PART IV: ADDITIONAL DATA SOURCES

45. Since it certainly would not be possible in this report to anticipate all of the needs for geologic information that will be encountered by the LMVD or its districts, pertinent sources of additional data are listed and discussed below. These include publications that were used in the compilation of this report and which are readily available. Periodicals and serials which frequently contain pertinent data are also listed and discussed.

Bibliographies and Indexes

46. The bibliographies and map indexes listed as references 268 through 312, Appendix A, apply either to the entire LMVD or to individual states. In almost all cases, the bibliographies include references to literature concerning all aspects of the field of geology and closely related fields. In very few cases, however, do any of the bibliographies contain annotations.

Federal Agency Publications

47. Excluding the CE and its design memorandums, the USGS is by far the largest single source of the geologic literature listed in this report. The USGS publishes bulletins, circulars, geologic folios, geologic quadrangle maps, hydrologic investigations atlases, professional papers, and water-supply papers. Additional data are frequently available in unpublished form in what are called open-file reports. Monthly and yearly listings of USGS publications are available, and an index covering the period 1879-1961 has been published.

48. The Soil Conservation Service of the USDA is the source of most of the county soil survey reports cited in this report. The monthly catalog of Government publications lists new reports as they are issued, and various indexes are available.

State Agency Publications

49. Each of the following state agencies has issued and is continuing to issue geologic publications for their respective states:
FOREWORD

This study was authorized in first indorsement, dated 12 June 1964, to letter from the Director, U. S. Army Engineer Waterways Experiment Station (WES), to the Division Engineer, U. S. Army Engineer Division, Lower Mississippi Valley (LMVD), dated 3 June 1964, subject "Status of Soils Division Projects for MRC and LMVD for FY 1964 and Request for Funds for Projects for FY 1965."

The compilation of the bibliography, annotation of the references, and preparation of the maps were accomplished by Messrs. R. T. Saucier and F. L. Smith of the Geology Branch, Soils Division, WES. This report was prepared by Mr. Saucier under the supervision of Dr. Charles R. Kolb and Mr. W. B. Steinriede, Jr., of the Geology Branch, Soils Division, and under the general supervision of Messrs. W. J. Turnbull and A. A. Maxwell, Chief and Assistant Chief, respectively, of the Soils Division.

Directors of the WES during the conduct of this study and the preparation of this report were Col. Alex G. Sutton, Jr., CE, and Col. John R. Oswalt, Jr., CE. Technical Director was Mr. J. B. Tiffany.
About 15 percent of the literature references are articles which appeared in the following major periodicals:

- American Association of Petroleum Geologists Bulletin
- Journal of Sedimentary Petrology
- Journal of Geology
- Transactions, Gulf Coast Association of Geological Societies
- Geological Society of America Bulletin
- Seismological Society of America Bulletin
- American Society of Civil Engineers Transactions
- Journal of Geology and the Geological Society of America Bulletin

Yne articles in the other journals generally are oriented toward a particular aspect or division of the field of geology. However, regardless of the orientation or specialization of the journal, occasional articles will be broad in content and will contain information of the types under consideration. Such is the case with the American Association of Petroleum Geologists Bulletin.

Occasionally, the transactions or journals of one of the following organizations also contain articles with pertinent geological data:

- Academy of Science of St. Louis
- Illinois Academy of Science
- Mississippi Academy of Science
- Tennessee Academy of Science

Regional and Topical Studies
Special Topical Studies
Guidebooks
Well Log Compilations

Reports Published in Series
Areal Study Reports
Site Investigation Reports

Bibliographies and Indexes
Federal Agency Publications
State Agency Publications
Theses
Periodicals

CONCLUDING REMARKS

LITERATURE NOT INDEXED ON MAPS
LITERATURE INDEXED ON MAPS
PLATES B1-B30
PART V: CONCLUDING REMARKS

56. Because of the large volume of geologic literature, it was necessary in this report to omit certain categories of geologic data which were considered to be largely not pertinent to engineering activities. Even within a pertinent category, it was frequently necessary to exclude references to older, shorter, or less well illustrated reports or articles. Consequently, because of this selectiveness, it is possible that one or more categories of data or types of reports have been omitted which may have value to one or more aspects of engineering practice.

57. It should also be pointed out that the manner of organization of the references and the techniques by which certain references are located on maps are not the only ones possible in a report of this type. Alternate methods of organization and presentation may well prove to be more useful.

58. Since a report of this type obviously becomes outdated within a few years and it is anticipated that revised or updated editions will be prepared, recipients of this report are requested, after having an opportunity to use or examine the report, to communicate to the WES suggestions that might help improve the content and format of future editions.

SUMMARY

Approximately 1000 references to published and unpublished items of geologic literature were selected as being pertinent to engineering problems experienced by the Lower Mississippi Valley Division (LMVD) and its districts. Annotations were prepared for about 600 of the references.

Literature concerning the entire area of the LMVD, large portions of the area, individual states, or special topical subjects is presented in Appendix A of the report. Literature pertaining to areas of county size or smaller is referenced and indexed on thirty 1:500,000-scale maps (Appendix B). Reports published in series, such as county geological bulletins, are differentiated from reports of areal studies and specific site investigations.

To facilitate finding references to additional publications, selected bibliographies and map and publication indexes are listed and various sources of geologic data are briefly discussed.
SELECTED GEOLOGIC LITERATURE

LOWER MISSISSIPPI VALLEY DIVISION AREA

INDEX AND ANNOTATED BIBLIOGRAPHY

PART I: INTRODUCTION

Purpose of Study

1. Within recent years the number of major construction projects in the Lower Mississippi Valley Division (LMVD) requiring extensive geological investigations has increased substantially. Moreover, the sophistication of engineering practice and techniques has led to the need for geological investigations for a wider range of design and construction activities. Thus, engineers and geologists in the LMVD and its districts are confronted with an increasing need for various types of geological information. Although special geological investigations are usually required to solve a specific problem, considerable pertinent background information or data almost always are present in the published literature.

2. The increasing need for geological information comes at a time when the field of geology itself is rapidly expanding and experiencing unprecedented diversification and specialization. The specialization in particular is manifested in the issuance of a large number of new periodicals and serials, many of which are little known and difficult to acquire. In general, production of geological literature of all types is increasing at a rapid rate.

3. The purpose of this report is to assist the division or district engineers and geologists by evaluating the existing body of geologic literature, by listing and indexing by area the more significant reports, maps, and related material, and by pointing out the primary sources of these data.

Scope

Corps of Engineers data needs

4. An analysis of the projects conducted by the LMVD and its
districts during the past decade revealed that geological data were used or could have been used in the following activities:

a. Selection of sites for construction projects.

b. Investigations of foundations for locks, dams, pumping stations, bridges, etc.

c. Planning for levee and channel locations or improvements.

d. Analysis of reservoirs, including determination of groundwater conditions, locations of mineral resources, etc.

e. Location of construction materials.

Selection of pertinent information

5. Information of the following types was selected as being pertinent to the data needs listed above:

a. Areal geologic maps.

b. Descriptions of the lithology (composition) of geologic formations.

c. Discussions of or cross sections showing stratigraphy (the thickness, location, and continuity of geologic formations).

d. Discussions of geologic structure (results of postdepositional movements), including data on faulting and earthquakes.

e. Locations and descriptions of mineral resources, particularly such resources as sand and gravel.

f. Data on occurrence and quality of groundwater.

g. Logs of borings and wells.

h. Descriptions of surficial soils.

i. Foundation investigations for engineering structures.

6. Because of the difficulty in locating and obtaining unpublished or manuscript data, these items were deliberately excluded from the bibliography with the exception of theses or dissertations prepared for advanced degrees, Corps of Engineers (CE) design memorandums, and reports prepared by the Geology Branch, Soils Division, U. S. Army Engineer Waterways Experiment Station (WES), for the IMWD or its districts. Moreover, the following additional types of information either were considered not
pertinent or were excluded for similar reasons:

a. Paleontological investigations.

b. Studies concerned primarily with the occurrence or production of petroleum.

c. Gazetteers, journals, and early geological accounts of a reconnaissance nature.

d. Groundwater investigations concerned only with deep aquifers.

e. Works superseded by later, more comprehensive (or more accessible) works on the same topic or area by the same writer.

f. Articles published in foreign languages or in obscure publications.

g. Abstracts of papers presented at association meetings.

Literature survey

7. Utilizing bibliographies, index guides, publication lists, periodical indexes, abstract journals, and bibliographies contained in individual publications, about 1500 references to literature of known or probable pertinence were assembled for evaluation, classification, and annotation. About 300 references, mostly to maps and to reports published in series, did not require annotating and were classified and located on the maps.

8. As a result of examining the literature available in the WES Research Center Library and that obtained on interlibrary loan, annotations were prepared for about 400 references and about 600 references were classified as not pertinent and were discarded.

