's "Electrolyte Solutions" are new editions of well-known works that first appeared in 1943 and 1955, respectively. "The Structure of Electrolytic Solutions" is a collection of papers given at an Electrochemical Society symposium in Washington in 1957.

Unlike the second edition, which was largely a reprint of the first, the new edition by Harned and Owen incorporates some major revision and has been considerably extended. A section on irreversible