

Kenya – Colonial Geology Surveys 1947-1956

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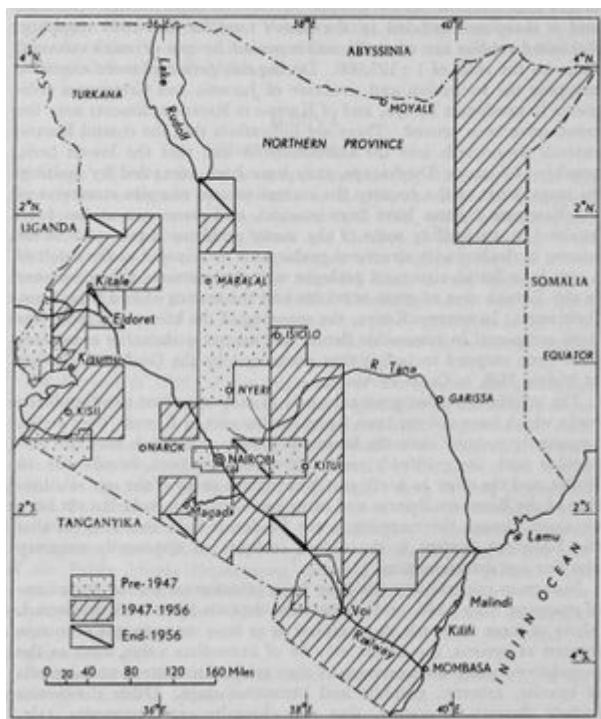
Photo: B. H. Baker

Kenya Geological Survey. Loading for the day's safari, Baragoi area, Kenya. Photo: B. H. Baker. Plate II.



Photo: L. A. J. Williams

Kenya Geological Survey. Geological equipment being taken across the River Tana at Garsen. Photo: L. A. J. Williams. Plate II.



Geological mapping in Kenya. Text-fig. 1.

Kenya

Although official geologists were appointed during the early part of this century to undertake special tasks in Kenya, the modern Geological Survey of the territory was not formed until 1933, when it became, and still remains, a section of a Mines and Geological Department. Until 1940, however, only one or two geologists were engaged; then for a time there were four, but the number soon fell back to one again, and so remained for several months in 1945. Thereafter, staff was recruited gradually, eventually reaching a maximum of 16 geologists in 1951, in addition to 3 E.C.A. geologists, two of whom worked in Kenya during 1950 and 1952 and one during 1950 and 1951.

At the end of 1946, at the beginning of this review, the geological staff consisted of 1 senior geologist and 2 geologists in an establishment of 5, with 1 chemist and assayer for the combined departmental staff. Two engineer-geologists were also on the staff of the Hydraulic Branch of the Public Works Department. By contrast, at the close of the review period, in the latter part of 1956, 12 geologists were in post, in addition to the Chief Geologist, in an establishment of 16, with associated staff including 2 chemists and assayers, 1 metallurgist, 1 chemist's assistant, 2 prospectors and 1 librarian. Moreover, the geological staff at this time of the Public Works Department consisted of 1 senior geologist and 4 geologists in a total establishment of 7, and 2 geologists who were employed as hydrologists. The African Land Development Board also employed 2 geologists, one as executive engineer and the other as engineer-geologist.

Prior to 1947, the Geological Survey had mapped some 17,790 sq. miles with scales as follows :

	Square miles
1 : 25,000	360
1 in.=1 mile	1,180
1 in.=2 mile	1,500
1 : 125,000	11,850

1 : 250,000 2,000

Other scales 900

In addition, there were a number of small-scale generalised maps and special maps of small areas. The main mineral discoveries made during this mapping were gold deposits, and extensive deposits of graphite and kyanite rocks.

