

PALMY ACCOUNT

The Oil Palm (*Elaeis guineensis* Jacq.)

By C. W. S. Hartley. (Tropical Agriculture Series.) Pp. xiv + 706 + 100 plates. (London: Longmans, Green and Co., Ltd, 1967.) 126s. net.

It is, indeed, no exaggeration to describe the oil palm as a peculiar plant with a most curious history. Mr Hartley has done great service in assembling a mass of information, hitherto published in widely scattered journals, bearing on the oil palm, its environment and productive capacity.

Although the natural habitat of the oil palm appears, on balance, to be the forest fringes close to the rivers of West Africa, it is difficult, if not impossible, to identify with certainty any areas of truly wild palms, but such, if they exist, are likely to occur in the lowlands within a very few degrees of the equator. The long association of this plant with man has made it a prominent feature of vegetation in the more densely populated areas, where it has served to meet man's need for edible oil, wine and materials for roofing and fencing. Man, more than any other natural factor, has caused it to spread.

Small quantities of palm oil entered European trade in the sixteenth and seventeenth centuries, but it was not until after the suppression of the slave trade and the development of industry in western Europe that the trade grew and became firmly established. Even so, the producing areas in West Africa from which the traders drew their supplies were virtually unknown to the merchants until the beginning of the twentieth century.

In the late nineteenth century, as with rubber, the British and Dutch administered territories in the Far East began to take an academic interest in the plant, but it was not until well after the establishment of commercial rubber estates that oil palm plantations were started, first in Sumatra and later in Malaya and Africa. The inter-war years saw a steady increase in production of oil of a consistently high quality from the Congo, Sumatra and Malaya. After the Second World War, largely as a result of the work of the West African Institute for Oil Palm Research, the quality of oil from Nigeria, always by far the largest producer, competed on more or less equal terms. At the present time, Malaysia is once again making a notable contribution to the large scale production of a relatively modern crop, planting oil palms on both estates and blocks of smallholders' land as an alternative crop to rubber.

The remarkable development shown by the oil palm industry during the course of the past 60 years, from its earlier dependence on groves of semi-wild trees to carefully planned production, has been the outcome to a very large degree of the research programmes commenced in the early stages by commercial and government organizations. In his account of how and why this took place, Mr Hartley has achieved an excellent balance between the reporting and discussion of purely technical data and providing a most readable account of current practices in the field. In this he has been helped by a clear style of writing, with short and concise sentences, presenting no conceivable difficulty to those whose mother tongue is not English. The figures are well drawn and reproduced on a generous scale. Like the tables, they are well integrated with the text, but not so the plates. Of 100 illustrations reproduced in colour or in black-and-white, only a dozen or so are specifically referred to in the text, and the value of the remainder is therefore very much reduced. This is a pity, as the photographs are so often excellent. Plate 10 does not appear to illustrate the topic discussed on pages 75-76, and I would suggest that control measures for wild pig (page 603) should be similar to those recommended for porcupines rather than elephants, even at the loss of much fun.

The publishers have achieved a high standard of production in this volume, in which typographical errors are happily very rare. Excellent printing, a useful index

and a wealth of references to original published work combine to ensure that it will become a most valued book in the hands of all those connected with the improvement, growing and economics of the oil palm. H. K. ASHBY

GEOLOGY OF DURHAM AREA

Geology of the Country between Durham and West Hartlepool

(Explanation of One-Inch Geological Sheet 27, New Series.) By D. B. Smith and E. A. Francis. With contributions by M. A. Calver, A. H. Edwards, G. D. Gaunt, R. K. Harrison and J. Pattison. (Memoirs of the Geological Survey of Great Britain—England and Wales.) Pp. xiii + 354 + 18 plates. (London: H.M. Stationery Office, 1967.) 60s. net.

THIS big memoir is the first comprehensive account of the geology of a district which contains important mineral resources, especially coal, and is of great interest scientifically. Such sheet memoirs of the Geological Survey are the most important primary sources of accurate and detailed information about the rocks and minerals of the country. This information is needed for practical, scientific and educational purposes. Its presentation must be a compromise between these needs, but the primary aim should surely be the practical one of giving a detailed geological account of the natural resources so that these can be used to the best advantage.

A vast amount of information, especially stratigraphical and palaeontological, on the Coal Measures is summarized effectively here. Data are derived from more than a thousand shafts and boreholes and from extensive mine workings. This information is of great importance in relation to the mining of coal. The most readable and interesting part of the memoir concerns the Permo-Triassic rocks. Here we have a vivid account of the initial desert deposits, the great sequence of evaporite cycles from the Zechstein sea, with shell banks, algal reefs, reef aprons, lagoonal deposits, anhydrite and so forth, and the burial of these by later deposits. Some of these rocks are extensively quarried for lime, aggregate and flux; the information about them is also important in searching for gas in the North Sea.

The description of the structure of the district is brief but clear, and is illustrated by good stratum contour maps. As a source of precise structural data, however, this chapter is inadequate. There is, for example, no systematic information about the hade of the faults. The stratum contour and isopachyte maps are on different scales so that it is tedious to correlate or analyse the information.

Pleistocene and Recent deposits are spread over much of the district. The account of these seems somewhat disconnected, partly because the deposits are difficult to interpret, but it is interesting.

For many practical purposes one would need information which is not supplied in this memoir. To utilize sands and gravels one wants grain size analyses. For many purposes one wants to know the depth to bedrock, and isopachyte maps are needed to show this. The quaint idea survives that petrographic descriptions of igneous rocks should be published but none of coals or their associates. There is no geotechnical information about the rocks of the district. One could surely expect to obtain quantitative data on such physical properties as porosity, crushing strength and liquid and plastic limits of the deposits.

The role of the sheet memoir, with its arbitrary limits, seems to need further consideration. Certainly for educational and many scientific purposes the regional guides are more useful, though they might be better still if expanded. Scientific problems seldom stop at sheet boundaries and are best dealt with elsewhere. As an