9. The remaining 200 references were annotated and, when applicable, located on the maps during visits to several major university libraries. The visits were necessary primarily to examine materials such as theses and dissertations which were not available at WES and which could not be obtained on interlibrary loan.

Organization of Report

10. Geologic literature concerning the entire area of U. S. Army Engineer Districts, Memphis, New Orleans, St. Louis, and Vicksburg
The geology of the area is summarized concisely and well illustrated with maps, cross sections, and aerial photo mosaics. Sections devoted to Recent stratigraphy and sea-level changes and subsidence are included.

Murray, Grover E. , Geology of the Atlantic and Gulf Coastal Province of North America. Harper and Brothers, New York, N.Y., 1911, 92 pp. This is the most comprehensive report on the geology of the Gulf Coastal Plain. It contains sections devoted to physiography, structural geology, faults and fault systems, regional stratigraphy, mineral resources, and vegetation and soils. Over 1000 references are cited in the bibliography. Data on nomenclature and correlations of formations or units are good, but descriptions of lithology are brief and hard to follow.


Storm, L. W., "Resume of facts and opinions on sedimentation in the Gulf Coast region of Texas and Louisiana." American Association of Petroleum Geologists Bulletin, vol 29 (1945), pp 1304-1335. General discussions of the sedimentary processes currently operative in deltaic, near-shore, and continental shelf environments followed by evaluations of the processes as they were during Pleistocene and Tertiary times are included. Influences of such processes as sea-level changes, structure, and subsidence are evaluated.

PART II: PRESENTATION AND EVALUATION OF
LITERATURE NOT INDEXED ON MAPS

Regional and Topical Studies

General geologic investigation reports

14. References 1 through 31 in Appendix A, arranged alphabetically
by authors, pertain to works which apply to all or large portions of the
IMVD. The reports present either the general geology of the area, the
classification or occurrence of a particular feature such as groundwater, or the
description of a group of formations of a given age. Although the areal
coverage is broad, the information is not necessarily generalized; much of
the literature is in the form of large reports that contain detailed dis-
cussions of specific features and small areas.

State geologic reports

15. The content of the state geological reports (references 32-79,
Appendix A) is similar to that listed in paragraph 14; the areas involved
are individual states or large portions of states. The references under
this and the next three headings are listed by state and by date of pub-
lication. Publication dates are significant in that the earlier reports may
contain nomenclature that is out of date.

State geologic maps

16. Geologic maps at a scale of 1:500,000 are available for each of
the eight states in the IMVD (references 80-93, Appendix A). Where more
than one edition of a map has been published, reference to only the latest
edition is given. All maps are similar in basic format; each map contains
a legend and usually a columnar section or cross sections.

State soils reports and soils maps

17. The publications in this category (references 94-105, Appendix A)
vary widely in content but generally discuss the distribution and character
of agricultural soils. Geological data, engineering properties of soils,
and detailed soils maps are usually not included.

State water resources reports

18. The publications included in this group (references 106-132,
Appendix A) are limited to those publications concerning groundwater rather
than surface water. About 75 percent of the publications were prepared by either state geological surveys or the U. S. Geological Survey (USGS).

Although the content of the reports varies appreciably, all of the reports contain discussions of the location and character of the aquifers and the quality and levels of the water. Most of the reports also contain cross sections or columnar sections and logs of wells.

State mineral resources reports

19. Two general types of publications are included in this category: (a) reports on the nature and distribution of all or most of the various resources in a given state and (b) reports on the nature and statewide distribution of clays, sand and gravel, and building stones. Publications dealing with the nature or distribution of other individual mineral resources (e.g. iron ore, bauxite, cinnabar) and reports on mines and individual prospects were omitted because of their great number and because of their probable rather limited application to engineering problems (possibly only to reservoir analyses). References to this type of publication are usually contained in the more general literature referenced in Appendix A (references 133-187).

20. Since only the most recent publications have been included in this category, the references are listed by states and then authors rather than dates of publication.

Special Topical Studies

Earthquakes

21. Publications referenced in this category (references 188-205, Appendix A) concern regional earthquake frequency or occurrence or a particular earthquake, such as the New Madrid earthquake of 1811. Literature dealing exclusively with seismographic records and geophysical data are not included.

Loess

22. Most of the literature on loess in the Lower Mississippi Valley is concerned primarily with its origin; however, references 206 through 212, Appendix A, were selected because valuable data on the distribution, composition, and physical properties of loess are given.
Mineralogy and petrology

23. Although many geologic publications contain some data on mineralogy and petrology, references 213 through 239, Appendix A, are devoted almost exclusively to these subjects. In general, the purposes of the studies reported were to determine environments of deposition, to investigate sedimentary processes, or to facilitate stratigraphic correlations.

Guidebooks

24. Guidebooks are prepared for various purposes but most are prepared for field trips that accompany periodic (usually annual) meetings of state or national geological societies. Although formats vary widely, the typical guidebook contains a number of short review articles on topics relating to the subject of the trip or features to be seen on the trip as well as a detailed road log. A columnar section and sometimes cross sections or photographs are included.

25. Because of the varied nature of the information contained in the guidebooks and the difficulty experienced in obtaining the guidebooks (or references to them), no attempt has been made in most cases to reference individual articles either in the text or on the plates in this report. References 240 through 259, Appendix A, are to the more readily available guidebooks; all possible pertinent references are by no means included.

Well Log Compilations

26. Because of the importance of well logs and boring logs to engineering problems, special compilations of such data are listed as references 260 through 267, Appendix A. Geologic interpretations of the logs are included in some of the references.
PART III: PRESENTATION AND EVALUATION OF
LITERATURE INDEXED ON MAPS

Reports Published in Series

County geological bulletins and reports

27. Of the 47 bulletins and reports included in this group, about 85 percent were prepared by state geological surveys; the remainder were prepared by the USGS or as theses for graduate degrees at universities.

28. Almost without exception, a detailed geologic map, usually at a scale of 1:125,000 or larger and frequently printed in color, accompanies each bulletin. The contents of the bulletins are strikingly similar (i.e. sections devoted to descriptions of the physiography, stratigraphy, structure, and economic geology); however, certain series usually emphasize one aspect more than another. For example, the county geological reports prepared by the USGS emphasize groundwater resources, while the county bulletins prepared by the Mississippi Geological, Economic and Topographical Survey emphasize mineral resources.

Geologic quadrangle maps

29. Included in this category are publications which are or contain geologic maps of all or parts of either 1:62,500-scale (15' series) or 1:24,000-scale (7-1/2' series) quadrangles. The publications were prepared and published in four types: (a) theses prepared for graduate degrees (about 55 percent), (b) reports published by state geological surveys (about 25 percent), (c) maps in the USGS Geologic Quadrangle series (about 15 percent), and (d) USGS Geologic Folios (about 5 percent). Special-purpose quadrangle maps such as those prepared by WES showing the distribution of alluvial deposits are not included in this category but rather are indicated on the maps as areal studies.

30. Geologic maps of types (a) and (b) are restricted largely to the states of Illinois and Missouri, type (c) to Kentucky, and type (d) to Illinois. There are no geologic quadrangle maps of any type for Louisiana.

31. In regard to the degree of accuracy of the maps, the USGS publications are probably the most accurate, while the maps prepared for theses are probably the least accurate. This is considered to be primarily a
reflection of differences in the relative amounts of time and money spent by the different groups.

County groundwater resource bulletins

32. The geologic descriptions presented in these bulletins are moderately detailed; however, they are not as detailed as those in county geologic bulletins. When geologic maps are included, they are usually generalized and of a rather small scale. As would be expected, the greatest emphasis is placed on descriptions (both geologic and hydrologic) of the major aquifers. A columnar section and logs of selected wells are included in most bulletins.

33. About 40 percent of the groundwater resource bulletins were published by state geological surveys (particularly Arkansas), about 30 percent by other state agencies such as departments of public works and water commissions, and most of the remainder (30 percent) by the USGS (mostly as water-supply papers). Only minor differences in content or emphasis occur among the bulletins published by the different groups.

County mineral resource bulletins

34. Prepared primarily by the Mississippi Geological, Economic and Topographical Survey for various counties in the state, these bulletins are similar in content to the county geological bulletins prepared by the same survey. The major difference is largely in emphasis rather than in content or organization. Nearly all of the 14 bulletins included in this group contain a detailed geologic map at a scale of 1:125,000 or larger.

County soil survey reports

35. Over 90 percent of the reports in this category were published by either the Bureau of Soils (before about 1930) or the Soil Conservation Service (since about 1930) of the U. S. Department of Agriculture (USDA). The remainder of the reports were published mainly by state agricultural experiment stations.

36. For the purposes of this report, the USDA soil survey reports have been divided into two classes. The first class includes reports published since about 1930 which contain detailed soil maps or photomaps and in which the soil names and boundaries are in accord with present-day USDA standards. Most of these reports contain detailed soil descriptions,
including data on physical soil properties, and a section on engineering test data.

