THE GEOLOGY OF NIGERIA : AN ANNOTATESD BIBLIOGRAPHY

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I N T R O D U C T I O N

Historical development

As part of introduction to this work it will be worthwhile recalling briefly the historical development of publications relating to the geology of Nigeria which came to light in the course of compiling the bibliography. This will serve two main purposes; firstly, it will provide an understanding of the nature or character of the early literature of the subject; secondly, it will be part of the study of Nigerian geology to examine its historical development.

Geological literature on Nigeria prior to the Twentieth century exists only in very scanty form. Such literature is found along with narratives of early expeditions or travels through Nigeria by explorers or traders.

The Niger Expedition of 1841 included in its party a geologist, Dr. William Stanger who later gave a geological report to the African Civilization Society about "... the geological phenomena which came under my notice, during the exploration of 340 miles of the River Niger from the mouth of the Nun branch of that river to Egga".*

Another of such references to earlier geological information is contained in B.W. Hodder's article on "Tin mining on the Jos Plateau of Nigeria"** where he gives the information that "European travellers and

*Allen, William and Thomson, T.H.R.; "A narrative of the Expedition sent by Her Majesty's Government to the River Niger in 1841 under the command of Captain H.D. Trotter." London, Richard Bentley, 1848. Vol.1. pp.507-509.

**Economic Geography vol.35, 1959, p.109.

traders in Nigeria during the latter half of the Nineteenth century ... noticed 'straw tin' being used by the Hausa for tinning their brass..." He adds that "In the 1880's, however, it became clear that tin had been mined and smelted near Kano ..." and that "In 1884 information was first received about the presence of tin on the Jos Plateau ... but it was not until the Mineral Survey of Northern Nigeria (1904-1909) that the occurrence of tin over wide areas of the plateau was proved."

Thus, although it is clear that there are some scanty references to Nigeria's geological literature prior to the Twentieth century as may be found in the narratives of early explorers and traders, the study of the country's geology on which now exists substantial material awaited the birth of the Twentieth century.

Geological study of Nigeria dates from the early Twentieth century and began in an instituted manner. Under the colonial administration, the Mineral Surveys of Southern Nigeria and Northern Nigeria were set up in 1903 and 1904 respectively, with their headquarters in London under the directorship of the Imperial Institute. The object was to undertake surveys of the mineral resources of the country. The surveyors who were attached to each of the Mineral Surveys spent part of the year in Nigeria collecting samples of rocks and minerals, and part of the year in London testing and analysing the samples at the Imperial Institute. The reports on the results were issued between 1906 and 1914 by the Director of the Imperial Institute and published as parliamentary papers in the series "Colonial Reports. Miscellaneous". They were in the form of annual reports; ten reports were issued for Southern Nigeria for the period

1903 to 1913 and four for Northern Nigeria for 1904 to 1909. These official reports mark the first stage of publications relating to Nigerian geology. They contain information about new minerals discovered, their composition from chemical analyses, and accounts of the progress of investigations. Similar information is carried in the "Bulletin of the Imperial Institute" but normally reported jointly with reports from other colonies. Much of the information in the Bulletin is a repetition or summary of the information issued in the "Colonial Reports, Miscellaneous" This explains many of the omissions of items in the Bulletin from this bibliography, except for very significant ones.

The two Mineral Surveys of Northern Nigeria and Southern Nigeria were discontinued in 1909 and 1913 respectively with no official geological work till 1919, shortly after the World War I, when the Geological Survey of Nigeria, a Nigerian Government department, was set up to succeed the earlier Mineral Surveys, with its own directorship based at the headquarters at Kaduna. The objectives of the Geological Survey included surveying and mapping the country as well as carrying out investigations on mineral occurrences, and evaluation and exploitation of groundwater resources. The Geological Survey began publishing reports on its investigations from 1921 in its own "Bulletins" (No.1., 1921-), "Occasional Papers" (No.1., 1925-), "Annual reports" (1930-) and "Records" (1954-). This marks what may be called the second stage of development of geological publications on Nigeria. This stage is significant not only from the point of view of the quantity of publications but also from the point of view that, for the first time,

series of regular publications devoted only to materials on Nigerian geology were beginning to emerge. It is also significant in that the reports, although official, bear the names of the individual authors responsible for the various parts or aspects of the investigations rather than being a general report in the name of the director. The bulletins, although not very regular, form the main geological literature of the country.

Most of the activities of the Geological Survey were on the decline during World War II, attention being directed mainly towards prospecting for those minerals which were necessary for prosecuting the war. Output of publications by the Survey was consequently affected during the period.

In relation to the publications of the Geological Survey of Nigeria, the role of the oil and mining companies in providing geological information about the country is worthy of note. During the course of prospecting by these companies, some geological investigations were undertaken and copies of their reports and maps were sent to the Geological Survey. These reports constituted further information on the geology of the country and were incorporated into the publications of the Geological Survey.

Alongside with publications of the Geological Survey were also reports on Nigerian geology in a British Government department sponsored bulletin, "Colonial Geology and Mineral Resources, the quarterly bulletin of the Colonial Geological Surveys" which began publishing in 1950 and which later changed name to "Overseas Geology and Mineral

Resources, the quarterly bulletin of the Overseas Geological Surveys". The bulletin gave summary reports from Colonial Geological Surveys. These reports cover important geological work in Nigeria and other ex-colonial and colonial countries. They contain valuable information on the country's geology.

The literature on Nigerian geology in the two stages referred to above in government department sponsored publications were mainly descriptive reports. The third stage in the development is characterised by increase in research and scholastic publications and this dates from about the early part of the second half of this century. Results of research into Nigerian geology were published in various periodicals emanating from foreign countries and in Nigeria. This increase in scholastic publication may be attributed to several factors:
(a) increasing interest of overseas institutions and individual researchers in Nigerian geology, (b) the establishment of the four departments of geology in four of Nigeria's universities (the four departments were established between 1961 and 1967), (c) the inauguration of the Nigerian Mining, Geological and Metallurgical Society in December 1962 and the subsequent publication of its journal, "Journal of the Nigerian Mining, Geological and Metallurgical Society" (now "Journal of Mining and Geology") which began in December 1963. Contributions to publications on Nigerian geology by Nigerian and foreign institutions, societies, individuals and other agencies after the first half of the century have been significant. This is demonstrated by a study of the dates of publications of items listed in this bibliography where the greater proportion

was published within the last two decades.

Statement of Problem

In his book, "Systematic bibliography", A.M. Lewin Robinson emphasised that "... the sole factor in theory governing the possible compilation of a bibliography of any subject is the existence of literature on that subject"* From the above survey of the historical development of publications on Nigerian geology from the beginning of the study to the present, it can rightly be said that a substantial amount of literature now exists and is known to have been published in various media in foreign countries as well as in Nigeria. Despite the existence of the literature and its scatter in periodicals, monographs, books, government agency publications, etc. there is no record of any published bibliography on the subject. R. A. Reyment, in his work "Aspects of the geology of Nigeria"** lists many useful references to the geology of Nigeria and the Cameroons at the end of the book. Similar materials are contained in the appendix to the Annual report of the Geological Survey of Nigeria for 1948. Here H. A. Ogunfebo lists bibliographical materials relating to Nigeria and the Cameroons under British Trusteeship. It seems the listing was primarily devoted to publications of the Geological Survey but only included "other publications" in the second part of the appendix. But even so, the first part which is devoted to publications of the Geological Survey does not conform with standard bibliographical listing.

*Robinson, A. M. L. Systematic bibliography, Rev. ed. 1966. p.46
**Reyment, R. A. Aspects of the geology of Nigeria, 1965, pp.128-137.

The entries are under "Bulletins", "Occasional Papers" and in the case of the annual reports, only their years are listed. Some of the materials included in the second part bear insufficient bibliographical information for tracing. The attempt is to be commended, however.

Thus, the study of Nigerian geology still suffers a handicap in the absence of a published bibliography on the literature. References to the literature are to be found scattered in periodicals, books, monographs, government agency publications, etc. Some other subject bibliographies on Nigeria, especially in the social sciences subjects have been compiled. The need and demand exist for a bibliography on the literature of geology. The rate of geological publications has increased considerably in the last twenty years and it is becoming increasingly difficult for students, research workers and all others interested in Nigerian geology to have access to the information they require readily.

Aim, Scope and Limitations

The aim of this bibliography is therefore to list together in one place all the scattered references to published materials on the geology of Nigeria from the beginning of the geological study of the country up to March 1972. It is intended for a variety of users; students of geology, research workers, natural resources development planners and all others interested in obtaining some information about the country's geology.

Attempt is made to cover materials in books, monographs, periodical articles, government publications and theses. Unpublished materials other than theses have been omitted. Although maps constitute a form of

geological literature, they have been excluded. However, papers or articles giving geological descriptions of maps are included. Newspaper articles and book reviews are also excluded. Materials on certain related subjects of geology such as geomorphology and soils have been excluded because these strictly belong to Geography and Soil Science. However, some few materials on geomorphology which bear serious geological treatment or connections have been included. Chapters or parts of books primarily dealing with other subjects but which contain reasonable material on Nigerian geology have been included and indicated as such.

This bibliography lays some claim to comprehensiveness, but cannot be complete. This is inevitable for a compilation based on materials and bibliographical sources available in only two libraries: Kashim Ibrahim Library, Ahmadu Bello University, Zaria and the Geological Survey of Nigeria Library at Kaduna. There is no doubt that materials may be available in other libraries both in Nigeria and Overseas but it has not been possible to travel outside Zaria and Kaduna to consult such libraries, especially as this work is undertaken on a part-time basis by a full-time library staff. It is necessary to mention that this work, being a pioneer work, has suffered from lack of bibliographical sources for consultation. The bibliography therefore draws materials heavily from references at the ends of periodical articles, monographs, books, etc. There is no claim of access to all the materials listed.

Entries

Information provided for each of the monographic and book materials includes author's name (and initials or other names), the title, edition (if not the first), place of publication, publisher, date of publication, pagination and illustrations. Where parts of composite works or sections of independent works are included in the bibliography the relevant chapters or pages are indicated in normal brackets. In the case of periodical articles the author, title of article, journal title (abbreviated and underlined), volume number, issue number, date of journal, relevant pages, and illustrations are given in that order. Abbreviations used for periodical titles conform with those used in the "World list of Scientific Periodicals," 4th ed. 1964, with slight modifications in a few cases, for instance, where there might be ambiguity. A list of the full titles of the abbreviations used is given in the introductory pages.

In both the annotations and classification of these materials the shortcomings of a non-geologist would be evident in most of the items. In the annotations in particular, I have relied very much on the author's claims for the contents of their works in the abstracts or introductory sections of their works. It must be stressed therefore that the annotations are not intended to be evaluations or criticisms of the works. They are simply summaries of the contents of the works. In some cases the authors' abstracts or abstracts from some bibliographical sources have been quoted. Some of the titles which are self-explanatory have not been annotated. Some of the gaps in annotation are due to lack of access

to the original materials.

Arrangement and Classification

No standard classification scheme has been used to classify materials in this bibliography, nor has any one been devised by the author. The materials have simply been grouped into broad subject divisions and sub-divisions within the subject field in as related sequences as possible. Items in each group have been arranged alphabetically by author. The title of the book or article follows on the line below the author's name.

Indexes

Two sets of indexes have been provided: an author and a subject index. In a grouping of materials into broad subject divisions without the use of any standard classification scheme and where each of the majority of materials is capable of being grouped into several alternative places, a subject index is necessary not only to alleviate any possible mis-groupings by a non-specialist in the subject, but also to avoid cumbersome use of cross-references.

The figures in the indexes refer to item numbers and not page numbers.

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SOURCES

It is impossible to list all the sources for this bibliography, especially that most of the materials were compiled from bibliographies, references and footnotes from various books and articles. However, in addition to these as well as to the catalogues of Kashim Ibrahim Library, Ahmadu Bello University, Zaria, and of the Geological Survey of Nigeria Library, Kaduna, the following are some of the major sources, and I owe acknowledgements to their authors:-

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Abbreviations of Journals and other titles cited

A.B.U., Dept. Geog. Occ. Pap.	Ahmadu Bello University, Department of Geography, Occasional Paper.
A.B.U., Inst. Agric. Res., Soil Surv. Bull.	Ahmadu Bello University, Institute for Agricultural Research, Soil Survey Bulletin.
Abstr. Proc. geol. Soc. Lond.	Abstracts of the Proceedings of the Geological Society of London.
Act. congr. Panafr. prehist. Quater.	Actes du congres Panafricain de prehistoire et de l'etude du Quaternaire.
Am. J. Sci.	American Journal of Science.
Am. Miner.	American Mineralogist.
Ann. Rep. geol. Surv. Nigeria	Annual Report of the Geological Survey of Nigeria.
Ann. Rep. Res. Inst. Afr. Geol., Univ. Leeds., Dept. Earth Sci.	Annual Report of the Research Institute of African Geology, University of Leeds, Department of Earth Sciences.
Annls. Fac. Sci., Univ. Clermont-Fer.	Annals de Faculté de Science, Université de Clermont-Ferrand.
Annls. Mag. nat. Hist.	Annals and Magazine of Natural History.
Ass. Sénégal Etude Quater. Ouest Afr. Bull.	Association Senegalaise pour l'Étude du Quaternaire de l'Ouest Africain. Bulletin de Liaison.
Boll. Soc. geol. ital.	Bollettino della Società geologica italiana.
Bull. Am. Ass. Petrol. Geol.	Bulletin of the American Association of Petroleum Geologists.
Bull. Br. Mus. (nat. Hist.)	Bulletin of the British Museum (Natural History)

Bull. geol. Soc. Am.	Bulletin of the Geological Society of America.
Bull. geol. Surv. Nigeria.	Bulletin. Geological Survey of Nigeria.
Bull. imp. Inst., Lond.	Bulletin of the Imperial Institute London.
Bull. Inst. Fond. Afr. Noire.	Bulletin de l'Institut Fondamental D'Afrique Noire.
Bull. Instn. Min. Metall.	Bulletin of the Institution of Mining and Metallurgy.
Bull. Int. Ass. Scient. Hydrol.	Bulletin. International Association of Scientific Hydrology.
Bull. Trans. Instn. Min. Metall.	Bulletin and Transactions of the Institution of Mining and Metallurgy.
Bull. U.S. geol. Surv.	Bulletin of the United States Geological Survey.
Bull. Volcanologique	Bulletin volcanologique.
Clay Miner. Bull.	Clay minerals Bulletin.
Coll. Int. Micropal.	Colloque Internationale de Micropaléontologie.
Colon. Geol. Miner. Resour.	Colonial Geology and Mineral Resources.
Colon. Rep. Misc.	Colonial Reports. Miscellaneous.
Contr. Miner. Petrol.	Contributions to Mineralogy and Petrology.
Earth Planet. Sci. Lett.	Earth and Planetary Science Letters.
Econ. Geogr.	Economic Geography
Econ. Geol.	Economic Geology.

Emp. Min. Metall. Congr.	Empire Mining and Metallurgical Congress.
Engng. Geol. (Amst.)	Engineering Geology (Amsterdam)
Engng. Min. J.	Engineering and Mining Journal.
Fm. Forest	Farm and Forest.
Geochim. cosmochim. Acta	Geochimica et cosmochimica Acta.
Geochem. Int.	Geochemistry International
Geochemistry	Geochemistry
Geogrl. J.	Geographical Journal.
Geokhimiya	Geokhimiya
Geol. För. Stockh. Förh.	Geologiska föreningens i Stockholm förhandlingar
Geol. Mag.	Geological Magazine
Geol. Surv. Nigeria. Pamphlet	Geological Survey of Nigeria. Pamphlet
Geologie Mijnb.	Geologie en Mijnbouw
Géotechnique	Geotechnique
Geotekt. Forsch.	Geotektonische Forschungen
Grana palynol.	Grana palynologica
Great Brit. Colon. Pubs.	Great Britain, Colonial Publications
Great Brit. Geol. Surv. Atomic Energy Div., Age. Determ. Rep.	Great Britain. Geological Survey. Atomic Energy Division, Age Determination Report.
Great Brit. Geol. Surv. & Mus. Atomic Energy Div., Rep.	Great Britain. Geological Survey and Museum. Atomic Energy Division Report
Ground water	Ground water

Ibadan Geol.	The Ibadan Geologist
Ibadan Univ. Bot. Studies	Ibadan University. Botanical Studies
Ibadan Univ. Dept. Geol. Pub.	Ibadan University. Department of Geology, Publications.
Inst. Petrol. Rev.	Institute of Petroleum Review
Int. Ass. Engng. Geol., Int. Congr.	International Association of Engineering Geology, International Congress.
Int. Bot. Congr.	International Botanical Congress
Int. Geol. Congr.	International Geological Congress
Int. Ser. Mono. Earth Sci.	International Series of Monographs in Earth Sciences
J. Geol.	Journal of Geology
J. Int. Ass. Math. Geol.	Journal, International Association for Mathematical Geology
J. Min. Geol.	Journal of Mining and Geology
J. Mines, Metals Fuels (Calcutta)	Journal of Mines, Metals and Fuels, Calcutta.
J. Nigerian Min. Geol. Metall. Soc.	Journal of the Nigerian Mining, Geological and Metallurgical Society
J. Paleont.	Journal of Paleontology
J. Sediment. Petrol.	Journal of Sedimentary Petrology
Leid. geol. Meded.	Leidsche geologische mededelingen
Mar. Geol.	Marine Geology
Mem. Bur. Rech. Geol. & Minieres (Fr.)	Memoires, Bureau de Recherches Geologiques et Minieres (France)
Mem. geol. Soc. Lond.	Memoirs of the Geological Society of London

Micropalcontology	Micropaleontology
Min. J. Lond.	Mining Journal. London
Min. Mag. Lond.	Mining Magazine. London
Mineralog. Mag.	Mineralogical Magazine
Mines Métall.	Mines et Métallurgie
Naturaliste can.	Le Naturaliste canadien
Nature, Lond.	Nature. London
Nature; Phys. Sci.	Nature; Physical Science. London
Nature Resour. (Unesco)	Nature and Resources (U.N.E.S.C.O.)
Neues Jb. Geol. Paläont. Abh.	Neues Jahrbuch für Geologie und Paläontologie. Abhanlungen
Neues Jb. Geol. Paläont. Mh.	Neues Jahrbuch für Geologie und Paläontologie. Monatschefte
Niger. Eng.	Nigerian Engineer
Niger. Fld.	Nigerian Field
Niger. geogrl. J.	Nigerian Geographical Journal
Niger. J. Sci.	Nigerian Journal of Science
Niger. Min. Geol. Metall. Soc.	Nigerian Mining, Geological and Metallurgical Society
Niger. Trade J.	Nigerian Trade Journal
Occ. Pap. geol. Surv. Nigeria	Occasional Papers. Geological Survey of Nigeria
Overseas Geol. Miner. Resour.	Overseas Geology and Mineral Resources
Overseas Geol. Surv. Geophys. Pap.	Overseas Geological Surveys, London. Geophysical Paper

Overseas Geol. Surv. Geophys. Rep.	Overseas Geological Surveys, London. Geophysical Report
Padua. Univ. Inst. Geol. Miner. Mem.	Padua. Universita. Institut di Geologio e Mineralogic. Memoric
Palaeogeogr. palaeoclimatol. palaeoecol.	Palaeogeography, palaeoclimatology, palaeoecology
Palaeontographica	Palaeontographica
Paläont. Z.	Paläontologische Zeitschrift
Photogramm. Engng.	Photogrammetric Engineering
Pollen et spores	Pollen et spores
Proc. geol. Soc.	Proceedings of the Geological Society of London
Proc. Int. Sediment. Congr.	Proceedings of the International Sedimentologists Congress
Proc. Int. West Afr. Conf.	Proceedings of the International West African Conference
Proc. malac. Soc. Lond.	Proceedings of the Malacological Society of London
Proc. Sci. Ass. Nigeria.	Proceedings of the Science Association of Nigeria
Proc. Symp. granites West Afr.	Proceedings of the Symposium on the granites of West Africa
Proc. West. Afr. Micropal. Coll.	Proceedings of the West African Micropaleontological Colloquium
Proc. World Petrol. Congr.	Proceedings of the World Petroleum Congress
Proc. zool. Soc. Lond.	Proceedings of the Zoological Society of London
Q. Jl. Engng. Geol.	Quarterly Journal of Engineering Geology

Q. Jl. geol. Soc. Lond.	Quarterly Journal of the Geological Society of London
Rec. geol. Surv. Nigeria.	Record of the Geological Survey of Nigeria
Revue Géogr. phys. Géol. dyn.	Revue de géographie physique et de geologie dynamique
Revue Géomorph. dyn.	Revue de géomorphologie dynamique
Revue Micropal.	Revue de Micropaléontologie
Schweiz. miner. petrogr. Mitt.	Schweizerische Mineralogische und Petrographische Mitteilungen
Sedimentology	Sedimentology
Soc. Econ. Paleontol. Mineralog. Spec. Pub.	Society of Economic Paleontologists and Mineralogists. Special Publication (Tulsa. Oklahoma)
South Afr. Min. Engng. J.	South African Mining and Engineering Journal
Stockh. Contr. Geol.	Stockholm Contributions to Geology
Tectonophysics	Tectonophysics
Trans. Instn. Min. Metall.	Transactions of the Institution of Mining and Metallurgy. London
Unesco. Natur. Resour. Res. Ser.	U.N.E.S.C.O. Natural Resources Research series
Z. dt. geol. Ges.	Zeitschrift der Deutschen geologischen Gesellschraft
Z. Geomorph.	Zeitschrift für Geomorphologie
Zentbl. Miner.	Zentralblatt für Mineralogie

ABBREVIATIONS USED IN CATALOGUING

Abt.	Abteilungen
Append.	Appendix
Aug.	August
Bd.	Band
Dec.	December
diag(s)	diagram(s)
ed.	edition
Fasc.	Fascicle (Fasciculo)
Feb.	February
frontis	frontispiece
Govt. Printer	Government Printer
h	heft
H.M.S.O.	Her Majesty's Stationery Office
illus.	illustration
Jan.	January
Mar.	March
n.d.	no date
No(s)	number(s)
Nov.	November
O.U.P.	Oxford University Press
Oct.	October
p.	pages (e.g. 679p.)
pp.	pages (e.g. pp.405-417)
rev.	revised
Sect.	Section

Sept.	September
Ser.	Series
U.N.E.S.C.O.	United Nations Educational, Scientific and Cultural Organization
U.S.A.I.D.	United States Agency for International Development
Vol.(s)	Volume(s)

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1. GENERAL

1. AINSLIE, J. R.

The physiography of Southern Nigeria and its effects on the forest flora. Oxford, Clarendon Press, 1926. 36p. illus, maps.

