

Bechuanaland Protectorate – Colonial Geological Surveys 1947-1956

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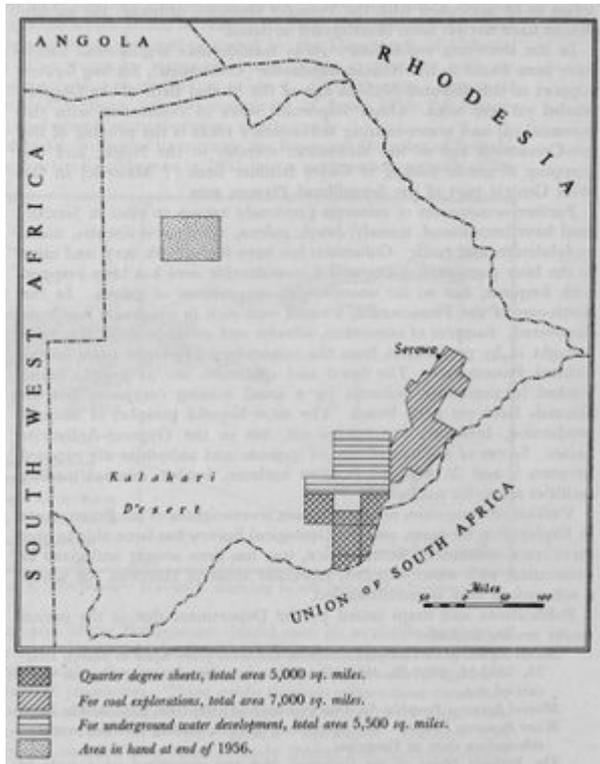
From Dixey, F. 1957. [Colonial Geological Surveys 1947-1956: a review of progress during the past ten years](#). Colonial geology and mineral resources. Bulletin supplement No. 2. London: HMSO.



Bechuanaland Geological Survey 3. Bellairs-Enslin electromagnetic apparatus near Lobatsi. Dr. S. H. Shaw from colour transparencies. Plate X.



Bechuanaland Geological Survey 4. Headquarters of Geological Survey at Lobatsi. Photo by Dr. S. H. Shaw from colour transparencies. Plate X.



Geological mapping on scale of approximately 2 miles to 1 inch by Geological Survey Department of Bechuanaland Protectorate. Text-fig. 7.

Bechuanaland Protectorate

The basis for future geological work in the Bechuanaland Protectorate was laid in 1943 when E. J. Wayland, C.B.E., became Geologist to the Public Works Department after retiring from the Geological Survey of Uganda which he had founded in 1921. He was stationed at first at Gaberones, and worked in close association with D. S. Metcalfe, Government Surveyor, in making a general geological survey of the whole territory with a view to the development of its mineral resources and water supplies. Important contributions resulted, and light was thrown on the Stone Age geology and the archaeology of the region.

The present Geological Survey of the Bechuanaland Protectorate was not founded as a separate Department until 1948, but towards the end of the period under review, in 1956, it consisted of 1 director, 4 geologists and 1 petrologist-chemist, with two new posts of geologist unfilled.

During the period under review (1948-56) the principal achievements of the Department have been as follows. A general reconnaissance of the geology and geomorphology of the Protectorate was completed and the results shown on a geological map published with the Annual Report for 1953. Some detailed mapping was carried out in the potential coalfield areas, at the Moshaneng asbestos mine, and in the vicinity of Lobatsi. In 1954, a programme was begun for general geological reconnaissance mapping at 1 : 125,000, uncontrolled print lay-downs from the Directorate of Colonial Surveys being used for the topographical basis. At the end of 1956, seven quarter-degree sheets incorporating some previous mapping had been completed and seven were in hand. Work on a new area in western Bechuanaland, of which air photographs have just become available, was started at the end of 1956. It is proposed to publish completed degree sheets at a scale of 1 : 250,000, and work has begun on the fair drawing of the Lobatsi degree sheet, No. 2525. The stratigraphical succession of the rocks of the Protectorate has now been worked out and correlated

with that of the neighbouring territories. Although some problems still remain to be solved, the principal relationships are clear, and a new provisional geological map of the territory was consequently published in the Annual Report for 1955.