37. The second class of USDA soil survey reports includes reports published before about 1930 in which the maps are somewhat generalized and the soil classification is not entirely in accord with present-day correlation. Engineering data or physical soil property data normally are not included.

38. References to both classes of reports are presented on the reverse sides of plates B1-B30, but references to only the first class of reports are located and shown by a pattern on the plates.

Areal Study Reports

39. The reports included in this category vary widely in type but do not include items published in series. They have been indicated in two groups on the plates in this report. The first group includes reports which describe an area (usually 25 or more square miles) that cannot be accurately delineated or which was not precisely defined in the source. The areas are therefore not outlined on the plates but references to the reports are included on the reverse sides of the plates.

40. The second group of reports describes areas that can be accurately located on the plates and usually includes location maps. The limits of the studies are therefore outlined on the maps and are keyed by number to the appropriate references printed on the reverse side of the plates.

Site Investigation Reports

General studies

41. Reports of general site investigations are similar to those of the areal studies in that they include a variety of data, excluding those published in series. They differ from the areal studies chiefly because they concern either a specific location or an area of not over about 1 or 2 square miles. About 50 publications are included in this category; the locations are indicated on the plates by circled numbers and the
references appear on the reverse sides of the plates.

Corps of Engineers studies

42. This category includes (a) design memorandums issued by CE district offices or LMVD which include either geological discussions, logs of borings, or both, (b) reports prepared by the Geology Branch, Soils Division, WES, and (c) special geological studies conducted for the President, Mississippi River Commission (MRC), by Harold N. Fisk, Consultant, during the period 1941-1948.

43. The approximately 150 references in this category are presented on the plates in the same manner as those for general site investigations except that the symbol is a square rather than a circle. Although most of these reports are site investigations as defined in paragraph 41, a few reports which involve a linear feature such as a stretch of river or a canal are also included.

44. Only a limited number of copies of the reports in this category were issued and they were not widely circulated. However, the WES Research Center Library has copies of most of the reports, and they can be loaned to CE offices.
PART IV: ADDITIONAL DATA SOURCES

45. Since it certainly would not be possible in this report to anticipate all of the needs for geologic information that will be encountered by the LMWD or its districts, pertinent sources of additional data are listed and discussed below. These include publications that were used in the compilation of this report and which are readily available. Periodicals and serials which frequently contain pertinent data are also listed and discussed.

Bibliographies and Indexes

46. The bibliographies and map indexes listed as references 268 through 312, Appendix A, apply either to the entire LMWD or to individual states. In almost all cases, the bibliographies include references to literature concerning all aspects of the field of geology and closely related fields. In very few cases, however, do any of the bibliographies contain annotations.

Federal Agency Publications

47. Excluding the CE and its design memorandums, the USGS is by far the largest single source of the geologic literature listed in this report. The USGS publishes bulletins, circulars, geologic folios, geologic quadrangle maps, hydrologic investigations atlases, professional papers, and water-supply papers. Additional data are frequently available in unpublished form in what are called open-file reports. Monthly and yearly listings of USGS publications are available, and an index covering the period 1879-1961 has been published.

48. The Soil Conservation Service of the USDA is the source of most of the county soil survey reports cited in this report. The monthly catalog of Government publications lists new reports as they are issued, and various indexes are available.

State Agency Publications

49. Each of the following state agencies has issued and is continuing to issue geologic publications for their respective states:
Louisiana Department of Public Works, Baton Rouge, La.
Mississippi Geological, Economic and Topographical Survey, Jackson, Miss.
Mississippi State Board of Water Commissioners, Jackson, Miss.
Missouri Geological Survey and Water Resources, Rolla, Mo.
University of Texas, Bureau of Economic Geology, Austin, Tex.

50. Upon request, each of these agencies will furnish a publication list showing which reports are available and which are out of print. Moreover, most if not all of these agencies have extensive unpublished file data which normally can be examined in their offices.

**Theses**

51. Unpublished theses and dissertations for master's and doctor's degrees, respectively, comprise about 28 percent of the literature referenced in this report. Graduate students in Departments of Geology or equivalents at at least 15 major universities have investigated topics pertinent to or areas in the LMVD; the following universities have produced the largest volume of literature:

Washington University, St. Louis, Mo.
Missouri School of Mines and Metallurgy, Rolla, Mo.
University of Iowa, Iowa City, Iowa
University of Missouri, Columbia, Mo.
University of Illinois, Urbana, Ill.
Louisiana State University, Baton Rouge, La.

52. Although theses and dissertations are numerically significant, their comprehensiveness and quality usually are not of the same standards as formal USGS reports or state geological survey bulletins.
Periodicals

53. About 15 percent of the literature references are articles which appeared in the following major periodicals:

- American Association of Petroleum Geologists Bulletin
- Journal of Sedimentary Petrology
- Journal of Geology
- Transactions, Gulf Coast Association of Geological Societies
- Geological Society of America Bulletin
- Seismological Society of America Bulletin
- American Society of Civil Engineers Transactions

54. The Journal of Geology and the Geological Society of America Bulletin usually contain articles which might be described as applying to general geology; articles in the other journals generally are oriented toward a particular aspect or division of the field of geology. However, regardless of the orientation or specialization of the journal, occasional articles will be broad in content and will contain information of the types under consideration. Such is the case with the American Association of Petroleum Geologists Bulletin.

55. Occasionally, the transactions or journals of one of the following organizations also contain articles with pertinent geological data:

- Academy of Science of St. Louis
- Illinois Academy of Science
- Mississippi Academy of Science
- Tennessee Academy of Science
PART V: CONCLUDING REMARKS

56. Because of the large volume of geologic literature, it was necessary in this report to omit certain categories of geologic data which were considered to be largely not pertinent to engineering activities. Even within a pertinent category, it was frequently necessary to exclude references to older, shorter, or less well illustrated reports or articles. Consequently, because of this selectiveness, it is possible that one or more categories of data or types of reports have been omitted which may have value to one or more aspects of engineering practice.

57. It should also be pointed out that the manner of organization of the references and the techniques by which certain references are located on maps are not the only ones possible in a report of this type. Alternate methods of organization and presentation may well prove to be more useful.

58. Since a report of this type obviously becomes outdated within a few years and it is anticipated that revised or updated editions will be prepared, recipients of this report are requested, after having an opportunity to use or examine the report, to communicate to the WES suggestions that might help improve the content and format of future editions.
APPENDIX A

LITERATURE NOT INDEXED ON MAPS
General Geologic Investigation Reports


   Marine cyclic deposition and a classification of marine sedimentary cycles are discussed. The Midway-Wilcox, Cane River, Sparta, Cook Mountain, and Cockfield cycles are included in a series of isopachous maps.


   The major structural features of the Gulf Coast area, including flexures, faults, folds, and uplifts are discussed generally. Maps and cross sections are included.


   This article gives an up-to-date and valuable summary of the stratigraphy, structure, and physiography of the Mississippi Embayment. It contains fence diagrams, geologic sections, and structure maps.


   Although basically concerned with regional correlations, the report does contain data on the physiography of the Quaternary formations of the Gulf Coast area. Areal geologic maps and cross sections are included.


   This is probably the most comprehensive and most valuable report on the geology of the Lower Mississippi Valley from the standpoint of engineering. Hundreds of illustrations, cross sections of the valley, and a series of detailed maps showing the history of river migration are included.


   The origin, distribution, morphology, and engineering significance of backswamp deposits and abandoned channel deposits are reported in detail. Hundreds of cross sections and boring logs are included as are tabulations of physical properties of sediments.

This report contains geologic maps of various underseepage sites showing the position of abandoned channel fillings, distribution of swale and ridge accretion features, and other elements.


A number of previous works by the same author are summarized.


Concise discussions of the distribution of deltaic deposits, shape and thickness of the deltaic mass, major facies in the deltaic deposits, depositional history, and structural deformation accompanying deposition are presented. Maps, cross sections, and tables are included.


The importance of geologic information to the design of engineering structures is described. The various environments of alluvial deposition and the resulting soil formations relating to engineering problems are examined. Maps and block diagrams are included.


The topography, bedrock floor of the embayment, and character of the upland scarp and outcrops are discussed along with the distribution, lithology, structure, and origin of the major formations.

The geology of the area is summarized concisely and well illustrated with maps, cross sections, and aerial photo mosaics. Sections devoted to Recent stratigraphy and sea-level changes and subsidence are included.


This is the most comprehensive report on the geology of the Gulf Coastal Plain. It contains sections devoted to physiography, structural geology, faults and fault systems, regional stratigraphy, mineral resources, and vegetation and soils. Over 1000 references are cited in the bibliography. Data on nomenclature and correlations of formations or units are good, but descriptions of lithology are brief and hard to follow.


Gross geometry, patterns of sedimentation, depositional environments, and geologic history of the Gulfian sediments (Cretaceous) of the Upper Mississippi Embayment are considered.