Gives detailed notes on the general geology and soils of Nigeria together with descriptions of the forest types and their floristic composition.

2. BAIN, A.D.N.

The geology of Bauchi town and surrounding district. Bull. geol. Surv. Nigeria. No.9, 1926, pp.38-64. illus, map, diags.

Gives the geological description of the area as well as a descriptive account of investigations into the occurrence and relationships of the syenites around the town.

3. BARBER, W.M. and others.

The geology of the Lower Gongola by W. Barber, E. A. Tait and J. H. Thompson. Ann. Rep. geol. Surv. Nigeria, 1952-53. pp.18-20. tables.

Describes the topography and drainage and the general geology of the area of Lower Gongola river valley, a tributary of the Benue river. Notes on some fossils found in the area are included.

4. BUCHANAN, K. M. and PUGH, J. C.

Land and people in Nigeria; the human geography of Nigeria and its environmental background. London, University of London Press, 1955. ("Geology": Ch.1. pp.1-12. maps, tables.)

The section on geology gives an account of the geological setting of Nigeria as a background study of its human geography.

5. CARTER, J. D. and others.

The geology of parts of Adamawa, Bauchi and Borno Provinces in North-Eastern Nigeria; explanation of 1:250,000 sheets Nos.25, 36 and 47. By J. D. Carter, W. Barber and E.A. Tait. With contributions by G.P. Jones. Bull. geol. Surv. Nigeria, No.30. 1963. 109p. illus, map.

A geological account of the area underlain by cretaceous sediments; younger granites, post-cretaceous volcanics and ancient rocks of the crystalline basement are described. The sedimentary rocks are compared with other areas of Nigeria and the Cameroon Republic. A discussion on the economic geology and hydrology of the area is included.

6. DESSAUVAGIE, T. F. J.

Photogeological interpretation of 1:250,000 sheet 46 (Futuk), Nigeria. J. Min. Geol. vol.4, Nos.1 & 2. 1969. pp.13-28. illus, maps, tables, diags.

7. DE SWARDT, A. M. J.

Geology of the country around Ilesha; an explanation of sheet North B 31 (Ilesha). Bull. geol. Surv. Nigeria, No.23, 1953. 54p. illus, maps, tables, diags.
E.2

Gives a description of the geology of the basement complex rocks of the area around Ilesha, Western State, with a discussion on their petrology and structure. Notes are provided on the economic aspects of the geology of the area with reference to gold, talc and cassiterite.

8. DE SWARDT, A. M. J.

The Ife-Ilesha goldfield. Interim report No.1. Ann. Rep. geol. Surv. Nigeria, 1946, pp.21-25.

A geological description of the Ife-Ilesha gold mining district of the Western State of Nigeria. Geomorphic features are also described.

9. DE SWARDT, A. M. J.

The Ife-Ilesha goldfield. Interim report No.2. Ann. Rep. geol. Surv. Nigeria, 1947, pp.14-19.

Gives an account of the progress of work in the Ife-Ilesha goldfield investigations. Describes the geomorphic features as well as the economic geology of the area.

10. DE SWARDT, A. M. J. and VAN COPPENHAGEN, J. D.

The Ife-Ilesha goldfield. Interim report No.3. Ann. Rep. geol. Surv. Nigeria, 1948, pp.14-18.

Describes the geomorphology and geology of the area in the Western State.

11. DIXEY, F.

Colonial geological surveys, 1947-56; a review of progress during the past ten years. Colon. Geol. Miner. Resour. Bulletin supplement. No.2. London, H.M.S.O. 1957.
(Nigeria: pp.68-73), map, table.

Contains some information on the history and progress of geological surveys in Nigeria during the period.

12. FALCONER, John Downie.
The geology and geography of Northern Nigeria. London, MacMillan, 1911. 295p.

13. FALCONER, John Downie.
The geology of Nigeria; some corrections and additions. Geol. Mag. Vol.65, 1928. pp.430-431.

This is a correspondence relating to a previously published article.

14. FALCONER, John Downie.
Geology of the Ningi Hills. Geol. Mag. vol.57, 1920. pp.526-527.

15. FALCONER, John Downie.
On horseback through Nigeria. London, T.F. Unwin, 1911. 312p. illus, map.

A narrative of the author's travels through the country, mainly in Northern Nigeria; it contains some references to the geology and mineral deposits of the areas travelled through.

16. FALCONER, John Downie.
Outlines of the Geology of Northern Nigeria. Geol. Mag. Vol.7, 1910. pp.519-520.

17. FALCONER, John Downie.
The Southern Plateau tinfields and the Sura volcanic line. Bull. geol. Surv. Nigeria, No.9. 1926, pp.19-37. illus, map.

A descriptive account of the geology of the Southern Plateau tinfields and the volcanic line of Sura.

18. FALCONER, John Downie.

Zaranda Hill. Bull. geol. Surv. Nigeria. No.9, 1926. pp.65-67.

A geological description of the Zaranda Hill near Bauchi in the Nigerian younger granite province.

19. FLOYD, Barry.

Eastern Nigeria; a geographical review. London, MacMillan, 1969. 359p.

("General aspects and geology" pp.67-81)

This part of the book includes a description of the geological setting of the former Eastern Nigeria.

20. FURON, Raymond.

The geology of Africa. Translated by A. Hallam and L. A. Stevens. 2nd ed. Edinburgh, Oliver & Boyd, 1963. 377p.

("Nigeria" Ch.27, pp.242-248. map).

The section on Nigeria contains a brief geological account of the country.

21. GARDE, G.

Description géologique des regions situées entre le Niger le Tchad. Paris, A. Hermann et Fils. 1911.

"... a careful and interesting study of the regions situated between the Niger and Lake Chad ..." by J.D.F.

[Source: Geogrl. J. vol.38, p.193]

22. GRANT, N. K.

The geology of part of the Dadiya syncline, North-Eastern Nigeria. J. Nigerian Min. Geol. Metall. Soc. Vol.2, No.1. July 1965. pp.17-28. maps, tables, diags.

An account of a study of the Cretaceous sediments of the Dadiya syncline in Gombe area North-Eastern State, undertaken by students of the Department of Geology, University of Ibadan. The account contains a description of Bima sandstones which are compared with similar sandstone formation in north-western Scottland which is of late Precambrian age.

23. GROVE, A. T.

The Benue valley. [Kaduna], Ministry of Natural Resources, [1957]. 94p. illus, maps, diags.

The book is essentially a geographical account of the Benue river valley but a substantial geological information of the valley is included.

24. GROVE, A. T. and PULLAN, R. A.

"Some aspects of Pleistocene Palaeogeography of the Chad Basin". In: African ecology and human evolution edited by F.C. Howell and F. Bourliére. London, Methuen, 1963. pp.230-245. illus, maps, diags.

Includes a geological description of the Nigerian sector of the Chad Basin.

25. JAQUES, E. H.

The geology of the Egbe District, Kabba Province. Interim report No.2. Ann. Rep. geol. Surv. Nigeria, 1945. pp.17-21.

A description of the geology of the area with a brief account of the topography.

26. JAQUES, E. H.

Geology of the Egbe District, Kabba Province. Interim report No.3. Ann. Rep. geol. Surv. Nigeria. 1946. pp.17-21.

Gives a description of the topography and geology of the area mapped. A description of the gold workings is also given.

27. JONES, H. A. and HOCKEY, R. D.

The geology of part of south-western Nigeria; explanation of 1:250,000 sheets No.59 and 68. Bull. geol. Surv. Nigeria. No.31, 1964. 88p. illus, map, tables, diags.

The authors give an account of the geology of the south-western part of Nigeria which embraces areas in the south-western corner from the Dahomey boarder to Ibadan and Lagos, consisting of ancient rocks of the crystalline basement, sedimentary rocks of the Cretaceous and Tertiary and Quaternary rocks.

28. KISTON, A. E.

Outlines of the geology of Southern Nigeria. Proc. geol. Soc. No.1042, 1919, pp.100-105.

29. McCURRY, Patricia.
The geology of degree sheet 21 (Zaria). M.Sc. Thesis. Ahmadu Bello University, 1970. 290p. illus, maps, tables, diags.

30. MIGEOD, F. M. H.
Through Nigeria to Lake Chad. London, Heath Cranton, 1924. (Geology: pp.189-204).

[Source: Ann. Rep. geol. Surv. Nigeria. 1948].

31. ORAJAKA, S.
Geology of Obudu area, Eastern Nigeria. D.Sc. Thesis, Université Laval, 1963.

32. ORAJAKA, S.
Geology of the Obudu area, Ogoja Province, Eastern Nigeria. Naturaliste can. vol.91, No.3, Mar. 1964, pp.73-100.

33. PARKINSON, John.
The geology of the Oban Hills, Southern Nigeria. Q. Jl. geol. Soc. Lond. Vol.63, 1907. pp.313-316p. map, diag.

34. RAEBURN, Colin.
The geology of Mama, Nassarawa Province. Bull. geol. Surv. Nigeria. No.9, 1926. pp.10-19, illus, table.

A geological description of Mama district in Nassarawa area.

35. RAHAMAN, M. A.

Preliminary report on the geology of the Iseyin area of Western State, Nigeria. Ann. Rep. Res. Inst. Afr. Geol. Univ. Leeds, Dept. Earth Sci. 14th. pp.20-22. map.

36. ROCKINGHAM, J. E. and MACKAY, R. A.

Geology of the Plateau tinfields. Interim report No.3. Ann. Rep. geol. Surv. Nigeria. 1946, pp.7-17. illus, diag.

The report is a provisional explanation of the sheet maps of the area. It contains a detailed geological description of the area.

37. ROCKINGHAM, J. E.

Geology of the Plateau tinfields. Interim report No.4. Ann. Rep. geol. Surv. Nigeria. 1947. pp.19-22.

A geological account of the area and a description of the map sheets.

38. RUSS, W.

The goldfields; Nigeria. Ann. Rep. geol. Surv. Nigeria. 1935, pp.3-6.

A brief outline of the geology of the area in the eastern part of the Nigerian goldfield. The area covered is the Kaduna, Kakuri and Bishini map sheets of the Geological Survey.

39. RUSS, W.

The Kakuri sheet; Africa North C 32 H.111 Ann. Rep. geol. Surv. Nigeria. 1936. pp.10-12.

A geological account of the map sheet of Kakuri lying immediately south-east of Kaduna. The physiography and hydrology of the area are described.

40. SACCHI, R.

The geology of the Kabba-Lokoja region in south-western Nigeria. Boll. Soc. geol. ital. Vol.87, No.2, 1968. pp.341-367.

41. SACCHI, R.

The geology of the region around Bena in northern Nigeria. Padua, Univ. Inst. Geol. Miner. Mem. Vol.26, 1967-68, 49p.

42. SIMPSON, A.

The Nigerian coalfield; the geology of parts of Onitsha, Owerri and Benue Provinces. Bull. geol. Surv. Nigeria. No.24, 1954. 83p. illus, maps, tables, diags.

The geomorphology, structure, stratigraphy and the Cretaceous coal measures of the southern part of the Nigerian coal field are dealt with. Descriptions of the geology of the area are included and a section with data on the petrographic, chemical and physical properties and the mode of occurrence of coal.

43. TATTAM, C. M.

Geology of Borgu Division. Ann. Rep. geol. Surv. Nigeria. 1936. pp.3-9.

A geological description of Borgu Division, Kwara State, including some notes on the physiography of the area as well as the mineral resources.

44. THOMAS, G. G. and VITTORIA, J. L.

Geology of the Liruei Hills. Min. Mag. Lond. Vol.27, 1922. pp.345-346.

45. TRUSWELL, J. F. and COPE, R. N.

The geology of parts of Niger and Zaria Provinces, Northern Nigeria; explanation of 1:2,500,000 sheet No.31. Bull. geol. Surv. Nigeria. No.29, 1963. 41p. illus, maps, tables, diags.

A geological interpretation of the map area (Kusheriki area) with some notes on the minerals available as well as sources of water supply in the area.

46. UDO, R. K.

Geographical regions of Nigeria. Ibadan, Heinemann, 1970. 212p. illus, maps, tables, diags.

The book contains scattered references to the geology and minerals of parts of Nigeria.

47. WILLIAMS, A. S.

Geology of the Liruei Hills. Min. Mag. Lond., vol.28, 1923. pp.161-162.

48. WILSON, R. C.

The geology of the Eastern Railway. Section 1: Port Harcourt to Enugu. With notes by A. D. Bain. Bull. geol. Surv. Nigeria. No.8, 1925, 95p. maps, tables, diags.

An account of the geology of the region of the railway belt between Port Harcourt and Enugu. Provides a systematic account of the character of the rocks of the Tertiary deposits of south-eastern Nigeria. Important discoveries of coal and lignite are recorded. Discussions on various theoretical considerations in the light of researchers made and various suggestions with regard to the past history of south-eastern Nigeria are presented.

49. WRIGHT, John R. and McCURRY, Patricia.

"The geological map of Zaria area". In: Zaria and its regions; a Nigerian Savanna city and its environs. Edited by M.J. Mortimore, A.B.U., Dept. Geog. Occ. Pap. No.4, 1970. pp.5-12. map.

Based on the map sheet 102 S.W. of the Northern Nigerian Survey, the geology of Zaria town and its surrounding area is described.

2. PHYSICAL GEOLOGY

50. ALLUM, J. A. E.

Photogeological interpretation of areas of regional metamorphism. Trans. Instn. Min. Metall. Vol.70, 1960-61, pp.521-543. illus.

Part of the paper discusses the use of photogeological legends which the author developed during his work in Nigeria and applies the techniques in a study of selected aspects of regional metamorphism in Nigeria.

51. ALLUM, J. A. E.

The photogeological interpretation of areas of regional metamorphism, with special reference to the Tegina map sheet of Nigeria. Ph.D. Thesis, London, 1959-60.

52. ALLUM, J. A. E.

The photogeological interpretation of areas of regional metamorphism, with special reference to the Tegina map sheet of Nigeria. Photogramm. Engng. vol.28, July 1962, pp.418-438.

53. BURKE, K. and DUROTOYE, B.

Late Quaternary climatic variation in southwestern Nigeria; evidence from pediments and pediment deposits. Ass. Sénégal. Étude Quater. Ouest Afr. Bull. No.25, 1970. pp.79-96.

54. BUSER, H.

Der Einfluss von paläostrukturen auf die Entwicklung der Entwässerungssysteme Westafrikas und die Quatärgeschichte des Niger-Benue stromgebietes. (The influence of paleostructures on the development of the drainage system of West Africa and the Quaternary history of the Niger-Benue river region). Z. dt. geol. Ges. Vol.116, No.3, 1964. pp.651-674.

55. BUSER, H.

Paleostructures of Nigeria and adjacent countries. Geotekt. Forsch. h.24, Sept. 1966, 90p. maps, tables.

56. DE SWARDT, A. M. J.

The recent erosional history of the Kaduna valley near Kaduna township. Ann. Rep. geol. Surv. Nigeria, 1946. pp.39-45, diags.

Although this is a geomorphological account of River Kaduna valley near Kaduna, some information is given on the geology of the valley.

57. HALSTEAD, L. B.

The shore-line of lake Kainji; a preliminary survey. J. Min. Geol. Vol.6, Nos.1 & 2. 1971. pp.3-22. illus, map, diags.

Contains some description of the geological setting of the shore-line area of lake Kainji.

58. JUNGERIUS, P. D.

The Upper Coal Measures cuesta in Eastern Nigeria. Z. Geomorph. Supplementband 5, Seite, 1964. pp.167-176. illus, map, diags.

A geomorphological and geological analysis of a cuesta landscape in the north-western part of East-Central State. The geology is associated with Late Cretaceous and Tertiary formations.

59. OFOMATA, G. E. K.

Quelques observations sur l'éboulement d'Awgu, Nigeria oriental ("Some observations on the landslide at Awgu, Eastern Nigeria") Bull. Inst. Fond. Afr. Noire. Ser.A. Tome 28, No.2, 1966. pp.433-443. illus, maps.

A geological description of the slope of the Awgu escarpment above the Port-Harcourt - Oji River road and the causes of the recurrent landslides along the road.
The author makes suggestions to avert the recurrence of the slide.

60. PARKINSON, John.

Foliated and non-foliated rocks of Southern Nigeria. Geol. Mag. Vol.7, 1910. pp.529-534.

61. PARKINSON, John.

The structure of Southern Nigeria. Geogrl. J. Vol.29, 1907. pp.56-64. illus, map.

The article deals briefly with the geology of the area as well as some prominent physical features.

62. PUGH, J. C.

The volcanoes of Nigeria. Niger. geogrl. J. Vol.2, No.1. June 1958. pp.26-36. illus, maps, diags.

Presents an account of volcanic activity in Nigeria from Lower Cretaceous period to the present. Five groups of volcanic activities are presented with an assertion that their distribution is related to the Northeast-Southwest lines of weakness.

63. SIMPSON, A.

Geology of the escarpment, north of Enugu. Ann. Rep. geol. Surv. Nigeria. 1947, pp.9-14.

Describes the topography and the geology of the area.

64. THORP, M. B.

Closed basins in the younger granite massifs, northern Nigeria. Z. Geomorph. Vol.11, No.4, 1967. pp.459-480. illus, maps, tablos.