The Geological Survey has also been instrumental in investigating and developing a number of mineral deposits. The Moshaneng Asbestos Mine owes its present development largely to Mr. E. J. Wayland, for he encouraged the Bangwaketse Tribe to work it as a tribal industry and brought the excellent quality of the fibre to the notice of mining houses until a concession was negotiated. Up to the end of 1955, 3,395 short tons of asbestos valued at £347,123 had been produced. The exploitation of a kyanite deposit in the Tati Concession resulted also from the efforts of the Geological Survey, and kyanite to the value of £85,406 was exported by the end of 1955. A comprehensive geological and geophysical survey of the Bushman Mine copper deposits 80 miles northwest of Francistown was completed in 1954, and a report was circulated to a number of mining companies. Negotiations are now in progress for a concession over the area. A discovery that may prove of considerable importance was made in 1953 when nickel was found to be associated with the copper deposits at Magogaphate in the north-eastern Bamangwato Reserve. The interest of mining companies has been attracted. Since 1948 an investigation of the potential coalfield areas of the Protectorate has been in progress and by the end of 1956 most of the areas had been geologically mapped and core boreholes to a total depth of 15,481 ft. had been drilled. A very large tonnage of good medium-quality coal is indicated in the proximity of the line of the Rhodesia Railways, and the investigation is therefore being pursued with the object of locating coals of better quality. Deposits of good-quality haematite were discovered near Mahalapye, but investigation showed that the reserves were not large enough to be of commercial interest at the present time.

The Geological Survey has been closely associated with the development of water supplies in the Protectorate since 1943. Water boring is carried out by the Public Works Department, but site selection is the responsibility of the Survey. Owing to shortage of staff, however, it has not been possible for the Survey to take charge of the selection of all sites for Government drilling, but advice is given in difficult areas. Geophysical methods involving resistivity, electromagnetic and magneto-metric techniques are used, and reference curves which are applicable to the Protectorate are being established. Records of private and Government boreholes are kept by the Geological Survey, sludge samples are analysed and their geological data compiled. Two new posts for geologists were added to the establishment in June, 1956, and when these are filled about one-quarter of the staff will be devoted to water development. Reports on sites for surface-water storage have been submitted from time to time to the Public Works Department.

The following works have been published:

Annual Reports for 1953, 1954, 1955.

An Outline of the Geology of the Bechuanaland Protectorate, by A. Poldervaart and D. Green. *C.R. 19^o Congr. geol. int. Alger*, 1954, Fasc. 20, pp. 53-66.

The Gaberones Granite, by A. Poldervaart. *Ibid.*, 1954, Fasc. 20, pp. 315-335, 1 map.

Coal in the Bechuanaland Protectorate, by D. Green and A. Poldervaart. *Ibid.*, 1954, Fasc. 21, pp. 71-81, sketch maps and tables.

Note on the Extension of the Karroo System in the North-Eastern Bechuanaland Protectorate, by A. Poldervaart. *Trans. geol. Soc. S. Afr.*, 1951, Vol. 53, pp. 73-77, 1 map.

Chrysotile Asbestos produced by Dolerite Intrusions in Dolomite, by A. Poldervaart. *Colon. Geol.*

min. Resour., 1950, Vol. 1, No. 3, pp. 239-245, 1 pl.

Karoo Dolerites and Basalts in the Eastern Part of the Bechuanaland Protectorate, by A. Poldervaart. *Trans. geol. Soc. S. Afr.*, 1952, Vol. 55, pp. 125-132, 1 map.

More about the Kalahari, by E. J. Wayland. *Geogr. J.*, 1953, Vol. 119, pp. 49-56.

Outline of Prehistory and Stone Age Climatology in the Bechuanaland Protectorate, by E. J. Wayland. *Coll. in 8°, Mem. Acad. R. Belg., Cl. Sci. nat. med.*, 1954, Vol. 25, Fasc. 4, 47 pp., pl.

The following paper, as yet unpublished, was presented at a meeting of the Association of African Geological Surveys held in Mexico in 1956:

Notes on the Geology and Geomorphology of the Bechuanaland Protectorate, by R. B. McConnell. [With provisional geological map.]

Mineral occurrences

Asbestos

Coal

Copper and copper ores

Iron and iron ores

Kyanite

Nickel

Water supply

Bechuanaland – Staff list

Geological Survey Department, Lobatsi

Director (Acting)

C. Boocock, M.Sc., F.G.S., A.M.I.M.M.

Geologists

D. Green, M.A., F.G.S.

D. J. Cullen, B.Sc., F.G.S.

E. P. Wright, B.A.

P. T. Wilson, B.Sc.

C. M. H. Jennings, B.Sc.

Chemist-Petrologist

O. J. van Straten, B.Sc., M.Sc., F.G.S.

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