The article is basically a paleogeographic study and contains paleogeographic, isostratigraphic, and lithofacies maps.


General discussions of the sedimentary processes currently operative in deltaic, near-shore, and continental shelf environments followed by evaluations of the processes as they were during Pleistocene and Tertiary times are included. Influences of such processes as sea-level changes, structure, and subsidence are evaluated.

The distribution and origin of late Mississippian cyclic sediments in the Illinois Basin are considered. Illustrations include cross sections, structure maps, and maps showing the thickness of various formations within the Chesterian series.


This history of the Mississippi Delta includes discussions of the definition of a delta, the extent of the deltaic plain, crevassing, distributaries, and sediments.


This article contains a brief résumé of the origin and characteristics of alluvial deposits and points out their influence on the design and construction of levees, revetments, etc.

25. U. S. Army Engineer Waterways Experiment Station, CE, Geological Investigation of Gravel Deposits in the Lower Mississippi Valley and Adjacent Uplands. Technical Memorandum No. 3-273, Vicksburg, Miss., 1949.

This discussion of the occurrence of gravels in Pleistocene terrace deposits and in the Recent floodplain deposits is illustrated by maps, numerous cross sections, and a list of operating sand and gravel producers. Data on physical and chemical properties of the gravels are also included.


The study is aimed at locating sources of rock for use as riprap for proposed engineering works. Report contains columnar sections, descriptions of quarries, and a geologic map.

27. U. S. Army Engineer Waterways Experiment Station, CE, Geological Investigation of Faulting in the Lower Mississippi Valley, by E. L. Krinitzsky. Technical Memorandum No. 3-311, Vicksburg, Miss., 1950.

Report contains discussions of the criteria for recognizing faulting in alluvial deposits, patterns of faulting, and the effects of faulting on engineering structures. A summary of the earthquake activity in the alluvial valley is included.
28. U. S. Army Engineer Waterways Experiment Station, CE, Air Photo Interpretation of Alluvial Soils in the Valley of the Lower Mississippi River and Their Engineering Significance. Miscellaneous Paper No. 3-181, Vicksburg, Miss., September 1956.

Descriptions of the major environments of deposition in the alluvial valley are illustrated by selected aerial photos of each type. Subsurface sections and a geologic map are included.

29. U. S. Army Engineer Waterways Experiment Station, CE, Investigation of Underseepage and Its Control, Lower Mississippi River Levees, by C. T. Mansur. Technical Memorandum No. 3-424, Vicksburg, Miss., 1956. (In two volumes.)

This is a large, comprehensive report covering all aspects of the problem. It contains a section on the influences of the geologic setting on underseepage and geologic descriptions of 16 sites in the alluvial valley. Volume 2 contains detailed geologic maps and cross sections.


A review of the geologic soil types in the Lower Mississippi Valley is presented. Backswamp and channel-filling deposits are emphasized. Detailed data from typical borings are presented and conclusions are drawn concerning the general character of the two types of deposits.


Sections of this report are devoted to the geographic and geologic setting of the alluvial aquifer, the hydrology of the alluvial aquifer, quality of water, and engineering applications. Volume 2 of the report contains piezometric surface and Tertiary surface contour maps on a quadrangle base.
Arkansas


Chapters of this report are devoted to the geologic occurrence of the igneous rocks, the literature pertaining to them, and the mineralogic, petrographic, and chemical characteristics of the rocks by regions. Except for a location map and several photos, the report is poorly illustrated.


Following a review of the literature and data on the nature of the underlying rocks, road cuts and outcrops are described for each major formation by counties. A rather poor and generalized geologic map is included.


This is a descriptive and well-illustrated account of the major formations in the area, with expanded sections covering special features such as faults, rapids, natural mounds, etc. Section on underground waters contains discussions of prospects by counties and detailed well and spring records.


This illustrated report contains short descriptions of the formations in the state and data on the nature and occurrence of mineral resources. Report does not contain a geologic map, sections, or logs of wells.


This article includes sections on general stratigraphy and brief discussion on formational units in the Paleozoic, Mesozoic, and Cenozoic systems. Cross sections and a columnar section are included.

Although much of this report is devoted to the ceramic properties of the clays and their utilization, localities are described and located and the stratigraphy and mineralogy of the clays are discussed in a separate chapter.

Illinois


A colored block diagram is presented with a brief description of the geology.


The physiographic divisions are located and described and related to glacial features and bedrock topography.


This is a comprehensive report on the bedrock topography, compiled to facilitate groundwater investigations. Detailed data on the physiographic division, bedrock valley systems, erosional history, and groundwater resources are given. Among the illustrations is a generalized geologic map of the state, a bedrock surface topographic map, and a map of preglacial drainage systems.


Faults, folds, dikes, sills, and diatremes are compiled on one map at a scale of 1:200,000.


The report presents detailed local and regional maps of sandstone thickness. Several types of sand bodies are recognized.

Kentucky


This is a study of the stratigraphy and topography of the area, including a generalized column, a list of fossil flora, and a correlation chart.
Clay is the chief mineral resource of the area. The geologic occurrence and various sections in the clay pits are described. Sand, gravel, chert, oil and gas, and groundwater are briefly mentioned.


A descriptive and well-illustrated account of the major formations in the area with expanded sections covering special features such as faults, rapids, natural mounds, etc., is presented. Section on underground waters contains discussions of prospects by counties and detailed well and spring records.


Detailed accounts of the physiography, stratigraphy, origin, and history of Pleistocene terraces in the central Gulf Coast area are given. Maps and cross sections are included.


This is the first publication concerning the recognition of four Pleistocene terraces in Louisiana according to the present nomenclature. It includes maps showing the extent of the four formations.


Report contains a general discussion of the distribution and causes of various stream patterns and how they can be used to help reconstruct the geologic history of an area.

Logs of wells used to identify and correlate Pleistocene formations in subsurface of south Louisiana are included. Cross sections and maps showing outcrops of formations are also included.

Mississippi


This is an excellent description of outcrops, but nomenclature and distribution of formations are largely out of date. Chemical analyses of soils and data on mineral resources are also included.


The descriptions of formations are brief and not as good as in later works; however, descriptions of sections and results of tests on clays and other materials may be of value.


Although many of the deposits described no longer are considered to be of Pliocene age, the descriptions are detailed and valuable. Numerous photographs and cross sections are included.


Sections on physiography, geologic history, stratigraphy, underground waters, mineral resources, and soils are included. Discussions are quite general and there are no maps, cross sections, etc.


Good discussions and descriptions of the physiographic regions of the state are included. The largest portion of the report is devoted to discussions of formations (stratigraphy). It contains additional sections on underground waters, mineral resources, and water powers. There is no detailed geologic map.


This study of the physiography, stratigraphic relations, lithology, paleontology, and economic products of the Midway and Wilcox groups of Mississippi contains descriptions of outcrops but no geologic map or sections.

Sections deal with physiography, stratigraphy, lithology, paleontology, soils, and depositional history. A geologic map and cross sections are included.


Concise and up-to-date descriptions of the stratigraphy of formations in the state ranging in age from Recent to Jurassic are illustrated by a structure map and cross sections but no geologic map.

Missouri


This is a comprehensive report covering all aspects of the subject, e.g. physiography, lithology, and distribution. It contains descriptions of sections, logs of wells, and a geologic map.


Most of this report is devoted to descriptions of the fauna; however, Chapter 1 contains accounts of the distribution and stratigraphic relations of the formations involved.


General discussions of the various members of the Kinderhook and Osage groups are included along with numerous descriptions of sections and lists of fauna.


The physiography and petrology of the structures are described and individual structures and their origins are discussed. Geologic maps are included.


This comprehensive study, containing sections on stratigraphic geology, structural geology, and economic geology is illustrated and contains an extensive bibliography.

The distribution, thickness, lithology, structure, age, and economic geology of the formation are described in detail. Measured sections and a geologic map are included.


In addition to descriptions of caves, both developed for tourism and undeveloped, there are discussions of cave origins, patterns, rates of growth, etc.


Concise discussions of the stratigraphy and lithology of the various series in the state are illustrated by a geologic map, a columnar section, an isopachous map of loess, and a map showing the limits of glaciation.

Tennessee


This is a comprehensive description and analysis of the physiography, stratigraphy, paleontology, structure, mineral resources, soils, etc., of Tennessee.


Stratigraphy and structure are summarized and illustrated by a sketch map of the major formations in the area.


Short descriptions of the stratigraphy are provided but the report is most valuable because of the sections showing electric-log correlations, isopachous maps, and structure maps.

Texas


This study of the geologic systems, structure, and underground water resources (by counties) contains well logs, chemical analyses of water, and a geologic map.


Sections of report are devoted to physiography, formational descriptions, geologic history, and economic mineral resources. Geologic maps, physiographic maps, and mineral location maps are included.


