curious basin of dolomite on Vogelstruisfontein, south of Roodepoort. It is considered that the Elsburg beds are perfectly conformable to the Upper Witwatersrand series, but indicate a gradual overlap of the last-named over the Lower Witwatersrand. The name of Transvaal System for the Black Reef-Dolomite-Pretoria series must now be regarded as standardized, in place of Potchefstroom System formerly used by Hatch and Corstorphine, but there appears to be no particular reason for its adoption.

The memoir gives an admirably clear account of the physiography and geology of this interesting and important area, bringing out all the salient features. Only one page is devoted to the gold-reefs, and the general geological reader unacquainted with the district would not acquire a very clear idea of their features and extent. There is singularly little reference to the highly important East Rand area, which lies just on the eastern margin of the map.

The memoir concludes with an excellent chapter by Dr. du Toit on the underground sources of water-supply in the Dolomite.

R. H. R.

IMPERIAL INSTITUTE: MONOGRAPHS ON MINERAL RESOURCES
WITH SPECIAL REFERENCE TO THE BRITISH EMPIRE: OIL-
SHALES. By H. B. CRONSHAW, B.A., Ph.D. pp. x + 80.
London: John Murray. 1921. Price 5s. net.

THIS volume is a companion to the recent memoir on petroleum by the same author, and it combines that lucidity of exposition with summary treatment characteristic of the earlier work. Latterly public interest has been directed to the problems facing an increased demand for and decreased supply of natural petroleum, and while the ultimate location and opening up of new oilfields must necessarily form one of the chief solutions, mitigating circumstances will also be found in the development of the world's oil shale resources, which may, without exaggeration, be regarded as prodigious. In America the possibilities of the oil shale industry have long been recognized though little progress seems to have been made, while in this country, although in the Midlothian occurrences we recognize the pioneer field, comparatively little heed had been paid to its development until the war caused a focus of attention on national resources. In 1920 the American industry received an impetus from the researches and publications emanating from the Colorado School of Mines, and Alderson's well-known "Oil Shale Industry" created a favourable atmosphere for a wider consideration of the possibilities of oil production from shales and torbanites. A statement of the world's resources of such raw material was the natural sequel to this, and the publication of the present memoir is therefore a further step in the right direction.

The sources of supply of oil shale are dealt with under the headings of British Empire and Foreign countries; the former comprises the occurrences in the British Isles, South Africa, Canada, and

Australasia, the latter those of Europe, certain countries in Asia, Morocco, the United States, Brazil, Chile, and Uruguay. In Scotland the shale industry has had a somewhat chequered career, being influenced in the past by the extent of importation of crude oil and sodium nitrate from the New World; the war failed to stabilize the industry as anticipated, and latterly decline has been rapid, largely due to abnormal economic conditions, and not, as frequently stated, to the exhaustion of raw material. The recent amalgamation of the companies concerned and their union with one of the premier oil companies have preserved the industry from extinction, the intention being to satisfy the capacity of the refineries by supplementing with crude oil from extraneous sources. The Norfolk shale field is in process of development, and a concise account of the occurrence and of the products obtainable from the shale is given here. Other prospects in the British Isles are not very hopeful. In South Africa, the Wakkerstroom district is being actively exploited at the moment, a test yield of 31 gallons of oil per ton of shale from one locality being an encouraging feature. Mennell has frequently reported on the Rhodesian resources of oil shale, while in Canada the Mackenzie River region offers possibilities in this connexion in addition to its crude oil potentialities. New South Wales is the largest producer of oil shale in Australia, the other interesting occurrences being those of Tasmania and Queensland. In Europe, the Esthonian shales are of both palæontological and technical importance; dry distillation of the material resulted in the production of 61 gallons of oil per ton, containing 20 per cent light fraction. The deposits of Yugo-Slavia (at Alexinatz) are valuable for their burning oil yielded on refining, while those of France, Spain, and Germany are sufficiently known to preclude further comment here. The resources of the United States are immense, some fascinating figures being given by Alderson in the work previously cited; the present author confines himself to mere statement of fact, though he omits reference to the difficulties met with in refining much of the shale hitherto tested. Finally, the discovery of shale deposits in Uruguay is important, and may lead to the opening up of a wide area in South America.

A map showing the oil shale-bearing districts referred to in the text is included, while a useful, though brief, bibliography is appended.

H. B. MILNER.

THE NEPHELINE ROCKS OF SEKUKUNILAND. By S. J. SHAND. Trans. Geol. Soc. S. Africa, vol. xxiv, 1921. pp. 111-49, with 3 plates and 6 text-figures.

THE nepheline-syenite body of Sekukuniland forms a plug or stock intruded into the red granite of the Bushveld laccolith, and has an outcrop of from six to nine square miles, occupying a