

**ANNOTATED BIBLIOGRAPHY
OF
GEORGIA GEOLOGY
FROM 1960 THROUGH 1964**

by

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**STATE OF GEORGIA
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Joe D. Tanner, Commissioner**

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INTRODUCTION

This bibliography is a continuation of, and a supplement to, the Annotated bibliography of Georgia geology through 1959, published by the Georgia Department of Mines, Mining and Geology as Bulletin no. 79 of the Geological Survey in 1967. This bibliography contains annotations of not only those articles published about the geology of Georgia published between 1960 and 1964 but also those of earlier dates which were overlooked in the preparation of Bulletin 79.

The annotations and index pattern of this supplement are similar to those established for Bulletin 79 which were in turn modelled after those established in the Bibliography of North American geology, published by the U. S. Geological Survey.

Each article was read, annotated, and indexed by county, subject, and stratigraphic interval where applicable. In those cases where the area involved was larger than that of a county, subdivisions of the state, based upon physiographic provinces were employed. These subdivisions are outlined on Figure 1.

Theses from colleges and universities in the United States and elsewhere which include data about the state are included but are not annotated. Abstracts are not included if the full paper has appeared; abstracts are not annotated either. Biographies of authors of Georgia geology are also included but not annotated.

The assistance of the reference librarians of the Emory University library is gratefully acknowledged, as is the editorial assistance of Mr. Fazlur Rahman and Mrs. Gloria Smith Saunders.

Users are encouraged to notify the Director of the Department of Mines, Mining and Geology of any omissions in this bibliography or in Bulletin 79 so they can be included in later supplements.

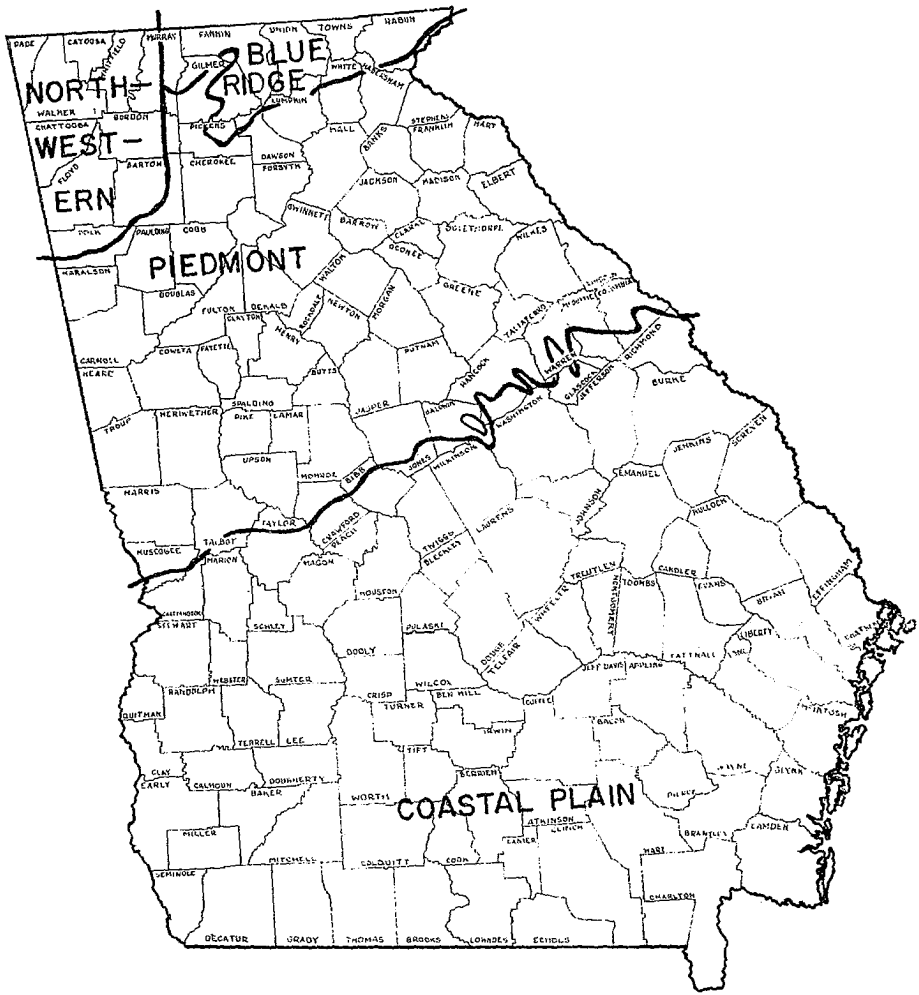


Figure 1. Subdivisions of Georgia used in this Bibliography

ABBREVIATIONS OF SERIALS CITED
IN THIS BIBLIOGRAPHY

- ALABAMA ACAD. SCI. JOUR.** Journal of the Alabama Academy of Science, published by the Academy from Birmingham, Alabama.
- ALABAMA GEOL. SURVEY BULL.; MAP; REPT. PROG.** Bulletin, Map, and Report of Progress of the Alabama Geological Survey, published by the Survey from University, Alabama.
- AM. ANTIQUITY.** American Antiquity, published by the Society for American Archeology from Menasha, Wisconsin.
- AM. ASSOC. PETROLEUM GEOLOGISTS BULL.** Bulletin of the American Association of Petroleum Geologists, published by the Association from Tulsa, Oklahoma.
- AM. CERAMIC SOC. BULL.; JOUR.** Bulletin and Journal of the American Ceramic Society, published by the Society from Easton, Pennsylvania.
- AM. GEOPHYSICAL UNION TRANS.** Transactions of the American Geophysical Union, published by the National Research Council for the Union from Washington, D. C.
- AM. INST. MINING ENGINEERS TRANS.** Transactions of the American Institute of Mining Engineers, published by the Institute from New York City, New York.
- AM. PHILOS. SOC. TRANS.** Transactions of the American Philosophical Society, published by the Society from Philadelphia, Pennsylvania.
- AM. PHYSICAL SOC. BULL.** Bulletin of the American Physical Society, published by the Society from Menasha, Wisconsin.
- AM. WATER WORKS ASSOC. SOUTHEASTERN DIV. JOUR.** Journal of the Southeastern Division of the American Water Works Association, published by the Division from various places.
- ASSOC. AM. GEOGRAPHERS ANNALS.** Annals of the Association of American Geographers, published by the Association from various places.
- ASSOC. AM. GEOGRAPHERS SOUTHEASTERN DIV. MEMO. FOLIO.** Memorandum Folio (mimeographed) of the Southeastern Division of the Association of American Geographers, published by the Division from various places.

- BULLS. AM. PALEONTOLOGY.** Bulletins of American Paleontology, published by the Paleontological Research Institute from Ithaca, New York.
- CARNEGIE INST. WASHINGTON PUB.** Publication of the Carnegie Institute of Washington, D. C., published by the Institute from Washington, D. C.
- CASTANEA.** Castanea, published by the Southern Appalachian Botanical Club from Morgantown, West Virginia.
- COMPASS.** The Compass of Sigma Gamma Epsilon, published by the Fraternity from Menasha, Wisconsin, and elsewhere.
- CONGLOMERATE.** The Conglomerate, published by the Michigan Mineralogical Society from Detroit, Michigan.
- CUSHMAN FOUND. FORAMINIFERAL RESEARCH CONTR.** Contributions from the Cushman Foundation for Foraminiferal Research, published for the Foundation by the Paleontological Research Institute from Ithaca, New York.
- DISSERT. ABS.** Dissertation Abstracts, published by the University of Michigan from Ann Arbor, Michigan.
- EARTHQUAKE NOTES.** Earthquake Notes, published by the Eastern Section of the Seismological Society of America from Washington, D. C.
- ECON. GEOLOGY.** Economic Geology, published by the Society of Economic Geologists from Lancaster, Pennsylvania.
- EVOLUTION.** Evolution, published by the Society for the Study of Evolution from Lancaster, Pennsylvania.
- FLORIDA GEOL. SURVEY BULL.; INF. CIRC.** Bulletin and Information Circular of the Florida Geological Survey, published by the Survey from Tallahassee, Florida.
- GEMS AND MINERALS.** Gems and Minerals, published commercially by numerous California mineral societies from Mentone, California.
- GEOCHIMICA ET COSMOCHIMICA ACTA.** Geochimica et Cosmochimica Acta, published by the Geochemical Society from London, England.
- GEOL. SOC. AMERICA BULL.; ENGINEERING GEOLOGY CASE HISTORIES; MEM.; PROC.; SPEC. PAPER.** Bulletin, Engineering Geology Case Histories, Memoirs, Proceedings, and Special Papers of the Geological Society of America,

- published by the Society from New York City, New York.
- GEOL. SOC. LONDON PROC.** Proceedings of the Geological Society of London, published by the Society from London, England.
- GEORGIA ACAD. SCI. BULL.** Bulletin of the Georgia Academy of Science, published by the Academy from Athens, Georgia.
- GEORGIA COASTAL PLAIN EXPER. STA. BULL.** Bulletin of the Georgia Coastal Plain Experiment Station, published by the Station from Athens, Georgia.
- GEORGIA GEOL. SURVEY BULL.; INF. CIRC.** Bulletin and Information Circular of the Georgia Geological Survey, published by the Georgia Department of Mines, Mining and Geology from Atlanta, Georgia.
- GEORGIA INST. TECHNOLOGY ENG. EXPER. STA. BULL.; SPEC. REPT.** Bulletin and Special Report of the Engineering Experiment Station of the Georgia Institute of Technology, published by the Institute from Atlanta, Georgia.
- GEORGIA MINERAL NEWSLETTER.** Georgia Mineral Newsletter, published by the Georgia Department of Mines, Mining and Geology from Atlanta, Georgia.
- GEORGIA SPELUNKER.** Georgia Spelunker, published by the Atlanta Grotto of the National Speleological Society from Atlanta, Georgia.
- GEOTIMES.** GeoTimes, published by the American Geological Institute from Washington, D. C.
- GROUND WATER.** Ground Water, published by the National Water Well Association from Urbana, Illinois.
- GULF COAST ASSOC. GEOL. SOCS. TRANS.** Transactions of the Gulf Coast Association of Geological Societies, published by the Association from various places.
- JOUR. GEOLOGY.** Journal of Geology, published by the University of Chicago from Chicago, Illinois.
- JOUR. GEOPHYSICAL RESEARCH.** Journal of Geophysical Research, published by the American Geophysical Union from Washington, D. C.
- JOUR. PALEONTOLOGY.** Journal of Paleontology, published by

the Paleontological Society, the Society of Economic Paleontologists and Mineralogists, and the Geological Society of America, from Menasha, Wisconsin.

JOUR. SED. PETROLOGY. Journal of Sedimentary Petrology, published by the Society of Economic Paleontologists and Mineralogists from Menasha, Wisconsin.

LAPIDARY JOUR. Lapidary Journal, published commercially from Los Angeles, California.

LILLOA. Lilloa, Revista de botanica, published by the Tucuman National University from Tucuman, Argentina.

METEORITICS. Meteoritics, published by the Meteoritical Society from Albuquerque, New Mexico.

MICROPALAEONTOLOGY. Micropaleontology, published by the American Museum of Natural History from New York City, New York.

MINING ENGINEERING. Mining Engineering, published by the American Institute of Mining, Metallurgical, and Petroleum Engineers from New York City, New York.

MISSISSIPPI GEOL., ECON., TOPOG. SURVEY BULL. Bulletin of the Mississippi Geological, Economic, and Topographic Survey, published by the Survey from Jackson, Mississippi.

NASHVILLE GROTTO SPELEONEUS. Nashville Grotto Speloneus, published by the Nashville Grotto of the National Speleological Society from Nashville, Tennessee.

NATL. ACAD. SCI. BIOG. MEM. Biographical Memoirs of the National Academy of Science, published by the Academy from Washington, D. C.

NATL. SPELEOL. SOC. NSS NEWS. National Speleological Society, NSS News, published by the Society from Washington, D. C.

NATURE. Nature, published commercially from London, England.

NAUTILUS. Nautilus, published commercially from Boston, Massachusetts.

NETHERWORLD NEWS. Netherworld News, published by the Pittsburgh Grotto of the National Speleological Society from Pittsburgh, Pennsylvania.

NEW YORK ACAD. SCI. ANNALS. Annals of the New York

Academy of Science, published by the Academy from various places.

NORTH CAROLINA DEPT. CONSERV. AND DEVEL. DIV. MINERAL RESOURCES BULL. Bulletin of the Division of Mineral Resources of the North Carolina Department of Conservation and Development, published by the Department from Raleigh, North Carolina.

PALAEONTOGRAPHICA, ABT. B. Palaeontographica, Abt. B, Palaeophytologia, published commercially by E. Schweizerbartsche from Stuttgart, Germany.

PROF. GEOGRAPHER. The Professional Geographer, published by the Association of American Geographers from Hamilton, New York.

RADIOCARBON. Radiocarbon, published by Yale University from New Haven, Connecticut.

RHODORA. Rhodora, published by the New England Botanical Club from Boston, Massachusetts.

SCIENCE. Science, published by the American Association for the Advancement of Science from New York City, New York.

SCIENTIFIC MONTHLY. Scientific Monthly, published commercially from New York City, New York.

SMITHSONIAN INST. ANN. REPT. Annual report of the Smithsonian Institution, published by the Institution from Washington, D. C.

SMITHSONIAN MISC. COLLNS. Smithsonian Miscellaneous Collections, published by the Smithsonian Institution from Washington, D. C.

SOC. VERTEBRATE PALEONTOLOGY NEWS BULL. News Bulletin of the Society of Vertebrate Paleontology, published by the Society from various places.

SOIL SCIENCE. Soil Science, published commercially from Baltimore, Maryland.

SOUTH CAROLINA ACAD. SCI. BULL. Bulletin of the South Carolina Academy of Science, published by the Academy from Columbia, South Carolina.

SOUTH CAROLINA DEVEL. BOARD DIV. GEOLOGY, GEOLOGY NOTES. South Carolina Development Board, Division of

Geology, Geology Notes, published by the Division from Columbia, South Carolina.

SOUTHEASTERN GEOLOGY. Southeastern Geology, published by Duke University from Durham, North Carolina.

SOUTHWESTERN LOUISIANA JOUR. Southwestern Louisiana Journal, published by the Southwestern Louisiana Institute from Lafayette, Louisiana.

SPELEO DIGEST. Speleo Digest, published by members of the Pittsburgh Grotto of the National Speleological Society from Pittsburgh, Pennsylvania.

SYSTEMATIC ZOOLOGY. Systematic Zoology, published by the Society of Systematic Zoology from Washington, D. C.

TENNESSEE DIV. GEOLOGY REPT. INV. Report of Investigation of the Tennessee Division of Geology, published by the Division from Nashville, Tennessee.

TEXAS ARCHAEOLOGICAL SOC. BULL. Bulletin of the Texas Archaeological Society, published by the Society from various places.

TEXAS UNIV. BUR. ECON. GEOLOGY REPT. INV. Report of Investigation of the Bureau of Economic Geology of the University of Texas, published by the University from Austin, Texas.

TEXAS UNIV. PUB. Publications of the University of Texas, published by the University from Austin, Texas.

U. S. BUR. MINES INF. CIRC.; REPT. INV. Information Circulars and Reports of Investigation of the United States Bureau of Mines, published by the Bureau from Washington, D. C.

U. S. COAST AND GEOD. SURVEY TECH. BULL. Technical Bulletin of the United States Coast and Geodetic Survey, published by the Survey from Washington, D. C.

U. S. GEOL. SURVEY BULL.; GEOPHYS. INV. MAP; HYDROL. INVS. ATLAS; MINERAL INVS. RESOURCES MAP; MISC. GEOL. INVS. MAP; PROF. PAPER; REPTS. OPEN FILE; WATER-SUPPLY PAPER. Bulletin, Geophysical Investigation Map, Hydrologic Investigations Atlas, Mineral Investigations Resources Map, Miscellaneous Geological Investigations Map, Professional Paper, Reports Open File, and Water-Supply Paper of the United States

Geological Survey, published by the Survey from Washington, D. C.

UNIV. GEORGIA AGRIC. EXPER. STA. TECH. BULL. Technical Bulletin of the Agricultural Experiment Station of the University of Georgia, published by the Station from Athens, Georgia.

UNIV. GEORGIA COLLEGE EXPER. STA. BULL. Bulletin of the College Experiment Station of the University of Georgia, published by the College from Athens, Georgia.

VIRGINIA GEOL. SURVEY BULL. Bulletin of the Virginia Geological Survey, published by the Survey from Charlottesville, Virginia.

VIRGINIA POLYTECH. INST. DEPT. GEOL. SCIS. MEM. Memoir of the Department of Geological Sciences of Virginia Polytechnical Institute, published by the Institute from Blacksburg, Virginia.

WORLD OIL. World Oil, published commercially from Houston, Texas.

BIBLIOGRAPHY

ADAMS, EMMETT RAY.

1. (and Davis, David Chandler). Developments in southeastern states in 1961: Am. Assoc. Petroleum Geologists Bull., v. 46, no. 6, p. 953-958, illus., 1962. Two wells were drilled to the basement in Georgia. One, in Glynn County, was over 4,700 feet deep, and one in Brantley County was over 4,600 feet deep. Seven other wells are cited as having been drilled, but no information is included.

ADAMS, GEORGE IRVING, 1870-1932.

1. Hydrothermal origin of the barite in Alabama: Econ. Geology, v. 26, no. 5, p. 772-776, illus., 1931; reprinted in Barite deposits of Alabama: Alabama Geol. Survey Bull. 25, p. 13-16, illus., 1940. The presence of an intrusive rock in Floyd County, Georgia is taken as evidence, in part, for the possible hydrothermal origin of the barite in nearby Alabama. The rock resembles a fine-grained dolomite.