The lithology, stratigraphy, and structure of the formations are described chronologically. Numerous descriptions of outcrops and discussions of mineral resources are included.


This is a detailed account of the stratigraphy (by formations) with sections also devoted to geologic history. It includes a bibliography of Texas geology, well data, stratigraphic sections, geologic map, etc.


Although the report is primarily paleontological in nature, the areal distribution of the group by counties is discussed. No geologic map is included.


The portion of report devoted to structure contains descriptions of major structural features and a history of structural deformation. The portion devoted to economic geology includes data on metallic and nonmetallic minerals, construction materials, and water supplies.
State Geologic Maps

Arkansas

Illinois

Kentucky

Louisiana

Mississippi
86. Mississippi Geological Society, "Geologic map of Mississippi." 1:500,000, Jackson, Miss., 1945.

Missouri

Tennessee
Texas


State Soils Reports and Soils Maps

General


Arkansas


Illinois


After a discussion of the general character of the surface deposits and pedologic classification, typical soil conditions and engineering characteristics of soils are presented according to physiographic divisions. Profile descriptions and engineering properties of 47 soil types are contained in Appendix 1. Maps include surface deposits and soil associations.

Louisiana

97. Lytle, S. A., and Sturgis, M. B., "General soil areas and associated soil series groups of Louisiana." 1:750,000, Louisiana State Agricultural Experiment Station, Louisiana State University, Baton Rouge, La., 1962.

Mississippi


The geologic structure is summarized and the physiographic regions and their soils are described. Data on chemical analyses of soils are included but a soils map is not.


The report contains sections on physiography, geologic history, stratigraphy, underground waters, mineral resources, and soils. Discussions are quite general and there are no maps, cross sections, etc.

101. Vanderford, H. B., Soils of Mississippi. Mississippi Agricultural Experiment Station, Mississippi State University, State College, Miss., February 1962, 125 pp.

This report is primarily concerned with crop suitability of soils, but it does contain a list of all soil types giving their parent material, nature of topsoil, and nature of subsoil. It contains no detailed maps.

Missouri


Generalized soil boundaries are shown on a small-scale map and brief descriptions are given for the major soil areas.

Texas

105. Carter, W. T., The Soils of Texas. Texas Agricultural Experiment Station Bulletin No. 431, Agricultural and Mechanical College of Texas, College Station, Tex., 1931, 192 pp.
State Water Resources Reports

Arkansas


The occurrence of ground water in the state is discussed by physiographic region and by aquifer. Maps showing well yields and similar data are included with records of wells, but logs of wells are not included.

Illinois


The geologic conditions governing groundwater occurrence is summarized and illustrated by maps showing sand and gravel aquifers, bedrock aquifers, and undeveloped sources.


Geologic conditions governing groundwater occurrence are summarized and illustrated by maps showing sand and gravel aquifers, bedrock aquifers, and undeveloped sources.

Kentucky


The natural features, structure, and stratigraphy of the region are described and illustrated with a cross section and a columnar section. Discussions of the hydrology of various aquifers are included.

    Short discussions of the stratigraphy and structure are contained. Geologic maps, cross sections, a columnar section, a water-availability map, and structural contour maps are included.

Louisiana


    This is a concise summary of the geology of the area; it contains logs of wells and physiographic map of the state.


    These comprehensive discussions of the physiography of the area and formations of Tertiary and Quaternary age are illustrated by a geologic map, contours on various formations, cross sections, and logs of wells. All aspects of groundwater are discussed by reservoir.


    Brief discussions of the water-bearing characteristics of the various geologic units in the state are included and illustrated by generalized maps showing major structural features, salt domes, and locations of various aquifers. Tables contain chemical analyses of water.


Mississippi


    Report contains well logs (organized by counties), a colored geologic map, and generalized geologic sections.
The study is oriented toward classifying the sandstones and interpreting the tectonic conditions under which they were deposited. No geologic map is included.


Analyses of about 200 Recent sand samples from the rivers and beaches of the Gulf Coast states were made to determine the origin and major transportation paths of the sands.


About 200 Recent sand samples from Gulf Coast rivers and beaches were studied to determine the major transportation paths and to relate the textures and mineralogy of the sands to their depositional environments.


This is a detailed report including sections on stratigraphy and lithology, sedimentary structures, petrology, provenance, environments of deposition, and tectonics.


This integrated stratigraphic, paleontologic, and petrographic study shows the presence of three general environments of deposition for the Cretaceous and Tertiary.


This petrographic study involves the determination of the size, shape, and roundness of sand grains and their vertical and lateral variations. Origin and age of the sandstone are discussed.

Missouri


Data on geology and groundwater are presented by districts and counties. A geologic map, cross sections, logs of wells, and chemical analyses of water are included.


General descriptions of the springs with data on rates of flow are given.
Tennessee


The topography, surface and subsurface stratigraphy, structure, and water resources are described by counties, including discussions of depth to Paleozoic floor and the expression of New Madrid earthquake in the topography. Geologic map, index map, map of hydrostatic levels, cross sections, measured sections, plate of plotted sections, photographs, logs of wells, and analysis are included.


The geography, stratigraphy, structure, and water resources are described by counties, with discussions on ground water and the water supply of Memphis. A geologic map, columnar section, measured sections, cross sections, and logs of wells are included.


Texas


The geologic systems, structure, and underground water resources are discussed. Well logs, chemical analyses of water, and a geologic map are included.
State Mineral Resources Reports

Arkansas


The composition and properties, occurrence, history of development, and data on reserves for mineral fuels, metals, and nonmetallic minerals are discussed in a brief, illustrated report.


The character, origin, and distribution of clays are discussed by counties. A colored geologic map of the state is included.


The geology, occurrence, and extent of the clays in the Wilcox formation in south-central and southwestern Arkansas are indicated. The results of microscopic and X-ray diffraction studies and ceramic tests are given briefly, together with chemical analyses.


Among the deposits described are clays, shales, slates, silica deposits, limestones and dolomites, barite, gypsum, and several others. The variety and distribution of the deposits indicate extensive potential use.


The age, origin, and distribution of economically-important mineral resources of the area are discussed. A location map is included.

Although much of this report is devoted to the ceramic properties of the clays and their utilization, localities are described and located and the stratigraphy and mineralogy of the clays are discussed in a separate chapter.

**Illinois**


The chemical composition, refractoriness, size of grains, and other properties of 90 samples are reported.


This report basically describes the occurrence and character of the deposits but also includes data on origin, mining and processing, and uses.


Types of stone used and the nature of the quarrying industry are summarized and the building stone resources of the state are discussed by districts.


Sixty-six samples of Pennsylvanian clays that occur in the Spoon and Abbot formations were tested and their bonding and ceramic properties determined.


The locations and mineral and chemical compositions of sands in Alexander, Pulaski, and Massac Counties are described and shown on maps.

**Kentucky**

Clay is the chief mineral resource of the area. The geologic occurrence and various sections in the clay pits are described. Sand, gravel, chert, oil and gas, and groundwater are briefly mentioned.


Louisiana


Selected sample localities are described and results of laboratory tests are presented in tabular form.


Samples from numerous localities in the area are located and their logs given. Tables on general characteristics, working properties, drying properties, and burning properties of each sample are included.


Samples from numerous localities in the area are located and their logs given. Tables on general characteristics, working properties, drying properties, and burning properties of each sample are included.

Samples from numerous localities in the area are located and their logs given. Tables on general characteristics, working properties, drying properties, and burning properties of each sample are included.


Brief discussions of nature and petrology of gravels and sands and the industry involved are included and followed by descriptions of several hundred production localities.

Mississippi


The descriptions of formations are brief and not as good as in later works; however, descriptions of sections and results of tests on clays and other materials may be of value.


This report is a valuable discussion of the occurrence and production of sand and gravel, heavy minerals, salt, cement materials, dimension stone, and clays in the state. A list of active mineral producers and a resource area map are included.


Report contains chapters on origin and classification of clay, chemical and physical properties of clay, processes of clay manufacture, geology of Mississippi clays, and a discussion of the clays and clay industry by counties.


Brief accounts of the geology of the clay-bearing formations are given. Somewhat more detailed statements of the geology are included with discussions of the clays and clay industries by counties. No geologic map or cross sections are included.

    The major types of materials followed by descriptions of important localities by counties are summarized. Very little geologic data are included.


    Brief sections on physiography, geologic structure, and the types of structural materials concerned (limestone, sandstones, sand, and gravel) are included. Most of report is devoted to descriptions (by counties) of pits, quarries, and undeveloped deposits. It also contains sections on tests of samples.


    A brief geologic description of the Porters Creek clay and the Basic City claystone or siltstone is followed by discussions of their potential for use in aggregate manufacture.


    This report contains data on samples taken from 24 boreholes that were drilled in 1 Cretaceous, 7 Tertiary, 1 Pleistocene, and 1 Recent formation. Each formation is briefly described and located and the logs of the boreholes are included. A considerable portion of the report is devoted to the economics of the lightweight aggregate industry and to firing tests of the clays.