A study of some massifs in the Jurassic granite ring complexes around the Jos Plateau to determine the geomorphological factors promoting their formation. Tables of the chemical and modal analysis of the rocks are provided.

65. THORP, M. B.

The geomorphology of the younger granite Kudaru Hills. Niger. geogrl. J. Vol.10, No.2, Dec. 1967. pp.77-90. maps, diags.

Included in the geomorphological description of Kudaru Hills which lie between Zaria and Jos are some geological accounts of the area in relation to the relief and drainage.

66. THORP, M. B.

"Joint patterns and the evolution of landforms in the Jarawa granite massif, Northern Nigeria." In: Liverpool essays in geography: a Jubilee collection. Edited by R. W. Steel and R. Lawton. London, Longmans, 1964. pp.65-83. maps, diags.

Describes the geology and geomorphology in relation to the landform evolution in the Jarawa granite massif in the northeast of the Jos Plateau.

67. VOUTE, C.

Geological and morphological evolution of the Niger and Benue valleys. Act. congr. Panafr. prehist. Quater. 4th., Léopoldville, 1959. Sect. 1 & 2. pp.189-207. maps, tables, diags.

Describes the geological and morphological features of the Niger and Benue valleys within Nigeria and compares them with other areas.

3 STRUCTURAL GEOLOGY - TECTONICS

68. BLACK, R. and GIROD, M.

Contrôle structural du volcanisme ancien et récent dans les régions du Hoggar, Aïr, Nigéria et Camëroun. (Structural control of ancient and recent volcanism in the Ahaggar, Aïr, Nigeria and the Cameroon regions). Abstr. proc. geol. Soc. Lond. No.1644 1968. pp.263-266.

69. BLACK, R.and GIROD, M.

"Late Palaeozoic to recent igneous activity in West Africa and its relationship to basement structure." In: African magnetism and tectonics, edited by T.N. Clifford and I.G. Gass. Edinburgh, Oliver & Boyd, 1970, pp.185-210.

A description of three major phases of phanerozoic igneous activity in West Africa including the late Palaeozoic-Tertiary alkaline Younger Granite ring-complexes and the Tertiary-recent alkali basalts of Nigeria.

70. GRANT, N. K.

The late Precambrian to early Paleozoic Pan-African orogeny in Ghana, Togo, Dahomey and Nigeria. Bull. geol. Soc. Am. Vol.80, 1969, pp.45-56.

A section of the paper deals with the effect of Pan-African orogeny in Nigeria. The author deduces that it resulted in the reactivation of the Nigerian basement complex.

71. GRANT, N. K.

The nature of the Pan-African orogeny in Nigeria. 13th. Ann Rep. Res. Inst. Afr. Geol. Univ. Leeds. Dept. Earth Sci. 1969, pp.20-21.

[Source: McCurry, P. The geology of degree sheet 21 (Zaria)]

72. GREENWOOD, R.

The Ganawuri overthrust, Plateau Province. Ann. Rep. geol. Surv. Nigeria, 1945, pp.29-30.

A description of the geological structure of Ganawuri on the Jos Plateau.

73. HUNTINGTON, J. F.

Methods and applications of fracture trace analysis in the quantification of structural geology. Geol. Mag. vol.106. No.5. Sept.-Oct. 1969. pp.430-451. ("The Lamurde anticline, North-east Nigeria" pp.436-439. map, table).

74. KING, B. C.

The form and structural features of aplite and pegmatite dykes and veins in the Oki area of the Northern Provinces of Nigeria and the criteria that indicate a mondilational mode of emplacement. J. Geol. Vol.56, No.5, 1948, pp.459-475.

75. KING, B. C.

The mode of emplacement and significance in petro-genesis of certain granitic bodies occurring in Uganda, Nigeria and Scotland. D.Sc. Thesis. Glasgow, 1950.

76. McCURRY, Patricia and WRIGHT, John B.

On place and time in orogenic granite plutonism. Bull. geol. Soc. Am. Vol.82, No.6. June 1971, pp.1713-1716. map, diags.

Based on the results of recent mapping of the area around Zaria, the authors compare relationships in high-grade metamorphic terraces in Nigeria and elsewhere and arrive at a conclusion that the granite masses were emplaced at successively lower crustal levels rather than at higher crustal levels during orogenesis.

77. McCURRY, Patricia.

Pan-African orogeny in northern Nigeria. Bull. geol. Soc. Am. Vol.82, No.11, Nov. 1971. pp.3251-3262. illus, maps, tables, diags.

On the basis of structural and metamorphic evidence derived from mapping the area around Zaria the author associates them with evidence of Pan-African orogeny in Nigeria. A detailed description of the geological structure of the area is presented.

78. McCURRY, Patricia.

Plate tectonics and the Pan-African orogeny in Nigeria. Nature: Phys. Sci. Vol.229, No.5, Feb. 1971. pp.154-155. map, diags.

79. OKEZIE, C. N.

"Ring-structures in the Sara-Fier younger granite complex, Northern Nigeria." By D.C. Turner. [Discussion]. Q. Jl. geol. Soc. Lond. Vol.120. Part 1. No.477, 1964. p.125.

This is a discussion on an earlier paper by D.C. Turner and it provides further evidence to show that four planes of weakness appeared to have exercised some significant control of the emplacement of the Nigerian younger granites.

The author's reply follows on the same page.

80. TURNER, David Charles.

The Pre-Cambrian and Lower Palaeozoic basement of Nigeria. In: Tectonics of Africa. UNESCO. Earth Sciences, 6. 1971. pp.255-258. map.

81. TURNER, David Charles.

The sedimentary cover in Nigeria. In: Tectonics of Africa. UNESCO. Earth Sciences, 6. 1971. pp.403-405. map.

A description of various sedimentary basins in Nigeria. Based on evidences from previous studies the author associates the formation of these basins with tectonic movements, especially those basins lying along the eastern part of the country.

82. TURNER, David Charles.

The Younger granites of Nigeria. In: Tectonics of Africa, UNESCO. Earth Sciences, 6. 1971. pp.258-260p. map.

"Major tectonic features of the basement controlled the location of the Nigerian Younger Granite complexes". [Author].

83. WRIGHT, John B.

The Benue valley; a rip in the African continent. Niger Fld. Vol.35, No.2, April 1970, pp.78-85. maps, diags.

Based on deductions from the continental drift theory and other evidences the author attempts to establish a probable cause of the Benue valley. He deduces that the valley resulted from some tensional rift in the first instance, during the wedging apart process of the continents of Africa and South America and a slight closing up of the valley later after subsequent infilling of marine sediments.

84. WRIGHT, John B.

South Atlantic continental drift and the Benue trough. Tectonophysics. Vol.6, No.4, 1968. pp.301-310.

The author, deducing from the hypothesis of South Atlantic continental drift, relates the origin of the Benue trough to the South Atlantic Continental drift. He dates the final separation of the two continents to about 80 million years ago and deduces that the Benue trough region was transformed into a minor compressional belt, folding its sediments within it.

4. STRATIGRAPHY-HISTORICAL GEOLOGY

85. ADEGOKE, O. S.

Eocene stratigraphy of southern Nigeria. In: "Colloque sur l'éocene" Paris, May 1968, Vol.3. Mem. Bur. Rech. Geol. Minières (Fr.). No.69, pp.23-47.

[Source: Bibliography and index of Geology vol.33, No.12]

86. BOND, G.

A preliminary account of the Pleistocene geology of the Plateau tin fields region of Northern Nigeria. Proc. Int. West Afr. Conf. 3rd. Ibadan, Nigeria. Dec. 1949. Lagos, Nigerian Museum, 1956, pp.187-202. map, tables.

Describes the geological setting of the Pleistocene period of the Plateau tin mining area in relation to some archaeological findings of the area.

87. BURKE, K. and DUMOTOYE, B.

The Quaternary in Nigeria; a review. Ass. Sénégal. Etude Quater. Ouest Afr. Bull. No.27-28, 1970, pp.70-96.

88. BUSER, H.

Provinces faunistiques et paléostructures dans le crétacé et le tertiaire de l'ouest Africain. Proc. West Afr. Micropal. Coll. 2nd. Ibadan, 1965. Edited by J. E. Van Hinte. pp.27-33, maps.

"The influence of two paleostructural elements, the Northern Nigerian Anticlinorium and the Emugu-Air Culmination on the district sedimentation and faunal development during five successive transgression - regression cycles (Aptian-Albia, Cenomanian-Turonian, Senonian-Danian, Tertiary) in the Western part of Africa are described ... A shift in marine influence from the East to the West of the Emugu-Air Culmination is recorded ..." [Author's abstract]

89. DIETRICH, W. O.

Trias in Nord-Adamaua. Zentbl. Miner. Abt. B. No.2, 1939, pp.60-63.

"Notes on the age and fauna of the Triassic Dakumè beds of northern Adamawa, Nigeria".

[Source: Bibliography and index of Geology exclusive of North America, Vol.7]

90. DU PREEZ, J. W.

Preliminary report on the Upper Coal Measures of Onitsha Province. Ann. Rep. geol. Surv. Nigeria, 1946. pp.27-28.

Describes the regional distribution, lithology and general geology of the Upper Coal Measures in Udi and Nsukka areas, East Central State.

91. HOEKEN-KLINKENBERG, P. M. J. van

A palynological investigation of some Upper Cretaceous sediments in Nigeria. Pollen et spores. Vol.6, No.1, 1964. pp.209-231.

92. JONES, Brynmor.

The sedimentary rocks of Sokoto Province. Bull. geol. Surv. Nigeria. No.18, 1948, 75p. maps, tables.

A note on the study made of the stratigraphy and lithology of the Cretaceous and Tertiary sedimentary formations of Sokoto area, North-Western State. It also includes sections on the physiography, structure and water supply of the area.

93. MARON, P.

Stratigraphical aspects of the Niger delta. J. Min. Geol. vol.4, Nos. 1 & 2, 1969, pp.3-12. maps, tables, diags.

A study of the sedimentary sequences of the Niger delta.

94. PARKINSON, John.

A note on the youngest beds of the Southern Province of Nigeria. Geol. Mag. Vol.63, Aug. 1926, pp.350-353.

95. PARKINSON, John.

The post-Cretaceous stratigraphy of Southern Nigeria. Q. Jl. geol. Soc. Lond. Vol.63, Aug. 1907. pp.308-312. map.

Gives an account of the stratigraphy of recent deposits of southern Nigeria, particularly in Asaba, Calabar and Ijebu districts.

96. RAEBURN, Colin and TATTAM, C. M.

A preliminary note on the sedimentary rocks of Sokoto Province. Bull. geol. Surv. Nigeria. No.13, 1930, pp.57-60.

The authors divide the sedimentary rocks of the area into three series; the Rima, the Gwandu and the Gundumi and a full description of each of the series is given.

97. REYMENT, R. A.

Aspects of the geology of Nigeria; the stratigraphy of the cretaceous and conozoic deposits. Ibadan, Ibadan U.P., 1965. 145p. illus, maps, tables, diags.

A textbook of the geology of Nigeria with particular emphasis on the stratigraphy of the cretaceous and cenozoic deposits. The author presents an account of the main results of work on Nigerian geology covering more than sixty years. There is a chapter on a review of Nigerian Pre-Cretaceous by E. O. Oyawoye. A bibliography of publications on Nigerian geology (including the Cameroons) up to 1963 is provided at the end of the text.

98. REYMENT, R. A.

Brief review of the stratigraphic sequences of West Africa (Angola to Senegal). Proc. West Afr. Micropal. Coll. 2nd. Ibadan, 1965. Edited by J. E. van Hinte. pp.162-175. maps.

Contains substantial material on Nigerian stratigraphic sequences.

99. REYMENT, R. A. and BARBER, W. M.

Nigeria and Cameroons. In "Lexique stratigraphique International", Vol.4, Afrique, 1956, pp.35-59.

[Source: Reyment, R.A: Aspects of the Geology of Nigeria. 1965, p.132]

100. REYMENT, R. A.

Notes on the Cretaceous-Tertiary transition in Nigeria. Int. Geol. Congr. 21st., Norden, 1960. Rep., Part 5, Sect.5, pp.131-135. map, table.

The author reviews the current status of his investigation into the Cretacoous-Tertiary transition in Nigeria.

101. REYMENT, R. A.

On the stratigraphy and palaeontology of the Cretaceous of Nigeria and the Cameroons, British West Africa. Geol. För. Stockh. Förh. Ed.78, h.1, No.484, Jan.-Feb. 1956. pp.17-96. tables, diags.

The author presents a summary of his work on the Nigerian Cretaceous carried out between 1950 and 1955.

102. REYMENT, R. A.

Review of Nigerian Cretaceous cenozoic stratigraphy. J. Nigerian Min. Geol. Metall. Soc. Vol.1, No.2. Dec. 1964. pp.61-80. map, tables.

A descriptive account of the Nigerian Cretaceous cenozoic stratigraphy and its distribution.

103. REYMENT, R. A.

Review of the stratigraphy of the Cretaceous system in Nigeria. Int. Geol. Congr., 20th, El Sistema Cretácico, Symposium. Tome 2, 1959, pp.119-133.

104. REYMENT, R. A.

Sedimentary sequence of coastal Nigeria. Ibadan Univ. Dept. Geol. Pub. No.3, 1964. 44p. maps, tables.
[mimeographed]

105. REYMENT, R. A.

Sedimentary sequence of the Nigerian coastal basin. Int. Geol. Congr. 22nd. New Delhi, 1964. Symposium on West African Sedimentary Basins. pp.125-151.

106. REYMENT, R. A.

Stratigraphy of some boreholes in the Western Region of Nigeria. J. Nigerian Min. Geol. Metall. Soc. Vol.2, No.1, July 1965. pp.1-11, maps, tables, diags.

A discussion of the stratigraphy of the boreholes of Upper Maestrichtian to lower Eocene age as well as a note on the occurrence of phosphate ore of possible economic importance. A review of the aspects of the paleoecology of the area is included.

107. REYMENT, R. A.

On the occurrence of Santonian in northeastern Nigeria. Stockh. Contr. Geol. Vol.1, No.3, 1957. pp.35-40. illus, map, table.

"The presence of the ammonite texanites aff. hourcqi COLLIGNON in the Sekule formation of northeastern Nigeria shows part of this formation to be of Lower Santonian age"

[Author's abstract]

108. SHORT, K. C. and STAUBLE, A. J.

Outline of geology of Niger delta. Bull. Am. Ass. Petrol. Geol. Vol.51, No.5, 1967. pp.761-779. maps, tables, diags.

The authors recognise a new threefold lithostratigraphic subdivision in the depositional features on the Niger delta subsurface. The three features described extend across the whole delta and each ranges in age from early Tertiary to recent. They maintain that the features are related to the present outcrops and environments of deposition.

109. STONELEY, R.

The Niger delta region in the light of the theory of continental drift. Geol. Mag. Vol.103, No.5, Sept.-Oct. 1966. pp.385-397. maps, diags.

The author examines the nature of the continental margin of Africa in the region of the Niger delta in Nigeria to see whether or not there is a genuine misfit of the continent of Africa and South America in the theory of continental drift. He attempts this by tracing the geological history of the delta region from the time of the split of the continents and by examining the evidence concerning the edge of the continental crust beneath the delta.

110. TATTAM, C. M.

A review of Nigerian stratigraphy. Ann. Rep. geol. Surv. Nigeria. 1943, Append. B. pp.27-46.

5. GEOCHRONOLOGY

111. DARNLEY, A. G. and others.

The age of fergusonite from the Jos area, Northern Nigeria, by A.G. Darnley, G.H. Smith, T.R.D. Chandler [and others]. Mineralog. Mag. Vol.33, No.256. 1962. pp.48-51.

The results of an analysis of two fergunosite concentrates from different localities in the Jos area, Benue-Plateau State, by the complete lead method to determine their age are presented.

112. DARNLEY, A. G.

Fergusonites from Jos area, Northern Nigeria. Great Brit. Geol. Surv. Atomic Energy Div. Age. Determ. Rep. No.10, 1959, 7p.

113. GRANT, N. K.

A compilation of radiometric ages from Nigeria. J. Min. Geol. Vol.6, Nos.1 & 2, 1971. pp.37-54. tables.

A list of radiometric ages of Nigerian rocks and minerals which have been published up to the end of 1969, accompanied with discussions.

114. GRANT, N. K.

Geochronology of Precambrian basement rocks from Ibadan, Southwestern Nigeria. Earth Planet. Sci. Lett. Vol.10, No.1, Dec. 1970. pp.29-38. maps, tables, diags.

A geochronological study of the Nigerian basement rocks from Ibadan, Western State, consisting of gneiss, aplite and basalt.

115. GRANT, N. K. and others.

The geological sequence and geochronology of old basement rocks from Ibadan, Nigeria. By N.K. Grant, D.C. Rex, K.C. Burke [and others]. Annls. Fac. Sci. Univ. Clermont-Fer. No.41, Geol. Mineral. fasc.19, 1969. p.84.

[Source: J. Min. Geol. vol.6, Nos.1 & 2. 1971. p.54]

116 JACOBSON, Reginald Ronald Eric and others.

Age determinations in the geology of Nigeria, with special reference to the older and younger granites. By R.R.E. Jacobson, N.J. Snelling and J.F. Truswell. Overseas Geol. Miner. Resour. vol.9, No.2, 1964. pp.168-182. tables.

A review of the results of some age determinations made on rocks and minerals from two suites of granitic rocks in Nigeria.

117. TUGARINOV, A.

Age absolu et particularités génétiques des granites du Nigeria et du Cameroun septentrional. [Absolute age and genetic characteristics of granite from Nigeria and northern Cameroon]. Proc. Symp. granites West Afr., March 1965. Paris, U.N.E.S.C.O. 1968, pp.119-122. tables, diags.

6. PALEONTOLOGY

118. ADEGOKE, O. S. and others.

Hemisphaerammina-like egg capsules of Neritina (Gastropoda) from Nigeria, by O.S. Adegoke, T.F.J. Dessauvagie and V.L.A. Yoloye. Micropaleontology Vol.15, No.1, 1969. pp.102-106. illus, map, table, diag.

A descriptive study of egg capsules of Neritina of the gastropod family commonly found in the marginal lagoons and estuaries of southwestern Nigeria, resembling species of the foraminifer hemisphaerammina.

119. ADEGOKE, O. S. and DESSAUVAGIE, T. F. J.
A new campanile from the Palaeocene of Western Nigeria. Geol. Mag. Vol.107, No.4, July 1970. pp.327-333. illus, map.

A description of specimens of a new campanile genus collected from the Palaeocene Ewokoro Formation of Western Nigeria.

120. ADEGOKE, O. S.
Status of paleontological research in Nigeria. J. Min. Geol. Vol.3, Nos. 1 & 2, 1968. pp.3-12. tables.

The author calls for the setting up of a national museum for the preservation of Nigeria's local fossils. He describes simple methods for collecting, curating, cataloguing and storing the bulk and type fossil material.

121. ANDREWS, C. W.
A description of new species of Zeuglodont and of leathery turtle from the Eocene of Southern Nigeria. Proc. Zool. Soc. Lond., 1919, pp.309-319.

122. ANDREWS, C. W.
Note on the sternum of a large carinate bird from the Eocene of southern Nigeria. Proc. Zool. Soc. Lond. 1916, pp.519-524.

123. ANDREWS, C. W.
Notes on some Ophidian vertebrate from Nigeria. Bull. geol. Surv. Nigeria. No.7, 1924. Append. pp.39-43. illus.

A description of three vertebrae of a fossil snake from Oshosun, in Abeokuta area which were presented to the British Museum (Natural History) by the Geological Survey of Nigeria.

124. BARBER, W. M.

Lower Turonian ammonites from North-Eastern Nigeria. Bull. geol. Surv. Nigeria. No.26, 1957, 86p. illus, maps, tables, diags.

A description of some ammonites collected from the cretaceous rocks of north-eastern Nigeria.