ADAMS, JOHN ALLAN STEWART, 1926-

1. (and Richardson, Keith Allan). Thorium, uranium, and zirconium concentrations in bauxite [Floyd County]: Econ. Geology, v. 55, no. 8, p. 1653-1675, illus., 1960. Bauxite from Floyd County and many other places around the world is analyzed. The uranium and thorium content in all the samples is above the average U and Th content of the earth's crust. There is a relation between the bauxite and the parent rock as to the relative percentages of the elements.

ADAMS, JOHN WAGSTAFF, 1915- , see Olson, Jerry Chipman, 1.

ALMAND, CHARLES WILLIAM, 1934-

1. The geology of the Lumpkin Quadrangle, Stewart County, Georgia: M. S. Thesis, Emory Univ., 1961; [abs.]: Georgia Mineral Newsletter, v. 14, nos. 2-3, p. 73, 1961.

AMERICAN GEOPHYSICAL UNION

1. (and United States Geological Survey). Bouguer gravity

anomaly map of the United States . . . : Washington, D. C., U. S. Geol. Survey, scale 1:2,500,000, 2 sheets, 1964.

ANDERS, EDWARD, 1926- , *see also* Goles, Gordon George, 1.

1. Meteorite ages, *in* The moon, meteorites, and comets: Chicago, Illinois, Univ. Chicago Press, p. 402-495, illus., revised 1963; originally published 1962. Numerous references to Georgia meteorites are made, both in allusion to their terrestrial age (how long they have been on earth), cosmogenic age (how old they are), and other general chemical problems. The Sardis meteorite, of Jenkins County, is most often described in the analyses.

ANTOINE, JOHN WOODWORTH.

1. (and Henry, Vernon James, Jr.). Seismic refraction study of the shallow portion of the shelf off the Georgia coast [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 15, 1964.

APPLIN, ESTHER ENGLISH RICHARDS, 1895- , *see also* Cole, William Storrs, 1, 3.

1. A tropical sea in central Georgia [Coffee County] in late Oligocene time, *in* Geological Survey research 1960: U. S. Geol. Survey Prof. Paper 400-B, p. B207-B209, illus., 1960. Many specimens of *Miogypsina* from a well in Coffee County indicates a warm-water Oligocene sea in the area.
2. (and Applin, Paul Livingston). Logs of selected wells in the Coastal Plains of Georgia: Georgia Geol. Survey Bull. 74, 229 p., illus., 1964. Lithologic and paleontologic descriptions of 31 oil wells in the southern part of the Coastal Plain are included. Only Cretaceous rocks are described in most wells, but a few include descriptions of Eocene rocks.
3. Some middle Eocene, lower Eocene, and Paleocene foraminiferal faunas from west Florida: Cushman Found. Foraminiferal Research Contr., v. 15, pt. 2, p. 45-72, illus., 1964. Numerous references to rocks in the southern tier of Georgia counties are included in a discussion of the rocks and microfossils of the pre-Jackson Eocene and Paleocene rocks. Most of the material discussed is Paleocene. The so-called "Tamesi" fauna is well represented in the Clayton Limestone of Georgia.

APPLIN, PAUL LIVINGSTON, 1891- , *see* Applin, Esther
English Richards, 2.

ATCHISON, THOMAS CALVIN, JR., 1922-

1. (and Duvall, Wilbur Irving, and Pugliese, Joseph M.).
Effect of decoupling on explosion-generated strain pulses
in rock: U. S. Bur. Mines Rept. Inv. 6333, 49 p., illus.,
1964. Some of the tests were made in a quarry in Lithonia
Gneiss in DeKalb County. Various geophysical properties
of the rock were determined.

AVERITT, PAUL, 1908-

1. Coal reserves of the United States, January 1, 1960, *in*
Geological Survey research 1960: U. S. Geological Survey
Prof. Paper 400-B, p. B81-B82, 1960. Georgia has 76
million tons of bituminous coal remaining in the ground.
2. Coal reserves of the United States — a progress report
January 1, 1960: U. S. Geol. Survey Bull. 1136, 116 p.,
illus., 1961. A general discussion of the occurrence of coal
in the United States, and some of its chemical properties,
is followed by a summary of the reserves by state.
Georgia is thought to have had 100 million tons of coal
originally, of which 76 million remain.
3. [Memorial to] Alfred D[exter] Zapp [1916-1962]: Geol.
Soc. America Bull., v. 74, no. 7, p. P113, 1963.

BACK, WILLIAM, 1925- , *see* Hanshaw, Bruce Busser, 1

BAILEY, EDWARD BATTERSBY, 1881-1965.

1. Charles Lyell [Jr., 1797-1875]: Garden City, New York,
Doubleday and Company, 214 p., illus., 1963.

BAILEY, THOMAS LAVAL, 1897-

1. Parker Davies Trask (1899-1961): Am. Assoc. Petroleum
Geologist Bull., v. 46, no. 5, p. 714-717, port., 1962.

BAKER, GEORGE, *see* Cohen, Alvin Jerome, 2

BANNER, FREDERICK THOMAS, *see* Eames, F. E., 1

BARKER, FRANKLIN BRETT, 1923- , *see* Scott, Robert Clyde,

BARNES, HARRY HAWTHORNE, JR., 1925- , *see* Kilpatrick,

BARNES, VIRGIL EVERETT, 1903-

1. Tektite strewn fields, Chapter 2 in *Tektites*: Chicago, Illinois, Univ. Chicago Press, p. 25-50, illus., 1963. Fifteen tektites are known from Georgia, fourteen being from Dodge County and one from Irwin County. They are found in or on Miocene rocks, but could be reworked from Oligocene rocks nearby up-dip.

BASSETT, J. BARRY, 3d, see Crothers, Ronald W., 1

BATES, THOMAS FULCHER, 1917- , *see also* Hinckley, David Narwyn, 1.

1. Geology and mineralogy of the sedimentary kaolins of the southeastern United States — a review, in *Clays and clay minerals — Proceedings of the 12th Natl. conf. on clays and clay minerals*: New York, MacMillan Book Company (Internatl. Ser. Earth Sci. Mon. 19), p. 177-194, illus., 1964. A general review includes discussions about the distribution and occurrence of the commercial kaolin deposits along the Fall Line of Georgia. This is a summary of the results of sixty-five years of accumulated data.

BECKER, EDITH, see Durfor, Charles Norman, 1.

BEEBE, BYRON WARREN, 1913-

1. (and Cornell, Lee H.). Walter August Ver Wiebe (1887-1961): *Am. Assoc. Petroleum Geologists Bull.*, v. 46, no. 1, p. 131-133, port., 1962.

BELL, HENRY, 3d., 1923- , *see* Reed, John Calvin, Jr., 1.

BENTON, NATHAN HOKE, 1930- , *see* Whitlach, George Isaac, 1.

BERGENDAHL, MAXIMILIAN HILMAR, 1921- , *see* Koschman, Albert Herbert, 1.

BERRY, WILLIAM BENJAMIN NEWELL, 1931-

1. (and Boucot, Arthur James). Distribution of Silurian rocks in North America [abs.]: *Geol. Soc. America Spec. Paper* 73, p. 116, 1963.

BLACKWELDER, ELIOT, 1880-

1. Bailey Willis, 1857-1949: Natl. Acad. Sci. Biog. Mem., v. 35, p. 333-350, port., 1961.

BLAIR, BYRON EMERSON, 1920-

1. Physical properties of mine rock — part 3: U. S. Bur. Mines Rept. Inv. 5130, 69 p., illus., 1955. Lithonia Gneiss from DeKalb County is described petrographically as a typical example of a category in a proposed classification of rock based upon mining properties.

BLANCHARD, HARRY E., JR., *see also* Callahan, Joseph Thomas, 5.

1. Georgia, in Ground water levels in the United States, 1956-1958, southeastern states: U. S. Geol. Survey Water-Supply Paper 1538, p. 83-98, illus., 1962. Water levels, in feet below the land surface, are reported from many counties.

BLOW, WALTER HARRY, *see* Eames, Frank Evelyn, 1.

BOIS, PAUL J.

1. Large multiple beryl crystal found near Macon, Georgia: Lapidary Jour., v. 16, no. 5, p. 543, illus., 1962. Beryl-bearing pegmatites from an undisclosed location within the Oconee National Forest, near Hillsboro, are described in a popular account.

BONINI, WILLIAM EMORY, 1926-

1. (and Woollard, George Prior). Subsurface geology of North Carolina-South Carolina [and part of Georgia] Coastal Plain, from seismic data: Am. Assoc. Petroleum Geologists Bull., v. 44, no. 3, p. 298-315, illus., 1960. Velocity measurements are made on various Piedmont rock types, including some in eastern Georgia, to be used in tracing features in the subsurface of the Coastal Plain. The "Slate Series" has been recognized in Georgia near the Fall Line and is shown on a small scale map.

BOTTOMS, AUBREY M.

1. A discovery of "temple" quartz [Bartow County]: Georgia Mineral Newsletter, v. 16, nos. 1-2, p. 53-54, illus., 1963. Quartz crystals in clusters resembling Mayan temples, from near Stathan, are described. They occur in veins.

BOUCOT, ARTHUR JAMES, 1924- , *see* Berry, William Benjamin Newell, 1.

BOWEN, BOONE MOSS, JR., 1933-

1. (and Edgerton, J. H., and Mohrbacher, J. A., and Callahan, Joseph Thomas). Geological factors affecting the ground disposal of liquid radioactive wastes into crystalline rocks at the Georgia Nuclear Laboratory site [Dawson County]: Internatl. Geol. Cong. 21, Rept. Part 20, p. 32-48, illus., 1960. The wastes are put into infiltration basins constructed in the weathered and chemically altered saprolite of various types of metamorphic rocks. While in the ground, ion-exchange, filtration, decay, and dilution by ground water reduce the activity. Most of the ground-water is in the saprolites and moves in the bedrock only through planar structures.
2. The structural geology of a portion of southeastern Dawson County, Georgia: M. S. Thesis, Emory Univ., 1961.

BOWMAN, ALBERT L., *see* Rusnak, Gene Alexander, 1, 2.

BRAZEE, RUTLAGE J.

1. (and Cloud, William K.). United States earthquakes 1958: Washington, D. C., U. S. Coast and Geodetic Survey, 76 p., illus., 1960. A slight earthquake, centering in Tift County, on April 8, 1958, is reported. No instrumental details are given however.

BREGER, IRVING ARTHUR, 1920-

1. (and Brown, Andrew). Kerogen in the Chattanooga Shale: Science, v. 137, no. 3525, p. 221-224, illus., 1962. The distribution of organic matter in the shale, including that in northwestern Georgia, is described, as is the uranium content. The shale deposition environment in Georgia probably was in shallow water, and the major source of the uranium in the shale was northern Georgia.

BROWN, ANDREW, 1896-1963, *see also* Breger, Irving Arthur, 1.

1. The Chickamauga campaign 1863, and geology: GeoTimes, v. 8, no. 6, p. 17-21, illus., 1964. The influence of topography in northwestern Georgia on troop movements

during the civil war battle near Chickamauga, Walker County, is explained. The geology, of course, influenced the topography.

BROWN, PHILIP MONROE, 1922- , *see* Swain, Frederick Morrill, Jr., 1.

BRYAN, JACK HOWARD, *see* Coogan, Richard, 1.

BRYANT, BRUCE HAZELTON, 1930- , *see* Reed, John Calvin, Jr., 1.

BUIE, BENNETT FRANK, 1910-

1. (and Gremillion, Louis Ray). Attapulgite in fuller's earth deposits of [southwestern] Georgia and Florida: Georgia Mineral Newsletter, v. 16, nos. 1-2, p. 20-25, illus., 1963. Attapulgite clay makes up the fuller's earth deposits in the Miocene Hawthorn Formation. Regionally, the strata are flat lying, but there may be some sort of structural control.
2. (and Oman, Charles H.). Sponge spicules from Coastal Plain strata in Glascock and Richmond Counties, Georgia [abs.]: Geol. Soc. America Spec. Paper 73, p. 2, 1963.
3. (and Gremillion, Louis Ray, and Ritchie, Frank T., Jr.). Field trip to attapulgite fuller's earth localities in Georgia and Florida, *in* Clays and clay minerals — Proceedings of the 12th National Conference on clays and clay minerals: New York, New York, MacMillan Company (Internatl. Ser. Earth Sci. Mon. 19), p. 1-6, illus., 1964. A one day field trip covers about 115 miles and includes two stops in Georgia. One is at Meigs and another at Ochlochnee, both in Thomas County. The deposits in two quarries are described.
4. Possibility of volcanic origin of the Cretaceous sedimentary kaolin of South Carolina and Georgia [abs.], *in* Clays and and clay minerals — Proceedings of the 12th National conference on clays and clay minerals: New York, New York, MacMillan Company (Internatl. Ser. Earth Sci. Mon. 19), p. 195, 1964.

BURDICK, GLENN ARTHUR, 1932-

1. (and Straley, H. W., 3d). The Beaufort, South Carolina,

magnetic low [Effingham County]: Southeastern Geology, v. 4, no. 1, p. 79-82, illus., 1962. A low anomaly trends southwestward from Charleston, South Carolina, and is traced a short distance into Georgia, near Springfield. It is attributed to topographic depressions in the basement, possibly stream valleys.

BURMEISTER, WALTER FREDERICK.

1. Appalachian water, v. 2 — including . . . Georgia . . . : Washington, D. C., Canoe Cruisers Assoc., 289 p., 1962. A description of many of the rivers of Georgia, with a view toward their canoeing characteristics, includes geological notes en route.

BUTLER, ARTHUR PIERCE, JR., 1908-

1. (and Finch, Warren Irwin, and Twenhofel, William Stephens). Epigenetic uranium in the United States, exclusive of Alaska and Hawaii: U. S. Geol. Survey Mineral Invs. Resources Map MR-21, scale 1:3,168,000, with text, 1962. Epigenetic uranium occurs only in pegmatites in the Stone Mountain Granite in DeKalb County.

BUTLER, ELIZABETH ANN MCGEE, 1932-

1. Miocene-Oligocene boundary problems in Gulf Coast [abs.]: Am. Assoc. Petroleum Geologists Bull., v. 44, no. 9, p. 1600, 1960; Gulf Coast Assoc. Geol. Socs. Trans., v. 10, p. 32, 1960.

CALLAHAN, JAMES EMMETT, 1933-

1. Mineral resources of Bibb County, Georgia: Atlanta, Georgia, Georgia Inst. Technology Eng. Exper. Sta. Project A-436, 29 p., illus. geol. map, 1960. Most of the mineral commodities are on the Coastal Plain portion of the county. They include kaolin, alluvial clays, sand, limestone, and fuller's earth. Iron ore, though not in commercial quantities, is present also. A general geological description of the county is also included.

CALLAHAN, JOSEPH THOMAS, 1922- , *see also* Bowen, Boone Moss, Jr., 1; Sever, Charles William, Jr., 3; Stewart, Joe William, 10.

1. Ground water for Georgia's expanding economy: Georgia

- Mineral Newsletter, v. 13, no. 4, p. 152-160, illus., 1960. This is a general survey of the occurrence of ground water in Georgia and its influence upon industrial development of the state. Carefully developed and wisely managed, the ground-water resources of the state will be a highly significant contribution to the expansion of industry in the state.
2. (and Wait, Robert Lyle, and Owen, Vaux, Jr.). Hydrogeology of limestone terrane in southwestern Georgia [abs.]: Geol. Soc. America Bull., v. 71, no. 12, p. 1838, 1960.
 3. Wild-flowing wells waste water: Georgia Mineral Newsletter, v. 13, no. 1, p. 21-23, illus., 1960. Nearly all of the flowing wells on the lower Coastal Plain penetrate a limestone aquifer. There are several hydraulically connected limestones of Eocene, Oligocene and Miocene age, of which much is made in description. There are 377 wells recorded in the seven coastal counties; those from Chatham County are no longer flowing.
 4. (and Wait, Robert Lyle, and McCollum, Morris J.). Television — a new tool for the ground-water geologist: Georgia Mineral Newsletter, v. 15, nos. 1-2, p. 22-25, illus., 1962; Ground Water, v. 1, no. 4, p. 4-6, illus., 1963. The use of television cameras to reveal the details of drilled wells is described. Examples are cited from various wells along the Atlantic Coastal Plain of Georgia.
 5. (and Blanchard, Harry E., Jr.). The quality of ground water and its problems in the crystalline rocks of Georgia: Georgia Mineral Newsletter, v. 16, nos. 3-4, p. 66-72, illus., 1963. Water from wells in almost every county of the Piedmont and Blue Ridge is analyzed. Most water is low in dissolved solids, and the various sources and reasons for differences are described.
 6. (and Wait, Robert Lyle). Relations of fresh and salty ground water along the southeastern U. S. Atlantic coast [abs.]: Geol. Soc. America Spec. Paper 76, p. 27, 1964.
 7. The yield of sedimentary aquifers of the Coastal Plain southeast river basins: U. S. Geol. Survey Water-Supply Paper 1669-W, p. W1-W56, illus., 1964. A general description of the aquifers below the Coastal Plain of Georgia are included. The sand aquifers of the Cretaceous System,

the limestone and sand aquifers of Early Tertiary age, the principal artesian aquifer of Eocene to Miocene age, and the Miocene to Recent aquifers of the Atlantic coast are discussed hydrologically as regards discharge and recharge. Structures in the rocks are postulated as controls and are in turn reflected in ground-water maps.