Missouri

An extensive report containing sections on the properties of stone, a list of areas from which stone for various uses can be obtained, and results of laboratory tests. Quarries are located on a geologic map of the state.


The major portion of this report is devoted to the distribution of sand and gravel by geological formations and districts. Included are data on thickness of formations, stratigraphic relations, structure, and favorable locations. Report is well illustrated with maps and photographs.


Detailed discussions of the lithology and stratigraphy of the northern and southern districts are included with sections devoted to origin of clays and physical and mineralogical characteristics. Report is well illustrated with geologic maps and cross sections.


In addition to extensive data on the physical, chemical, and ceramic properties, there is a section on the geologic occurrence of clays. A colored geologic map of the state is included.

Tennessee


Moderately detailed descriptions of the physiographic provinces of the state and the stratigraphy are followed by brief discussions of each of the major mineral resources (e.g. asphalt, barite, cement).


179. Gildersleeve, Benjamin, "Clays, of the Gulf Embayment region of Ten-
nessee and Kentucky." Proceedings of the Southeastern Mineral
Symposium 1950, edited by P. McGrain, Kentucky Geological Survey,

180. Hershey, Robert E., The High-Silica Resources of Tennessee. Ten-
nessee Division of Geology, Reports of Investigations No. 10,
This report contains notes on the geology of 8 formations
sampled and descriptions of 24 sample localities. Results of both
chemical and mechanical analyses are included.


182. Nelson, W. A., Clay Deposits of West Tennessee. Tennessee Geologi-
The geography, stratigraphy, occurrence, distribution, etc., of
clays, and the clay resources are described by counties in west Ten-
essee. Geologic map, index maps, cross sections, measured sections,
tables of results of tests, photographs, and analyses are included.

Survey Bulletin No. 49, Nashville, Tenn., 1940, 368 pp.
The chemical and physical properties of clay, the stratigraphy,
prospects of ceramic materials, including the bleaching clay and
lightweight aggregate possibilities of the Porters Creek clay are
described. A geologic map, cross sections, core logs, and laboratory
test results are included.

Texas

184. Nash, J. P., and others, Road-Building Materials in Texas. Univer-
sity of Texas Bureau of Economic Geology Bulletin 1839, Austin, Tex.,
1918, 159 pp.
Locations of pits or sites and results of laboratory tests are
presented for the state by counties. Little geologic data are
included.

185. Sellards, E. H., "Mineral resources of Texas." Texas Geological

186. Sellards, E. H., and Evans, G. L., Index to Mineral Resources of
Texas by Counties. Texas University Mineral Resources Circular 29,
Austin, Tex., 1944, 21 pp.
Occurrences are listed both by mineral type and by county.
County distribution maps are included.

A29

Separate papers by various authors describe specific mineral deposits in Texas or deal with subjects of interest in connection with the development of mineral resources. A mineral locality map is included.

A30
Earthquakes


The distribution, intensity, periodicity, and cause of earthquakes affecting Arkansas are discussed. A list of earthquakes affecting the Mississippi Valley region from 1811 to 1931 is included.


The earthquake, the geologic phenomena accompanying the earthquake, the evidences of origin, and the possibilities of a recurrence are discussed. A map of the distribution of the effects is included.


An excellent discussion of the nature of seismic activity in the various regions of the state is given, including the geologic settings of the regions and a chronological list of earthquakes in the state from 1816 to 1940.


The earthquake (intensity VI) occurred a few miles south of St. Louis, Missouri, and coincided with one of the largest floods in history of the Mississippi River. The evidence suggests an origin in a basement zone of transitional structure and a relation to epicenters of previous seismic activity. Whether there was any relation between the flood and the quake is not known.


The relation between water load in the alluvial valley and the frequency of earthquakes is discussed.


The article presents the historical account of the earthquake and its phenomena, citing landslide scars and craters in Obion County as still preserved in 1936. Topographic index map, photographs, and plotted section of loess are included.


Brief accounts of the earthquakes give data on the epicenter locations, intensities, and seismograph data.


Epicenter locations, intensities, and seismograph data are given.


Report includes a brief account of the earthquake and contains a map showing the area sensibly affected.


Earthquakes, faulting, warping, and subsidence are discussed and data are provided for specific examples.


Article describes the phenomena that accompanied the earthquake.
and associated artesian conditions. Three photographs, a cross section, and a regional geologic map with the location of flowing wells are included.


This account of the earthquake gives data on the epicenter location, the intensity, and seismograph records.
Loess


This article is an attempt to show by means of studies of the distribution, structure, age, mineralogy, and petrology that an aeolian origin for loess is untenable.


The results of analyses by X-ray diffraction, petrographic microscopy, or wet chemistry of 583 samples are included. Differences in mineral content reflect differences in source area.


Stratigraphic succession, eolian origin, distribution, composition, and other features of the Pleistocene loess deposits in both the upper and lower Mississippi Valley are discussed.


Article contains data on the distribution and physical characteristics of the loess but is mainly concerned with setting forth a new theory of loess formation.


Article contains descriptions of the better road cuts and outcrops.


Article is concerned primarily with the field and laboratory characteristics (e.g. mineral composition, mechanical composition) and the thickness of the loess.
Mineralogy and Petrology


The heavy mineral analyses and the possible mineral source areas of the sands of Tertiary and Quaternary systems of west Tennessee are discussed.


Seven heavy mineral zones are recognized and used as an aid in correlating the nonmarine subsurface sands.


The heavy mineral assemblages characterizing five mineral zones are described and the variation in mineral assemblage which occurs with depth is illustrated by well logs.


Results of a comparison of the petrologic and mechanical analyses of sediments from the modern delta and the abandoned St. Bernard delta are discussed.


The study is oriented toward classifying the sandstones and interpreting the tectonic conditions under which they were deposited. No geologic map is included.


Analyses of about 200 Recent sand samples from the rivers and beaches of the Gulf Coast states were made to determine the origin and major transportation paths of the sands.


About 200 Recent sand samples from Gulf Coast rivers and beaches were studied to determine the major transportation paths and to relate the textures and mineralogy of the sands to their depositional environments.


This is a detailed report including sections on stratigraphy and lithology, sedimentary structures, petrology, provenance, environments of deposition, and tectonics.


This integrated stratigraphic, paleontologic, and petrographic study shows the presence of three general environments of deposition for the Cretaceous and Tertiary.


This petrographic study involves the determination of the size, shape, and roundness of sand grains and their vertical and lateral variations. Origin and age of the sandstone are discussed.

The size distribution data are presented in histograms, tables, and distribution curves.


This article is primarily concerned with determining the effects of stream transportation on the mineral composition of the transported bed load.


This study was made to determine the source of the clastic materials, the sedimentary and tectonic environment, and the relation of the petrography to the sedimentary structure and stratigraphy.


The mineralogy, regional distribution, stratigraphic distribution, and granular variation of heavy minerals in Jacksonian sediments are discussed.


Samples from cores taken off the coast of Louisiana were studied by X-ray diffraction to obtain information on possible clay-mineral alteration in a marine environment.

235. U. S. Army Engineer Waterways Experiment Station, CE, *Comparison of Bed Materials from Mississippi River with Those of Certain Tributaries*. Technical Memorandum No. 92-1, Vicksburg, Miss., 1934.

This study was made to determine whether the bed materials of the Ohio, St. Francis, Arkansas, and White Rivers differ sufficiently from the bed material of the Mississippi to enable them to be distinguished.
236. U. S. Army Engineer Waterways Experiment Station, CE, Petrographic Character of Bed Materials from the Mississippi River, Cairo to the Gulf. Technical Memorandum No. 62-2, Vicksburg, Miss., January 1955.

This study was made to determine whether the action of the river upon its bed load causes a progressive change downstream in the mineral composition of the bed load.


Data on mineral-content analyses of the bed material of the Mississippi River and its tributaries are tabulated. Such factors as distribution of grain sizes, attrition of particles, and selective downstream sorting are discussed.


This is a study of the heavy mineral composition of sediments supplied by Gulf Coast streams as related to the distribution of heavy mineral suites on the continental shelf.


Changing patterns of alluvial plains, deltas, shore deposits, and several major changes in the direction of longshore drift and currents during the period of Holocene rise in sea level are recognized through a study of variations in heavy mineral assemblages.
Guidebooks

General


Arkansas


Illinois


247. Leighton, Morris M., Weller, J. M., and McQueen, H. S., "Guide to field studies between East St. Louis, Ill., Cape Girardeau, Mo.; Cape Girardeau, Mo., to Vienna, Ill., and return; Cape Girardeau and 'Embayment Missouri' areas; Cape Girardeau to St. Louis, Mo.; St. Louis to Rolla, Mo." Guidebook, 13th Annual Field Conference, Southwestern Illinois and Southeastern Missouri, August 30 to September 3, 1939, Kansas Geological Society (1939), pp 16-104.