125. BARBER, W. M.

Notes on Upper Cretaceous ammonoidea from north-eastern Nigeria. Rec. geol. Surv. Nigeria. 1957, pp.60-66. illus, tables, diags.

A description of a small collection of the fossils, ammonoidea from north-eastern Nigeria and which are believed to belong to the Upper Cretaceous. They are compared with the ammonite faunas of the same age from northern Peru.

126. BARBER, W. M.

Upper Cretaceous Mollusca from north-eastern Nigeria. Rec. geol. Surv. Nigeria. 1956, pp.14-37. illus, map, tables, diag.

A description of Upper Cretaceous Lamellibranchie and Gastropoda specimens collected from various parts in north-eastern Nigeria.

127. BATHER, R. A.

Eocene echinoids from Sokoto. Geol. Mag. Vol.41, 1904. pp.292-304.

128. BERGGREN, W. A.

Paleocene biostratigraphy and planktonic foraminifera of Nigeria, West Africa. Int. Geol. Congr., 21st. Nordon, 1960. Rep. Part 6, Sect.6, pp.41-55. illus.

A paper delivered at the Congress giving a brief summary of the Paleocene biostratigraphy of Western Nigeria, based on studies of the planktonic foraminifers of some boreholes.

129. BRIGHTON, A. G.

On some Cretaceous Echinoids from Nigeria. Occ. Pap. geol. Surv. Nigeria. No.3 , 1925. 21p. tables, diags.

A description of twelve specimens of Cretaceous echinoids from Gongola in Bauchi area, North-Eastern State.

130. CARTER, J. T.

The rostrum of the fossil swordfish, cylindracanthus, Leidy (Coelorhynchus, Agassiz), from the Eocene of Nigeria. Occ. Pap. geol. Surv. Nigeria. No.5, 1927, 15p. illus.

A paper describing the morphology of the fossil, cylindracanthus from the Eocene beds of Ameki near Abakaliki, East-Central State.

131. CHAVAN, A.

A new fossil gastropod from the Middle Eocene of Ameki, Nigeria. Proc. Malac. Soc. Lond. Vol.29. Nos.2-3, 1952. pp.80-82.

132. CLARKE, R. T.

Peregrinipollis nigericus; a new palynomorph from the Upper Tertiary of Nigeria. Grana palynol. Vol.6, No.3, 1966. pp.544-546.

133. CLARKE, R. T. and FREDERIKSEN, N. O.

Some new sporomorphs from the Upper Tertiary of Nigeria. Grana palynol. Vol.8, No.1. 1968. pp.210-217.

134. DESSAUVAGIE, T. F. J.

Cenomanian trocholinas from Nigeria. Micropaleontology. Vol.14, No.1, 1968. pp.64-72.

"Limestones belonging to the cenomanian Odukpani formation are exposed in southeastern Nigeria, and in them a new species of foraminifor, trocholina odukpaniensis, as well as fragments of algae and mollusk shells, are preserved as calcite casts. Revision of published material necessitates a new diagnosis of the genus" [Author's abstract quoted in "Bibliography and index of geology exclusive of North America." Vol.32, No.7, July 1968].

135. DESSAUVAGIE, T. F. J.

Preservation of trocholina (Foraminiferida) in the limestone of the Odukpani formation in Eastern Nigeria. J. Nigerian Min. Geol. Metall. Soc. Vol.2, No.2, Dec. 1965, pp.57-64. illus.

A description of the results of observations made of the limestone of the Odukpani formation along Oban-Calabar road, southeastern Nigeria, which is found to contain specimens of the fossil, trocholina. There is a discussion on the possible original wall structure of trocholina.

136. EAMES, F. E.

Eocene mollusca from Nigeria; a revision. Bull. Br. Mus. (nat. Hist.) A Geology, Vol.3, No.2, 1957. pp.23-70.

A revision of the molluscan fauna which had been previously described from the Eocene of Bende Ameki near Abakaliki by R.B. Newton. The author describes some new species with a confirmation of the Eocene age of the fauna.

137. FAULKNER, J. S. and others.

Megastomella nov. gen., nouveau foraminifere de l'Afrique Occidentale. Revue Micropal. Vol.6, No.1, 1963. pp.19-22.

"Describes megastomella africana n.g. n.sp. and m. africana compressa n. subsp. from Miocene beds of Western Gabon and southeastern Nigeria respectively."

[Source: Bibliography and index of Geology exclusive of North America. Vol.28].

138. FAYOSE, E. A.

Stratigraphical palaeontology of Afowo 1 Well, South Western Nigeria. J. Min. Geol. Vol.5, Nos.1 & 2, 1970. pp.3-99. illus, maps, tables.

Gives an account of stratigraphical and taxonomic studies made of the Upper Maestrichtian-Lower Miocene strata of part of south western Nigeria.

139. FAYOSE, E. A.

Three new taxa in the Nigerian Lower Tertiary. Revue Micropal. Vol.12, No.3, 1969. pp.125-129.

140. FRANCIS, B. N.

On some reptilian bones from the Eocene of Sokoto. Occ. Pap. geol. Surv. Nigeria. No.2, 1925. 15p. illus.

An account of examinations made of some fossil reptilian bones found at Sokoto and their comparison with different reptilian bones in the Geological Department of the British Museum, London and with the 'Dyrosaurus' remains at the École des Mines in Paris.

141. FROST, G. Allen.

Teleost otoliths. Bull. geol. Surv. Nigeria. No.10, 1926. Append. pp.84-86.

Descriptions of specimens of teleost otoliths from Ameki, East Central State of Nigeria.

142. GREGORY, H.

Eocene fossil shells of Southern Nigeria. Nigor. Fld. Vol.14, No.2, 1949. pp.70-73. illus, tables.

A description of fossil shells found in the railway cuttings at Ameki near Umuahia and at Bende.

143. HAWKINS, H. L.

A new species of fibularia from Nigeria. Geol. Mag. New Ser. Vol.9, No.7. Dec. 1912.

144. HERON-ALLEN, E. and EARLAND, A.

Foraminifera from the Eocene clay of Nigeria. Bull. geol. Surv. Nigeria. No.3, 1922, Append. pp.138-148. illus.

A note on the study of some specimens of Foraminifera taken from the Eocene clay beds at Ameki, East-Central State.

145. HOEKEN-KLINKENBERG, P. N. J. van.

Maestrichtian, Paleocene and Eocene pollens and spores from Nigeria. Leid. geol. Moded. Vol.38, 1966. pp.37-48.

146. KNAAP, W. A.

A montane pollen species from the Upper Tertiary of the Niger delta. J. Min. Geol. Vol.6, Nos.1 & 2, 1971. pp.23-29. illus, maps, diags.

A description of the bisaccate pollen found in the Upper Tertiary subsurface of the coastal fringe and offshore of the Niger delta. The pollens are compared and correlated with those found from Mount Cameroon.

147. MONKHOUSE, R. A.

A new species of venericardia, and its inclusion in a stratigraphically useful group in Nigeria. Proc. malac. Soc. Lond. Vol.37, pp.367-369.

148. NEWTON, R. B.

Eocene mollusca from Nigeria. Bull. geol. Surv. Nigeria. No.3. 1922, pp.1-37. illus, map, tables.

An account of the results of the observations made of some specimens of Tertiary fossils collected from southern Nigeria, largely from Ameki, East-Central State. There is an appendix on the Feraminifera from the same deposits by E. Heron-Allen and A. Earland.

149. NEWTON, R. B.

Eocene shells from Nigeria. Annls. Mag. nat. Hist. Ser.7, Vol.15, 1905, pp.83-91.

150. NEWTON, R. B.

A notice of some marine Tertiary fossils from Northern Nigeria. Geogrl. J. Vol.24, 1904. pp.522-524.

151. NEWTON, R. B.

On raetomya, a new genus of pelecypoda, from the Tertiary rocks of Egypt and Southern Nigeria. Proc. malac. Soc. Lond. Vol.13, 1919, pp.79-84.

152. NEWTON, R. B.

On some fossil mollusca from Southern Nigeria collected by John Parkinson. Annls. Mag. nat. Hist. Ser.8, Vol.8, 1911. pp.193-208.

153. NEWTON, R. B.

A preliminary opinion on some valves of a cardita from a Nigerian deposit. Bull. geol. Surv. Nigeria. No.6, 1924, pp.63-65. illus, tables.

A description of a molluscan fossil, the genus cardita from the neighbourhodd of Enugu.

154. OMATSOLA, M. E.

Podocopid ostracoda from the Lagos lagoon, Nigeria. Micro-paleontology. Vol.16, No.4, Oct. 1970. pp.407-445. illus, map.

A systematic description of some new species of podocopid ostracoda found in sediment samples collected from the shores of Lagos lagoon and neighbouring creeks, with a discussion of the morphology and taxonomic importance of normal spores.

155. PARKER, D. H.

Paleocene fossils from Sokoto Province, north-western Nigeria. Rec. geol. Surv. Nigeria. Vol.7, 1964. pp.23-36. map, table, diags.

Describes some paleocene fossils from Sokoto Province, north-western Nigeria.

156. PURI, G. S.

The geo-botanical indications of some plant fossils from Nigeria and other regions. Ibadan,Univ. Bot. Studies. No.12, 1963. 16p.

A study of fossil plants from parts of Nigeria and their geo-botanical interpretations. These fossil plants are compared with those of other countries.

157. PURI, G. S. and JADESIMI, M. A.

Some micro-plant fossils recovered from Benin lignites in Nigeria. 1. Ibadan Univ. Bot. Studies. No.4, 1962. 24p. illus.

A systematic examination of some samples of lignite from Benin tertiaries with a description of some micro-plant fossils which are found to contain various fossil pollen and spores in abundance.

158. PURI, G. S.

Some plant-microfossils from the cretaceous and Paleocene of Nigeria. Ibadan Univ. Bot. Studies. No.10, 1963. 142p. illus.

Contain some palynological studies of some plant microfossils from parts of Nigeria, mainly from the Cretaceous to Pleistocene in age.

159. PURI, G. S.

Some studies on the Tertiary deposits of Nigeria, W. Africa. Kumasi, University of Science and Technology, 1964. 10p. [Mimeographed]

160. REYMENT, R. A. and REYMENT, E.

Bairdia ilaroensis sp. nov. aus dem paleozän Nigerians und die Gultigkeit der Gattung bairdoppilata (Ostr., crust.). Stockh. Contr. Geol. Vol.3, No.2, 1959. pp.59-68.

"The new species Bairdia ilaroensis is described from the Paleocene of Western Nigeria ..."

[Source: Bibliography and index of Geology exclusive of North America, Vol.24]

161. REYMENT, R. A.

Biostratigraphic et micropaleontologie du Paleogene de la Nigeria Occidentale. Mem. Bur. Rech. Geol. Minieres. (Fr.) Vol.26, No.2, pp.839-847.

[Source: J. Min. Geol. Vol.3, Nos. 1 & 2. 1968. p.12]

162. REYMENT, R. A.

The biostratigraphy of the Cretaceous and the Tertiary deposits in Nigeria and in the adjacent area in Cameroons. Bull. Br. Mus. (nat. Hist.) A Geology. Vol.26, No.6, 1961. pp.26-35.

163. REYMENT, R. A.

Bohrlöcher bei ostrakoden. Paläont. Z. Bd.37, Nos.3 & 4. 1963. pp.283-291. illus.

"The effect of predatory gastropods on ostracods is discussed. Seven ostracod species from the Nigerian Paleocene were analysed for this study. The author concludes that gastropods belonging to the Muricidae and Naticidae are responsible for numerous borings found on ostracod carapaces."

[Source: J. Nigerian Min. Geol. Metall. Soc. Vol.2, No.2, Dec. 1965. p.103].

164. REYMENT, R. A.

The Cretaceous ammonbidea of Southern Nigeria and the Southern Cameroons. Bull. geol. Surv. Nigeria. No.25, 1955. 112p. illus, maps, tables, diags.

The Lower and Upper Cretaceous ammonoidea of south-eastern Nigeria and the Southern part of the Cameroons Republic are described with notes on their stratigraphic succession and a discussion of their distribution. An illustrated description of a collection of Nigerian cretaceous ammonites are given.

165. REYMENT, R. A.

Excursion to the Ewekoro area, Western Nigeria. Proc. West Afr. Micropal. Coll. 2nd. Ibadan, 1965. Edited by J. E. Van Hinte. pp.275-291. illus, map, table, diags.

Contains a list of identified microfossils associated with the various sedimentary formations described from the Ewekoro area in the Western State of Nigeria. An illustrated checklist of some Upper Cretaceous and Palaeogene foraminifers of Western Nigeria is appended.

166. REYMENT, R. A.

Morphologische variation bei zwei fossilen arten der gattung cibicides Montfort (Foraminifera Prot.). [Morphologic variation in two fossil species of cibicides]. Paläont. Z. Vol.40, No.1-2. 1966. pp.65-69.

A description of the two new foraminiferal species cibicides ijebu from the Maestrichtian (Cretaceous) and c. eshui from the Paleocene of Nigeria with reference to their morphologic variation.

[Source: ="Bibliography and index of geology exclusive of North America". Vol.32, No.2, Feb. 1968].

167. REYMENT, R. A.

New Turonian (Cretaceous) ammonite genera from Nigeria. Colon. Geol. Miner. Resour. Vol.4, No.2, 1954. pp.149-164. illus, map, tables, diags.

A description of four new ammonite genera and one new ammonite subgenus from the Lower Turonian of Nigeria. Some new species of these genera are described and a proposal for the division of the Nigerian Turonian into three main subdivisions is included.

168. REYMENT, R. A.

A note on Palaeocene nautiloids from Nigeria. Overseas Geol. Miner. Resour. Vol.10, No.1, 1966. pp.47-55. illus, map, diags.

A study of five species of nautiloids from the Palaeocene formations in north-western and western Nigeria.

169. REYMENT, R. A.

Notes on fossils from the Northern and Eastern Regions. Ann. Rep. geol. Surv. Nigeria. 1952-53, pp.20-22. tables.

Describes some fossils collected from Ogoja, Onitsha, Owerri and Calabar Provinces of the former Eastern Region and from Benue Province in Benue-Plateau State.

170. REYMENT, R. A.

Notes on some globigerinidae, globotruncanidae and globorotaliidae from the Upper Cretaceous and Lower Tertiary of Western Nigeria. Rec. geol. Surv. Nigeria. 1957, pp.68-86. illus, map, diags.

A description of Foraminifera of the families of globigerinidae, globotruncanidae and globorotaliidae found at Araromi, Iloro and Otta, in Western Nigeria.

171. REYMENT, R. A.

Notes on the description of Post-Paleozoic fossil ostracods. J. Paleont. Vol.37, No.3, May 1963. pp.682-687.

"Certain points of view on the mode of presentation of descriptions of fossil ostracods are discussed with particular reference to the integration of qualitative morphologic descriptions with biometric analysis. The presentation is based on Nigerian material." [Author's abstract]

172. REYMENT, R. A.

Observations on the variability of sagrina circumspinosa (De Klasz and Rerat) (Eocene: Foraminifera). Niger. J. Sci. Vol.1. No.1. March 1966. pp.65-70. illus, tables, diags.

The author gives an account of observations made on the morphologic variation of the test on the sagrina circumspinosa (De Klasz and Rerat) species in the Ameki formation of coastal Nigeria of Eocene age.

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and secondary groups on the basis of their mode of formation. He makes further division on the basis of their morphology. Ferruginised sedimentary rocks are described as well.

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Les granite de l'Ouest Africain en Côte-d'Ivoire, au Nigeria et au Cameroun. Proc. Symp. granites West Afr., March 1965. Paris, U.N.E.S.C.O., 1968. pp.105-117.

266. REYMENT, R. A. and others.

"Petrological examination of stone axes from Benin." By R.A. Reyment, N.K. Grant and G.E. Connah. In: Polished stone axes in Benin by Graham Connah. [Lagos, Federal Department of Antiquities], n .d. Append.1. pp.17-19. table.

The results of a petrological examination of a sample of stone axes from Benin are presented with a discussion of their probable origin.

267. TURNER, David Charles.

The geology of the younger granite ring-complex of the Sara-Fier and Pankshin Hills, Northern Nigeria. Ph.D. Thesis. London, 1961-62.

268. TURNER, David Charles.

A note on the occurrence of trachytes in the Zaranda ring-complex. J. Min. Geol. Vol.6, Nos.1 & 2, 1971. pp.61-63. map.

A description, with notes on the occurrence of newly recognised volcanic rock features by the author in the central part of the Zaranda Hill ring-complex near Bauchi in the north-eastern part of the Nigerian younger granite province.

269. TURNER, David Charles.

Review of the younger granites of Northern Nigeria. Proc. Symp. granites West Afr. March 1965. Paris, U.N.E.S.C.O., 1968. pp.19-21.

270. TURNER, David Charles.

Ring-structures in the Sara-Fier younger granite complex, Northern Nigeria. Q. Jl. geol. Soc. Lond. Vol.119, Part 3. No.475. Sept. 1963. pp.345-366. maps, tables, diags.

A paper describing the composition of the Sara-Fier younger granite complex, with an account of the evolution of the ring structure.

271. TURNER, David Charles.

Volvanic and intrusive structures in the Kila-Warji ring-complex, Northern Nigeria. Q. Jl. geol. Soc. Lond. Vol.124, Part 1. No.493, Oct. 1968. pp.81-89. maps, tables, diags.

The author describes the structure of the Kila-Warji ring complexes of Jurassic age lying in the extreme north of the Nigerian Younger Granite province. He relates the affirnities of the Kila-Warji complex as being closer to the northern complexes than to the main part of the Nigerian Younger Granite Province.

272. WALLS, R.

A preliminary note on the Udei Station nesosidorite, Nigeria. Int. Geol. Congr., 19th. Algeria, 1954. Fasc.21, Part 2, pp.211-212.

"Briefly describes the 226-lb. mesosiderite meteorite found in 1935 near Udei Station, Nigeria."

[Source: Bibliography and index of Geology exclusive of North America, vol.21, 1956].

273. WILSON, A. F.

Geological report on granites in West Africa. Proc. Symp. granites West Afr. March 1965. Paris, U.N.E.S.C.O., 1968. pp.123-147. map, tables.
("Nigeria: pp.135-142").

274. WRIGHT, John B. and McCURRY, Patricia.

Composite phonolite tholeiids in the cenozoic volcanic province of Nigeria. Geol. Mag. Vol.107. No.4, July. 1970. pp.357-360. map, diags.

A description of volcanic rocks in an area lying south of Gombe and in the Benue trough, northeastern Nigeria.

275. WRIGHT, John B.

Deep crustal origin for oligoclase and andesine phenocrysts in basalt from Gombe, Nigeria. Nature, Lond. Vol.218, No.5138. April 1968. pp.262-263.

Variations in composition of large plagioclase crystal in Tertiary-Quaternary olivine basalt from the Benue alkalic volcanic region are described with notes on their probable origin.

276. WRIGHT, John B.

High pressure phases in Nigerian cenozoic lavas distribution and geotectonic setting. Bull. volcanologique Tome 34, Fasc.4. 1970, pp.833-847. illus, maps.

277. WRIGHT, John B.

Oligoclase-andesine phenocrysts and related inclusions in basalts from part of the Nigerian cenozoic province. Mineralog. Mag. Vol.36, No.283,, 1968. pp.1024-1031. maps, diag.

An interpretation of large sodic plagioclase crystals in basaltic plug in the Benue trough as having probably crystallised at deep crustal levels.

278. WRIGHT, John B.

Olivine nodules and related inclusions in trachyte from the Jos Plateau, Nigeria. Mineralog. Mag. Vol.37, No.289, Sept. 1969. pp.370-374. map.

An account of the Nigerian cenozoic volcanic province lying in an area of regional uplift and which is characterised by scattered small volcanic centres. The author describes the high pressure inclusions which are found at these centres, with a suggestion that the magmas rose directly and rapidly to the surface from the upper mantle levels at which they were generated.