CAMPBELL, THOMAS NOLAN, 1908-

1. Elias Howard Sellards, geologist and prehistorian, 1875-1961: Texas Archaeological Soc. Bull. 1960, v. 31, p. 331-336, port., 1961.

CAMPBELL, WILLIAM P., JR.

1. Appalachian gold — handbook and guide to gold placers of the southeast: [Erwin, Tenn.], privately printed, 45 p., illus., 1960. This is a popular account of the origin of placer gold and how to pan for it. References to its occurrence in the Piedmont and Blue Ridge of Georgia are included, but no details are included.

CARROLL, DOROTHY, 1907-

1. Petrography of some sandstones and shales of Paleozoic age from borings in Florida [and Echols County, Ga.]: U. S. Geol. Survey Prof. Paper 454-A, p. A1-A15, illus., 1963. Quartzite and argillaceous quartzite, of probable Ordovician age, and black shale of possible Devonian age are encountered in wells which have entered the basement in Echols County. Details are given in tables.

CARRON, MAXWELL KENNETH, 1910- , see Clarke, Roy Slayton, Jr., 1.

CARTER, R. F., see Stewart, Joe William, 10.

CARTER, ROBERT L., see also Giddens, Joel Edwin, 1.

1. (and Giddens, Joel Edwin). Soils of Georgia — their formation, classification, and use: Georgia Coastal Plain Exper. Sta. Bull. 52, 68 p., illus., 1953; Univ. Georgia College Exper. Sta. Bull. 2, 1953. The origin of soils from the different parent rocks is described. The influence of climate, relief, and drainage is also described, and a map shows the distribution of the different kinds of soils resulting from the different factors. Analyses are included.

[CHAMBLESS, JESSE O.]

1. Some notes on the history of Byers cave [Dade County]: Georgia Spelunker, v. 6, no. 5, p. 34-44, illus., 1962; Speleo Digest 1962, p. 125, illus., 1964. The cave is in Mississippian limestone in Fox Mountain near Rising Fawn. Many illustrations and a map are included.

CHAO, EDWARD CHING-TE, 1919-

1. The petrographic and chemical characteristics of tektites, Chapter 3 in Tektites: Chicago, Illinois, Univ. Chicago Press, p. 51-94, illus., 1963. Analyses for major elements and minor elements are given in tables. A tektite from Georgia [probably from Dodge County] is included in those analysed. It has 80.54% SiO₂ and 11.21% Al₂O₃. Normative mineral compositions are plotted and tabulated also, as are various ratios and proportions of elements.

CHEETHAM, ALAN HERBERT, 1928-

1. *Rimosocella*, new genus of cheilostome bryozoa [Richmond County]: Micropaleontology, v. 6, no. 3, p. 287-289, illus., 1960. *Rimosocella lacinosa* from the McBean Formation of Eocene age is described and illustrated.
2. Eocene Bryozoa from the McBean Formation in [Richmond and Burke Counties] Georgia: Micropaleontology, v. 8, no. 3, p. 323-336, illus., 1962. Nineteen species of cheilostomes, of which eight are new, are described and illustrated. The formation is Late Eocene in age.
3. Late Eocene zoogeography of eastern Gulf Coast region: Ph D Thesis, Columbia Univ., 1959; Geol. Soc. America Mem. 91, 113 p., illus., 1963. The Ocala Limestone in southwestern Georgia is included in the discussion. Special emphasis is placed upon the cheilostome distribution, although other invertebrates are also considered. Four distinct biofacies are recognized, three of which are found in Georgia. The Suwannee strait is analogized to the present day straits of Florida.

CHEN, CHIH SHAN, 1929-

1. The petrology of Lower Pennsylvanian Sewanee Sandstone, Lookout Mountain, Alabama and [Dade and Walker

Counties] Georgia: M. S. Thesis, Florida State Univ., 1960; (and Goodell, Horace Grant): Jour. Sed. Petrology, v. 34, no. 1, p. 46-72, illus., 1964. Textures, fabric, composition, and field studies show that the Sewanee was formed under stable conditions in a transitional depositional environment. The sediments were derived from the east and northeast, the provenance of which is discussed also.

CHIDESTER, ALFRED HERMAN, 1914-

1. (and Worthington, Helen Weissenborn). Talc and soapstone in the United States, exclusive of Alaska and Hawaii: U. S. Geol. Survey Mineral Invs. Resources Map MR-31, scale 1:3,168,000, with text, 1962. The occurrence of talc and soapstone throughout Georgia is mapped. The Murphy Marble belt and the Chatsworth district are the most important occurrences, although the material occurs throughout the Piedmont and Blue Ridge.
2. (and Engel, Albert Edward John, and Wright, Lauren Albert). Talc resources of the United States: U. S. Geol. Survey Bull. 1167, 61 p., illus. incl. atlas, 1964. A very brief description of the talc deposits in the Chatsworth district of Murray County is included. The talc is in lenticular bodies in schist which occurs as remnants in gneiss, and as isolated thrust remnants.

CHOQUETTE, JOSEPH A., see Whitlach, George Isaac, 1.

CLARK, FRANK RINKER, 1881-

1. Clarence Lemuel Moody (1888-1963): Am. Assoc. Petroleum Geologists Bull., v. 48, no. 7, p. 1205-1207, port., 1964.

CLARKE, OTIS M., JR.

1. Bauxite deposits of the south-eastern United States, in Proceedings of the 5th Inter-Guinea Geol. Conf.: Georgetown, British Guinea, British Guinea Geol. Survey Dept., p. 199-204, illus., 1964. An extremely cursory review of the bauxite deposits at Andersonville and Macon is given as is an equally brief description of the valley sink-hole deposits. Field evidence suggests that the alteration of bauxite to kaolin and kaolin to bauxite is reversible.

CLARKE, ROY SLAYTON, JR., 1925-

1. (and Carron, Maxwell Kenneth). Comparison of tektite specimens from Empire [Dodge County], Georgia, and Martha's Vineyard, Massachusetts: Smithsonian Misc. Colln., v. 143, no. 4, 18 p., illus., 1961. The specimens are described and compared by morphology, internal structures, physical properties, absorption spectra and spectrographic chemical analyses. They show a remarkable and unexpected similarity.
2. (and Henderson, Edward Porter). Georgia tektites and related glasses: Georgia Mineral Newsletter, v. 14, no. 4, p. 90-114, illus., 1961. Georgia tektites are compared with others from around the world. Georgia's fifteen have come from Dodge and Irwin Counties. The chemical relationships between those from Georgia and those from elsewhere are discussed.

CLOUD, WILLIAM K., *see* Brazee, Rutlage, J., 1.

COHEN, ALVIN JEROME, 1918-

1. Germanium content of tektites and other natural glasses — implications concerning the origin of tektites: Internatl. Geol. Cong. 21, Rept. Part 1, p. 30-39, illus., 1960. Tektites from Dodge County, along with others from other locations, are chemically analyzed with emphasis placed upon the germanium content. These are compared with various types of terrestrial rocks and minerals and are considered too low in germanium to be of definite terrestrial origin.
2. Moldavites and similar tektites from [Dodge and Irwin Counties] Georgia, U. S. A.: *Geochimica et Cosmochimica Acta*, v. 17, no. 2, p. 150-153, 1959; discussion with title, Comments on the recent letter "Moldavites and similar tektites from Georgia, U. S. A.," by George Baker, v. 19, no. 2, p. 232-233, 1960. The Georgia tektites are compared chemically and physically with tektites from elsewhere, and they resemble moldavites and bediasites. They are also compared geologically with the others, and since all may be in or on rocks of the same age, they may be genetically related to one great fall.

COKER, ALFRED EUGENE, 1928-

1. Mineralization of Lower Mississippian chert nodules collected in [Floyd County] northwest Georgia [abs.]: Georgia Acad. Sci. Bull., v. 18, nos. 1-2, p. 13, 1960.

COLE, WILLIAM STORRS, 1902-

1. (and Applin, Esther English Richards). Stratigraphic and geographic distribution of larger Foraminifera occurring in a well in Coffee County, Georgia: Cushman Found. Foraminiferal Research Contr., v. 12, pt. 4, p. 127-135, illus., 1961; discussion with title, Nomenclature problems involving Foraminifera, by Cornelis Willem Drooger, v. 13, pt. 2, p. 39-40, 1962. Larger forams include miogypsinids and others characteristic of the *Eulepidina* zone. The relation of the rocks in the Georgia well to other rocks in other places across the Caribbean is discussed.
2. American mid-Tertiary miogypsinid Foraminifera — classification and zonation [Coffee County]: Cushman Found. Foraminiferal Research Contr., v. 15, pt. 4, p. 138-150, illus., 1964. *Miogypsina panamensis* from Oligocene rocks in an oil well in Coffee County is described, illustrated, and discussed taxonomically. The position of these rocks in a zone recognized throughout the Caribbean area are identified for the first time in Georgia.
3. (and Applin, Esther English Richards). Problems of the geographic and stratigraphic distribution of American Middle Eocene larger Foraminifera: Bulls. Am. Paleontology, v. 47, no. 212, p. 1-48, illus., 1964. *Discocyclina* (*Discocyclina*) *marginata* from Pierce County and *Pseudophragmina* (*Proparocyclina*) *teres* from Pierce and Clinch Counties are described and illustrated. They are used in part as the basis of correlation of similarly-aged deposits in Florida and elsewhere in the Caribbean area. They are from unnamed rocks in oil wells. Other larger forams are also present.

COLLY, WALLACE H. C., JR.

1. The Sitton's cave story: Georgia Spelunker, v. 6, no. 1, p. 3-4, illus., 1962; Speleo Digest 1962, p. 129, 1964. A general description of the cave in Dade County is given; a map is included.

CONANT, LOUIS COWLES, 1902-

1. (and Swanson, Vernon Emanuel). Chattanooga Shale and related rocks of central Tennessee and nearby areas: U. S. Geol. Survey Prof. Paper 357, 91 p., illus., 1961. A complete description of the formation is given, petrographic, stratigraphic, geographic, and paleontologic. It occurs throughout the Paleozoic terrain of northwestern Georgia, although only the Gassaway Member is present. Its thickness is variable, from 10 to a bit over 40 feet, and it is determined to have been a shallow water marine deposit. A little uranium is present, but none is in commercial quantities.

CONN, WILLIAM V.

1. Final foundation report, Allatoona dam, Cartersville [Bartow County], Georgia; U. S. Army Corps of Engineers, Mobile Dist., 51 p., illus., 1949. A detailed description of the stratigraphy and structure of the rocks at the dam site is given. Only the Weisner Formation is present at the foundation site. Petrographic descriptions are included as is an analysis of the bedrock from the engineering point of view. An extremely detailed geologic map of the damsite is included.
2. (and Neiheisel, James). Geology and petrography of Kennesaw Mountain [Cobb County], Georgia [abs.]: Geol. Soc. America Spec. Paper 73, p. 4-5, 1963.

CONNELL, JAMES FREDERICK LOUIS, 1920-

1. Stratigraphy and paleontology of the Jackson Group of Georgia: Southwestern Louisiana Jour., v. 2, p. 321-348, illus., 1958. Detailed descriptions of the formations are given, and faunal lists are included. Correlations are discussed.
2. A catalog of type localities of Coastal Plain stratigraphic units: Southeastern Geology, v. 2, no. 2, p. 49-126, tables, 1960. A list of the majority of the surface and subsurface units occurring in the Atlantic and Gulf Coastal Plains is presented. Where possible they are arranged in proper stratigraphic sequence. Discarded names, synonyms, and neotype localities are included for clarity and complete-

ness. Geographic locations are described completely, and those from Georgia (12) are included on pages 88-89.

3. A supplementary catalog of type localities of Coastal Plain stratigraphic units: *Southeastern Geology*, v. 4, no. 1, p. 1-78, 1962. Type sections of Coastal Plain units in Georgia and other states are cited bibliographically. Those from Georgia (15) are on pages 37-38.

COOGAN, RICHARD

1. (and Bryan, Jack Howard). Interpretation of core borings across the Ocoee-Conasauga contact at Carter's dam site, Murray County, Georgia: *Georgia Mineral Newsletter*, v. 15, nos. 3-4, p. 47-56, illus., 1962. The units are separated by a healed fault zone which dips 60° eastward. The main fault zone is 12 feet thick and is cataclastically composed of the two units. The two units are also extensively faulted within themselves.

COOPER, BYRON NELSON, 1912-1971.

1. Relation of stratigraphy to structure in the southern Appalachians, in *Tectonics of the southern Appalachians*: Virginia Polytech. Inst., Dept. Geol. Scis. Mem. 1, p. 81-114, illus., 1964. The folded overthrust faults in northwestern Georgia are cited as examples of vertical movement being dominant over horizontal movement in a general discussion of the evidence that the folding in the Valley and Ridge was in part contemporaneous with the sedimentation.

COOPER, JAMES DEAN, *see* Klinefelter, Theron Albert, 1.

COOPER, JOHN ROBERTS, 1907-

1. Bismuth in the United States, exclusive of Alaska and Hawaii: U. S. Geol. Survey Mineral Invs. Resource Map MR-22, scale, 1:3,168,000, with text, 1962. Bismuth occurs in the mineral tetradymite associated with gold ore in the Piedmont province of Georgia.

CORE, EARL LEMLEY, 1902-

1. Plant migrations and vegetational history of the southern Appalachian region: *Lilloa*, v. 3, no. 1, p. 5-29, 1938. The distribution of the flora is a result of several factors, such

as post-Cretaceous peneplain uplift, Cenozoic uplift, and Pleistocene cooling.

CORMIER, RANDALL F., 1930- , *see* Fairbairn, Harold Williams, 1.

CORNELL, LEE H., *see* Beebe, Byron Warren, 1.

COTTER, DAVID JAMES, 1932- , *see* McCormick, John Franklin, 1.

COUNTS, HARLAN BRYAN, 1921- , *see also* Davis, George Hamilton, 1; McCollum, Morris J., 2.

1. Salt water encroachment into the principal aquifer in the Savannah area, Georgia and South Carolina: *Am. Water Works Assoc. Southeastern Sec. Jour.*, v. 24, p. 25-50, illus., 1960. Salt water occurs in the principal aquifer to the southeast of the city and below the aquifer throughout the area. Its movement toward the area of pumping is very slow, however. Eocene and Miocene limestones constitute the principal aquifer in the region.
2. (and Donsky, Ellis). Salt-water encroachment, geology, and ground water resources of the Savannah area, Georgia and South Carolina: *U. S. Geol. Survey Water-Supply Paper 1611*, 100 p., illus., 1963. The aquifer is about 600 feet of Eocene to Miocene limestones within a Cretaceous-Recent rock section. All of the units are described, and the water-bearing properties discussed. Salt water is encroaching very slowly due to the pumping at Savannah.

CRAMER, HOWARD ROSS, 1925- , *see also* Gray, Stephen Wood, 1.

1. Clastic dikes in Stewart County, Georgia [abs.]: *Georgia Acad. Sci. Bull.*, v. 18, nos. 1-2, p. 11, 1960.
2. Inarticulate brachiopods from the Floyd Shale [Floyd County] Georgia [abs.]: *Georgia Acad. Sci. Bull.*, v. 19, nos. 1-2, p. 8, 1961.
3. (and Everitt, Jack McLarin). New nautiloid locations in [Stewart and Randolph Counties] Georgia [abs.]: *Georgia Acad. Sci. Bull.*, v. 20, nos. 1-2, p. 9, 1962.
4. (and Gray, Stephen Wood). Pleistocene tapir jaw from

[Walker County] northwestern Georgia [abs.]: Geol. Soc. America Spec. Paper 68, p. 68, 1962.

CRAWFORD, THOMAS JONES, 1932- , see Hurst, Vernon James, 9.

CRESSLER, CHARLES WILLIAM, 1932-

1. Geology and ground-water resources of Catoosa County, Georgia: Georgia Geol. Survey Inf. Circ. 28, 19 p., illus. incl. geol. map, 1963. Cambrian to Pennsylvanian-aged rocks are present in the county, and folds and faults are the predominant structures. Most of the rocks yield water sufficient for domestic use; many springs are present and discussed also.
2. Geology and ground-water resources of the Paleozoic rock area, Chattooga County, Georgia: Georgia Geol. Survey Inf. Circ. 27, 14 p., illus. geol. map, 1964. Rocks of Cambrian to Pennsylvanian age are present, most of which yield water sufficient for domestic use. The Conasauga, Knox, and Mississippian carbonate units are the large-scale water producers. Many large springs are present, and numerous analyses of the water are included.
3. Geology and ground-water resources of Walker County, Georgia: Georgia Geol. Survey Inf. Circ. 29, 15 p., illus. incl. geol. map, 1964. Cambrian to Pennsylvanian-aged rocks are present and mapped. Most yield sufficient water for domestic purposes. Many large springs are also present.

CROFT, MACK G., see also Stewart, Joe William, 1.

1. Geology and ground-water resources of Bartow County, Georgia: U. S. Geol. Survey Water-Supply Paper 1619-FF, p. FF1-FF32, illus. incl. geol. map, 1963. Cambrian and Ordovician rocks are intensely folded and locally faulted. The Paleozoic rocks are bordered on the east by the rocks on the other side of the Cartersville fault, and on the south by the Ocoee metamorphic rocks of Precambrian age. Much ground water comes from the Paleozoic rocks.
2. Geology and ground-water resources of Dade County, Georgia: Georgia Geol. Survey Inf. Circ. 26, 17 p., illus. geol. map, 1964. A complete geological description of the area is given. Paleozoic rocks are everywhere present, and

much folding and faulting comprise the structures. The water-bearing properties of each unit are discussed.