Since 1946, a further 58,470 sq. miles of the country has been mapped, much of it with the assistance of aerial photographs. Some 14,000 sq. miles of the north-east corner of Kenya were also covered in reconnaissance style during the secondment of the E.C.A. geologists, but most of this area has now been re-mapped to normal departmental standard, and is therefore included in the above total for post-1946 mapping. Published reports are normally accompanied by one or more coloured maps on the scale of 1 : 125,000. During this period of more extensive mapping the succession and structure of Jurassic and Cretaceous sediments in north-east Kenya, and of Karroo to Recent sediments near the coast, have been proved. There are indications that the coastal Karroo extends downwards into the Carboniferous and that the lowest beds, possibly of Ecca or Dwyka age, may have been concealed by faulting. In many parts of the country the succession and complex structures of the Basement System have been studied, and some success has been attained in unravelling some of the many problems it presents. More success in dealing with structural problems is anticipated as the result of a visit by a British structural geologist who demonstrated the occurrence in the Turoka area of great overfolds and the tearing of fold noses from their roots. In western Kenya, the mapping of the known goldfields has been completed in reasonable detail, and several carbonatite complexes have been mapped including that discovered by the Geological Survey at Mrima Hill, in Coast Province.

The goldfields consist predominantly of non-crystalline pre-Cambrian rocks which have not yet been found further east in Kenya. Two series, apparently younger than the Basement System and which may be comparable with the goldfields rocks, have however been found—one in Embu, and the other in north-east Kenya. No proof of the age relationship of the Basement System and other pre-Cambrian rocks has yet been obtained, though the mapping in the Broderick Falls area suggests that the Basement System is the oldest, in spite of apparently contrary absolute age determinations.

Numerous mineral deposits have been investigated during the course of mapping since 1946, and several new deposits have been discovered. Many of these are small, or so placed as to have no apparent economic interest at present, but others may be of immediate value, such as the pyrochlore-monazite occurrences of the carbonatite centres, and deposits of kyanite, asbestos, graphite and bentonitic clays. Other discoveries include deposits of copper, zinc and chromite ores, magnesite, talc, fluorite, mica, sillimanite and wollastonite. Considerable attention has been paid to mapping of possible oil-bearing areas, and, as a result, some oil companies have carried out preliminary examinations of part of north-east Kenya. Work has also been carried out in south-east Kenya, where a large oil combine took out a licence in 1954 to explore for oil. Throughout the period the Geological Survey has given assistance in engineering problems in connection with hydro-electric schemes, bridge abutments, dams, subsidence of buildings, aerodrome surfaces, harbour extensions, the making of new roads, marine erosion, the reclamation of land at the coast, and the movement of sand-dunes. The Survey has not concentrated its attention on water-supply, apart from reporting on the areas mapped, as a section of another department is concerned solely with such work, but it has, nonetheless, been able to give assistance on numerous occasions both to official and public bodies. Advice on geological problems generally has been consistently given, and in some cases has clearly been of help in the establishment of local mineral industries, including two cement factories. Other industries that were assisted were concerned with lime-burning, glass, building, shoe-making, stone aggregates, ceramics and paint. Recently, considerable mapping and

investigation have been carried out to assist a commercial search for geothermal steam in the Rift Valley. Associated staff has at various times given extensive assistance in the search for or improvement of methods of extraction of minerals, as, for example, in connection with graphite, asbestos and diatomite, and with sodium fluoride from Magadi.

In spite of printing difficulties, the Survey has always attempted to publish reports within a reasonable time of the completion of its work. Reports and other material published since the end of 1946 include the following, each report being accompanied by a coloured geological map on the scale of 1 : 125,000, unless otherwise stated:

Memoir No. 1 Kyanite in Kenya, by B. N. Temperley, 1953.

Bulletin No. 1 The Geology and Mineral Resources of Kenya, by W. Pulfrey, 1954 (two small-scale maps). Index to Annual Reports, 1933-1950.

Report No. 13 Mtito Andei-Tsavo area, by J. Parkinson, 1947 (map 1 : 250,000).

Report No. 14 West of Kitui township, by J. J. Schoeman, 1947.