279. WRIGHT, John B.

Olivine nodules in trachyte from the Jos Plateau, Nigeria. Nature. Lond. Vol.223, No.5203, 1969. pp.285-286.

Describes the upper mantle origin of olivine nodules in the trachytic Bokkos plug from the Jos Plateau. The author attributes this to a local change in the pressure-temperature conditions at the upper mantle levels where olivine basalts were being generated.

280. WRIGHT, John B.

"Origin of the younger granites of Northern Nigeria" by P. Bowden. [Discussion]. Contr. Miner. Petrol. Vol.29, No.1. 1970. pp.89-90.

This is a critical comment on the paper "Origin of the younger granites of northern Nigeria" by P. Bowden in "Contr. Miner. Petrol. vol.25, No.2, 1970. pp.153-161.

281. WRIGHT, John B. and McCURRY, Patricia.

A reappraisal of some aspects of Procambrian shield geology; discussion. Bull. geol. Soc. Am. vol.81, Nov.1970. pp.3491-3492.

The authorsdraw a parallel between the Nigerian Procambrian rocks and the greenstone belts and their surrounding granitic terrains previously described by C.R. Anhaeusser and others. [in Bull. geol. Soc. Am. vol.80, Nov. 1969. pp.2175-2200].

282. WRIGHT, John B.

Sampling inner space in Nigeria. Niger. Fld. Vol.35, No.4. Oct. 1970. pp.170-179. illus, maps, diags.

An analytical study of samples of volcanic lavas from various centres in the Nigerian "Inner Space".

8. MINERALOGY

283. BANNISTER, F. A. and others.

Nigerite, a new tin mineral. By F.A. Bannister, M.H. Hey and H.P. Stadler. Mineralog. Mag. Vol.28, No.198, Sept. 1947. pp.129-136. illus, tables.

Gives an account of the chemical analyses and the crystallography of samples of nigerite, a new tin-bearing mineral from Nigeria previously discovered by R. Jacobson and J.S. Webb. Data on the analyses are presented.

284. BORLEY, G. D.

Amphiboles from the Younger Granites of Nigeria. Part 1. Chemical classification. Mineralog. Mag. Vol.33, No.260, March 1963, pp.358-376. tables, diags.

The results of chemical analyses of some alkali amphiboles from iron-rich ferromagnesian minerals taken from the Younger granites of Nigeria are presented and discussed.

285. BORLEY, G. D. and FROST, M. T.

Some observations on igneous ferrohastingsites. Mineralog. Mag. Vol.33, No.263, Dec. 1963. pp.646-662. tables, diags.

A comparison of the mineral compositions of chemically analysed ferrohastingsites from the Younger Granites of the northern states of Nigeria and the nepheline-bearing rocks in the Marangudzi complex of Southern Rhodesia. Their optical properties and unit-cell parameters are determined.

286. CANNING, A. R.

Alluvial tin properties in Nigeria. Min. Mag. Lond. Vol.18, 1918, pp.176-183.

287. FROST, M. T.

Amphiboles from the Younger granites of Nigeria. Part 2. X-ray data. Mineralog. Mag. Vol.33, No.260, 1963. pp.377-384. illus.

A chemical analysis of samples of amphiboles from the Younger granites of Nigeria and a description of methods of distinguishing between calcium- and sodium-rich amphiboles and between iron-rich and iron-poor varieties of amphiboles. An attempt is made to explain these variations from structural considerations.

288. GAME, P. M.

Oriented rutile in a high-temperature andesine from Nigeria. Bull. Br. Mus. (nat. Hist.). C. Mineralogy. Vol.1, No.3, 1952. pp.75-84.

289. [GREAT BRITAIN. Imperial Institute]

Northern Nigeria; first report on the results of the mineral survey of Northern Nigeria, 1904-5, by Wyndham Dunstan. Colon. Rep. Misc. No.32. London, H.M.S.O. 1906. 23p. tables.

290. [GREAT BRITAIN. Imperial Institute]

Northern Nigeria; report on a series of mineral and vegetable products from Northern Nigeria by W.R. Dunstan. Colon. Rep. Misc. No.26, London, H.M.S.O. 1904. 26p. tables.

A report on various specimens of mineral and vegetable products from the Northern States of Nigeria which were collected and sent to the Imperial Institute, London for chemical examination with view to determining their commercial value.

291. [GREAT BRITAIN. Imperial Institute]
Northern Nigeria; report on the results of the mineral survey, 1905-6 by Wyndham R. Dunstan. Colon. Rep. Misc. No.47. London, H.M.S.O., 1908. 38p. tables.

292. [GREAT BRITAIN. Imperial Institute]
Northern Nigeria; report on the results of the mineral survey, 1906-7 by Wyndham R. Dunstan. Colon. Rep. Misc. No.59. London, H.M.S.O., 1909, 22p. tables.

293. [GREAT BRITAIN. Imperial Institute]
Northern Nigeria; reports on the results of the mineral survey, 1907-8 and 1908-9 by Wyndham R. Dunstan. Colon. Rep. Misc. No.79. London, H.M.S.O., 1911. 40p. tables.

294. [GREAT BRITAIN. Imperial Institute]
Northern Nigeria; second report on the results of the mineral survey, 1904-5, by Wyndham R. Dunstan. Colon. Rep. Misc. No.46, London, H.M.S.O., 1908. 26p. tables.

295. [GREAT BRITAIN. Imperial Institute]
Southern Nigeria; reports on the mineral survey of Southern Nigeria for 1903-4 and 1904-5 by Wyndham R. Dunstan. Colon. Rep. Misc. No.33. London, H.M.S.O., 1906. 34p. tables.

Contains two reports which describe the main results of the mineral survey of Southern Nigeria for the two years, 1903-4 and 1904-5. The chief mineral discoveries during the period are given. The reports deal mainly with the practical considerations and results which follow from the examination and analysis at the Imperial Institute, London, of the minerals collected from southern Nigeria.

296. [GREAT BRITAIN. Imperial Institute]
Southern Nigeria; report on the results of the mineral survey, 1905-6 by Wyndham R. Dunstan. Colon. Rep. Misc. No.67. London, H.M.S.O., 1910. 27p. tables.

297. [GREAT BRITAIN. Imperial Institute]
Southern Nigeria; report on the results of the mineral survey, 1906-7 by Wyndham R. Dunstan. Colon. Rep. Misc. No.68. London, H.M.S.O., 1910. 35p. tables.

298. [GREAT BRITAIN. Imperial Institute]
Southern Nigeria; report on the results of the mineral survey, 1907-8 by Wyndham R. Dunstan. Colon. Rep. Misc. No.76. London, H.M.S.O., 1911. 19p. tables.

299. [GREAT BRITAIN. Imperial Institute]
Southern Nigeria; report on the results of the mineral survey, 1908-9 by Wyndham R. Dunstan. Colon. Rep. Misc. No.81. London, H.M.S.O., 1911. 36p. tables.

300. [GREAT BRITAIN. Imperial Institute]

Southern Nigeria; report on the results of the mineral survey of Southern Nigeria, 1910 by Wyndham R. Dunstan. Colon. Rep. Misc. No.83. London, H.M.S.O., 1912. 13p. tables.

301. [GREAT BRITAIN. Imperial Institute]

Southern Nigeria; report on the results of the mineral survey of Southern Nigeria, 1911 by Wyndham R. Dunstan. Colon. Rep. Misc. No.85. London, H.M.S.O., 1913. 12p. tables.

302. [GREAT BRITAIN. Imperial Institute]

Southern Nigeria; report on the results of the mineral survey of Southern Nigeria, 1912 by Wyndham R. Dunstan. Colon. Rep. Misc. No.86. London, H.M.S.O., 1913. 13p. tables.

303. [GREAT BRITAIN. Imperial Institute]

[Southern] Nigeria; report on the results of the mineral survey of Southern Nigeria, 1913 by Wyndham R. Dunstan. Colon. Rep. Misc. No.89. London, H.M.S.O., 1914. 9p. tables.

304. HEINRICH, E. W.

Xenotime and thorite from Nigeria. Am. Miner. Vol.48. Nos.1-2, Jan. 1963. pp.206-208.

"A note on the chemical composition of some xenotime and thorite from Jos-Bukuru younger granite complex, Northern Nigeria."

[Source: J. Nigerian Min. Geol. Metall. Soc. vol.2, No.2, Dec. 1965].

305. HOSKING, K. F. G. and PATTERSON, J. H.

Thorite in Nigerian products. Min. Mag. Lond. Vol.45, No.2, 1945. pp.73-75.

306. JEFFORD, G.

Xenotime from Rayfield, Northern Nigeria. Am. Miner. Vol.47. No.11 & 12, Nov.-Dec. 1962. pp.1467-1473. tables, diag.

The physical properties and chemical composition of xenotime from Rayfield on the Jos Plateau are described with some data.

307. JOYCE, J. R. F. and GAME, P. M.

Note on anorthoclase from Nigeria. Bull. Br. Mus. (nat. Hist.) C. Mineralogy. Vol.1, No.3, June 1952. pp.85-93.

An account is given of the chemical composition and optical properties of anorthoclase found in central Nigeria.

308. KAYODE, A. A.

Natural cleavage in quartz from Northern Nigeria. Mineralog. Mag. Vol.37, No.290, June 1970. pp.734-735. illus.

An account of an analytical study made of a piece of vein quartz taken from the parent rock along the Zaria-Jos road in northern Nigeria. The results of the chemical analysis are presented.

309. KING, B. C.

Some large felspar augen from near Ilorin town, Nigeria. Geol. Mag. Vol.87, No.5, Sept.-Oct., 1950. pp.369-372.

310. KNORRING, O. von and DYSON, P.

An occurrence of genthelvite in the Younger granite Province of Northern Nigeria. Am. Miner. vol.44, Nos.11 & 12, 1959, pp.1294-1298. illus, tables.

Describes the location and field relations of genthelvite, the rare zinc member of the helvite group which had been found in two different associations in the granite complex of the Jos Plateau. An account of its mineralogy and chemistry are given. Its physical, chemical and x-ray data are given.

311. McCURRY, Patricia.

A pseudomorphic quartz-tourmaline relationship from northern Nigeria. Am. Miner. Vol.56, No.7-8, July-Aug. 1971, pp.1474-1476. illus.

Describes relationships between quartz and tourmaline found in River Sokoto bed near Funtua, northern Nigeria.

312 McCURRY, Patricia.

The relationship between optical properties and occurrence of some black tourmalines from northern Nigeria. Mineralog. Mag. Vol.38, Sept. 1971. pp.369-373. map, diag.

313. MAcLEOD, W. N. and JONES, M. P.

Effects of heat and hydrochloric acid on the properties of some Nigerian minerals. Colon. Geol. Miner. Resour. Vol.5, No.2. 1955. pp.166-173. tables, diags.

The paper discusses the demagnetisation of cassiterite by heating, the optimum conditions of time and temperature are determined. The second part of the paper is an account of a study made of the effects of leaching with hydrochloric acid on certain Nigerian minerals.

314. RAEBURN, Colin.

Tinstone in the Calabar district. Bull. geol. Surv. Nigeria. No.11, 1927. pp.72-88. map, tables.

A description of the rocks and their associated minerals in Calabar area, South-Eastern State. The results of the chemical analysis of some of the minerals are given. The geology of the area is also described.

315. TATTAM, C. M. and others.

Notes on the younger granite mineralization with special reference to wolfram, by C.M. Tattam, R.R.E. Jacobson and E.H. Jaques. Ann. Rep. geol. Surv. Nigeria. 1943. Append A. pp.14-20. maps.

A general account of mineral deposits found in the younger granites of Nigeria with special attention on wolfram.

316. TEMARI, G. P.

Occurrence of kaolinite in association with iron-pan. Nature. Lond. Vol.198, No.4884, 1963. p.1019.

A short account of a small specimen of indurated iron pan found on a hill slope in Nsukka, East-Central State, which, on analysis, is found to be kaolinite.

317. WAGNER, A. J.

Correlations by mineralogical methods in the southern Niger delta. Proc. West Afr. Micropal. Coll. 2nd. Ibadan, 1965. Edited by J. E. van Hinte. pp.257-267. table, diag.

9. GEOCHEMISTRY

318. BORLEY, G. D.

Geochemistry of the mafic minerals in some younger granites of Nigeria. Ph.D. Thesis, London, 1963.

319. BOWDEN, P.

Gallium from Younger granites of Northern Nigeria. Geochim. Cosmochim. Acta. Vol.28, 1964. pp.1981-1988.

320. BOWDEN, P.

The geochemistry of some Nigerian igneous rocks. Ph.D. Thesis, London, 1961-62.

321. BOWDEN, P.

Lithium in Younger granites of Northern Nigeria. Geochim. cosmochim. Acta. Vol.30, 1966. pp.555-564.

322. BOWDEN, P.

Zirconium in Younger granites in northern Nigeria. Geochim. Cosmochim. Acta. Vol.30, 1966, pp.985-993.

Biotite and albite-riebeckite granites from the Nigerian Younger granites are analysed to determine the zirconium content.

323. BUTLER, J. R. and THOMPSON, A. J.

Cadmium and zinc in some alkali acidic rocks. Geochim. cosmochim. Acta. Vol.31, No.2, 1967. pp.97-105. tables.

Gives the results of chemical analysis of samples of granite rocks from the Younger Granite Province of northern Nigeria with respect to their cadmium and zinc contents.

324. BUTLER, J. R. and THOMPSON, A. J.

Caesium in some alkali granites (Younger granites) of Northern Nigeria. Geochim. Cosmochim. Acta. Vol.27, 1963. pp.769-773. tables.

An analysis of caesium values in the Younger granites of the Northern States of Nigeria to determine the concentration. The values are tabulated.

325. BUTLER, J. R. and THOMPSON, A. J.

Different values for caesium in G-1. Geochim. Cosmochim. Acta. Vol.26, No.12, 1962, pp.1349-1350.

The authorsdiscuss the results obtained using a radioactivation method to determine the Cs in four samples of G-1 granite and in two samples of a biotite granite from Nigeria.

326. BUTLER, J. R. and others.

K/Rb ratios in the evolution of the younger granites of Northern Nigeria by J.R. Butler, P. Bowden and A.Z. Smith. Geochim. cosmochim. Acta. Vol.26, No.1, 1962. pp.81-100. tables, diag.

An analysis to determine the K/Rb ratios in some samples of younger granites of Northern States.

327. BUTLER, J. R. and THOMPSON, A. J.
Ta in the granite G-1. Geochim. Cosmochim. Acta. Vol.26, No.4, 1962. pp.516-517.

Presents the results of an analysis of a sample of albite-riebeckite granite from the Younger Granites of northern Nigeria. It is found to contain a certain proportion of Tantalum.

328. BUTLER, J. R.
Thallium in some igneous rocks. Geochemistry. No.6, 1962. pp.599-609.

A determination of the concentration of thallium in some samples of alkali granites from the Younger Granites of northern Nigeria.

329. BUTLER, J. R. and THOMPSON, A. J.
Zirconium: hafnium ratios in some igneous rocks. Geochim. cosmochim. Acta. Vol.29, 1965. pp.167-175.

The concentration of zirconium and hafnium in some Younger Granites from the Northern States was determined and presented.

330. BUTLER, J. R. and SMITH, A. Z.
Zirconium, niobium and certain other trace elements in some alkali igneous rocks. Geochim. cosmochim. Acta. Vol.26, 1962. pp.945-953. tables.

Certain trace elements from a variety of alkali igneous rocks from different parts and their concentration are compared with those from the younger granites of northern Nigeria.

331. CHADWICK, L. C.

Chemical composition of Nigerian columbite. Colon. Geol. Miner. Resour. Vol.2, No.4, 1951. pp.308-311.

The results of chemical analysis carried out on columbite from the younger granite at Liruei on the Jos Plateau are presented. The mode of occurrence and distribution of tin oxide as well as the tin content are discussed.

332. CHADWICK, L. C.

Glass sand from Enugu, Nigeria. Colon. Geol. Miner. Resour. Vol.2, No.1, 1951. pp.33-36. tables.

A report on laboratory investigations on samples of quartz sand from sandstone near Iva Coal Mine, Enugu, East-Central State. The chemical composition and the results of grating test are given, with a discussion on its suitability for the manufacture of common bottles and window glass.

333. FISHER, D. E.

Excess rare gases in a subaerial basalt from Nigeria. Nature, Phys. Sci. Vol.232, No.29, July 1971. pp.60-61. tables.

A chemical examination of the subaerial alkaline basalt rock from the Benue Trough.

334. FREETH, S. J.

Chemical analyses of Nigerian igneous and metamorphic rocks and minerals up to 1968. J. Min. Geol. Vol.4, Nos.1 & 2, 1969. pp.83-108. map, tables.

335. GARDNER, P. M. and WHITEHEAD, E. V.

The isolation of squalane from a Nigerian petroleum. Geochim. cosmochim. Acta. Vol.36, No.2, Feb. 1972. pp.259-263. diags.

"The present work deals with the isolation and identification of squalane from a Nigerian petroleum ..." [Author].

336. GERASIMOVSKIY, V. I. and KARPUSHINA, V. A.

O soderzhanii niobiya i tantala v Nigeriyskikh granitakh. ("Niobium and tantalum contents of Nigerian granites"). Geokhimiya No.6, 1967. pp.730-733.

[Source: Bibliography and Index of Geology exclusive of North America. Vol.32, No.12 Dec. 1968].

337. HAWKES, H. E.

Geochemical prospecting investigations in the Nyeba lead-zinc district of Nigeria. Bull. U.S. geol. Surv. 1000-B. 1954. pp.51-103. maps, tables, diags.

The author describes the results of a field study made of the distribution of traces of lead and zinc in the residual and alluvial soils in the Nyeba lead-zinc district in southeastern Nigeria to determine the extent to which geochemical methods of prospecting could be applied in tropical regions for the exploration of minerals. The results and conclusions are presented.

338. HORNE, W. P.

A note on the experimental production of mixed oxides of tantalum and niobium from Nigerian columbite. Bull. Instn. Min. Metall. No.458, 1943. pp.[57-61]. table.

339. MORRIS, D. F. and FIFIELD, F. W.

Rhenium contents of rocks. Geochim. cosmochim. Acta. Vol.25, 1961. pp.232-233.

"Rhenium in six younger granites from the Liruei complex, Northern Nigeria is shown to range from 0.00022 to 0.00114 ppm".

[Source: J. Min. Geol. vol.4, Nos.1 & 2. 1969. p.110].

340. ORAJAKA, S. and NWACHUKWU, S. O.

Combined electromagnetic and geochemical investigations in the Ameri lead-zinc area. J. Min. Geol. Vol.3, Nos.1 & 2, 1968. pp.49-52. diags.

The authors use the method of geochemical and electromagnetic surveys to outline ore bodies in the Ameri lead-zinc area in Abakaliki district, East-Central State. The paper is an account of the methods as well as an analysis of data and interpretation of the results.

341. PHILPOTTS, J. A. and others.

Rare-earth and barium abundances in the Bununu howardite by J.A. Philpotts, C.C. Schnetzler and H.H. Thomas. Earth Planet. Sci. Lett. Vol.2, No.1, 1967. pp.19-22. table, diags.

An analytical study of samples of the howardite which fell near Bununu in 1942. It is found to contain abundances of eight rare-earth elements and barium.

342. ROBERTS, R. O.

Geochemical investigations in Nigeria in 1948 and 1949. Colon. Geol. Miner. Resour. Vol.3, No.4. 1952. pp.347-357. map, tables, diags.

The author gives an account of the results of geochemical prospecting for lead-zinc ores in the Abakaliki area, East-Central State during the years 1948 and 1949.

343. ROGERS, A. S. and others.

Physical and chemical properties of the Ikogosi Warm Spring, Western Nigeria by A. S. Rogers, A.M.A. Imevbore and O.S. Adegoke, J. Min. Geol. vol.4, Nos.1 & 2, 1969. pp.69-81. map, tables, diags.

A description of the geological setting of the Ikogosi Warm Spring in the Western State, with a discussion of its physical and chemical properties in relation to the surrounding rocks.