CROTHERS, JUDITH S., *see* Crothers, Ronald W., 1.

CROTHERS, RONALD W.

1. (and Crothers, Judith S., and Bassett, J. Barry, 3d). [Map of] Johnson's Crook cave, Dade County, Georgia, Durham Quadrangle: *Georgia Spelunker*, v. 5, no. 1, scale 1 inch to 50 feet, 1960; *Speleo Digest* 1961, p. I126-I127, illus., 1962.

CULBERTSON, WILLIAM CRAVEN, 1919-

1. Pennsylvanian nomenclature in northwest Georgia, *in* Geological Survey research 1962: U. S. Geol. Survey Prof. Paper 450-E, p. E51-E57, illus., 1963. The rocks are renamed according to their correlation with the rocks of Tennessee and Alabama. They are, from bottom to top: Gizzard Formation (Raccoon Mountain, Warren Point, and Signal Point Shale Members) and Crab Orchard Mountains Formation (Sewanee, Whitwell Shale, Newton Sandstone, and Vandever Members). The thickness totals about 1000 feet.

DANE, CARLE HAMILTON, 1900-

1. John Bernard Reeside, Jr., 1889-1958: *Natl. Acad. Sci. Biog. Mem.*, v. 35, p. 272-291, port., 1961.

DARBY, DAVID G.

1. (and Hoyt, John Harger). An upper Miocene fauna dredged from tidal channels of coastal Georgia: *Jour. Paleontology*, v. 38, no. 1, p. 67-73, illus., 1964. A mollusk fauna similar to that of the Duplin Marl is reported from dredge-dumps of the Intra-coastal Waterway behind the barrier islands of the Atlantic coast. Most are from Sapelo Sound (McIntosh County) 75 to 90 feet below mean water level. Three species are new.

DAVIS, DAVID CHANDLER, *see also* Adams, Emmett Ray, 1.

1. (and Karges, Harold Earl). Developments in southeastern states in 1962: *Am. Assoc. Petroleum Geologists Bull.*, v. 47, no. 6, p. 1109-1115, illus., 1963. One well was

drilled in Georgia with no results cited. Its location is not given.

DAVIS, GEORGE HAMILTON, 1921-

1. (and Small, James Barter, and Counts, Harlan Bryan). Land subsidence related to decline of artesian pressure in the Ocala Limestone at Savannah [Chatham County], Georgia: Geol. Soc. America Engineering Geology Case Histories, no. 4, p. 1-8, illus., 1963. Temporal and spatial relations, determined by precise leveling, indicate that the decline in the hydrostatic head is the major cause of land subsidence, although loading by buildings in Savannah may also account for some of it.

DAVIS, RICHARD D., *see* Lynch, Jeffrey D., 1, 2.

DEEVEY, EDWARD SMITH, JR., 1914-

1. Biogeography of the Pleistocene — Part 1, Europe and North America: Geol. Soc. America Bull., v. 60, no. 9, p. 1315-1416, illus., 1949. Numerous examples of plants and animals are cited from the southern Appalachians, including Georgia, to show that relic communities still persist. These were established when the climate was different during Pleistocene time. Various theories of mechanics are reviewed.

DE FELICE, JAMES CHARLES, *see* Fireman, Edward Leonard, 1.

DE GRAZIA, A. R.

1. (and Haskins, Larry A.). On the gold contents of rocks: *Geochimica et Cosmochimica Acta*, v. 18, no. 5, p. 559-564, illus., 1964. Forty-one materials, which include Stone Mountain Granite from DeKalb County, have been examined for their gold content. The Stone Mountain Granite contains 1.9 ppb gold, the overall spread being relatively narrow (from 0.6 to 44 ppb) for all of the materials.

DEUSER, WERNER GEORG, 1935-

1. (and Herzog, Leonard Frederick, Jr.). Rubidium-strontium age determinations of muscovite and biotite from pegmatites of the Blue Ridge and Piedmont: *Jour. Geophysical Research*, v. 67, no. 5, p. 1997-2004, illus., 1962.

Measurements on muscovite and biotite from the Mauldin mine in Upson County are included with many others. The muscovite date is 296 ± 16 my, and the biotite date is 256 ± 12 my old. Various factors are discussed to account for the differences in ages. Several intervals of metamorphism or crystallization, or alteration of the Rb and/or Sr content are possible.

DIETRICH, RICHARD VINCENT, 1924-

1. Basement beneath the emerged Atlantic Coastal Plain between New York and Georgia: *Southeastern Geology*, v. 1, no. 4, p. 121-131, illus., 1959 [1960]. The basement lithology and topography are described. The Savannah River-Beaufort Basin occurs at the Georgia-South Carolina border area. The rocks are, in general, similar to those exposed in the Piedmont to the west.
2. Igneous activity in the southern Appalachians, *in* *Tectonics of the southern Appalachians*: Virginia Polytech. Inst. Dept. Geol. Scis. Mem. 1, p. 47-60, 1964; discussions, p. 60-61. A review of the ideas which have developed regarding Appalachian igneous geology alludes to Georgia. Nearly all of the large scale granitic activity probably involved anatexis; K-Ar dates may reflect the passage of a large convection current or imposition of thermal anti-forms and synforms. Several periods of sedimentation, orogeny, and/or igneous activity may be present.

DOERING, JOHN A.

1. Quaternary surface formation of southern part of Atlantic Coastal Plain: *Jour. Geology*, v. 68, no. 2, p. 182-202, illus., 1960. The Citronelle Formation is determined paleontologically to be Pleistocene, and it rests upon a late-Miocene-Pliocene peneplain. It is gravel and sand about 100 feet thick, and covers the Coastal Plain southeast of a line from Bainbridge to Augusta.

DONSKY, ELLIS, 1929- , *see* Counts, Harlan Bryan, 2.

DRAKE, CHARLES LUM, 1924-

1. (and Heirtzler, James Ransom, and Hirschman, J.). Magnetic anomalies off eastern North America: *Jour. Geophysi-*

cal Research, v. 68, no. 18, p. 5259-5275, illus., 1963. A small scale map shows trends of anomalies running north-east-southwest along the Coastal Plain of Georgia, both in land and on the continental shelf. Their relation to gravity anomalies is striking.

DROOGER, CORNELIS WILLEM, *see* Cole, William Storrs, 1.

DRUMMOND, KENNETH M.

1. Zircon studies in the southeastern Piedmont: M. S. Thesis, Univ. South Carolina, 1962.

DU BAR, JULES RAMON, 1923-

1. (and Solliday, James R.). Check list of Duplin (late Miocene) molluscan species of Georgia and the Carolinas: South Carolina Devel. Board Div. Geology, Geology Notes, v. 5, no. 2, p. 15-30, 1961. No data other than a list of species are given. The obvious synonyms have been eliminated and the nomenclature has been brought up to date. Only those species reported in the literature are included.

DUKE, JAMES ALAN, 1929-

1. The psammophytes of the Carolina fall line [abs.]: Dissert. Abs., v. 21, no. 7, p. 1723, 1961.

DUNBAR, CARL OWEN, 1891-

1. Memorial to William Henry Twenhofel (1875-1957): Geol. Soc. America Proc. 1960, p. 150-156, port., 1962.

DURFOR, CHARLES NORMAN, 1923-

1. (and Becker, Edith). Public water supplies of the 100 largest cities in the United States, 1962: U. S. Geol. Survey Water-Supply Paper 1812, 364 p., illus., 1964. The supplies for Atlanta and Savannah are included. Data are given in tables as regards volume, quality, source, chemistry, and etc.

DUVAL, WILBUR IRVING, 1915-, *see* Atchison, Thomas Calvin, Jr., 1; Hooker, Verne E., 1.

EAMES, FRANK EVELYN

1. (and Banner, Frederick Thomas, and Blow, Walter Harry,

and Clarke, W. J.). Fundamentals of mid-Tertiary stratigraphical correlation. 163 p., illus., Cambridge Univ. Press, 1962. A world wide description of the Oligocene is given, and on the basis of the corals and larger Foraminifera, the Oligocene of Georgia (and adjacent states) is considered to be lower Miocene. The Oligocene is not present.

EARDLEY, ARMAND JOHN, 1901-

1. Structural geology of North America, 2nd edition: Harper and Row, New York, New York, 743 p., illus., 1962. A textbook includes surveys of various aspects of Georgia geology. It is primarily, though not exclusively, structural.

EATON, GORDON PRYOR, 1929- , *see* Johnston, John Edward, 1.

EBY, JAMES BRIAN, 1896-

1. Joseph Theophilus Singewald, Jr. (1884-1963): Am. Assoc. Petroleum Geologists Bull., v. 48, no. 5, p. 732-735, port., 1964.

ECKELMANN, FRANK DONALD, 1929- , *see* Kulp, John Laurence, 1, 2.

EDGERTON, J. H., *see* Bowen, Boone Moss, Jr., 1.

EMRICH, GROVER HARRY, 1929-

1. Cross-bedding and textural variations of the Miocene Hawthorn Formation in northern Florida [and southwestern Georgia]: Jour. Sed. Petrology, v. 30, no. 4, p. 561-567, illus., 1960.

ENGEL, ALBERT EDWARD JOHN, 1916- , *see* Chidester, Alfred Herman, 2.

ENGLAND, CHARLES BENNETT, *see* Perkins, Henry Frank, 1.

ESPENSHADE, GILBERT HOWRY, 1912-

1. (and Potter, Donald Brandreth). Kyanite, sillimanite, and andalusite deposits of the southeastern states: U. S. Geol. Survey Prof. Paper 336, 121 p., illus. incl. geol. maps, 1960. The distribution of these materials in the Piedmont and Blue Ridge is discussed. Graves Mountain, in Lincoln

County, is the largest kyanite deposit in Georgia; kyanite also occurs throughout the schists of Habersham and Rabun Counties. Sillimanite-bearing schist is in Madison, Elbert, and Hart Counties. No andalusite is known.

2. Pyrophyllite and kyanite and related minerals in the United States, exclusive of Alaska and Hawaii: U. S. Geol. Survey Mineral Invs. Resources Map MR-18, scale 1:3,168,000, with text, 1962. Such deposits are in Lincoln County, in a band from Hart County through Elbert to Madison Counties, and in Habersham County. No specific information is included, however.

EVANS, GLEN LOUIS, 1911-

1. Elias Howard Sellards (1875-1961): Am. Assoc. Petroleum Geologists Bull., v. 45, no. 11, p. 1904-1906, port., 1961.

EVENDEN, LEONARD JESSE, 1937- , *see also* Woodruff, James Frederick, 1, 2.

1. Quantitative characteristics of drainage basins in the delineation of geomorphic regions: M. S. Thesis, Univ. Georgia, 1962.

EVERITT, JACK McLARIN, 1945- , *see* Cramer, Howard Ross, 3.

FAIRBAIRN, HAROLD WILLIAMS, 1906-

1. (and Pinson, William Hamet, Jr., and Hurley, Patrick Mason, and Cormier, Randall F.). A comparison of the ages of coexisting biotite and muscovite in some Paleozoic granite rocks: *Geochimica et Cosmochimica Acta*, v. 19, no. 1, p. 7-9, illus., 1960. The ages are determined by the Rb-Sr ratios in the biotites and muscovites, and then compared with the K-Ar ages determined from the biotite. Stone Mountain Granite, in DeKalb County, shows $283 \pm 5\%$, $272 \pm 11\%$, and 300 million years respectively. Another DeKalb County granite is $293 \pm 5\%$, $313 \pm 15\%$, and 300 million years respectively. Lithonia Gneiss from DeKalb County shows $287 \pm 5\%$, $288 \pm 7\%$, and 235 million years respectively, whereas Elberton Granite, from Elbert County shows $254 \pm 5\%$, $245 \pm 6\%$, and 235 million years respectively.

FAIRLEY, WILLIAM MERLE, 1928-

1. Murphy syncline in the Tate Quadrangle [Pickens County] Georgia: Ph D Thesis, Johns Hopkins Univ., 1962; [abs.]: Geol. Soc. America Spec. Paper 68, p. 70, 1962.
2. Cross-folding of the Murphy syncline in the Georgia Piedmont [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 19, 1964.

FAUL, HENRY, 1920-

1. History of intrusion and metamorphism in the Appalachians and in the Urals [abs.]: Geol. Soc. America Spec. Paper 68, p. 176, 1962.

FAUSOLD, MARSHALL

1. Howard's Waterfall cave (Dade County, Georgia): Speleo Digest 1960, p. I144-I145, illus., 1962; with different title, Georgia Spelunker, v. 4, no. 2, p. 61-63, illus., 1960. A map and a general description of this cave are given. No details are included.

FERNALD, MERRITT LYNDON, 1873-

1. Specific segregations and identities in some floras of eastern North America and the Old World: Rhodora, v. 33, no. 386, p. 25-63, illus., 1931. The Blue Ridge, including that part in Georgia, has been exposed continuously since its formation and so has been available for plant occupation. Examples of plants which are long-lived and widespread are discussed with regard to their origin and dispersal.

FINCH, WARREN IRWIN, 1924- , see Butler, Arthur Pierce, Jr., 1.

FIREMAN, EDWARD LEONARD, 1922-

1. (and DeFelice, James Charles). Argon-39 and tritium in meteorites: Geochimica et Cosmochimica Acta, v. 18, nos. 3-4, p. 183-192, illus., 1960. Many meteorites, including Pitts, from Wilcox County, are studied. The cosmic ray exposure time for Pitts is 0.3×10^6 years.

FISHER, WILLIAM LAWRENCE, 1932-

1. Stratigraphic names in the Midway and Wilcox Groups of

the Gulf Coastal Plain: Gulf Coast Assoc. Geol. Socs. Trans., v. 11, p. 263-295, 1961; Texas Univ. Bur. Econ. Geology Rept. Inv. 44, p. 263-295, 1961. Terminology for these two intervals is reviewed. The Midway and Wilcox should be group names, not stage names; over 100 units recognized within these units are discussed. Many are in the Coastal Plain of Georgia.

FLEISCHER, MICHAEL, 1908- , *see also* Hewett, Donnel Foster, 1.

1. Fluoride content of the ground water in the conterminous United States (maximum reported values for each county): U. S. Geol. Survey Misc. Geol. Invs. Map I-387, scale 1:5,000,000, 1962.

FORGOTSON, JAMES MORRIS, JR., 1930-

1. A correlation and regional stratigraphic analysis of the formations of the Trinity Group of the Comanchean Cretaceous of the Gulf Coastal Plain—and the genesis and petrography of the Ferry Lake Anhydrite: Gulf Coast Assoc. Geol. Socs. Trans., v. 6, p. 91-108, illus., 1958. The Lower Cretaceous of the southwestern corner of the Georgia Coastal Plain is included. The Hosston Formation rests upon Paleozoic rocks and several facies are identified above this unit. The deposits are those of a stable shelf, and are primarily sandstones and calcareous shales.
2. Depositional history and paleotectonic framework of the Comanchean Cretaceous Trinity Stage, Gulf Coast area: Am. Assoc. Petroleum Geologists Bull., v. 47, no. 1, p. 69-103, illus., 1963. Lower Cretaceous rocks in southwestern Georgia are discussed as a part of a larger problem. The rocks, generally mapped as “clastics, undifferentiated,” are shown to have been deposited largely upon a stable shelf with a very small portion in the extreme southwest deposited upon an unstable shelf. Correlations based on regional facies patterns are suggested.

FORTSON, CHARLES WELBORN, JR., 1934- , *see also* Furcron, Aurelius Sydney, 2.

1. (and Navarre, Alfred Theodore, Jr.). Monazite-bearing pegmatites in the south Georgia Piedmont [Crawford County]: Econ. Geology, v. 54, no. 7, p. 1309-1311, illus., 1959;

discussion by Vernon James Hurst, v. 55, no. 3, p. 610-613, 1960; reply by authors, p. 613-615, 1960. Pegmatites, a few inches thick, occur in shear zones in metamorphic rocks. They contain quartz, potash feldspar, and small monazite crystals. Their origin is uncertain, but they may be related genetically to monazite-bearing granites a few miles away. Hurst disagrees.

2. Peat deposits of Georgia: Georgia Mineral Newsletter, v. 14, no. 1, p. 1-25, illus., 1961. A general discussion of the origin and uses of peat is followed by descriptions of individual deposits, most of which are on the Coastal Plain. Most are in or about the Okefenokee Swamp and along the Atlantic coastal terraces.

FOUNTAIN, RICHARD CALHOUN, 1937-

1. A contribution to the petrography of the Silurian iron ores of northwest Georgia: Georgia Mineral Newsletter, v. 13, no. 3, p. 114-116, illus., 1960. The iron oxide oolites are characteristically concretionary with the layers of iron oxide, calcium carbonate, and/or silica in varying proportions. The ore also occurs as cavity fillings of all sizes. The iron oxide occurs as the last stage of the depositional cycle.
2. The geology of the northwestern portion of Jasper County, Georgia: M. S. Thesis, Emory Univ., 1961; [abs.]: Georgia Mineral Newsletter, v. 14, no. 4, p. 119, 1961.

FRANKENBERG, DIRK, 1937- , see Pilkey, Orrin Hendren, 6.

FRIDLEY, HARRY MARION, 1893-

1. Sidney Longman Galpin (1886-1962): Am. Assoc. Petroleum Geologists Bull., v. 47, no. 6, p. 871-872, port., 1963.

FRIEND, JAMES PHILIP, 1929- , see Walton, Alan, 1.

FURCRON, AURELIUS SYDNEY, 1899-1971.

1. Beryl in Clayton County: Georgia Mineral Newsletter, v. 13, no. 4, p. 162, 1960. Green beryl from a pegmatite near Blair Village is reported. The pegmatite averages 1 foot in thickness and the beryl occurs as fragments or as crystals which are from finger-size to double thumb-size in diameter.