Louisiana


250. Shreveport Geological Society, Tenth Annual Field Trip of the Shreveport Geological Society, July 8th and 9th, 1933, over the Oligocene and Eocene Jackson Formations of Caldwell and Catahoula Parishes. Louisiana, 1933.

Missouri


252. Association of Missouri Geologists, Seventh Annual Meeting, October 7 and 8, 1960, Middle Mississippian and Pennsylvanian Stratigraphy of St. Louis and St. Louis County, Missouri. Sponsored by the Department of Geology and Geological Engineering, Institute of Technology, St. Louis University, St. Louis, Mo., 1960, 13 pp.


257. Leighton, Morris M., Weller, J. M., and McQueen, H. S., "Guide to field studies between East St. Louis, Ill., Cape Girardeau, Mo.; Cape Girardeau, Mo., to Vienna, Ill., and return; to Cape Girardeau and 'Embayment Missouri' areas; Cape Girardeau to St. Louis, Mo.; St. Louis to Rolla, Mo." Guidebook, 13th Annual Field Conference, Southwestern Illinois and Southeastern Missouri, August 30 to September 3, 1939, Kansas Geological Society (1939), pp 16-104.

Tennessee


Features of geologic interest are located but not discussed; a few columnar sections are included.
Bibliographies and Indexes

General


285. U. S. Army Engineer Waterways Experiment Station, CE, Sources of Pertinent Geologic Data for Lower Mississippi Valley Division Engineers. Miscellaneous Paper No. 3-341, Vicksburg, Miss., June 1959. This report summarizes in ready-reference form the most pertinent geologic or engineering-soils maps available of the Lower Mississippi Valley and describes the types of engineering-soils data on file at the Waterways Experiment Station.


Arkansas


Illinois


Kentucky


Louisiana


Mississippi


Missouri


Tennessee


Texas


APPENDIX B

LITERATURE INDEXED ON MAPS
amp at a scale of about 1:50,000.

436 Fehrenbacher, J. B., and Farrar, St. Clair, Stuart, "Clay deposits are included. Illinois. pp 527-531. eastern Missouri of report is devoted to results of tests. Geologic Folio 185, Missouri Geological Survey and Experiment Station, Rolla, Mo., 1937, 92 pp.


711 Smith, R. S., and others, Marion County Soil. University of Illinois Agricultural Experiment Station Soil Report No. 34, Urbana, Ill., 1938.

774 Smith, R. S., and others, St. Clair County Soil. University of Illinois Agricultural Experiment Station Soil Report No. 40, Urbana, Ill., 1940.


438. This geologic description of the county includes a geologic map, cross sections, descriptions of several sections, and logs of boreholes.


LITERATURE LOCATED ON MAP


438. This geologic description of the county includes a geologic map, cross sections, descriptions of several sections, and logs of boreholes.


LITERATURE NOT LOCATED ON MAP


Hydrography and topography are briefly summarized and followed by detailed discussions of outcrops and sections. The geologic history of the ridge and economic geology also are mentioned.


Report contains a list of sample locations and a paragraph on general geology; remainder of report is devoted to results of tests.


Concise discussions of the distribution, thickness, lithology, and paleontology of the Cretaceous and Tertiary formations are included with a columnar section but no geologic map.


A stratigraphic summary of the area is followed by discussions of the structure, economic geology, and groundwater conditions. Logs of numerous water wells, detailed geologic maps, and structure maps are included.


Report contains brief discussions of the physiography and geology of the area but is primarily concerned with the origin of the lowlands. No geologic map is included.


This lengthy discussion of the physiography and geologic history of the area contains detailed geologic and physiographic maps and photographs.


This general discussion of the geology and hydrology of the area includes a generalized lithologic section and geologic map.


Most aspects of the geology of a 22-county area in northeastern Arkansas are covered. A geologic map, logs of wells, descriptions of outcrops, and separate sections on the physiography, geology, and water resources of each county are included.


A very brief account of the relief, drainage, and certain special physiographic features of the area is given.

LITERATURE NOT LOCATED ON MAP


The formation is discussed generally, and the results of a petrographic study made to determine the modes of origin of the formations are given.


This general discussion of the geology and hydrology of the area includes a generalized lithologic section and geologic map.
literature located on map


LITERATURE LOCATED ON MAP


LITERATURE NOT LOCATED ON MAP


744 Schneider, Robert, and Blankenship, R. R., "Subsurface geologic cross section from Claybrook, Madison County, to Memphis, Shelby County, Tennessee." Tennessee Division of Geology, Miscellaneous Chart No. 1, 1950. In addition to the cross section, a generalized columnar section is shown together with descriptive data on the formations, groundwater levels, and wells. Chemical analyses of water from several wells are also given.


1012 Whitlatch, G. I., Light-Weight Product Possibilities of the Porters Creek Clay of West Tennessee. Tennessee Division of Geology, Resources of Tennessee, 2nd Series, No. 1, 1937, 26 pp. The distribution, ceramic properties, and possibilities of the clay for light-weight ceramic products are discussed. Index-geologic map and tables of results of tests are included.


Fisk, Harold N., Preliminary Geological Investigation of the Rockport Damsite, Ouachita River, Arkansas, Report No. 1, U. S. Army Engineer Waterways Experiment Station, Vicksburg, Miss., 1942.


Fisk, Harold N., Preliminary Geological Investigation of the Rockport Damsite, Ouachita River, Arkansas, Report No. 1, U. S. Army Engineer Waterways Experiment Station, Vicksburg, Miss., 1942.


Fisk, Harold N., Preliminary Geological Investigation of the Rockport Damsite, Ouachita River, Arkansas, Report No. 1, U. S. Army Engineer Waterways Experiment Station, Vicksburg, Miss., 1942.


This detailed account of the physiography, stratigraphy, structure, historical geology, and

This study of the origin, character, and distribution of deposits in the area of the Arkabutla Headwater Flood Control Project, McKinney Bayou, General Design Memorandum No. 1. Vicksburg, Miss., February 1959, 62 pp.

This discussion of several aquifers of Tertiary and Quaternary age, includes data on
derived groundwater potential and the occurrence of high water levels. A geologic map, structure maps, and detailed lithologic sections are included.

Areal studies of the geology of the Cretaceous formations were made
in the Yazoo River Basin, Mississippi, Yazoo Headwater Flood Control Project, Station, Tallahatchie, Mississippi. Department of Agriculture, Bulletin No. 3-480, Vicksburg, Miss., 1958. 957 pp.

The physiography and geologic conditions affecting the occurrence of ground
water include data on occurrence, utility, and storage of ground water. A geologic map, physiographic map, and test holes are included.

Most aspects of the geology of a 22-county area in northeastern Arkansas are covered.
A geologic map, logs of wells, piezometric surface maps, and hydrographs are included.

Areal studies of the geology of the Cretaceous formations were made
in the Yazoo River Basin, Mississippi, Yazoo Headwater Flood Control Project, Station, Tallahatchie, Mississippi. Department of Agriculture, Bulletin No. 3-480, Vicksburg, Miss., 1958. 957 pp.

The major geologic formations are discussed. A stratigraphic column, geologic map, and structure maps, detailed geologic cross sections, and test holes are included.

Astronomical and subsurface features of the area and their relation to the occurrence of underseepage
are investigated. A geologic map, but no cross sections, is included.

Underseepage
is investigated. A geologic map, but no cross sections, is included.

The physiography and geologic conditions affecting the occurrence of ground
water include data on occurrence, utility, and storage of ground water. A geologic map, physiographic map, and test holes are included.

Most aspects of the geology of a 22-county area in northeastern Arkansas are covered.
A geologic map, logs of wells, piezometric surface maps, and hydrographs are included.
LITERATURE LOCATED IN MAP


LITERATURE LOCATED ON MAP

423 Chaffin, Bruce F., and others, "The geologic and ground water resources of a part of Webster, Ouachita, and Dallas counties, Arkansas," Arkansas Geological Survey Bulletin 83, 1948.
429 Chaffin, Bruce F., and others, "The geologic and ground water resources of a part of Webster, Ouachita, and Dallas counties, Arkansas," Arkansas Geological Survey Bulletin 83, 1948.
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The geology and ground water are part of western Kentucky and are described. Included are an extensive clay layer and two general geology and aquifer sections.


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Ground water occurs in the Wilcox group, Carrizo sand, and Mount Selman formation, all of Eocene age. The strata and structure are described briefly.


This comprehensive account of the geology of the area includes sections on physiography, stratigraphy, structure, and petroleum geology. Detailed geologic maps, cross sections, photographs, and lists of wells are included.


The stratigraphy and structure of the area are discussed in only very general terms; however, the lithology, water-bearing characteristics, and water quality of the major aquifers are presented in more detail. Cross sections, but no geologic map, are included.