344. TUGARINOV, A.I. and others.

Distribution of Pb-isotopes, Sn. Nb. Ta, Zr. and Hf. in granitoids of Nigeria. By A.I. Tugarinov, V.I. Kovalenko, E.B. Znamenskiy [and others]. In: Origin and distribution of the elements. Int. Ser. Mono. Earth Sci. Vol.30, 1968. pp.687-699.

345. WEBB, J. S. and MILLMAN, A. P.

Heavy metals in vegetation as a guide to ore; a biogeochemical reconnaissance in West Africa. Trans. Instn. Min. Metall. Vol.60, Part 11, 1950-51, pp.473-504. illus, maps, tables, diags.

Using some spectrographic analysis the authors demonstrate that concentrations of lead, zinc and silver in twigs and leaves of savannah trees in the Nigeria lead-zinc belt of Ameka-Ameri in Abakaliki region, East-Central State, increase in proximity to mineralisation. The physical features, the geology and mineralization of the area are described. The technique used is described and the results and conclusions are presented. [Discussions on the paper are published in Bull. Instn. Min. Metall. No.541. pp.105-118, and No.544. pp.306-307].

346. WEBB, J. S. and MILLMAN, A. P.

Heavy metals in natural waters as a guide to ore; a preliminary investigation in West Africa. Bull. Instn. Min. Metall. No.518, Jan. 1950. pp.3-16. maps, tables.

Gives details of the dithizone field test (a geochemical prospecting method) used to estimate the heavy metal content of natural waters in the Ameka-Ameri lead-zinc area in Abakaliki region, East-Central State. A general description of the area including the geology is given.
[Discussions on the paper are published in the Bulletin No.521, April 1950. pp.25-34 and No.522. May 1950. pp.43-44. Authors' reply to discussions is published in No.526, Sept. 1950. pp.15-17].

347. WRIGHT, John B.

A simple alkalinity ratio and its application to questions of non-orogenic granite genesis. Geol. Mag. Vol.106, No.4, July-Aug. 1969. pp.370-384. map, diags.

The author uses the example of the younger granites of northern Nigeria [pp.378-382] among others to test a proposed simple alkalinity ratio as an application to non-orogenic granite genesis.

10. GEOPHYSICS

348. AJAKAIYE, Deborah Enilo.

A gravity interpretation of the Liruei younger granite Ring complex of Northern Nigeria. Geol. Mag. Vol.105, No.3, May-June 1968. pp.256-263. map, table, diags.

An account of a preliminary survey to investigate the depth and shape of the Liruei Younger Granite ring complex of Nigeria with respect to the Older granitic basement complex. The interpretation of the gravity measurements is given.

349. AJAKAIYE, Deborah Enilo.

Gravity measurements over the Nigerian younger granite province. Nature. Lond. Vol.225, No.5227, Jan. 1970. pp.50-52. maps.

An analysis of the results of a regional gravity survey of the Nigerian Younger Granite province with view to discovering the structural relations at depth between the ring complexes and the basement.

350. AJAKAIYE, Deborah Enilo.

A gravity survey of the Nigerian younger granite province. Ph. D. Thesis, Ahmadu Bello University, 1970. [406]p. maps. tables, diags.

351. CRATCHLEY, C. R. and JONES, G. P.

An interpretation of the geology and gravity anomalies of the Benue valley, Nigeria. Overseas Geol. Surv. Geophys. Pap. No.1. London, H.M.S.O., 1965. 26p. maps, tables, diags.

The geology and gravity anomalies are presented with discussions, based on geophysical data, on the nature and cause of the Benue valley.

352. DU PREEZ, J. W.

Some notes on electrical resistivity work in the Plateau Province. Ann. Rep. geol. Surv. Nigeria, 1948. pp.39--44.

This is a description of resistivity measurements carried out in some part of Plateau Province of Benue-Plateau State. Describes the instrument as well as the procedure for making resistivity measurements, and a note on the interpretation of the measurements.

353. GREGORY, Alan F.

On the feasibility of airborne geophysical prospecting for mineral deposits in Nigeria; a report to the Ministry of Mines and Power, Federation of Nigeria. Ottawa, Geological Survey. 1962. 63p.

354. HOSPERS, J.

Gravity field and structure of the Niger Delta, Nigeria, West Africa. Bull. geol. Soc. Am. Vol.76, No.4, April 1965. pp.407-422. maps, tables, diags.

Analysing data obtained from some gravity stations in the general area of the Niger delta of Nigeria, the author discusses gravity anomalies in the area.

355. MAKOWIECKI, L. Z. A.

The work of the Geophysical Division, Overseas Geological Surveys, 1950-1961; [Nigeria, 1950 and 1959]. Compiled by members of the Geophysical Division. Overseas Geol. Miner. Resour. Vol.9. p.49 and pp.55-56.

Summarises accounts of geophysical surveys in Nigeria in 1950 and 1959.

356. MASSON, Smith D.

Geophysical prospecting for basalt-covered cassiterite on the Jos Plateau, Northern Nigeria. Overseas Geol. Surv. Geophys. Rep. No.27, 1965.

[Source: Ajakaiye, D. E. A gravity survey of the Nigerian younger granite province. Ph.D. Thesis, A.B.U., 1970].

357. SHAW, S. H. and COLE, J. A.

The use of the electrical resistivity method for prospecting deep leads in the Jos Plateau tinfield. Rec. geol. Surv. Nigeria. 1959. pp.21-30. maps, tables, diags.

An account of an investigation into the deep leads in the Jos Plateau to determine whether electrical resistivity methods could be used to locate the deep leads instead of the exploratory drilling method. The method is described and the results of the measurements are given. Comparison with drilling results are made with discussions.

358. TATTAM, C. M.

Geophysical investigations upon the lead-zinc lodes of Ogoja Province. Ann. Rep. geol. Surv. Nigeria. 1933, pp.50-51.

Describes the spontaneous polarization method of geophysical prospecting used in the Abakaliki lead-zinc lode area. The results and conclusions are presented.

359. TURNER, David Charles.

A gravity interpretation of the Liruei ring complex, Nigeria. Geol. Mag. Vol.106. No.1. Jan.-Feb. 1969. pp.95-97. map.

This is a commentary on "A gravity interpretation of the Liruei Younger Granite ring complex of Northern Nigeria" by D.E. Ajakaiye in Geol. Mag. vol.105. pp.256-263.

11. APPLIED GEOLOGY

A. GENERAL

360. BALFOUR BEATTY & Co.

The role of aerial survey in the investigation of the Niger dams multipurpose development project. In: Aerial surveys and integrated studies; Proceedings of the Toulouse conference. Unesco. Natur. Resour. Res. Ser. No.6. pp.333-343. maps.

Photogeological studies of the Nigor dam reservoir and the bedrock of the damsite.

361. [DIXEY, F.]

Geological Survey of Nigeria. Bull. imp. Inst., Lond. Vol.43, No.3, 1945. pp.235-236.

A summary of a note on the geological and mineral investigations carried out by the Geological Survey Department in 1944 as reported by F. Dixey. It includes notes on pegmatite investigations as well as water supply in the northern parts of Nigeria.

362. DIXEY, F.

Nigeria's geology and mineral resources. Bull. imp. Inst., Lond. Vol.43, No.4, 1945. pp.300-316. illus, maps, tables.

A lecture delivered at the Imperial Institute, London in October 1945. It describes the geology and mineral resources of Nigeria as well as the history of the activities of the Geological Survey of Nigeria in relation to mineral and groundwater supply investigations. Discussion on the lecture is included.

363. JONES, M. P.

Some factors controlling the efficiency of a laboratory high-tension separator. Rec. geol. Surv. Nigeria. 1959. pp.31-47. tables, diags.

An account of laboratory tests carried out to determine the factors which control the efficiency of high-tension separators. The results of these tests are discussed with reference to the existing plant practice in Nigeria, using middlings product from the wet-tabling of Nigerian columbite.

364. NDULUE, J. A.

Technological advances in mineral dressing and metallurgy and its bearing on Nigeria's economic developments. J. Nigerian Min. Geol. Metall. Soc. Vol.1, No.2. Dec. 1964. pp.104-108. tables.

An account drawn from the experience gained during a tour of mineral processing and metallurgical plants and laboratories in Italy. The author discusses this experience with particular reference to its possible application to the metallurgical problems facing Nigeria at present.

365. NIGERIA. Geological Survey.

Annual report. 1930-1964/65. Lagos, Govt. Printer, 1931-1968.

These reports give accounts mainly of geological investigations and mappings, geophysical surveys, mineral prospecting and water supply investigations carried out in various parts of the country by the Geological Survey during the period of year covered by each report. Individual author's reports on specialised fields or particular areas (entered under the author's name in this bibliography) form the bulk of these reports.

366. NIGERIA. Geological Survey.

An illustrated review of the Geological Survey compiled from talks prepared for the Nigerian Broadcasting Corporation. [Lagos], Ministry of Mines and Power, 1963. 62p. illus, map.

A summary of the history and achievements of the Geological Survey of Nigeria compiled from a broadcast of the Nigerian Broadcasting Corporation. Contains information about the geology, mineral resources and prospecting methods of the country. Appendix I contains a list of the Geological Survey publications while appendix II contains a list of the unpublished reports of the Survey.

367. NIGERIA HANDBOOK.

"Geology, water supply and minerals" In: The Nigeria handbook. London, Crown Agents, 1953. Ch.2. pp.12-18.

Briefly describes the main geological features, water supply and mineral deposits of Nigeria.

368. REYMENT, R. A.

The future of geology in Nigeria; an inaugural lecture delivered at the University of Ibadan on 6 December 1963. Ibadan, Ibadan U.P., 1964. 12p. map.

Discusses briefly the geological activities and mineral resources of Nigeria with reference to the possibilities for Nigerian graduates seeking employment as geologists.

369. RUSS, W.

Kaduna sheet; Africa North $\frac{C.32}{H.1}$; the goldfield. Ann. Rep. geol. Surv. Nigeria. 1937. pp.4-8.

Gives a description of the physiography, hydrology and geology of the area with a discussion of the economics of the gold deposits.

370. RUSS, W.

Reconnaissance survey of parts of Abeokuta and Oyo Provinces. Ann. Rep. geol. Surv. Nigeria. 1933, pp.43-50. map, table.

An account of a reconnaissance survey carried out in parts of the Western State in an area between the main line of the railway and Dahomey border. Descriptions of the physiography, hydrology and geology of the area are given with some notes on economic mineral deposits.

371. TATTAN, C. M.

Interim report on the geology of Borgu Division. Ann. Rep. geol. Surv. Nigeria. 1935. pp.6-12.

Describes the geology of Borgu Division, Kwara State with some account of mineral deposits and water supply based on the geological reconnaissance survey carried out during the year 1935.

372. WILSON, R. C.

The geology of the Western railway; Section 1. Iddo to Okuku. With notes by A.D. Bain and W. Russ. Bull. geol. Surv. Nigeria No.2, 1922. [77]p. illus, map.

Gives an account of field and laboratory investigations carried out in a geological exploration of a belt along the Western railway. The gneisses and schists which occur over the greater part of the area are discussed.

373. WILSON, R. C. and BAIN, A. D. N.

The Nigerian coalfield; Section 2. Parts of Onitsha and Owerri Provinces. Bull. geol. Surv. Nigeria. No.12, 1928. pp.11-50. illus, map, tables, diags.

A description of the geological investigations of the Nigerian coalfield which lies in the regions of Onitsha and Owerri in East-Central State.

11B. MINERAL DEPOSITS AND MINING

374. BAIN, A. D. N.

The coalfield. Ann. Rep. geol. Surv. Nigeria. 1930, pp.6-10.

An account of coal investigations near Enugu and a description of the geology of the area.

375. BAIN, A. D. N.

The geology of the Kudaru Hills. Bull. geol. Surv. Nigeria. No.11, 1927. pp.39-48, illus, map.

A geological description of the Kudaru Hills area in relation to the occurrence of mineral deposits, with special reference to tinstone.

376. BAIN, A. D. N.

The Nigerian coalfield: Section 1. Enugu area. With appendices by R. Bullen Newton and A.C. Seward. Bull. geol. Surv. Nigeria. No.6. 1924. pp.9-62. illus, maps, tables.

The author gives an account of the geology of the important coalfield of Enugu, including descriptions of the physical features of the area. The results of a full chemical analysis of the coal are provided in a tabular form.

377. BUCHANAN, M. S.

The Emugu coals, Udi Division, Onitsha Province. Rec. geol. Surv. Nigeria. 1955, pp.5-10. map.

An account is given of coal drilling activities carried out between 1950 and 1954 west and north of the Enugu colliery to determine the coal reserves. The structure and lateral variations in the coal seams are revealed. There are some notes on the quality of coal and a map to indicate the structure of the coal and the positions of the boreholes are given.

378. CALVERT, Albert Frederick.

Nigeria and its tin fields. 2nd ed. London, E. Stanford, 1912. 488p. illus, maps, diags.

379. CASEY, O. P. and RICHARDS, H. J.

The Ezimo coal, Nsukka Division, Onitsha Province. Rec. geol. Surv. Nigeria. 1954. pp.10-13. map.

Describes early surveys and mappings carried out and the subsequent explorations undertaken to determine the extent of the coal in the area. A note is also given on the structure and nature of the coal seam in the lower part of the cretaceous sequence.

380. CASEY, O. P. and others.

The Ogboyoga coal, Igala Division, Kabba Province by O.P. Casey, R.D. Hockey and H.J. Richards. Rec. geol. Surv. Nigeria. 1955. pp.11-16. map, tables.

An account of surveys and a description of the exploration of coal near Ogboyoga in Igala, Kwara State. The extent of the coal, the local variations in the thickness of the coal as well as its quality are discussed. The geological account of the area is given.

381. CASEY, O. P. and HOCKEY, R. D.

The Orukpa coal, Idoma Division, Benue Province. Rec. geol. Surv. Nigeria. 1954, pp.4-9. map.

An account is given of early exploration of coal as well as drillings carried out in the area. Description is given of the coal seams, with some notes on the quality of the coal and the available reserve. The coal seams is said to belong to the Upper Cretaceous age.

382. DE KUN, Nicolas.

The mineral resources of Africa. Amsterdam, Elsevier Publishing Co. 1965. 740p. illus, maps, diags. (Nigeria: Section 7, pp.95-98).

The mineral resources of the various countries of Africa are reviewed. The section on Nigeria includes a description of the mineral resources and their location.

383. DE SWARDT, A. M. J. and CASEY, O. P.

The coal resources of Nigeria. With a section on the physical and chemical properties of the coals, compiled by G. Jefford. Bull. geol. Surv. Nigeria. No.28, 1963. 100p. illus, maps, tables, diags.

A description of the geology of the Nigerian coalfield and the reserves available. Data on the physical and chemical properties of the coal are compiled and presented. A table of records of boreholes drilled for coal from 1948-56 is provided.

384. DE SWARDT, A. M. J. and PIPER, H.

The lignites of Asaba Division, Benin Province. Rec. geol. Surv. Nigeria. 1957. pp.5-23. illus, maps, tables, diags.

A brief note on the tertiary lignite deposits of Asaba Division in Benin Province, with indications on the available reserves. Notes on the analysis of the lignites are included.

385. DU PREEZ, J. W.

Further observations on the lignites of Onitsha Province. Ann. Rep. geol. Surv. Nigeria. 1946. pp.25-26.

The report describes the distribution and geological relationships of the various lignite seams in the Bende-Ameki Group in Awka area, East Central State.

386. DU PREEZ, J. W.

Geology of the Oba and Nnewi lignite deposits, Onitsha Province. Ann. Rep. Geol. Surv. Nigeria. 1945. pp.26-29.

A description of investigation of the lignite deposits around Oba and Nnewi near Onitsha. Contains a brief account of the physical features. The general geology of the area and the economic aspects of the deposits are presented.

387. EVANS, R. D. and POYTHRESS, S. J.

"Nigeria." In: Petroleum developments in central and southern Africa in 1968. Bull. Am. Ass. Petrol. Geol. Vol.53, No.8. Aug. 1969. pp.1753-1758. maps, tables.

Gives an account of exploration and production activities in petroleum in Nigeria during 1968.

388. FALCONER, John Downie.

Age of Nigerian tinstone. Min. Mag. Lond. Vol.30, 1924. p.283.

389. FALCONER, John Downie.

The geology of the Plateau tinfields. Bull. geol. Surv. Nigeria. No.1, 1921. 55p. illus, map.

Gives a preliminary account of the principal field and laboratory results of the survey of the tinfields of the Jos Plateau as well as an account of the geology of the area.

390. FALCONER, John Downie.

Nigerian tin; its occurrence and origin. Econ. Geol. Vol.7, 1912. pp.542-546.

391. FALCONER, John Downie and RAEBURN, Colin.

The Northern tinfields of Bauchi Province. With notes by A.D.N. Bain. Bull. geol. Surv. Nigeria. No.4, 1923. 67p. illus, maps.

A geological description of the area lying to the north and north-east of the Bauchi Plateau and adjoining part of Kano State with reference to the origin and occurrence of tinstone.

392. FARRINGTON, J. L.

A preliminary description of the Nigerian lead-zinc field. Econ. Geol. Vol.47, No.6, Sept.-Oct. 1952. pp.583-608. illus, map.

A description of the lead-zinc deposits of Nigeria which occur in the main belt of Lower Cretaceous formations in the Benue and Niger river area.

393. FRANKL, E. J. and CORDRY, E. A.

The Niger Delta Oil Province; recent developments, on shore and offshore. Proc. World Petrol. Congr. 7th. Vol.2, 1967. pp.195-209.

A description of the deltaic deposits of the Niger delta oil Province as well as of the principal oil discoveries in the Agbada formation.

394. GREAT BRITAIN. Colonial Office.

Annual report[s] on Nigeria for the year[s] 1947-1954. London, H.M.S.O., 1949-1958.

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Chapter 6 of each of these reports deals with various production in Nigeria, including mineral production. Accounts of mining activities and activities of the Geological Survey are included.

395. [GREAT BRITAIN. Imperial Institute]
Lignite deposits of Nigeria. Bull. imp. Inst., Lond. Vol.21, No.2, 1923. pp.325-348. map.

Gives a summary of available information on the geological relationships of the lignite deposits in parts of southern Nigeria. Particulars are given of their situation and extent, composition of the lignite and the results of firing trials.

396. [GREAT BRITAIN. Imperial Institute]
New lignite deposits in Nigeria. Bull. imp. Inst. Lond., Vol.23, No.2, 1925. pp.202-204. tables.

Provides additional information to the accounts of lignite deposits of southern parts of Nigeria described in Bulletin vol.21 No.2, 1923, pp.325-348. It is a description of samples of new lignite deposits found in new localities in the neighbourhood of Umuahia and Ossidinge.

397. [GREAT BRITAIN. Imperial Institute]
Nigeria coal; the new coalfield in West Africa. Bull. imp. Inst. Lond., Vol.14, 1914. pp.369-378.

Describes preliminary discoveries of deposits of bituminous coal at Udi, near Enugu.

398. GREENWOOD, R.

Geology of the Plateau tinfields. Interim report No.1. Occ. Pap. geol. Surv. Nigeria. No.7, 1945. 11p. map.

The report, which deals with part of the tinfield between Kuru Station and Kura Falls, Kwakwi Station and Barakin Ladi, describes the geology of the area as well as the tin deposits and associated minerals.

399. GREENWOOD, R.

Geology of the Plateau tinfields. Interim report No.2. Occ. Pap. geol. Surv. Nigeria. No.8, 1946. (Also in Ann. Rep. geol. Surv. Nigeria, 1945, pp.4-17).

A description of the geology of the Plateau tinfields with some notes on mineralization and economic deposits.

400. GRIFFITHS, S. V.

Tin leads in Northern Nigeria. Min. Mag. Lond. Vol.82. No.6, June 1950. pp.338-343.