2. (and Fortson, Charles Welborn, Jr.). Commercial limestones of the Flint River basin south of Albany [Decatur and Dougherty Counties], Georgia: Georgia Mineral Newsletter, v. 13, no. 2, p. 45-57, illus., 1960. The entire area is underlain by limestone, but only a few outcrops occur. Eocene, Oligocene, and Miocene limestones are present, and twenty-six exposures in all are described; analyses are included.
3. Corundum in Georgia: Georgia Mineral Newsletter, v. 13, no. 4, p. 167-177, illus., 1960. This is a survey of the known occurrences of corundum in Georgia. Annotations of earlier published reports are included. All occur in the Piedmont and Blue Ridge.
4. Kyanite, sillimanite, and andalusite in Georgia: Georgia Mineral Newsletter, v. 13, no. 1, p. 9-21, illus., 1960. This is a general discussion of the origin of these minerals and their occurrence in the Piedmont and Blue Ridge provinces. Sillimanite is in argillaceous schists and gneisses; kyanite occurs in medium-grade metasediments, and sillimanite takes the place of kyanite in the high-grade schists and gneisses of the Piedmont.
5. Some lost mineral localities in Georgia: Georgia Mineral Newsletter, v. 13, no. 3, p. 124-129, illus., 1960. This is a popular description of localities for several minerals which have been known from earlier accounts in the literature of Georgia, but which are not now developed. Cassiterite, spodumene, lead, silver, opal, epidote, and cacoxenite are discussed. All are from the Piedmont and/or Blue Ridge.
6. Amazonite and graphic granite [Jasper County]: Georgia Mineral Newsletter, v. 14, nos. 2-3, p. 61-62, 1961, Feldspar-bearing pegmatites contain amazonite; they occur a short distance southeast of Monticello. The country rock is predominantly hornblende schist.
7. Geologic age of the tektite shower and its associated rocks of the Georgia Coastal Plain: Georgia Mineral Newsletter, v. 14, no. 4, p. 115-119, illus., 1961. The tektites from Georgia were *in situ* in the sands and gravels in which they were found, and while all of the deposits may not be of the same age, they all postdate the Oligocene, and so are probably Pliocene or Pleistocene.

8. An oil show in Walker County: Georgia Mineral Newsletter, v. 14, nos. 2-3, p. 38-39, illus., 1961. Oil-filled vugs in the Ordovician Lebanon Limestone are described from along the McLemore Cove road. The oil probably migrated upward and was trapped in the vugs.
9. Resolution [Count Dillon Gibson, 1888-1961]: Georgia Mineral Newsletter, v. 14, no. 1, p. 36, 1961.
10. Epidote near Commerce, Jackson County, Georgia: Georgia Mineral Newsletter, v. 14, nos. 3-4, p. 102-103, illus., 1962. An outcrop of epidote several hundred feet in extent is described. Large crystals are present.

FURNISH, WILLIAM MADISON, JR., 1912-

1. Memorial to A[rthur] K[ith] Miller (1902-1963): Jour. Paleontology, v. 37, no. 4, p. 944-946, port., 1963.

GARDNER, CHARLES HARWOOD, 1937-

1. The geology of central Newton County: M. S. Thesis, Emory Univ., 1961; [abs.]: Georgia Mineral Newsletter, v. 14, nos. 2-3, p. 73, 1961.

GEDDES, WILBURT H., see Watkins, Joel Smith, 1.

GEORGIA DEPARTMENT OF PUBLIC HEALTH

1. Fluoride content of Georgia water supplies: Atlanta, Georgia, Georgia Dept. Public Health, Water Quality Div., 11 p., revised, 1959. The fluoride content, in parts per million, from numerous water sources in the state is listed in tables. Many of the sources are springs and ground-water.

GERGEL, THOMAS JOSEPH, 1936-

1. Morphometric analysis of drainage basin characteristics on the Georgia Piedmont: M. A. Thesis, Univ. Georgia, 1961.

GIBBS, J. A., see Perkins, Henry Frank, 1.

GIDDENS, JOEL EDWIN, see also Carter, Robert L., 1.

1. (and Perkins, Henry Frank, and Carter, Robert L.). Soils of Georgia: Soil Science, v. 89, no. 4, p. 229-238, illus., 1960. Parent materials and topography are largely the cause of the many different soil types in Georgia. Red-

yellow podzols predominate because of the climate; some gray-brown podzols occur in the mountains. The soils are highly weathered, and are low in organic matter.

GIESE, FRED P.

1. (and Shirley, Lawrence P., and Vallely, James L.). Titanium in the southeastern United States: U. S. Bur. Mines Inf. Circ. 8223, 30 p., illus., [1964]. Titanium occurs in rutile from Graves Mountain in Lincoln County. It also occurs in ilmenite in the fluvial sands of various Coastal Plain rivers and in ilmenite which occurs as a heavy mineral in various beach-sand deposits along the coast. It also occurs with economic potential as TiO_2 in various bauxite and kaolin deposits within the state.

GILES, ROBERT T.

1. (and Pilkey Orrin Hendren). Grain size and heavy mineral content of Georgia beach sands [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 16, 1964.

GILL, JAMES ROGERS, 1922-

1. Alfred Dexter Zapp (1916-1962): Am. Assoc. Petroleum Geologists Bull., v. 48, no. 1, p. 127-129, port., 1964.

GILLULY, JAMES, 1896-

1. Memorial to Parker Davies Trask (1899-1961): Geol. Soc. America Bull., v. 74, no. 1, p. P13-P19, port., 1963.

GOEL, PARMATMA S.

1. (and Kohman, Truman Paul). Cosmogenic carbon-14 in meteorites and terrestrial ages of "finds" and craters: Science, v. 136, no. 3519, p. 875-876, illus., 1962. An analysis of the meteorite from Sardis, Jenkins County, is included. It has been on earth more than 16,000 years.

GOLES, GORDON GEORGE, 1934-

1. (and Anders, Edward). Abundances of iodine, tellurium, and uranium in meteorites: Geochimica et Cosmochimica Acta, v. 26, no. 7, p. 723-737, illus., 1962. The Sardis meteorite from Jenkins County is included among many analyzed. Tellurium is strongly chalcophile and iodine is weakly so. Sardis is exceptionally rich in lawrencite

(FeCl₂), and its troilite has a greater iodine content than normal.

GOODELL, HORACE GRANT, 1925- , *see* Chen, Chih Shan, 1; Pilkey, Orrin Hendren, 4.

GORSLINE, DONN SHERRIN, 1926- , *see also* Moore, Joseph E., 1.

1. Bottom sediments of the Atlantic shelf and slope off the southern United States: *Jour. Geology*, v. 71, no. 4, p. 422-440, illus., 1963. Several intervals of sedimentation are recognized off the coast of Georgia, and sediments from several source areas can be detected. Inshore, the main contributions are from the Coastal Plain rocks and salt marshes; relicts of lower sea stands are next offshore, and no sedimentation is occurring here. Pelagic sediments are found farther out from this and show the influence of the Gulf Stream.

GRAHAM, ALAN

1. Origin and evolution of the biota of southeastern North America — evidence from the fossil plant record: *Evolution*, v. 18, no. 4, p. 571-585, illus., 1964. The Cretaceous and Tertiary plant communities from various places including Georgia are evaluated. The paleoenvironment is discussed.

GRANT, WILLARD HUNTINGTON, 1923- , *see also* Higgins, Michael Wicker, 1; Mohr, David Wilfred, 1.

1. Geology of the Barnesville area, Lamar County, Georgia [abs.]: *Georgia Acad. Sci. Bull.*, v. 19, nos. 1-2, p. 9, 1961.
2. Field excursion, Stone Mountain-Lithonia district [DeKalb County] — *Geol. Soc. America Southeastern Sec. Ann. Mtg. 1962, Guidebook 2: Atlanta, Georgia, Georgia Dept. Mines, Mining and Geology*, 21 p., illus., 1962. A field trip of ten stops is outlined. The Stone Mountain Granite, Lithonia Gneiss, and various types of metamorphic country rock are visited and described.
3. Weathering of Stone Mountain Granite [DeKalb County], Georgia, *in* *Clays and clay minerals—Proceedings of the 11th National Conference on clays and clay minerals: New*

York, New York, MacMillan Company (Internatl. Earth Sci. Ser. Mon. 13), p. 65-73, illus., 1963.

4. Alluvial clay deposits in small streams and branches in the central Georgia Piedmont [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 18, 1964.
5. Chemical weathering of biotite-plagioclase gneiss [DeKalb County], in Clays and clay minerals—Proceedings of the 12th National Conference on clays and clay minerals: New York, New York, MacMillan Company, (Internatl. Earth Sci. Ser. Mon. 19), p. 455-463, illus., 1964. The weathering products of the various constituent minerals are outlined, as are their physical properties.

GRAVES, HENRY B.

1. Agate in the southeastern states, in The agates of North America: Del Mar, California, Lapidary Jour., p. 55, illus., 1961. This is a popular account of the occurrence of agate in Upson and Pulaski Counties. No details are included, however.

GRAY, STEPHEN WOOD, 1915- , see also Cramer, Howard Ross, 4.

1. (and Cramer, Howard Ross). A tapir mandible from a [Walker County] northwest Georgia cave: Georgia Acad. Sci. Bull., v. 19, no. 4, p. 83-90, illus., 1961. Part of the left mandible, found in Anderson Spring cave, is described and illustrated. The bone is probably Pleistocene and most nearly resembles *Tapirus veroensis*.

GREEAR, PHILLIP FRENCH-CARTERSON, 1918-

1. Preliminary report on the find of Pleistocene bear remains in Floyd County, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 21, nos. 1-2, p. 12-13, 1963.
2. A Pleistocene bear in [Floyd County] northwest Georgia: Georgia Acad. Sci. Bull., v. 22, no. 1, p. 13-14, 1964. Bones of *Ursus americanus* from a cave above Blacks Bluff on the Coosa River are described. One of the mandibles containing teeth is included.

GREMILLION, LOUIS RAY, see Buie, Bennett Frank, 1, 3.

GRIFFITTS, WALLACE RUSH, 1919-

1. (and Larrabee, David Marcel, and Norton, James Jennings). Beryllium in the United States, exclusive of Alaska and Hawaii: U. S. Geol. Survey Mineral Invs. Resources Map MR-35, scale 1:3,168,000, with text, 1962. Beryllium occurs in pegmatites in Troup County and many other places which are not considered economical. They are plotted on a map. All are in pegmatite bodies in the Piedmont and all have less than 100 tons of beryl present.

GRISCOM, ANDREW, 1926-

1. Tectonic significance of the Bouguer gravity anomaly field of the Appalachian system [abs.]: Geol. Soc. America Spec. Paper 73, p. 163-164, 1963.
2. (and Zietz, Isidore). Differences between aeromagnetic and geologic depths to basement in the Appalachian Plateau [Floyd-Bartow Counties] [abs.]: Geol. Soc. America Spec. Paper 76, p. 68-69, 1964.

GROOT, CATARINA R., see Groot, Johan Jacob, 1.

GROOT, JOHAN JACOB, 1918-

1. (and Penny, John Sloyan, and Groot, Catarina R.). Plant microfossils and age of the Raritan, Tuscaloosa, and Magothy formations of the eastern United States. *Palaeontographica*, Abt. B, v. 108, nos. 3-6, p. 121-140, illus., 1961. Samples of Tuscaloosa Formation from the Ruby Quarry [Baldwin County?] are described along with others from other places. Ten species of pollen are described, and the relation of the Tuscaloosa to the other formations is discussed, the age being based upon the number and distribution of angiosperm pollen.

GRUNENFELDER, MARC H., see Silver, Leon Theodore, 1.

GUILLOU, ROBERT BARTON, 1923-1965.

1. (and Schmidt, Robert Gordon). Correlation of aeroradioactivity data and areal geology, *in* Geological Survey research 1960: U. S. Geol. Survey Prof. Paper 400-B, p. B119-B121, illus., 1960. A small portion of the area along the Savannah River in Columbia County is used as an

example of the technique. Most of the granite has a high aeroradioactivity level; the slate is generally low, and the metamorphic complex is both high and low. The Cretaceous and Eocene rocks are both high and low, and the Oligocene and younger rocks are all low.

GUNTER, HERMAN, 1885-

1. Memorial to Fred Harvey Hall Calhoun (1874-1959): Geol. Soc. America Proc. 1959, p. 115-116, port., 1960.
2. Elias Howard Sellards, 1875-1961: Soc. Vertebrate Paleontology News Bull. 62, p. 34-36, port., 1961.

HADLEY, JARVIS BARDWELL, 1909-

1. Correlation of isotopic ages, crustal heating, and sedimentation in the Appalachian region, *in* Tectonics of the southern Appalachians: Virginia Polytech. Inst. Dept. Geol. Scis. Mem. 1, p. 33-44, illus., 1964; discussions, p. 45. K-Ar, Rb-Sr, and U-Pb dates from the Appalachians, including Georgia, indicate periods of regional heating and cooling. Thermal peaks are evident at about 1150, 800-900, 440, 340-360, 160, and 180-190 my. A Late Devonian or Early Mississippian peak is very common, as is one of the Late Ordovician. The rocks are related to the relative ages of the clastic wedges in the Valley and Ridge province.

HAGER, DORSEY, 1887-

1. Possible oil and gas fields in the Cretaceous beds of Alabama: Am. Inst. Mining Engineers Trans., v. 59, p. 424-431, illus., 1918; discussions, p. 431-434. The Gordon Anticline is recognized in southeastern Alabama, and it extends eastward into Early County, Georgia. It has 40 feet of closure and includes a total of about 10 square miles.

HAMMOND, EDWIN HUGHES, 1919-

1. Classes of land-surface form in the forty-eight states, U. S. A.: Assoc. Am. Geographers Annals, v. 54, no. 1, map supp. 4, scale 1:5,000,000, 1964. This map shows the types of land on the basis of topography. Georgia is divided into various types of plains, hills, tablelands, and mountains.

HANNA, MARCUS ALBERT, 1898-

1. Paul Livingston Applin: Gulf Coast Assoc. Geol. Soc. Trans., v. 10, p. 304, 1960.

HANSHAW, BRUCE BUSSER, 1930-

1. (and Back, William, and Rubin, Meyer). Relation of carbon 14 concentrations to saline-water contamination of coastal aquifers [Glynn County] [abs.]: Ground Water, v. 2, no. 1, p. 56, 1964; Geol. Soc. America Spec. Paper 76, p. 74, 1964.

HARPER, LEWIS

1. Qualitative chemical analyses of the Madison [Madison County] chalybeate, sulphurous, and alkaline springs: Athens, Georgia, 1852 [not seen].

HARREL, DAVID C.

1. (and Lynch, William Dean). Developments in southeastern states in 1960: Am. Assoc. Petroleum Geologists Bull., v. 45, no. 6, p. 903-909, illus., 1961. Four wells were drilled, but only that in Wayne County, which entered the basement at 4,551 feet, is described. No details are included.

HASKIN, LARRY A., 1934- , *see* DeGrazia, A. R., 1.

HASSEMER, RUSSELL ROBERT, 1915-

1. Morphometrics of drainage basins of diverse physiographic provinces: M. A. Thesis, Univ. Georgia, 1963.

HAWKINS, GERALD STANLEY, 1928-

1. (and Wolfson, Sumner H.). Origin of tektites: Nature, v. 186, no. 4730, p. 1027-1028, illus., 1960. Sand from Dodge County, where tektites have been found, was fused in a solar furnace. The glass showed flow lines and bubbles but no lechatelierite particles so common in tektites.

HEIRTZLER, JAMES RANSOM, 1925- , *see* Drake, Charles Lum, 1.

HENDERSON, EDWARD PORTER, 1898- , *see* Clarke, Roy Slayton, Jr., 2.

HENRY, VERNON JAMES, JR., 1931- , *see* Antoine, John Woodworth, 1; Hoyt, John Harger, 3, 4, 7, 8, 9, 10, 11.

HERON, STEPHEN DUNCAN, JR., 1926-

1. Origin of the opal in the lower Tertiary of South Carolina, Georgia, and Alabama [abs.]: Geol. Soc. America Spec. Paper 73, p. 171-172, 1963.

HERRICK, STEPHEN MARION, 1904- , *see also* McCollum, Morris, J., 1; Stewart, Joe William, 6.

1. Late Eocene Foraminifera from South Carolina and [Chatham County] Georgia [abs.]: Geol. Soc. America Bull., v. 71, no. 12, p. 2016-2017, 1960.
2. Some small Foraminifera from Shell Bluff [Burke County] Georgia: Bulls. Am. Paleontology, v. 41, no. 187, p. 117-130, illus., 1960. Twenty species from the uppermost part of the oyster bed in the McBean Formation are described; nineteen are illustrated. They are no older than uppermost Eocene and possibly younger.
3. Well logs of the Coastal Plain of Georgia: Georgia Geol. Survey Bull. 70, 461 p., illus., 1961. Lithologic characteristics of almost 400 wells in the Cretaceous and Cenozoic rocks are given. Summaries of the stratigraphic units in each well, along with thicknesses and water-bearing properties, are included also.
4. (and Vorhis, Robert Carson). Subsurface geology of the Georgia Coastal Plain: Georgia Geol. Survey Inf. Circ. 25, 78 p., illus., 1963. Isopach maps of the Cretaceous and Cenozoic subdivisions are presented as are generalized descriptions of the rocks in the various units.
5. (and LeGrand, Harry Elwood). Solution subsidence of a limestone terrane in [Baker and Mitchell Counties] southwest Georgia: Internatl. Assoc. Sci. Hydrology Bull., v. 9, no. 2, p. 25-36, illus., 1964. The lowland plain in the Flint River valley is due to solution of the underlying Eocene and Oligocene limestones. The karst area is well developed.
6. Subsurface study of Pleistocene deposits in coastal Georgia [abs.]: Geol. Soc. America Spec. Paper 76, p. 245, 1964.