Report No. 15 Northern Kenya, by F. Dixey, 1948 (map 1 : 2,000,000),

Report No. 16 Sotik district, by J. J. Schoeman, 1949.

Report No. 17 Embu-Meru area, by J. J. Schoeman, 1951.

Report No. 18 Kisii district, by A. Huddleston, 1951.

Report No. 19 Kitale, Elgon and West Suk area, by D. L. Searle, 1952 (two maps, 1 : 125,000).

Report No. 20 Mariakani-Mackinnon Road area, by J. M. Miller, 1952.

Report No. 21 Kisumu district, by E. P. Saggerson, 1952 (coloured map

Report 1 : 125,000, uncoloured approx. 1 : 25,000).

Report No. 22 North-east Kenya, by F. M. Ayers, 1952 (coloured maps 1 : 1,000,000 and 1 : 500,000, three uncoloured approx. 1 : 125,000).

Report No. 23 Area South-east of Embu, by L. M. Bear, 1952.

Report No. 24 Mombasa-Kwale area, by P. V. Caswell, 1953.

Report No. 25 South-east Machakos area, by R. G. Dodson, 1953.

Report No. 26 Broderick Falls area, by A. B. Gibson, 1954.

Report No. 27 Southern Machakos area, by B. H. Baker, 1954.

Report No. 28 Kakamega district, by A. Huddleston, 1954.

Report No. 29 Sultan Hamud area, by D. L. Searle, 1954.

Report No. 30 Kitui area, by L. D. Sanders, 1954.

Report No. 31 Meru-Isiolo area, by P. Mason, 1955.

Report No. 32 Taveta area, by L. M. Bear, 1955 (two maps, 1 : 125,000).

Report No. 33 North Kitui area, by R. G. Dodson, 1955.

Report No. 34 Kilifi-Mazera area, by P. V. Caswell, 1956.

Report No. 35 Kitale-Cherangani area, by J. M. Miller, 1956.

Report No. 36 Malindi area, by A. O. Thompson, 1956.

The following reports were in the press at the end of 1956 :

Report No. 37 South Kitui area, by E. P. Saggerson.

Report No. 38 Mwingi area, by A. M. Crowther.

Report No. 39 Namanga-Bissel area, by P. Joubert.

Report No. 40 Takabba-Wergudud area, by E. P. Saggerson and J. M. Miller (two maps, 1 : 125,000).

Report No. 41 Kolossia-Tiati area, by P. Mason and A. B. Gibson (two maps, 1 : 125,000).

Report No. 42 Magadi area, by B. H. Baker.

Report No. 43 Derkali-Melka Murri area, by A. O. Thompson and R. G. Dodson (two maps, 1 : 125,000).

Report No. 44 Gwasi area, by G. J. H. McCall (three maps, 1 : 125,000, 1 : 15,840 and 1 : 12,120).

Report No. 45 El Wak-Aus Mandula area, by B. H. Baker and E. P. Saggerson (three maps, two 1 : 125,000, one 1 : 50,000).

Other reports in various stages of preparation were

Mid-Galana area, by L. D. Sanders.

Bur Mayo-Tarbaj area, by A. O. Thompson and R. G. Dodson (three maps, two 1 : 125,000, one 1 : 40,000).

Mandera area, by P. Joubert (two maps, 1 : 125,000, one large-scale).

Area South of the Taita Hills, by J. Walsh.

Kericho area, by F. W. Binge.

Kasigau area, by E. P. Saggerson (two maps, 1 : 125,000, one large-scale).

Baragoi area, by B. H. Baker.

Naivasha area, by A. O. Thompson and R. G. Dodson.

Voi area, by L. D. Sanders (two maps, 1 : 125,000, one large-scale).

Area north of Malindi, by L. A. J. Williams (two maps, 1 : 125,000).

Index of mineral occurrences

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Pyrochlore

Rare-earths

Sillimanite

Talc

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Wollastonite

Zinc

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