401 GRUMMITT, W. C.

The gold-bearing country east of Minna, Northern Nigeria. Min. Mag. Lond. Vol.49, No.3, 1933. pp.148-158.

402. HAAG, H. L.

Wolfram in Nigeria; with notes on cassiterite, wolfram and columbite zones. Bull. Instn. Min. Metall. No.458. Jan. 1943. pp.[23-56]. map, tables, diag.

An account of the occurrence of wolfram in Nigeria including the history of its mining, the types of deposits, their decomposition, distribution, prospecting methods and economic aspects.

[Comments on this paper are found in Bull. Instn. Min. Metall. No.459. March 1943, No.460. May 1943 and No.461 July 1943 under "Further contributed remarks ..."].

403. HAZELL, J. R. T.

The Enugu ironstone, Udi Division, Onitsha Province. Rec. geol. Surv. Nigeria, 1955. pp.44-58. map, tables.

A description of Enugu ironstone deposits which were investigated by the Geological Survey between 1952 and 1954. Brief descriptions of the topography and geology of the area are given. Notes are given on the distribution, texture and mineralogy of the ironstones. There are tables of calculated reserves and notes on the methods used in prospecting.

404. HAZELL, J. R. T.

The Inyi-Awlaw coal, Awgu Division, Onitsha Province. Rec. geol. Surv. Nigeria. 1954, pp.13-16. map.

A report on coal investigations in Inyi area, Awgu Division with a view to exploration. The topography and geology of the area are given. Notes on the quality of the coal are included. Reserves are indicated by drilling.

405. HAZELL, J. R. T.

The Jakura marble, Kabba Province. Rec. geol. Surv. Nigeria. 1956. pp.38-45. illus, maps, tables, diags.

A report on the occurrence of pure marble in the basement complex near Jakura in Kwara State. An account is given of the physical features, the general geology and the petrology of the area. The available resources of the marble are estimated.

406. HODDER, B. W.

Tin mining on the Jos Plateau of Nigeria. Econ. Geogr. Vol.35, 1959. pp.109-122. illus, map, tables, diags.

Describes tin mining operations on the Jos Plateau. Some information is given on the geological condition of the area.

407. HOLLOWAY, H. L.

Prospecting in Northern Nigeria. Min. Mag. Lond. Vol.80. No.5, 1949. pp.279-283.

An outline of methods used in prospecting for tin on the Bauchi Plateau.

408. IFATUROTI, E. A.

Review of the mining legislation of Nigeria. J. Nigerian Min. Geol. Metall. Soc. Vol.2, No.2, Dec. 1965. pp.71-82.

409. INSTITUTE OF PETROLEUM REVIEW.

Nigeria; growing source of world oil. Inst. Petrol. Rev. Vol.17, No.199, July 1963. pp.233-241.

410. INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT.

The economic development of Nigeria; report of a mission organised ... at the request of the Governments of Nigeria and the United Kingdom. Baltimore, Johns Hopkins Press, 1955. 686p. maps, tables, diags. ["Mining": pp.406-430].

The section on mining includes some accounts of the minerals and mining activities in the Nigeria with a brief geological description of the country.

411. JACOBSON, Reginald Ronald Eric.

Notes on the occurrence of columbite in the Younger Granites. Ann. Rep. geol. Surv. Nigeria. 1945. p.26.

A short note on some columbite found in some samples of the Nigerian Younger Granites from Rukuba Hills and along the Gaiya river in the Liruoin Kano Hills.

412. JACOBSON, Reginald Roland Eric and others.

The occurrence of columbite in Nigeria by R.R.E. Jacobson, A. Cawley and W.N. MacLeod. Occ. Pap. geol. Surv. Nigeria. No.9, 1951. 11p. tables, diags.

Describes the distribution of columbite in the alluvial tin deposits formed from the weathered younger granites of the basement complex. Its presence in pegmatites of the older granites is discussed.

413. JACOBSON, Reginald Ronald Eric and WEBB, J. S.

The occurrence of Nigerite, a new tin mineral in quartz-sillimanite-rocks from Nigeria. Mineralogy. Mag. Vol.28, No.197. June 1947, pp.118-128. illus, map, tables, diags.

The geology of the tin-bearing pegmatites of Egbe district, Kwara State is briefly described with special reference to the pegmatites, the quarts-sillimanite rocks in which the nigerite occurs, the associated minerals of nigerite and the paragenesis.

414. JACOBSON, Reginald Ronald Eric and WEBB, J. S.
The pegmatites of Central Nigeria. Bull. geol. Surv. Nigeria. No.17, 1946. 61p. illus, maps, tables, diags.

An account of investigations carried out by the authors on the pegmatites and associated economic minerals of central Nigeria in an area extending from Jamma of the Jos Plateau area to the Egbe district in Kabba, Kwara State. The investigation includes a study of the distribution, mode of occurrence, mineral associations, mineralogy and paragenesis and phases of mineralization.

415. JACOBSON, Reginald Ronald Eric and WEBB, J. S.
A preliminary report on the pegmatites of central Nigeria. Ann. Rep. geol. Surv. Nigeria. 1943. Append A. pp.20-24.

An account of a brief survey of pegmatites and associated economic minerals found in Central Nigeria around Wamba and Jama'a, and Egbe in the northern states and in isolated localities, both in the north and south. Suggestions for the prospecting of the pegmatite mineral deposits are included.

416. JACOBSON, Reginald Ronald Eric and JAQUES, E. H.
Report on wolfram investigations. Ann. Rep. geol. Surv. Nigeria. 1943. Append A. pp.5-13. maps.

Gives a report on investigations on wolfram in Afu, Shona, South Mada, the Ningi, the Kwandonkaya, the Sutumi, the Burku and Fagam Hills and the Jarawa valley regions. Accounts of the geology and mineralization of each area are given.

417. JAQUES, E. H.

Note on the Duchin Hai graphite. Ann. Rep. geol. Surv. Nigeria. 1943. Append A. p.25.

A brief descriptions of graphite lode which occurs near Duchin Hai in Ningi District of Bauchi Province. The author contends that the extent and composition of the lodes do not warrant profitable working.

418. JAQUES, E. H.

Reconnaissance of the Kabba-Ilorin pegmatite area. Ann. Rep.geol. Surv. Nigeria. 1944. pp.3-6.

An account of the geological investigation and mapping of the area with view to prospecting for tantalite. A description of the topography and geology of the area is given.

419. JOHN, T. U. and PAULO, K. L.

A note on the occurrence of columbite in the younger granites of the Jos Plateau, Nigeria. Geol. Mag. Vol.91, No.3, May-June 1954. pp.245-248.

420. JONES, H. A.

The occurrence of oolitic ironstones in Nigeria; their origin, geological history and petrology. D.Phil. Thesis. Oxford, 1955-56.

421. JONES, H. A.

The oolitic ironstones of the Agbaja plateau, Kabba Province. Rec. geol. Surv. Nigeria. 1955, pp.20-43. illus, maps, tables, diags.

The author gives an account of the investigations carried out by the Geological Survey of Nigeria on the oolitic ironstones in 1952 and 1953. Through drilling the reserve of iron deposits was determined. The results of the analysis of samples from each borehole are tabulated and appended. The topography and general geology of the area are described.

422. JONES, H. A.

Phosphate deposits in Abeokuta Province. Rec. geol. Surv. Nigeria. Vol.7, 1964. pp.5-13. maps, tables, diags.

Describes the phosphate deposits at Ifo Junction in Abeokuta Province. The physical features and the general geology of the area are described.

423. JONES, M. P.

Mineral dressing tests on the extraction of columbite and other heavy minerals from the Odegi Younger granite. Rec. geol. Surv. Nigeria. 1957. pp.36-59. illus, tables, diags.

An account of the mineral dressing tests carried out on the columbite and other heavy minerals from the Odegi zone of columbite bearing granite in Benue Province. There is a discussion of the results of the tests.

424. JUNNER, N. R.

The mineral resources of the British West African colonies. Emp. Min. Metall. Congr. 4th. Great Britain. Paper No.A-B 5 Part 1. 1950. pp.110-123.
(Discussion: pp.206-216)

"The principal mineral deposits of Nigeria, Gold Coast [Ghana] and Sierra Leone are briefly described, emphasis being placed on mineral discoveries and progress in mineral development during the past 20 years."

[Source: Bibliography and index of Geology exclusive of North America vol.14].

425. KING, B. C.

Notes on the tin-dressing methods employed on the Plateau. Ann. Rep. geol. Surv. Nigeria. 1946. pp.36-39. tables.

A discussion on some of the problems of ore-dressing on the Jos Plateau and an outline of the methods designed to overcome the problems.

426. MACKAY, Robert Alexander.

The columbite-bearing granites, Jos Plateau, Nigeria. Econ. Geol. Vol.52, No.1. 1957. p.83.

A correspondence clarifying a point in a paper by F.A. Williams and others in relation to the younger granite complex of the Jos Plateau. (For the paper see Williams, F.A. and others. "Economic geology of the decomposed columbite-bearing granites, Jos Plateau, Nigeria").

427. MACKAY, Robert Alexander.

A comparative study of two lead-zinc occurrences in Plateau and Ogoja Provinces. Ann. Rep. geol. Surv. Nigeria. 1946, pp.29-35. map, table, diag.

A description and comparison of lead-zinc occurrences at Zurak in Benue-Plateau State and at Ameka in Ogoja area, South-Eastern State.

428. MACKAY, Robert Alexander and others.

The geology of the Plateau tinfields; resurvey, 1945-48, by R.A. Mackay, R. Greenwood and J.E. Rockingham. With an appendix on the morphology of the Jos Plateau by F. Dixey. Bull. geol. Surv. Nigeria. No.19, 1949. 78p. illus, maps, tables, diags.

A description of the geology of the Jos Plateau with a detailed analysis of its component rocks and their formation. The production of tin from the alluvial deposits along the existing drainage system is discussed. Data on the mineralogy of the ore deposits are provided.

429. MACKAY, Robert Alexander.

The lead and zinc veins in the Lower Cretaceous of Nigeria. Int. Geol. Congr. 18th. London, 1950. Rep. Part 7. pp.217-221.

430. MACKAY, Robert Alexander.

Notes on the coal outcrops of Kukuruku Division, Benin Province. Ann. Rep. geol. Surv. Nigeria. 1946. pp.35-36.

An account of the geology and economic aspect of coal discovered at Ifuji in Kukuruku Division in the Mid-Western State of Nigeria.

431. MAcLEOD, W. N.

The geology of the Jos-Bukuru younger granite complex with particular reference to the distribution of columbite. Rec. geol. Surv. Nigeria. 1954. pp.17-34. map, table.

A descriptive account of a study made of the Jos-Bukuru granite complex with particular attention on the distribution of columbite in the various phases of the complex. A study of tin mineralization is included.

432. MANS, F. J.

Some petroleum production practices in Nigeria. J. Nigerian Min. Geol. Metall. Soc. Vol.2, No.1, July 1965. pp.12-16.

A discussion of the technical problems which assail the Shell-BP in the production of petroleum in Nigeria.

433. NIGERIA, FEDERATION. Ministry of Mines and Power. Mines Division.

Annual report[s], 1951/52-1963/64. Lagos, Govt. Printer, 1952-65.

These are reports on the activities of the Mines Division of the Federal Ministry of Mines and Power. They include reports on mining and minerals in Nigeria.

434. NIGERIA, FEDERATION. Ministry of Mines and Power. Petroleum Division.

Annual report[s], 1962/63-1967/68. Lagos, Govt. Printer, 1963-1968.

These are reports on the activities of the Petroleum Division of the Federal Ministry of Mines and Power. They include information on petroleum exploration and development by the various oil exploration companies operating in Nigeria.

435. [NIGERIA. Geological Survey].
Mineral resources of Nigeria; the role of geological surveying. [Kaduna, Geological Survey of Nigeria?], [n.d.], 10p. illus, maps.

Contains some notes on the minerals of Nigeria as well as geological mappings of the country.

436. NIGERIA. [Geological Survey].
Minerals and industry in Nigeria, with notes on the history of geological survey in Nigeria and the Cameroons. Lagos, Govt. Printer, 1957. maps.

This work is a new edition of "Minerals and industry in Nigeria" by C. Raeburn. It is an enlargement of the scope of his work. It contains a history of the geological survey of Nigeria and the Cameroons Republic as well as an outline of the geology. Notes on the occurrence and characteristic of the various minerals and a summary of the mineral resources are included.

437. NIGERIA. Geological Survey.
Prospecting for uranium and thorium minerals in Nigeria. Kaduna, Govt. Printer, 1949. 22p.

Contains brief descriptions of the mode of occurrence and characteristics of the more important uranium and thorium minerals in Nigeria. Notes on the operation of radioactivity prospecting equipment are included.

438. NIGERIA. Mines Department.
Mines manual. 8th ed. Lagos, Govt. Printer, 1957.

439. NIGERIA. Mines Department.
Mining and mineral resources of Nigeria. Lagos, Mines Department, 1957. 15p. maps.

Contains some information on the mineral resources of Nigeria, with indications of their present and future economic importance.

440. NIGERIA, NORTHERN PROVINCES.
Minerals proclamation, 1913. Lagos, Govt. Printer, 1913.

441. NWOGU, E. D.
Oil in Nigeria. Niger. geogrl. J. Vol.3, No.2, Nov. 1960. pp.15-25. illus, maps.

Gives an account of the development of petroleum exploration in Nigeria. Some geological account is given of the nature of the exploration with respect to drilling, transportation of the crude oil. It is useful for the study of early geological survey of the country.

442. NWORJI, P. O. J.
Further trials with the longwall system. J. Nigerian Min. Geol. Metall. Soc. Vol.2, No.2, Dec. 1965. pp.83-87. tables. diags.

An outline of a research carried out with the longwall system of coal mining with particular reference to the Nigerian mines in East-Central State.

443. OGODAZI, O.

Comments on oil development in Nigeria. J. Nigerian Min. Geol. Metall. Soc. Vol.1, No.2, Dec. 1964. pp.55-60. map, tables, diags.

A resurvey of the historical and geological background of oil exploration in Nigeria. Information regarding the distribution of oil-prospecting leases, oil exploration and production is included. The associated natural gas is discussed.

444. OMEZI, G. M.

Trials with the Longwall system. J. Nigerian Min. Geol. Metall. Soc. Vol.1, No.2, Dec. 1964. pp.43-53. illus, map. tables, diags.

A description of experiments carried out at Hayes (Okpara) and Ekulu mines using the method of longwall system of coal mining. There is a brief geological description of the Enugu coalfield at the introductory part.

445. ONYEMENAM, G. N.

Nigeria; the work and problems of the Mines and Geological Divisions. Technical Conference on tin, London, 1967. [Papers] Vol.2, pp.587-602. London, International Tin Council, 1968.

446. ORAJAKA, S.

The geology of the Enyeba, Ameri and Ameka lead-zinc lodes, Abakaliki Division, Eastern Nigeria; a reconnaissance. J. Nigerian Min. Geol. Metall. Soc. Vol.2, No.2, Dec. 1965. pp.65-69. map.

Describes the geology and the mineral deposits of the lead-zinc area near Abakaliki.

447. PARKER, D. H. and others.

Diatomite deposits near Abakire and Bularaba, Bornu Province. By D.H. Parker, J.D. Carter and W. Barber. Rec. geol. Surv. Nigeria. Vol.7, 1964. pp.15-22. illus, maps, tables.

A history and description of diatomite deposits near Abakire and Bularaba in Bornu Province, North-Eastern State. Some chemical analysis and physical properties of the diatomites are given, with a summary of the commercial investigations.

448. PRIGOGINE, A.

Concentration des minerais de cassitérite et de columbite en Nigérie. Mines Métall. No.9, 1960. pp.571-575.

449. RAEBURN, Colin.

The geology of south-eastern Zaria. Bull. geol. Surv. Nigeria. No.11, 1927. pp.9-38. illus, map, table.

An account of the geology of the tinfields in the south-eastern part of Zaria in relation to the occurrence of tinstone and other mineral deposits.

450. RAEBURN, Colin.

Minerals and industry in Nigeria. Great Brit. Colon. Pub. Feb. 1949. 9p.

Describes Nigeria's mineral resources and their usefulness in industrial progress.

451. RAEBURN, Colin.

The tin fields of Nassarawa and Ilorin provinces, Ph.D. Thesis. Glasgow, 1926.

452. RAEBURN, Colin.

The tinfields of Nassarawa and Ilorin Provinces. Bull. geol. Surv. Nigeria. No.5, 1924. 63p. illus, maps.

A comparative description of the tinfields of the former Nassarawa and Ilorin Provinces in Benue-Plateau and Kwara States respectively, with reference to the origin and occurrence of tinstone. Geological descriptions of the areas are given.

453. RICHARDS, H. J. and BUCHANAN, M. S.

The Okaba coal, Igala Division, Kabba Province. Rec. geol. Surv. Nigeria. 1955. pp.17-19. map.

Gives an account of investigations carried out at Okaba coalfield in Igala land Kwara State. The topography and geology of the area are briefly described. The extent of the coal reserve is determined through drilling. A map is provided to show the topography, position of the boreholes and the structure of the seams.

454. ROCKINGHAM, J. E.

Limestone deposits in the Gongola valley. Ann. Rep. geol. Surv. Nigeria, 1948, pp.44-46.

Limestone deposits in the Gongola river valley in Gombe area, North-Eastern State are described with a brief account of the geology of the area.

455. ROCKINGHAM, J. E. and MACKAY, R. A.

Notes on the Zurak lead-zinc veins. Ann. Rep. geol. Surv. Nigeria. 1947. pp.22-24. map.

The topography and the geology as well as the ore-bodies of the Zurak lead-zinc mine near Zurak in the Wase district, Shendam Division, Benue-Plateau State are described.

456. RUSS, W.

The geology of parts of Niger, Zaria and Sokoto Provinces, with special reference to the occurrence of gold. Bull. geol. Surv. Nigeria, No.27, 1957. 42p. illus, maps, tables.

A general description of the Pre-Cambrian rocks over the area with particular attention to the occurrence of gold.

457. RUSS, W.

The geology of the Banke and Liruein Kano Hills. Bull. geol. Surv. Nigeria. No.11, 1927. pp.49-71. illus, maps.

Describes the geology of the area in relation to mineral deposits, particularly tinstone. An account of the mineralization of the granites is given.

458. RUSS, W.

The Minna-Birnin Gwari belt. Ann. Rep. geol. Surv. Nigeria. 1930. pp.10-14.

An account of the geology of the area including gold investigations.

459. RUSS, W.

The Minna-Birnin Gwari gold-belt. Kaduna, Govt. Printer, 1933.

460. RUSS, W.

The Minna-Birnin Gwari goldfield. Ann. Rep. geol. Surv. Nigeria. 1932. pp.33-36. table.

An account of surveys carried out in the area during the year , 1932. This includes mining investigations. The physiography, hydrography and geology of the area are described.

461. RUSS, W.

The Nigerian goldfield. Min. Mag. Lond. Vol.49, No.5, 1933. pp.278-282.

462. RUSS, W.

Phosphate deposits of Abeokuta Province. Ph.D. Thesis, London, 1925.

463. RUSS, W.

The phosphate deposits of Abeokuta Province. Bull. geol. Surv. Nigeria. No.7, 1924. 43p. illus, maps, tables, diags.

A full description of Western State phosphates which occur near Oshosun in Abeokuta Province. The geological occurrence and the economic aspects of the deposits are discussed.

464. RUSS, W.

A review of the Nigerian gold-field. Ann. Rep. geol. Surv. Nigeria. 1934. pp.6-16. maps.

This is a review of the state of development and prospects of the goldfield.

465. SCHATZL, L. H.

Petroleum in Nigeria. Ibadan, O.U.P., 1969. 257p.

Although the book is written from the point of view of petroleum economics in Nigeria, it has sections devoted to the history of petroleum exploration in the country. A brief account of the geological structure of Nigeria is included.

466. SIMPSON, A.

The lignite seams of Asaba Division, Benin Province. Ann. Rep. geol. Surv. Nigeria. 1948, pp.6-14. maps, diags.