7. Upper Eocene smaller Foraminifera from Shell Bluff and Griffin's Landings, Burke County, Georgia, in Geological Survey research 1964: U. S. Geol. Survey Prof. Paper 501-C, p. C64-C65, illus., 1964.

HERZOG, LEONARD FREDERICK, JR., 1926- , see Deuser, Werner Georg, 1.

HEWETT, DONNEL FOSTER, 1881-1971.

1. (and Fleischer, Michael). Deposits of manganese oxides: Econ. Geology, v. 55, no. 1, p. 1-55, illus., 1960. General descriptions of the occurrence of manganese oxide from the Shady and Rome Formations in Bartow County are included.

HIGGINS, MICHAEL WICKER, 1940-

1. (and Grant, Willard Huntington). Weathering of Panola Granite, DeKalb and Henry Counties, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 18, 1964.

HILL, CARL R.

1. (and Woodruff, James Frederick). Tidal stream meanders in the Georgia coastal marshes [Glynn County] [abs.]: Georgia Acad. Sci. Bull., v. 21, nos. 1-2, p. 12, 1963.

HILL, PATRICK ARTHUR, 1922-

1. The gossans of Minas Carlota, Cuba: Econ. Geology, v. 57, no. 1, p. 168-194, illus., 1962; discussion with title, The use of the term gossan, by Thomas Lingle Kesler, no. 6, p. 982-985, 1962. The gossans of the Cartersville district, in Bartow County, are used as examples of different types of origins. The term should be confined to an outcrop feature of metalliferous ore minerals.

HINCKLEY, DAVID NARWYN

1. (and Bates, Thomas Fulcher). Evaluation of the amount and distribution of montmorillonite in some Georgia and South Carolina clays [abs.], in Clays and clay minerals—Proceedings of the 8th National conference on clays and clay minerals: New York, New York, Pergamon Press, p. 18-21, illus., 1960.
2. Mineralogical and chemical variations in the kaolin deposits

of the Coastal Plain of Georgia and South Carolina [abs.]: Dissert. Abs., v. 22, no. 7, p. 2412, 1962.

3. Variability in "crystallinity" values among the kaolin deposits of the Coastal Plain of Georgia and South Carolina, in *Clays and clay minerals — Proceedings of the 11th National conference on clays and clay minerals*: New York, New York, MacMillan Book Company (Internatl. Earth Sci. Ser. Mon. 13), p. 229-235, illus., 1963. The deposits are nonhomogeneous with respect to crystallinity, and the hard and soft types can be distinguished at the 0.95 probability level by an analysis of variance. The evidence indicates the existence of two distinct clay populations.

HIPPENMEIER, LOUIS A.

1. Speleogenesis and cave distribution in Florida and the Coastal Plain areas of Georgia and Alabama [abs.]: Natl. Speleol. Soc. NSS News, v. 19, no. 8, p. 95, illus., 1961.

HIRSCHMAN, J., see Drake, Charles Lum, 1.

HOLLAND, WILLIS A., JR., 1931- , see Hurst, Vernon James, 3, 4.

HOOKER, VERNE E., 1921-

1. (and Nicholls, Harry R., and Duvall, Wilbur Irving). *In situ* stress determination in a Lithonia Gneiss outcrop [DeKalb County] [abs.]: Earthquake Notes, v. 35, nos. 3-4, p. 46, 1964.

HORTON, GEORGE R., see Hurst, Vernon James, 8.

HOSE, HEATH ROYDON

1. The genesis of bauxites, the ores of aluminum: Internatl. Geol. Cong. 21st, Rept. Part 16, p. 237-247, illus., 1960. The bauxite deposits of the Coastal Plain of Georgia and other southeastern states are cited as examples of those which form on penepains. A tropical or subtropical climate with an adequate but seasonal rainfall is required.

HOWE, HENRY VAN WAGENEN, 1896-

1. Hilgard [Eugene Waldemar Hilgard, 1833-1916] as a geologist: Mississippi Geol., Econ., Topog. Survey Bull. 104, p. 33-64, port., 1964.

HOYT, JOHN HARGER, 1928-1970, *see also* Darby, David G., 1; Weimer, Robert Jay, 1.

1. Development of soft sand beaches, [McIntosh County] coastal Georgia [abs.]: Georgia Acad. Sci. Bull., v. 20, nos. 1-2, p. 11, 1962; Univ. Georgia Marine Inst. Collected Reprints, v. 3, 1964.
2. High-angle beach stratification, Sapelo Island [McIntosh County] Georgia: Jour. Sed. Petrology, v. 32, no. 2, p. 309-311, illus., 1962; Univ. Georgia Marine Inst. Collected Reprints, v. 3, 1964. Foreshore sand bars typically have a landward slope. Deposition on this slope results in landward movement of the bar. The deposits are characterized by high-angle cross-bedding with dips as steep as 30 degrees.
3. (and Henry, Vernon James, Jr.). Influence of island migration on barrier island sedimentation [McIntosh County] [abs.], *in* Proceedings of the first national coastal and shallow water research conference: Tallahassee, Florida, National Science Foundation and Office of Naval Research, p. 45, 1962; Univ. Georgia Marine Inst. Collected Reprints, v. 3, 1964.
4. (and Henry, Vernon James, Jr.). Barrier-island sedimentation, coastal Georgia [abs.]: Geol. Soc. America Spec. Paper 73, p. 300, 1963; Univ. Georgia Marine Inst. Collected Reprints, v. 3, 1964.
5. (and Weimer, Robert Jay). *Callianassa major* burrows, geologic indicators of littoral and shallow neritic environments [abs.]: Georgia Acad. Sci. Bull., v. 21, nos. 1-2, p. 10-11, 1963; Univ. Georgia Marine Inst. Collected Reprints, v. 3, 1964.
6. (and Weimer, Robert Jay). Comparison of modern and ancient beaches, central Georgia coast: Am. Assoc. Petroleum Geologists Bull., v. 47, no. 3, p. 529-531, illus., 1963. The modern beach deposits at Sapelo Island are compared with those of Pleistocene age at Sutherland Bluff, McIntosh County. Similarities and differences are described.
7. (and Henry, Vernon James, Jr.). Development and geologic significance of soft beach sand [abs.]: Geol. Soc. America Spec. Paper 73, p. 175, 1963; Univ. Georgia Marine Inst.

Collected Reprints, v. 3, 1964.

8. (and Henry, Vernon James, Jr., and Weimer, Robert Jay). Geologic history and development of the barrier islands in the vicinity of Sapelo Island [McIntosh County] Georgia [abs.]: Geol. Soc. America Spec. Paper 73, p. 11, 1963; Univ. Georgia Marine Inst. Collected Reprints, v. 3, 1964.
9. (and Henry, Vernon James, Jr.). Rhomboid ripple mark, indicator of current direction and environment: Jour. Sed. Petrology, v. 33, no. 3, p. 604-608, illus., 1963. At Sapelo Island, in McIntosh County, rhomboid ripples are best developed on slopes of $\frac{1}{2}$ to 2 degrees. They are bowed in the direction of the current generally, and are pointed up-current. They are formed on foreshore beaches by wave backwash and by washover of low bars.
10. (and Henry, Vernon James, Jr.). Formation of high-angle marine stratification, central Georgia coast [McIntosh County] [abs.]: Geol. Soc. America Spec. Paper 76, p. 246, 1964.
11. (and Weimer, Robert Jay, and Henry, Vernon James, Jr.). Late Pleistocene and Recent sedimentation, central Georgia coast [McIntosh County] U. S. A., in Deltaic and shallow marine deposits — Developments in sedimentology, v. 1: Amsterdam, Elsevier Pub. Co., p. 170-176, illus., 1964. Coastal sediments and depositional environments are described. The geologic history of the area is related to late Pleistocene and Holocene sea level fluctuations. The geologic and geomorphic positions of the barrier islands, lagoons, and beaches are shown, and four different shorelines are recognized.
12. (and Weimer, Robert Jay). Reconstruction of Pleistocene sea-levels using burrows of *Callianassa major* [abs.]: Geol. Soc. America Spec. Paper 76, p. 84, 1964.

HUBBS, CARL LEAVITT, 1894-

1. David Starr Jordan [1851-1931], in Famous zoologists: Systematic Zoology, v. 13, no. 4, p. 195-200, port., 1964.

HULL, JOSEPH POYER DEYO, JR., 1889-1970.

1. Cretaceous Suwannee Strait, Georgia and Florida: Am. Assoc. Petroleum Geologists Bull., v. 46, no. 1, p. 118-122,

illus., 1962. The Suwannee Strait is an area in Southern Georgia where the Cretaceous rocks are missing or are very thin. The strait can be explained as an area of relatively thin deposition which separated the carbonate banks to the south from the sources of terrigenous sediments to the north.

HUNTER, J. H., *see* Krebs, Robert Dixon, 1.

HURLEY, PATRICK MASON, 1912- , *see* Fairbairn, Harold Williams, 1.

HURST, VERNON JAMES, 1923- , *see also* Fortson, Charles Welborn, 1; Vistelius, Andrew B., 1.

1. Oil tests in Georgia: Georgia Geol. Survey Inf. Circ. 19, 14 p., illus., 1960. At least 115 oil test wells have been drilled to date; the deepest, in Seminole County, is over 7,600 feet deep. The average depth is 2,915 feet. Many oil and gas shows have been reported, but none of the wells are productive. A map shows their locations, and brief logs are included for some; most are on the Coastal Plain.
2. Status of lithologic mapping in crystalline rocks of Georgia [abs.]: Georgia Acad. Sci. Bull., v. 18, nos. 1-2, p. 14-15, 1960.
3. (and Holland, Willis A., Jr.). Strontium in the dolomite-marble of the Brevard Belt [abs.]: Georgia Acad. Sci. Bull., v. 18, nos. 1-2, p. 15, 1960.
4. (and Holland, Willis A., Jr.). Strontium-barium content of Georgia carbonates [abs.]: Georgia Acad. Sci. Bull., v. 19, nos. 1-2, p. 9, 1961.
5. (and Schlee, John Stevens). Field excursion, Ocoee meta-sediments, northcentral Georgia-southeast Tennessee — Geol. Soc. America Southeastern Sec. Ann. Mtg. 1962. Guidebook 3: Atlanta, Georgia, Georgia Dept. Mines, Mining and Geology, 28 p., illus., 1962. A general description of the metamorphic rocks of the region is followed by a field trip road log through the Ocoee Gorge in Tennessee. Details of the stratigraphy are explained; the rocks are late Precambrian in age.
6. Geochemical studies in Habersham and White Counties

- [abs.]: Georgia Acad. Sci. Bull., v. 21, nos. 1-2, p. 12, 1963.
7. (and Porter, Katherine Elaine). Lithiophorite from Hall County, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 21, nos. 1-2, p. 12, 1963.
 8. (and Horton, George R.). The Bell Mountain silica deposit, Towns County, Georgia: Washington, D. C., U. S. Dept. Commerce Area Redevel. Adm., 42 p., illus. incl. geol. map, 1964. A quartzite body overlying gneiss is mapped and described geologically. The rock is irregularly colored due to the decomposition of pyrite within it, and the discoloration is related to the jointing. Two million tons of stone are shown to be present.
 9. (and Crawford, Thomas Jones). Exploration of mineral deposits in Habersham County, Georgia: Washington, D. C. U. S. Dept. Commerce Area Redevel. Adm., 180 p., illus., 1964. Asbestos, flagstone, gold, granite, gneiss, kyanite, marble and soapstone occur in the county; none is being worked. Descriptions of many of the deposits are included. Kyanite and asbestos occur in commercial quantities.
 10. (and Otwell, William L.). Exploration of mineral deposits in White County, Georgia; Washington, D. C., U. S. Dept. Commerce Area Redevel. Adm., 166 p., illus., 1964. The report shows where gold has been mined, where unmined gravels occur, high-volume gravel which could contain gold, and vein locations. Certain of the deposits, those with an economic potential, are described. Asbestos, mica, soapstone, platinum, and scheelite are also present.

HUSTED, JOHN EDWIN, 1915- , *see also* Whitlach, George Isaac, 1.

1. (and Straley, H. W., 3d). The Blue Ridge fault zone and the distribution of southern Appalachian earthquakes [abs.]: Georgia Acad. Sci. Bull., v. 18, nos. 1-2, p. 14, 1960.
2. (and Straley, H. W., 3d). The pre-Cretaceous topography of the Georgia Coastal Plain [abs.]: Georgia Acad. Sci. Bull., v. 18, nos. 1-2, p. 10, 1960.
3. (and Straley, H. W., 3d). Earthquakes and geological

structures of North America [abs.]: Geol. Soc. America Spec. Paper 68, p. 74, 1962.

IVES, PATRICIA C.

1. (and others). U. S. Geological Survey radiocarbon dates VII: Radiocarbon, v. 6, p. 37-76, 1964. Peat from the Okefenokee Swamp in Echols County is dated 400 ± 200 years old, and wood from sediments along the Turtle River in Glynn County is 3,670 to 2,780 years old. They are both listed as Holocene.

JASTER, MARION CHARLOTTE, 1896- , see Rogers, Cleaves Lincoln, 1.

JOHNSON, HENRY STANLEY, JR., 1926- , see Reed, John Calvin, Jr., 1.

JOHNSTON, JOHN EDWARD, 1919- , see also Trumbull, James Van Allen, 2.

1. (and Trumbull, James Van Allen, and Eaton, Gordon Pryor). The petroleum potential of the emerged and submerged Atlantic Coastal Plain of the United States: Georgia Mineral Newsletter, v. 13, no. 2, p. 66-73, illus., 1960. A general description of the Coastal Plain and continental shelf includes that of Georgia. No specific examples from Georgia are included, although various structural and stratigraphic features are evaluated in connection with their petroleum potential.

JONAS, EDWARD CHARLES, 1924-

1. Petrology of the Dry Branch [Twiggs County], Georgia kaolin deposits, in Clays and clay minerals—Proceedings of the 12th National conference on clays and clay minerals: New York, New York, MacMillan Company (Internatl. Ser. Earth Sci. Mon. 19), p. 199-205, illus., 1964. The orientation of kaolinite crystals with respect to any gross stratification in the deposits, and with respect to their mineral precursors, was investigated. The kaolin was not sedimented in still water as the mineral kaolinite.

JORDAN, GEORGE F.

1. Submarine physiography of the U. S. continental margins: U. S. Coast and Geod. Survey Tech. Bull. 18, 29 p., illus.,

1962. Numerous seismic surveys, including some off the coast of Georgia, are interpreted topographically. A survey eastward from Brunswick shows the Blake Plateau very clearly at a depth of about 400-500 fathoms and which extends seaward for 100 to 250 miles. Its origin is uncertain but it appears to be a northward extension of the Bahama Platform.

JOYNER, B. F.

1. Iron in Georgia ground water: Georgia Mineral Newsletter, v. 16, nos. 3-4, p. 73-74, illus., 1963. A generalized summary of the geology of the state is given. About one third of the wells summarized are in the Paleozoic terrane in northwestern Georgia and contain iron in excess of .30 ppm; the basic rocks of the Blue Ridge and Piedmont may contain iron up to 2.0 ppm or more. The iron content of Coastal Plain well water varies; limestone water is low, in general, and Cretaceous-sand water is very high in iron.

KARGES, HAROLD EARL, *see* Davis, David Chandler, 1.

KAUFFMAN, ERLE GALEN, *see* Sohl, Norman Frederick, 2.

KAYE, CLIFFORD ALAN, 1916-

1. Shore erosion study of the coasts of Georgia and north-west Florida: U. S. Geol. Survey Repts. Open File [no. 662], 74 p., illus., 1961 [1962]. The Atlantic coastline of Georgia is described geomorphologically. Coasts of net accretion and net erosion are mapped and locations of active accretion and erosion during March, 1961, are outlined. Each individual offshore island is discussed.

KEARNEY, THOMAS HENRY, JR., 1874-

1. The lower Austral element in the flora of the southern Appalachian region, a preliminary report, [Part] 3, *of* Plant geography of the United States: Science, new ser. v. 12, p. 830-842, 1900. The various provinces of Georgia and other states can be identified by their plant inhabitants although Coastal Plain (lower Austral) plants occur throughout the state. Two distinct categories occur; some are thought to be invaders from the present flora, and the others are thought to be Tertiary relicts from times of higher stands of the sea and/or less relief.

KELLY, MARY PARDEE

1. Memorial to Joseph Thomas Pardee (1871-1960): Geol. Soc. America Bull., v. 74, no. 5, p. P39-P42, port., 1963.

KENNEDY, VANCE CLIFFORD, 1923-

1. Sediment transported by Georgia streams: U. S. Geol. Survey Water-Supply Paper 1668, 101 p., illus., 1964. Stream sampling at 33 sites is reported. All of the major rivers and tributaries are included. Comparison of suspended loads with bed loads is made, and important factors appear to be relief, soil texture, and dam location. Precipitation, runoff, vegetation, drainage area, and channel types serve to modify the major factors.

KESLER, THOMAS LINGLE, 1908- , see also Hill, Patrick Arthur, 1.