The report evaluates the quantity and quality of the surface-water and ground-water resources of the parish and discusses the problems associated with the use of water from the Sabine River. It contains sections on physical characteristics, geology, climate, and natural resources of the basin. Available data on streamflow, water levels, and temperature and chemical quality of water are tabulated.

906 U.S. Army Engineer Lower Mississippi Valley Division, CE, Ferrell's Bridge Dam and Reservoir, Design Memorandum No. 3 (Detailed Design of Embankment, Outlet Structures, and Spillway, Geology of the Site, Investigation for Construction Materials, Including Concrete Aggregates, and Stream Diversion During Construction). Vicksburg, Miss., May 1953.

929 U.S. Army Engineer Waterways Experiment Station, CE, Preliminary Geological Investigation, Ferrell's Bridge Dam Site, Cypress Creek, Marion County, Texas. Vicksburg, Miss., March 1948 (unpublished).

The physiography, stratigraphy, and structure of the damsite area are reported with emphasis on foundation conditions and sources of construction materials. Maps and cross sections are included.


LITERATURE NOT LOCATED ON MAP


The presence and age of an anticline are discussed and an areal geologic map, surface structure map, subsurface structure map, and cross sections are included.


This cross section traverses portions of south Arkansas, northwest Louisiana, and east Texas, in a direction from northeast to southwest. It gives the writers' interpretation of the stratigraphy and structure of the area along the line of traverse and shows the changes in the lithology of various formations downdip from the surface or buried outcrops. Section is moderately detailed.


The physiography, stratigraphy, lithology, history, and structure of the area are discussed and illustrated with an areal geologic map, a correlation chart, and cross sections.
The physiography, stratigraphy, lithology, and structure of the area are briefly discussed. Cross sections, but no geologic map, are included.

This detailed discussion of the physiography, stratigraphy, structure, salt domes, and economic resources of the parishes contains detailed geologic maps, cross sections, columnar sections, photographs, etc.

The reports contain detailed discussions of the physiography, stratigraphy, structure, salt domes, and economic resources of the parishes. Cross sections, but no geologic map, are included.

The geologic history, and geologic-engineering considerations. Maps show the areal distribution of the geologic units, cross sections, and photographs are also included.

The geologic facies in the area are described and shown in cross sections. Water levels, histories of development, and water quality are discussed by formations or groups.

This short paper includes illustrations of the fault patterns in the Naborton area. The geologic history, and geologic-engineering considerations. Maps show the areal distribution of the geologic units, cross sections, and photographs are also included.

This detailed discussion, includes sections on physiography, stratigraphy, and economic resources of the parish and discusses the problems associated with the use of water resources.

The geology along the Ouachita River, Arkansas and Louisiana, Nine-Foot Navigation Project, Design Memorandum No. 5, Availability of Construction Materials for Columbia and Jonesville Locks and Spears Dam, Ouachita River, Louisiana, by R. T. Page, Leland V., and DeSoto, Roy, Jr., Ground-Water Resources of the Red River, La., 1947, 47 pp., soil maps, tables of well data, a plotted log, soil and sheet of well locations, and analyses are included.

This detailed discussion, includes sections on physiography, stratigraphy, structure, salt domes, and economic resources of the parishes contains detailed geologic maps, cross sections, columnar sections, photographs, etc.
The stratigraphy and structure in relation to dependable ground-water supply.

The nature, thickness, and distribution of various deposits in the area are discussed. Data on ground-water occurrence, water quality, and public and industrial water supplies of Hinds County, Mississippi, are included.

Investigations. Vicksburg, Miss., July 1953.

Geology of the Proposed Lower City Drainage Channel, Vicksburg, Miss., August 1964.

This detailed account of the geomorphology, stratigraphy, structure, and economic potential of the Mississippi River, with special reference to the proposed lower city drainage channel, is concerned with the geologic conditions governing the design of the project.

893 Morse, W. A., Geology of the Jackson Area, Mississippi. Board of Water Commissioners, Jackson, Miss., March 1962, 7 pp.


956 U.S. Army Engineer Waterways Experiment Station, GE, "Geology of the Mississippi River Deltaic Plain." Distribution of Soils Bordering the River is mapped with special regard to engineering significance. The subsurface disposition of depositional environments and their associated processes active within various environments of deposition, the soil types associated with each, their distribution, and their physical properties are described, graphically shown on 34 subsurface profiles. Physical characteristics of the soil types are summarized and the effects of geologic actors on river migration are discussed.

958 U.S. Army Engineer Waterways Experiment Station, CE, "Geology of the Mississippi River from Donaldsonville to Head of Passes." Distribution of soils bordering the river is mapped with special regard to engineering significance. The subsurface disposition of depositional environments and their associated processes active within various environments of deposition, the soil types associated with each, their distribution, and their physical properties are described, graphically shown on 34 subsurface profiles. Physical characteristics of the soil types are summarized and the effects of geologic actors on river migration are discussed.

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This is a plan view of the Gulf of Mexico showing the location of Port Arthur, Texas. The map includes a legend for references and a scale in miles. For locations of maps and scale in miles, see reverse side of plate.
LITERATURE LOCATED ON MAP

This detailed description of the geology and hydrology of the Cary area and vicinity contains a geologic map, cross sections, structure maps, logs of borings, and hydrologic data.

This detailed description contains cross sections, structure maps, geologic maps, and borehole logs of the geological features along the Mississippi River.

The hydrogeology, geology, and geohydrology of the Lower Mississippi Valley are discussed in detail. A geologic and hydrologic map and borehole logs are included. A section of the report is devoted to water resources.

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977. Van Lopik, J. R., Recent Geology and Geomorphic History of Central Coastal Louisiana. Louisiana State University, Coastal Studies Institute Technical Report No.7, Baton Rouge, La., 1955, 89 pp. Sections of report are devoted to physiography, hydrography, geologic history, and to modern conditions such as shoreline fluctuations. A physiographic map, photographs, and maps showing abandoned distributary systems are included.


LITERATURE LOCATED ON MAP


ciabi, L. T., "Areal variations of calcium carbonate and heavy minerals in Barataria

762 Relations between the distributions of the two types of material are discussed and por­


This detailed discussion of the physiography, stratigraphy, structure, well access, and


26 pp (unpublished)." 

This intensive sedimentological study of samples from six borings made to test the use of

476 Fisk, Harold N., "Nearsurface sediments of the continental shelf off Louisiana." Reprint

412 Hilgard, Eugene W., and Hopkins, F. V., "Sediments of the New

480 This detailed study contains sections on the shallow shelf sedimentology, paleoceanography, the

420 Appendix W2 (1874), pp 855-890.

The cyclic repetition of detrital and nondetrital deposition about deltaic lobes is dis­


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The surface and shallow subsurface geologic conditions at several sites near Columbus, La., are illustrated by a geologic map, cross sections, and logs of borings.

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This short paper includes illustrations of the fault patterns in the Sabine area.


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371 Caldwell, L. T., "Areal variations of calcium carbonate and heavy minerals in Barataria

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This short paper includes illustrations of the fault patterns in the Sabine area.

A brief account of the geologic history of the area is followed by detailed discussions of the depositional types as revealed by borings. Maps and cross sections are included.


The processes active within various environments of deposition, the soil types associated with each, their distribution, and their physical properties are described, graphically illustrated, and/or delineated on maps and cross sections. The problem of subsidence is discussed.

U. S. Army Engineer Waterways Experiment Station, CE, Distribution of Soils Bordering the Mississippi River from Donaldsonville to Head of Passes, by C. R. Kolb. Technical Report No. 3-601, Vicksburg, Miss., June 1962, 1 pp.

The distribution of soils bordering the river is mapped with special regard to engineering significance. The subsurface disposition of depositional environments and their associated soil types are shown on 34 subsurface profiles. Physical characteristics of the soil types are summarized and the effects of geologic factors on river migration are discussed.


A method for determining the sedimentary history of a stratigraphic section from depositional sequences is discussed. Models including data on lithology, sedimentary structures, geometry, etc., are presented for fluvial, deltaic, lacustrine, and other environments.


Locations of faults and salt domes are determined from wells.


The physiography and sedimentary history of the area and processes such as bar building, bifurcation, subsidence, and channel closing are discussed. Maps and cross sections are included.


Report contains logs of borings and pile test data, but very little geological material.


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Approximately 1000 references to published and unpublished items of geologic literature were selected as being pertinent to engineering problems experienced by the Lower Mississippi Valley Division (LMVD) and its districts. Annotations were prepared for about 600 of the references. Literature concerning the entire area of the LMVD, large portions of the area, individual states, or special topical subjects is presented in Appendix A of the report. Literature pertaining to areas of county size or smaller is referenced and indexed on thirty 1:500,000-scale maps (Appendix B). Reports published in series, such as county geological bulletins, are differentiated from reports of areal studies and specific site investigations.

To facilitate finding references to additional publications, selected bibliographies and map and publication indexes are listed and various sources of geologic data are briefly discussed.