Gives an account of the geological investigations undertaken of the lignite bearing strata which occur in Asaba Division, Mid-Western State.

467. SIMPSON, A.

Review of coalfield investigations, 1947-50. Ann. Rep. geol. Surv. Nigeria. 1949-50. pp.15-18. table.

A review of coal investigations carried out in Nsukka, Idoma and Igala areas south of the Benue river and between the Niger and the Eastern Railway. There is a note on the nature of the coal.

468. SINCLAIR, W. E.

Tin mining in Nigeria. South Afr. Min. Engng. J. vol.54, part 1, No.2637, 1943. pp.503-507.

469. SINCLAIR, W. E.

Tin placer mining in Nigeria. Engng. Min. J. vol.134, No.2, pp.55-57.

470. TAIT, E. A. and CASEY, O. P.

The Kwakuti marble, Mina Division, Niger Province. Rec. geol. Surv. Nigeria. 1957. pp.29-35. map, tables.

An account of investigations carried out by the Geological Survey on the deposits of marble near Kwakuti village in Minna, Division, North-Western State, to determine its extent and suitability for use in the manufacture of cement. The variations in its chemical composition are examined.

471. TATTAM, C. M.

Abakaliki lead-zinc field. Ann. Rep. geol. Surv. Nigeria. 1934. pp.18-19.

A short discussion of the results of prospecting on a lease at Nyeba in Abakaliki lead-zinc field, East-Central State.

472. TATTAM, C. M.

Cassiterite in Ife-Ilesha Division. Ann. Rep. geol. Surv. Nigeria. 1943. Append A. pp.23-25.

Contains a brief description of the occurrence of cassiterite in the area.

473. TATTAM, C. M.

Columbite in the Afu Hills. Ann. Rep. geol. Surv. Nigeria. 1943. Append A. pp.13-14. map.

A short account of the investigation for columbite in the Afu Hills.

474. TATTAM, C. M.

The lead-zinc deposits of Ogoja Province. Ann. Rep. geol. Surv. Nigeria. 1930. pp.14-23.

A description of the lead-zinc deposits in parts of Abakaliki, particularly at Nyoba and Ameka. The geology of the area is described in some detail. The mineralization and economic aspects of the lodes are discussed.

475. THOMAS, W. E.

Tin deposits in Nassarawa, Nigeria. Min. Mag. Lond. Vol.19, 1918. pp.240-242.

476. THOMSON, A. G.

Progress in Nigeria. Min. J., Lond. vol.239, No.6107. 1952. pp.251-252.

A summary of the mineral resources and mining industry in Nigeria.

477. VAN KESTEREN, J.

Formation logging and evaluation in Nigerian reservoirs. J. Nigerian Min. Geol. Metall. Soc. Vol.2, No.2, Dec. 1965. pp.88-91.

A description of the methods used by mining companies to evaluate the reserves of Nigerian oil.

478. VARLEY, E. R. and others.

Nigerian diatomite, insecticidal properties for the control of stored product insects, by E.R. Varley, J.W. Du Preez, E.A. Parkin [and others]. Colon. Geol. Miner. Resour. Vol.6, No.2, 1956. pp.176-181.

Deals with the occurrence of diatomite near the villages of Bularaba and Abakire and in the area between Abakire and Potiskum-Maiduguri road, North-Eastern State. The location, origin, nature and the composition of the deposits are briefly described, and an account is given of their insecticidal properties.

479. WEBB, J. S.

A portable electromagnet for the examination of cassitorite-columbite-tantalite concentrates. Ann. Rep. geol. Surv. Nigeria. 1945. pp.21-26. diags.

A description of the construction of an electromagnet designed for the separation of heavy minerals from concentrates of cassiterite-columbite-tantalite, based on examination of Nigerian samples.

480. WILLIAMS, F. A. and others.

Economic geology of the decomposed columbite-bearing granites, Jos Plateau, Nigeria, by F.A. Williams, J.A. Meehan, K.L. Paulo [and others]. Econ. Geol. Vol.51, No.4, June-July 1956. pp.303-332. illus, map, tables, diags.

A description of petrographic methods which have been developed for identification of different types of decomposed granites of Jos-Bukuru complex. The geology and mineralogy of the area are described.

481. WILLIAMS, F. A.

The identification and valuation of decomposed columbite-bearing granites of the Jos-Bukuru younger granite complex, Nigeria. Trans. Instn. Min. Metall. Vol.65, Part 5, 1956. pp.169-179. illus.

A description of methods devised for valuing intensely decomposed granites containing columbite and other primary accessory minerals. A brief geological setting of the area is given. [Discussions on the paper are published on pp.320-331, and 503-514 and author's reply in Vol.66. Part 1, 1956-57. pp.17-22].

482. WILLIAMS, F. A.

Performance analysis of screens, hydrocyclones, jigs and tables used in recovering heavy accessory minerals from an intensely decomposed granite on the Jos Plateau, Nigeria. Trans. Instn. Min. Metall. Vol.67, Part 3, 1957-58. pp.89-108. tables, diags.

The paper describes an investigation of the plant-scale recovery of the resistant heavy accessory minerals cassiterite, columbite, zircon and xenotime from an intensely decomposed granite on the Jos Plateau. The performance analyses are given.

483. WILLIAMs, F. A.

Recovery of fine alluvial cassiterite; correlation of bore valuations with plant-scale recovery. Trans. Instn. Min. Metall. Vol.70, 1960-61. pp.49-69. illus, tables, diags.

A description of a new method for the recovery of fine cassiterite from alluvial bore and plant samples devised by the author and put into practice in the Plateau minesfield, northern Nigeria.

484. WILS

F Pap. geol. Surv. Nigeria.

No.

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485.

ation in the older and younger tin

fields of Nige... n. Geol. Vol.65, No.8, Dec.1970.

pp.945-951. maps.

A review of Nigeria's tin fields with respect to their distribution, mineralogy and tectonic setting. The author concludes that "an ancient lineament system, controlled the development of Nigeria's tin fields."

486. WRIGHT, John R. and McCURRY, Patricia.

The first occurrence of manganese ores in northern Nigeria. Econ. Geol. Vol.65, No.2, March-April 1970. pp.103-106. maps. diags.

A description of the occurrence of some quantities of manganese ore lying within a ... basedimentary belt in northern Nigeria.

11C. HYDROGEOLOGY

487. ANDERSON, H. R. and OGILBEE, W.

Exploration for artesian water in the Sokoto basin, Nigeria. Ground water, vol.5, No.3, July 1967. pp.42-46. illus, map.

Describes work of exploration of ground water for water supply in the area. Some geological information especially of the Tertiary acquifer (Gwandu formation) and Cretaceous acquifers is given.

488. BARBER, W. M. and JONES, D. G.

The geology and hydrology of Maiduguri, Bornu Province. Rec. geol. Surv. Nigeria. 1958. pp.5-20. illus, maps, tables, diags.

An account of the history of the exploration and exploitation of the various sources of water supply of Maiduguri town and an assessment of their value. Information is given about the present water supply which is obtained from acquifers in the Chad Formation.

489. BARBER, W. M.

Pressure water in the Chad Formation of Bornu and Dikwa Emirates, North-Eastern Nigeria. Bull. geol. Surv. Nigeria. No.35, 1965. 138p. illus, maps, tables, diags.

An account of hydrogeological investigations carried out of that part of the Chad Basin lying in Bornu and Dikwa Emirates, North-Eastern State. Information collected in the past on pressure water in the Chad formation is examined. The geology of the area is discussed in relation to water supply. The results of chemical analyses of the water are presented and discussed.

490. BARBER, W. M.

Water supply for Bama town, Bornu Province; an investigation of water held in sediments adjacent to the River Yedseram near Bama. Rec. geol. Surv. Nigeria. Vol.7, 1964. pp.41-57. maps, tables, diags.

A study carried out to estimate available water supply for Bama town.

491. BRYCE, M. W.

Water supply. Ann. Rep. geol. Surv. Nigeria. 1944, pp.6-8. tables.

Describes work on well sinking with view to providing water, mainly in the six northern states of Nigeria.

492. CARTER, J. D. and BARBER, W. M.

The rise in the water-table in parts of Potiskum Division, Bornu Province. Rec. geol. Surv. Nigeria. 1956. pp.5-13. illus, maps, tables, diags.

A discussion on rises in the level of the water-table which have taken place in the central part of Potiskum since 1932. The physical features and the general geology of the area are briefly described.

493. CLARKE, F. E.

Preliminary study of water-well corrosion, Chad Basin, Nigeria. U.S. Geological Survey. Open-File report. 1965. 36p.

494. COCHRAN, H. A.

Katsina town water supply. Ann. Rep. geol. Surv. Nigeria. 1937, pp.10-13. map.

An account of well sinking operation in relation to water supply for the town. Some geological information of the area is indicated.

495. COCHRAN, H. A.

Technique and results of well-sinking. Ann. Rep. geol. Surv. Nigeria. 1930. pp.29-40. tables.

The report is concerned with the technical aspect of well sinking in relation to ground water supply based on work in Sokoto, Borno and Hadejia Emirates. The nature of the strata of the area is discussed.

496. COCHRAN, H. A.

The technique of well sinking in Nigeria. Bull. geol. Surv. Nigeria. No.16, 1937. 63p. maps, tables, diags.

Describes the method, the plant and equipment which had been specially designed for well sinking in the work of groundwater exploration in Nigeria by the Geological Survey.

497. COCHRAN, H. A.

Water supply, Sokoto Emirate. Ann. Rep. geol. Surv. Nigeria. 1931. pp.14-21.

498. COCHRAN, H. A.

Water supply, Sokoto Province. Ann. Rep. geol. Surv. Nigeria. 1933. pp.16-25. map, tables.

An account of water supply investigations and well sinking operations in various parts of Sokoto area during the year 1933. The results of the operations are tabulated.

499. COCHRAN, H. A.

Water supply, Sokoto Province. Ann. Rep. geol. Surv. Nigeria. 1934. pp.19-25. map, tables.

Gives reports on water supply operations in Sokoto area, with a concentration on the work in the "bush areas" during the year, 1934.

500. COCHRAN, H. A.

Water supply, Sokoto Emirate. Ann. Rep. geol. Surv. Nigeria. 1932. pp.14-25. map, tables.

Contains an account of water supply schemes in various parts of the Emirate during the year 1932.

501. DOW, W. A. and BRYCE, M. W.

Water supply. Ann. Rep. geol. Surv. Nigeria. 1945. pp.30-44. tables.

Contains reports of water supply activities of the Geological Survey Department for the period. A summary of wells sunk in Kano, Katsina, Zaria, Bornu, Bauchi and Sokoto areas is presented in a tabular form.

502. DU PREEZ, J. W. and BARBER, W. M.

The distribution and chemical quality of groundwater in Northern Nigeria. Bull. geol. Surv. Nigeria. No.36, 1965. 93p. maps, tables, diags.

Gives a summary of the results of groundwater investigations which had been carried out in the Northern States by the Geological Survey of Nigeria. This includes information on the distribution and chemical quality of groundwater. A comprehensive data on the groundwater information are compiled. The geology is discussed in relation to the groundwater.

503. DU PREEZ, J. W.

Groundnut scheme, Bornu; water supply. Ann. Rep. geol. Surv. Nigeria. 1947. pp.29-34. map.

The groundnut scheme in Bornu Province, North Eastern State, is discussed in relation to underground water. A brief geological description of the area is given.

504. DU PREEZ, J. W.

Groundnut scheme, Kontagora; water supply. Ann. Rep. geol. Surv. Nigeria. 1947. pp.34-37. map.

Includes brief geological account of the area in relation to underground water.

505. DU PREEZ, J. W.

The hydrology of Gumel Emirate. Ann. Rep. geol. Surv. Nigeria. 1947. pp.24-29. map.

An account of a survey carried out of Gumel Emirate, Kano State during the year, 1947, in relation to the occurrence and distribution of the groundwater. The account contains descriptions of the physical features and the geology of the area. A detailed account of the hydrology of the area is given.

506. DU PREEZ, J. W. and RICHARDS, H. J.
The hydrology of Gumel Emirate, Kano Province. Rec. geol. Surv. Nigeria. 1955. pp.65-71. map, tables.

A summary of work carried out on the groundwater resources of Gumel Emirate, Kano State, with reference to the well-sinking programme began by the Geological Survey in 1933, and to later investigations. Chemical analyses of samples of water from some of the boreholes are given. A map of the water table is provided.

507. DU PREEZ, J. W.
The hydrology of Katsina town. Ann. Rep. geol. Surv. Nigeria. 1947. pp.38-43. map.

The topography, geology and hydrology of the area are described, with a map of the water table.

508. DU PREEZ, J. W.
Water supply and antrycide in Nigeria. Proc. Int. West Afr. Conf. 3rd. Ibadan, Nigeria, Dec. 1949. Lagos, Nigerian Museum, 1956. pp.235-243.

Discusses water supply conditions in Nigeria with respect to the geological control and in relation to cattle rearing development.

509. DU PREEZ, J. W.
The water supply of Katsina town. Rec. geol. Surv. Nigeria. 1955. pp.59-64. map, tables.

The author gives a description of the general hydrological conditions around Katsina town, making reference to previous work carried out with the object of providing and adequate water supply.

510. GROVE, A. T.

Land and population in Katsina Province. Kaduna, Govt. Printer, [1957]. ("The geology and relief of Katsina Province as they affect water supply and soils" pp.22-27).

In this part of the book an outline description of the geology of Katsina Province in relation to water supply and soil formation is given.

511. GROVE, A. T.

Land use and soil conservation in parts of Onitsha and Owerri Provinces. Bull. geol. Surv. Nigeria. No.21, 1951. illus. maps, tables, diags.

An outline of the geology, hydrology and water supply of the area is included.

512. HALL, J. W.

Water supply, Bornu Emirate. Ann. Rep. geol. Surv. Nigeria. 1934. pp.35-38. map. tables.

Gives an account of well-sinking operations carried out along the Ballo-Maiduguri road with view to providing supply of water in the area.

513. HALL, J. W.

Water supply, Katsina Emirate. Ann. Rep. geol. Surv. Nigeria. 1933. pp.25-28. map, tables.

Report on water supply operations during the year.

514. JONES, Brynmor.

The geology and water supply of Daura and Katsina Emirates. Ann. Rep. geol. Surv. Nigeria. 1933. pp.6-10. map.

Describes the geology of the areas in relation to underground water supply. A geological map of the areas is provided.

515. JONES, Brynmor.

The geology and water supply of northern Bornu and north-eastern Kano. Ann. Rep. geol. Surv. Nigeria. 1932. pp.6-12. tables.

A geological description of the Chad group of Tertiary sediments stretching from Kano through Gumel and Hadejia to Lake Chad in relation to water supply in the area.

516. JONES, Brynmor.

Water supply, Katsina Province, Katsina Emirate. Ann. Rep. geol. Surv. Nigeria. 1934. pp.30-32, map, table.

A report of well-sinking operations with view to providing water for the area. The results of the work are tabulated.

517. JONES, D. G.

The rise in the water-table in parts of Daura and Katsina Emirates, Katsina Province. Rec. geol. Surv. Nigeria. 1957. pp.24-28. maps, tables.

An account of investigation into the rise in the water-table in parts of Daura and Katsina areas. The physiography, geology and hydrology are presented.

518. LEDGER, D. C.

Recent hydrological changes in the Rima basin, Northern Nigeria. Geogrl. J. vol.127, Part 4, Dec. 1961. pp.477-487. maps, tables, diags.

Although the paper is largely devoted to discussing hydrological changes of the basin of river Rima in North-Western State, there is some information on the underlying geological structure of the basin, consisting of Pre-Cambrian and younger sedimentary rocks. A geological map of the basin is provided.

519. LONGRIDGE, T. W.

Water supply, Kano Province, Gumel Emirate. Ann. Rep. geol. Surv. Nigeria. 1934. pp.26-28. map, table.

Report on well-sinking operations to provide water in some parts of the Emirate.

520. MILLER, R. E. and others.

Availability of ground water in the Chad Basin of Borno and Dikwa Emirates, Northern Nigeria; a description for the general reador. By Raymond E. Miller, Richard H. Johnston, Jonathan A. I. Olowu [and others]. [Prepared cooperatively by the United States Geological Survey and the Geological Survey of Nigeria under the auspices of the United States Agency for International Development]. U.S. Geological Survey. Open-File Report. June 1965. 48p. maps, tables, diags.

This is a report on the findings of a joint study of ground water in the Chad Basin by the personnel of the Geological Survey of Nigeria and the United States Geological Survey with respect to the occurrence and availability of artesian and shallow water, based on available information.

521. MILLER, R. E. and others.

Ground-water hydrology of the Chad basin in Bornu and Dikwa Emirates, northeastern Nigeria, with special emphasis on the flow life of the artesian system. By R. E. Miller, R.H. Johnston, J.A. I. Olowu and [others]. U.S. Geological Survey. Water-Supply Paper 1957-I. Prepared in cooperation with the Geological Survey of Nigeria under the auspices of U.S.A.I.D. Washington, D.C., Government Printing Office, 1968.

An account of a project to evaluate the ground-water potential, particularly the flow life of the existing artesian boreholes, of the Chad Basin in Dikwa and Bornu Emirates of North-Eastern State. A geological account of the area in relation to water supply is given.

522. NIGERIA, BENUE PLATEAU STATE. [Ministry of Works and Surveys].

Master plan of water resources development. Maifa, Balasha & Jalon, 1970. 9+[11]p. maps.

Presents a summary and recommendations for the development of water resources in the state. Among the various aspects of the project dealt with is a summary of the geology. Maps of the hydrogeological groups, groundwater resources and geological sections are given.

523. [NIGERIA. Geological Survey]

Pressure water in the Chad Basin. Niger. Trade J. vol.7, No.4, Oct.-Dec. 1959. pp.147-150. illus, map, diag.

A description of the search for pressure water in the Nigerian sector of the Chad Basin in the North-Eastern State. The geology, geography and the history of the research and future plans are described.

524. NIGERIA, MID-WESTERN STATE. Ministry of Works and Transport.
Master plan for urban and rural water supply. Tel Aviv, Tahal (Water Planning), 1965. [210]p. maps, tables, diags.

Contains some geological account of the Mid-Western State of Nigeria in relation to underground water.

525. OGILBEE, W. and ANDERSON, H. R.
Exploratory drilling for ground water in western Sokoto Province, Nigeria, with particular reference to artesian aquifers in the Gwandu formation. Prepared cooperatively by the United States Geological Survey and the Geological Survey of Nigeria under the auspices of the United States Agency for International Development. [Washington D.C., U.S.A.I.D.], 1965. 96p. maps, tables, diags.

A report on the results of ground water investigations in Sokoto area, North-Western State to evaluate the resources and characteristics of the water. The report includes investigations of Gwandu formation to explore its water yielding capacity. Some geological information as well as the chemical quality of the ground water are given.

526. PATTERSON, R.
Water supply, Hadejia Emirate. Ann. Rep. geol. Surv. Nigeria. 1931. pp.35-39.

527. PATTERSON, R.
Water supply, Hadejia Emirate. Ann. Rep. geol. Surv. Nigeria. 1932, pp.25-28. map, tables.

Contains accounts of well-sinking operations in parts of the Emirate during the year 1932.

528. PATTERSON, R.

Water supply, Northern Division, Kano Province. Ann. Rep. geol. Surv. Nigeria. 1933. pp.28-35. map, tables.

A report on well sinking operations in Hadejia, Gumel and Daura Emirates during the year 1933.

529. RAEBURN, Colin and JONES, Brynmor.

The Chad Basin; geology and water supply. Bull. geol. Surv. Nigeria. No.15, 1934. 61p. maps, tables, diags.

A description of the Nigerian sector of the Chad Basin, particularly of the portion lying between Kano and Lake Chad which includes part of Kano, Bornu and Bauchi former Provinces. The geology is described in relation to ground water supply.

530. RAEBURN, Colin.

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