1. Environment and origin of the Cretaceous kaolin deposits of Georgia and South Carolina: Georgia Mineral Newsletter, v. 16, nos. 1-2, p. 2-11, illus., revised, 1963; originally published 1956. The kaolin has resulted from the deltaic, rapid deposition of detrital feldspar from the Piedmont and Blue Ridge areas which was then decomposed to kaolinite, to be deposited in fresh, quiet water in ponds formed by distributaries on the deltas. These ponds were then later covered with Cretaceous and younger sediments.

KILPATRICK, F. A.

1. (and Barnes, Harry Hawthorne, Jr.). Channel geometry of Piedmont streams as related to frequency of floods: U. S. Geol. Survey Prof. Paper 422-E, p. E1-E10, illus., 1964. The relation of height of valley benches to height of water surface corresponding to floods was investigated. Surveys of channel geometry are included as is the measurement of water surface profiles during flood periods. The discharge-probability relation was established. The bench heights are significantly related to mean annual flood and slope of stream channel. Seven sites are from the Georgia Piedmont.
2. Source of base flow of streams, *in* Symposium—Surface Waters, General Assembly at Berkeley of the I.U.G.G.: Internatl. Assoc. Sci. Hydrology Pub. 63, p. 329-339, illus., 1964. The Mount Zion Branch of the Yellow River in

DeKalb County was examined and used as an example of the methods used for determining the contribution to stream flow of ground water. The contributions are from bedrock of metamorphic rocks and from an alluvial gravel layer, both below the floodplain. Each contributes equally during high base flow, but only the rock aquifer contributes during low flow.

KING, ELBERT A., JR.

1. Field investigation of Georgia tektites and description of new specimens [Dodge County]: Georgia Mineral Newsletter, v. 15, nos. 3-4, p. 84-85, illus., 1962. The age of the Georgia tektite showers cannot be determined in Dodge County on the basis of stratigraphy. The older ages determined by the K-Ar dating are consistent with the stratigraphic possibilities, however. The Georgia tektites are more numerous than previously suspected.
2. New data on [Dodge County] Georgia tektites: Geochimica et Cosmochimica Acta, v. 28, no. 6, p. 915-919, illus., 1964. All the Georgia tektites have been found on a sand and gravel unit of probable Pliocene or Pleistocene age. Because of the older K-Ar dates on the tektites, it is probable that they have been reworked and transported from older rock units to the north or northwest. The terms "strewn field" for the Georgia material should not be used.

KING, ELIZABETH RAYMOND, 1928-

1. Regional magnetic map of Florida: Am. Assoc. Petroleum Geologists Bull. 43, no. 12, p. 2844-2854, illus., 1959. A small scale map includes a portion of southwestern Georgia. A northeast trending high anomaly and a parallel low anomaly passes into the state near the Okefenokee swamp.

KING, PHILLIP BURKE, 1903-

1. Summary reports on selected wells penetrating Paleozoic rocks in the southeastern states, pt. 3 of Appendix, in Ouachita System: Texas Univ. Pub. 6120, p. 347-361, illus., 1961. A brief description of some of the Paleozoic and Precambrian rocks below the Cretaceous rocks of the southwestern Georgia Coastal Plain are given, and a map

shows their geologic and geographic circumstances. Some are well below 7,000 feet from the surface, and Paleozoic rocks are known only from the southern tier of counties, and from Miller and Early Counties.

2. Systematic pattern of Triassic dikes in the Appalachian region, *in* Geological Survey research 1961: U. S. Geol. Survey Prof. Paper 424-B, p. B93-B95, illus., 1961. The diabase dikes in Georgia are included in a regional study. The dikes are the products of intrusion in areas of regional tension directed horizontally in the crust and reflect deep-seated tensile stresses. The trend of the axis of greatest tension (or least compression) was to the northeast.
3. Further thoughts on the tectonic framework of southeastern United States, *in* Tectonics of the southern Appalachians: Virginia Polytech. Inst. Dept. Geol. Scis. Mem. 1, p. 5-31, illus., 1964. A general review of Appalachian tectonics includes Georgia. Special emphasis is placed upon Piedmont tectonics and the Brevard Zone. Gravity anomalies are also described and speculated upon, as are the connections between the Appalachian and Ouachita structures.
4. The tectonic map of North America: Washington, D. C., U. S. Geol. Survey, 26 p., table, 1964 [not seen].

KIRKPATRICK, SAMUEL ROGER, 1936-

1. Geology of the Lumpkin SW quadrangle, Stewart County, Georgia: M. S. Thesis, Emory Univ., 1961; summary, *Compass*, v. 41, no. 1, p. 40-51, illus., 1963. A complete geological description of the area is given. Cretaceous and Paleocene rocks are mapped; fossils are described, listed, and illustrated. Iron ore is the chief economic resource.

KLINEFELTER, THERON ALBERT, 1886-

1. (and Cooper, James Dean). Kyanite, a materials survey: U. S. Bur. Mines Inf. Circ. 8040, 55 p., illus., 1961. A general survey of the properties and occurrence of kyanite and silimanite includes a cursory description of the occurrence in the Piedmont and Blue Ridge of Georgia. It is primarily from Lincoln County.

KOENIG, JOAN ELIZABETH, 1938-

1. Rudistids in [Stewart County] Georgia [abs.]: Georgia Acad. Sci. Bull., v. 20, nos. 1-2, p. 11-12, 1962.

KOHMAN, TRUMAN PAUL, 1916- , *see* Goel, Parmatma S., 1.

KOSCHMANN, ALBERT HERBERT, 1896-1962.

1. (and Bergendahl, Maximilian Hilmar). Gold in the United States, exclusive of Alaska and Hawaii: U. S. Geol. Survey Mineral Invs. Resources Map MR-24, scale 1:3,168,000, with text, 1962. The principal districts of Georgia are included; they are Cherokee County, Lumpkin County, and White County. No new data are included, however.

KREBS, ROBERT DIXON, 1931-

1. (and Hunter, J. H.). Evaluation of soils and use of soil surveys for engineering purposes in urban development: Washington, D. C., Federal Housing Adm. Architectural Standards Div., Tech. Studies, 71 p., illus., 1963. A discussion of soil classification for engineering purposes, with a view to establishing federal standards, includes a description of part of Fulton County as one of several examples.

KRIEGER. ALEX D.

1. Elias Howard Sellards, 1875-1961: Am. Antiquity, v. 27, no. 2, p. 225-228, port., 1961.

KULP, JOHN LAURENCE, 1921-

1. (and Eckelmann, Frank Donald). Potassium-argon isotopic ages on micas from the southern Appalachians, in Geochronology of rock systems: New York Acad. Sci. Annals, v. 91, no. 2, p. 408-419, illus., 1961. Six samples from various places in the Georgia Piedmont are included. The ages are, in millions of years: Atlanta, granitic gneiss, 311; Tyrone, porphyritic granite, 286; Lorane, migmatite, 254; Sparta, granite, 299; Greensboro, Palmetto-type granite, 261; Athens, migmatite, 263. Boundaries of thermal effects are mapped, and several intervals of metamorphism are noted.
2. (and Eckelmann, Frank Donald). Geochronological investigations in the Blue Ridge and Piedmont [abs.]: Geol. Soc. America Spec. Paper 73, p. 192, 1963.

LADD, HARRY STEPHEN, 1899-

1. Memorial to Julia Anna Gardner (1882-1960): Geol. Soc. America Proc. 1960, p. 87-92, port., 1962.

LAMOREAUX, PHILLIP ELMER, 1920- , *see* Toulmin, Lyman Dorgan, Jr., 1, 2.

LAND, LYNTON S.

1. Eolian cross-bedding in the beach dune environment, Sapelo Island [McIntosh County] Georgia: Jour. Sed. Petrology, v. 34, no. 2, p. 389-394, illus., 1964. High-angle ($>30^\circ$) cross bedding records the orientation of the prevailing winds. About one half of the dune slipfaces and high angle cross beds are stable at angles which exceed the angle of repose of dry sand, and cross-bed dips as high as 42° are stable in, and may be indicative of, the beach dune environment.

LARRABEE, DAVID MARCEL, 1909- , *see* Griffitts, Wallace Rush, 1.

LAURENCE, ROBERT ABRAHAM, 1908-

1. Report of igneous rock near Rome [Floyd County], Georgia, is erroneous: Georgia Mineral Newsletter, v. 14, nos. 2-3, p. 39-41, illus., 1961. The report of igneous rock in the Rome area by Adams (1931) is investigated. The rock turns out to be a quartzite unit in the Conasauga Formation; very unusual.

LEGRAND, HARRY ELWOOD, 1917- , *see also* Herrick, Stephen Marion, 5.

1. Summary of geology of Atlantic Coastal Plain: Am. Assoc. Petroleum Geologists Bull., v. 45, no. 9, p. 1557-1571, illus., 1961. A generalized description of the section from Lower Cretaceous to the Pleistocene includes rocks of these ages in Georgia. No new details are included.
2. Geology and ground water resources of the Macon area, Georgia: Georgia Geol. Survey Bull. 72, 68 p., illus. incl. geol. map, 1962. The geology of Bibb, Crawford, Houston, Macon, Peach, Schley, and Taylor Counties is outlined. The area is underlain by Cretaceous and lower Tertiary sedimentary rocks; the ground-water potential of each unit

is discussed. The best aquifers are in the Cretaceous sands.

3. Hydrogeologic framework of the Gulf and Atlantic Coastal Plain: *Southeastern Geology*, v. 5, no. 4, p. 177-194, illus., 1964. This is a general summary of the nature and occurrence of ground water in the Coastal Plain. No specific examples from Georgia are cited. A water table aquifer and at least one artesian aquifer are everywhere present, however.

LERMAN, ABRAHAM, 1935-

1. Evolution and environment of *Exogyra* in the Late Cretaceous of the southeastern United States: Ph D Thesis, Harvard Univ., 1964.

LESTER, JAMES GEORGE, 1897-

1. Georgia palynology and petrology—a preliminary report [abs.]: *Georgia Acad. Sci. Bull.*, v. 18, nos. 1-2, p. 15, 1960.

LESURE, FRANK GARDNER, 1927-

1. Geology of the Taylor mica mine, Hart County, Georgia: *Georgia Mineral Newsletter*, v. 15, nos. 1-2, p. 9-14, illus., 1962. Mica comes from a pegmatite 75 by 15 feet at the surface, and which is known to extend to 250 feet below the surface. Muscovite in 18-inch books occurs in the wall zones.

LEVE, GILBERT WARREN, 1928-

1. Preliminary investigation of the ground-water resources of northeast Florida [and southeastern Georgia]: *Florida Geol. Survey Inf. Circ.* 27, 28 p., illus., 1961. A few of the data come from Camden and Charlton Counties. Eocene and Miocene rocks are present; they are described and their water-bearing properties discussed. A small-scale piezometric map is included which shows the cone of depression at Jacksonville, Florida, extending into southeastern Georgia.

LJUNGSTEDT, OLOF AXEL, see Stose, George Willis, 1.

LOEBLICH, ALFRED RICHARD, JR., 1914-

1. (and Tappan, Helen Nina). Cretaceous planktonic For-

minifera, Part 1—Cenomanian: Micropaleontology, v. 7, no. 3, p. 257-304, illus., 1961. The planktonic Foraminifera in the Atkinson Formation in the subsurface of the Georgia Coastal Plain suggest that the formation is younger than originally proposed.

LONG, C. L., *see* Phillbin, P. W., 1.

LUSK, TRACY WALLACE, 1926- , *see* St. John, F. B., Jr., 1.

LYNCH, JEFFRY G.

1. (and Davis, Richard D.). An interesting cephalopod find in Floyd County, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 20, nos. 1-2, p. 11, 1962.
2. (and Davis, Richard D.). A new find of *Conularia* in [Walker County] north Georgia [abs.]: Georgia Acad. Sci. Bull., v. 20, nos. 1-2, p. 13, 1962.

LYNCH, WILLIAM DEAN, *see* Harrell, David C., 1.

McCOLLUM, MORRIS J., *see also* Wait, Robert Lyle, 7.

1. (and Herrick, Stephen Marion). Offshore extension of the upper Eocene to Recent stratigraphic sequence in south eastern Georgia, in Geological Survey research 1964: U. S. Geol. Survey Prof. Paper 501-C, p. C61-C63, illus., 1964. Strata ranging in age from Recent to late Eocene were penetrated in test wells drilled ten miles offshore from Savannah Beach in Chatham County. The section is similar to that onshore except that the post-Miocene rock is thinner offshore.
2. (and Counts, Harlan Bryan). Relation of salt-water encroachment to the major aquifer zones, Savannah area, Georgia and South Carolina: U. S. Geol. Survey Water-Supply Paper 1613-D, p. D1-D26, illus., 1964. The Lisbon and Ocala Formations, and Oligocene and Miocene sediments are the principal artesian aquifers. Five zones are present. The chloride content of each zone increases eastward and northeastward. Pumping from a relatively small area has created a large, deep, cone of depression which is drawing in the salt water.
3. Salt-water movement in the principal artesian aquifer of the Savannah area, Georgia and South Carolina: Ground

Water, v. 2, no. 4, p. 4-8, illus., 1964. The aquifer is composed of late and middle Eocene limestones. Unflushed salt water is present in the lower water-yielding zones of the aquifer in the eastern part of the area, and sea water is entering the upper zones in the southeastern parts of the area. The Savannah cone of depression is drawing the salt water toward it.

McCORMICK, JOHN FRANKLIN

1. (and Cotter, David J.). Radioactivity on southeastern granite outcrops: Georgia Acad. Sci. Bull., v. 22, no. 1, p. 20-28, illus., 1964. Radioactivity in the granite outcrops is due largely to uranophane in the rocks. Levels of radioactivity on several are shown on tables with a view toward determining the effect of the radioactivity on the plant populations.

McGUINNESS, CHARLES LEE, 1914-

1. Georgia, *in* The role of ground water in the national water situation: U. S. Geol. Survey Water-Supply Paper 1800, p. 255-268, 1963. A general summary of ground water sources and conditions in the state include very cursory descriptions of occurrences in the various physiographic provinces. Most of the water comes from the Coastal Plain.
2. Generalized map showing annual runoff and productive aquifers in the conterminous United States: U. S. Geol. Survey Hydrol. Invs. Atlas HA 194, scale 1:5,000,000, 1964.

MacKALLOR, JULES A., 1924-

1. Aeroradioactivity survey and areal geology of the Georgia Nuclear Laboratory area, northern Georgia (ARMS-1): U. S. Atomic Energy Comm. Rept. CEX-58.4.8, 36 p., illus., 1963. This is a survey which shows natural gamma radioactivity of a large area in the Piedmont of Georgia. Radioactivity contacts in general parallel geological contacts in the region, and samples were collected for equivalent uranium content.
2. Natural gamma aeroradioactivity of the Georgia Nuclear Laboratory area, Georgia: U. S. Geol. Survey Geophys.

Inv. Map GP-351, scale 1:250,000, geol. map and text, 1963. An area extending from Henry County northward to Dawson County and from Chattooga County eastward to Hart County, and Fannin County, is mapped, and areas of gamma radiation are outlined and compared to a geologic map. The influence of the major geologic structures in the region is very evident.

McLEMORE, WILLIAM H.

1. Heavy mineral investigations of Recent and Pleistocene barrier islands of Georgia [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 16, 1964.

MADDOX, JAMES H., JR.

1. Physical and chemical properties of the fall-line kaolins [abs.]: Georgia Acad. Sci. Bull., v. 19, nos. 1-2, p. 8-9, 1961.

MAHDAVI, AZIZEH

1. The thorium, uranium, and potassium contents of Atlantic and Gulf coast beach sands, *in* The natural radiation environment: Chicago, Illinois, Univ. Chicago Press, p. 87-114, illus., 1964. Samples from the beaches on the offshore islands of Georgia area included. The measurements were made *in situ* by a portable counter, and laboratory tests were made to determine the origin of the radiation and to determine the mineralogy of the samples. Various ratios are discussed.

MANN, VIRGIL IVOR, 1920- , *see* O'Rourke, J. E., 1.

MANSFIELD, WENDELL CLAY, 1874-1939.

1. Mollusks of the Tampa and Suwannee Limestones of Florida: Florida Geol. Survey Bull. 15, 334 p., illus., 1937. Numerous gastropods and pelecypods from the two formations are described and illustrated. Some come from exposures along Flint River in Decatur County, and a general discussion of the distribution of the two formations in Georgia and Florida is included.

MARK, HELEN

1. High-alumina kaolinitic clay in the United States, exclusive

of Alaska and Hawaii: U. S. Geol. Survey Mineral Invs. Resources Map MR-37, scale 1:3,168,000, with text, 1963. Such clay occurs through the fall-line area of the Georgia Coastal Plain and in Floyd and Meriwether Counties. No new data are included, however.

MEDLIN, JACK HAROLD

1. Geology and petrography of the Bethesda Church area, Greene County, Georgia: M. S. Thesis, Univ. Georgia, 1964.
2. Petrography of the rocks of northeast Greene County, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 21, 1964.

MERRIHUE, CRAIG M., *see* Reynolds, John Hamilton, 2.

MERTIE, JOHN BEAVER, JR., 1888-

1. Memorial to Louis Marcus Prindle (1865-1956): Geol. Soc. America Proc. 1960, p. 138-141, port., 1962.

MEYER, ROBERT PAUL, 1924- , *see* Pooley, Robert Neville, 2.

MILLIANS, ROBERT WILSON, 1939-

1. Drainage basin shape as a measurement of physiographic differences: M. A. Thesis, Univ. Georgia, 1963.

MISER, HUGH DINSMORE, 1884-

1. Memorial to George Willis Stose (1869-1960): Geol. Soc. America Proc. 1960, p. 143-149, port., 1962.

MITCHUM, ROBERT MITCHELL, JR., *see* Stearns, Richard Gordon, 1.

MOHR, DAVID WILFRED, 1941-

1. (and Grant, Willard Huntington). Amphibolite pseudodikes near Redan, DeKalb County, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 19, 1964.

MOHRBACHER, J. A., *see* Bowen, Boone Moss, Jr., 1.

MONROE, WATSON HINER, 1907-

1. Memorial to Lloyd William Stephenson (1876-1962): Geol. Soc. America Bull., v. 75, no. 5, p. P83-P89, port., 1964.

MOORE, JOSEPH E.

1. (and Gorsline, Donn Sherrin). Physical and chemical data for bottom sediments, South Atlantic coast of the United States, M/V Theodore N. Gill cruises 1-0: U. S. Fish and Wildlife Service Spec. Sci. Rept. Fisheries 366, 84 p., illus., 1960. Many of the samples are from traverses off the coast of Georgia. Most of the data are in tables.

MURPHY, THOMAS DANIEL, 1905-

1. Distribution of silica resources in eastern United States: U. S. Geol. Survey Bull. 1072-L, p. 657-665, illus., 1960. The map includes Georgia. A deposit of tripoli and massive quartz is on one map, quartzite exposures on another, sandstone on a third, and sand of the Coastal Plain on another. No details are given.

MURRAY, GROVER ELMER, JR., 1916-

1. Geologic framework of the Gulf Coastal Province of United States, *in* Recent sediments, northwest Gulf of Mexico: Tulsa, Oklahoma, Am. Assoc. Petroleum Geologists, p. 5-33, illus., revised, 1960. A cursory description of the entire province includes Georgia. This is largely taken from earlier works and revised. Large-scale structures are included only.
2. Geology of the Atlantic and Gulf coastal provinces of North America: New York, New York, Harper and Bros., 692 p., illus., 1961. A textbook includes a generalized summary of all of the aspects of Coastal Plain geology, including that of Georgia. Physiography, structure, stratigraphy, framework, and economics are included.

NATIONAL SPELEOLOGICAL SOCIETY

1. NSS field trip caves 1961 [National Speleological Soc. Guidebook 2] [12 p.], illus., 1961; Speleo Digest 1961, p. I124-I125, illus., 1963. Brief descriptions of Howard's Waterfall, Case, and Sitton's caves in Dade County are included in a field trip guidebook. Sketch maps of Case and Howard's Waterfall caves are included.

NAVARRE, ALFRED THEODORE, JR., 1894-1962, see also Fortson, Charles Welborn, Jr., 1.

1. Mineral resource survey of Crawford County, Georgia: Atlanta, Georgia, Georgia Inst. Technology Eng. Exper. Sta. Project A-346-3, 7 p., geol. map, 1960. Kaolin and construction sand are the two major mineral resources of the county. Limestone and granite, while present, have a limited economic potential. Deposits and locations are described.
2. A mineralogical evaluation of the Cretaceous and Eocene formations of Crawford County, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 18, nos. 1-2, p. 11-12, 1960.

NEIHEISEL, JAMES, *see also* Conn, William V., 2.

1. Heavy mineral investigation of Recent and Pleistocene sands of lower Coastal Plain of Georgia: Geol. Soc. America Bull., v. 73, no. 3, p. 365-374, illus., 1962. Analyses of heavy mineral samples from beaches, rivers, across Jekyll Island, and from two lower Pleistocene terraces show that all of the parameters selected were applicable to both intervals. Chemical decay of those in the Pleistocene can be detected, and economic considerations are discussed.

NETTLES, JAMES EDWARD

1. Study of Foraminifera in the Clayton Formation near Fort Gaines [Clay County] Georgia: M. S. Thesis, Florida State Univ., 1959.

NEWTON, JOHN G., 1929- , *see* Toulmin, Lyman Dorgan, Jr., 1.

NICHOLAS, GERAROUS, 1927-

1. Ralph W[alter] Stone, 1876-1964: Netherworld News, v. 12, no. 6, p. 75-77, 1964.

NICHOLLS, HARRY R., *see also* Hooker, Verne E., 1.

1. *In situ* determination of the dynamic elastic constants of rock, *in* International symposium on mining research, Proc., v. 2: New York, New York, Pergamon Press, p. 727-738, illus., 1962. Explosives discharged in the Lithonia Gneiss in DeKalb County were used to generate waves from which some of the geophysical properties of the rock were determined.

NICKELL, WALTER P.

1. Providence Canyon [Stewart County]: Conglomerate, v. 23, no. 2, p. 1, 1962. This is a popular account of the origin and occurrence of the canyon. No new data are included.

NOBLE, DAVID F.

1. Origin of the expandable clay minerals in the Twiggs of Eocene age: M. S. Thesis, Florida State Univ., 1962.
2. (and Osmond, John Kenneth). Expandable clay minerals in the Twiggs Clay of [east central] Georgia [abs.]: Geol. Soc. America Spec. Paper 73, p. 14-15, 1963.

NORTON, JAMES JENNINGS, 1918- , *see* Griffitts, Wallace Rush, 1.

ODOM, O. B.

1. Effects of tides, ships, trains, and changes in atmospheric pressure on artesian water levels in the Savannah area [Chatham County], Georgia: Georgia Mineral Newsletter, v. 14, no. 1, p. 18-29, illus., 1961. Hydrograms from wells clearly show the effects of tides on the water level; a variation of two feet is detected. The other artificial influences on the level can also be detected.

OLSON, JERRY CHIPMAN, 1917-

1. (and Adams, John Wagstaff). Thorium ore rare earth in the United States, exclusive of Alaska and Hawaii: U. S. Geol. Survey Mineral Invs. Resources Map MR-28, scale 1:3,168,000, with text, 1962. Thorium-bearing minerals occur in the granites of Elbert County and as heavy minerals in the coastal beach sands, the potential of which is small or unevaluated.

OLSON, NORMAN KEITH

1. Kaolin and fuller's earth districts of Georgia and Florida: Georgia Mineral Newsletter, v. 16, nos. 1-2, map, scale 1 inch to about 10 miles, 1963.
2. Deformation of Conasauga Limestone, south of Calhoun [Gordon County], Georgia [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 18, 1964.

OMAN, CHARLES H., *see* Buie, Bennett Frank, 2.

ORMSBY, WALTER CLAYTON, 1924-

1. (and Shartsis, Jack Morris). Clay mineral content of two domestic kaolins: *Am. Ceramic Soc. Jour.*, v. 43, no. 6, p. 335, illus., 1960. A sedimentary analysis of kaolins from an undisclosed location in Georgia is given. Kaolinite and montmorillonite are the clay minerals present.
2. (and Shartsis, Jack Morris, and Woodside, K. H.). Exchange behaviour of kaolins of variable crystallinity [abs.]: *Am. Ceramic Soc. Bull.*, v. 39, no. 4, p. 241, 1960.

O'ROURKE, J. E.

1. Paleozoic banded iron-formation: *Econ. Geology*, v. 56, no. 2, p. 331-363, illus., 1961; discussion with title, Iron formations of the southeastern United States, by Virgil Ivor Mann, no. 5, p. 997-1000, 1961. Interlayered hematite and quartzite in the Cartersville area of Bartow County are cited as an example, along with many others from other places, that banded iron-ore deposits need not be Proterozoic. These are considered to be a transitional type between those typical of the Proterozoic deposits and those of the Silurian. Mann suggests that the only similarity in any of the deposits is the presence of iron.

OSMOND, JOHN KENNETH, 1928- , see Noble, David F., 2.

OSTLUND, H. GOTE, 1923- , see Rusnak, Gene Alexander, 1, 2.

OTWELL, WILLIAM L., see Hurst, Vernon James, 10.

OULTON, THOMAS DIXON, 1911-

1. Mining, production, and uses of attapulgite clay products [abs.]: *Mining Engineering*, v. 16, no. 12, p. 86, 1964.

OVERSTREET, ELIZABETH FISCHER, 1915-

1. Geology of the southeastern bauxite deposits: *U. S. Geol. Survey Bull.* 1199-A, p. A1-A19, illus., 1964. Those in Georgia are the important commercial deposits. They formed one land surface in Paleocene-Eocene time, the parent material being fine-grained, probably clay, feldspar, other silicates, and a few heavy minerals from metamorphic rocks. The fine material accumulated in lakes, ponds, and depressions, and was converted to bauxite by leaching

in well-drained areas, and then covered with younger sediments.

OVERSTREET, WILLIAM COURTNEY, 1919- , *see* Reed, John Calvin, Jr., 1.

OWEN, VAUX, JR., 1927-1962, *see also* Callahan, Joseph Thomas, 2.

1. Stratigraphy and ground-water resources of Mitchell County, Georgia—summary: Georgia Mineral Newsletter, v. 14, nos. 2-3, p. 41-51, illus. incl. geol. map, 1961. Rocks of Cretaceous, Paleocene, Oligocene, Miocene, and Recent age are mapped. Most of the water comes from the Ocala Limestone in the Dougherty Plain.
2. Geology and ground-water resources of Lee and Sumter Counties, southwest Georgia: U. S. Geol. Survey Water-Supply Paper 1666, 70 p., illus., 1963. The Cretaceous-Tertiary rocks are described. A regional homocline is the major structure; it dips gently to the southeast. Water comes from Cretaceous sands and Paleocene and Eocene limestones, and all is of good quality.
3. Geology and ground-water resources of Mitchell County, Georgia: Georgia Geol. Survey Inf. Circ. 24, 40 p., illus., 1963. Rocks of Cretaceous to Holocene age are present, and those of the Eocene, Oligocene, and Miocene are described in detail. Their water-bearing properties are outlined. The Suwannee, Ocala, and Tallahatta Formations are the big aquifers.

PENNY, JOHN SLOYAN, 1914- , *see* Groot, Johann Jacob, 1.

PEPIN, ROBERT OSBORNE, 1933- , *see* Reynolds, John Hamilton, 2.

PERKINS, HENRY FRANK, 1921- , *see also* Giddens, Joel Edwin, 1.

1. (and England, Charles Bennett, and Gibbs, J. A.). Some morphological, physical, chemical and clay mineral characteristics of several agriculturally important Georgia soils: Univ. Georgia Agric. Exper. Sta. Tech. Bull. n.s. 26, 37 p., illus., 1962. A discussion of the origin and analysis of fourteen different soils in the state is given. The vast majority have a similar texture regardless of the parent

material. Kaolinite is the dominant clay mineral. Vermiculite is present in significant quantities, and small amounts of illite, gibbsite, goethite, quartz and amorphous materials are also reported.

PETRAFESO, FRANK A., *see* Phillbin, P. W., 1.

PEYTON, GARLAND, 1892-1964.

1. Amazonite from Jasper County: Georgia Mineral Newsletter, v. 13, no. 1, p. 21, 1960. The mineral comes from the Appalachian Mineral Company quarry near Monticello. No data are included.
2. Georgia, record exploratory activity reported: World Oil, v. 130, no. 7, p. 106-108, illus., 1960. A general survey of the petroleum potential of the state is given. Most of the potential is in the southeastern portion of the Coastal Plain, though some records of wells in the Paleozoic terrane of northwestern Georgia are included.
3. Georgia, *in* Underground storage of natural gas in the United States: Oklahoma City, Oklahoma, Interstate Oil Compact Commission, p. 20-21, 1962. The Blufftown Formation contains a considerable thickness of clay above the water-bearing rocks and could possibly be used as a place of storage. Also, coring in Clayton County reveals the possibility of storage in mixed-granite caverns.

PHILLBIN, P. W.

1. (and Petrafeso, Frank A., and Long, C. L.). Aeromagnetic map of the Georgia Nuclear Laboratory area, Georgia: U. S. Geol. Survey Geophys. Inv. Map GP-488, scale 1:250,000, 1964. An area from Henry County northward to Dawson County and from Chattooga County eastward to Hart County is mapped. Isogam intervals related to an arbitrary datum are 20 and 100 gammas. Fannin County is also included.

PHILBRICK, SHAILER SHAW, 1908-

1. Preliminary report on the geology of the Allatoona Dam site, Etowah River, Bartow County, Georgia, *in* Geology, Appendix C of Definitive project report for Allatoona Dam and reservoir: U. S. Army Corps of Engineers Mobile Dist.,

p. 3C-5C, illus., [1941]. The area of the dam is underlain by Weisner Quartzite, and the foundation rests on quartz-mica schist heavily injected with vein quartz and containing numerous lenses of quartzite. Dolomite occurs in lenses also. Numerous cores are logged.

PICKERING, SAMUEL MARION, JR., 1938-

1. Geology of iron ore deposits of the Perry Quadrangle, [Pulaski County] Georgia: Georgia Mineral Newsletter, v. 14, no. 4, p. 83-90, illus. incl. geol. map, 1961. Eocene, Oligocene, Miocene-Pliocene, and Recent rocks are mapped in the area. The iron ore occurs as a mappable unit in the Oligocene, the Fe content extending upward to 59%. The ore is over, or associated with, a chert zone.

PILKEY, ORRIN HENDREN, *see also* Giles, Robert T., 1.

1. Heavy minerals of the U. S. south Atlantic continental shelf and slope: Geol. Soc. America Bull., 74, no. 5, p. 641-648, illus., 1963. Many samples are from off the coast of Georgia. Heavy mineral variation is subdued due to a similar provenance for most of the sediments. Roundness distribution histograms indicate dual-sediment sources in some cases.
2. (and Richter, Dennis M.). Beach profiles of a Georgia barrier island [McIntosh County]: Southeastern Geology, v. 6, no. 1, p. 11-19, illus., 1964. Seven stations on Sapelo Island were sampled seasonally. Except for accretion at the southern end, most of the island is being eroded. Seasonal and storm changes are slight.
3. Carbonate fraction of U. S. south Atlantic shelf and upper slope sediments [abs.]: Geol. Soc. America Spec. Paper 76, p. 130-131, 1964.
4. (and Goodell, Horace Grant). Comparison of the composition of fossil and recent mollusk shells: Geol. Soc. America Bull., v. 75, no. 3, p. 217-228, illus., 1964. Unrecrystallized shells of five species of mollusks were collected from Miocene, Pliocene, Pleistocene, and Recent deposits, the latter including Atlantic coastal Georgia. Various components are compared and contrasted. The trace-element content of both calcite and aragonite can change without recrystallization, so caution is urged.

5. Distribution of heavy minerals in sediments of the United States south Atlantic continental shelf and slope [abs.]: Geol. Soc. America Spec. Paper 76, p. 254, 1964.
6. (and Frankenberg, Dirk). The relict-Recent sediment boundary on the Georgia continental shelf: Georgia Acad. Sci. Bull., v. 22, no. 1, p. 37-40, illus., 1964. Detailed bottom sampling shows the boundary to be but 2-4 miles wide and composed of interfingering Holocene and Pleistocene sediments. It occurs at a depth of 6 fathoms. The Holocene sediments are fine sands and silt; the Pleistocene sediments are coarser.

PINSON, WILLIAM HAMET, JR., 1919- , *see also* Fairbairn, Harold Williams, 1; Schnetzler, Charles Carter, 1, 2.

1. (and Schnetzler, Charles Carter). Rubidium-strontium correlation of three tektites and their supposed sedimentary matrices: Nature, v. 193, no. 4812, p. 233-234, illus., 1962. The Rb-Sr ratios of a tektite from Dodge County and the soil in which it was found were determined to test the hypothesis that the tektite is a product of lightning-fused matrix. The more refractory Rb is enriched relative to the more volatile Sr but it is considered coincidental, as the major element analyses of both materials are very different.

POLLEYS, E. H., SR.

1. Wilder's Cave (Grady County, Georgia): Speleo Digest [1959], p. 1175-1176, 1961; with different title, Georgia Spelunker, v. 3, no. 2, p. 17-18, illus., 1959. A detailed, popular description of this cave, also known as Blowing Hole, is given.

POOLEY, ROBERT NEVILLE

1. Basement configurations and sub-surface geology of eastern Georgia and southeastern South Carolina as determined by seismic-refraction measurements: M. S. Thesis, Univ. Wisconsin, 1960.
2. (and Meyer, Robert Paul, and Woollard, George Prior). Yamacraw Ridge, pre-Cretaceous structure beneath South Carolina-Georgia coastal plain [abs.]: Am. Assoc. Petroleum Geologists Bull., v. 44, no. 7, p. 1254-1255, 1960.

PORTER, KATHERINE ELAINE, 1940- , *see* Hurst, Vernon James, 7.

POTTER, DONALD BRANDRETH, 1923- , *see* Espenshade, Gilbert Howry, 1.

POWELL, JAMES C., *see* Ritchie, Frank T., Jr., 1.

POWER, WALTER ROBERT, JR., 1924-

1. (and Reade, Ernest Herbert, Jr.). Field excursion, the Georgia marble district — Geol. Soc. America Southeastern Sec. Ann. Mtg., 1962, Guidebook 1: Atlanta, Georgia, Georgia Dept. Mines, Mining and Geology, 21 p., illus., 1962. Descriptions of Murphy Marble occurrences are given. The marble, Cambrian in age, lies in a belt bounded on the east and west by other metamorphic rocks; these are also described. Where the marble is absent in the belt, thrusting from the east is suspected. Deposits near White-stone and Tate in Pickens County are examined in detail. No road log is included.

PRESSLER, EDWARD DOERK, 1904-

1. Geology and occurrence of oil in Florida: Am. Assoc. Petroleum Geologists Bull., v. 31, no. 10, p. 1851-1862, illus., 1947. A general description of the stratigraphy and structure of Florida includes the Georgia Coastal Plain. The Central Georgia Uplift, Decatur Arch, Appalachian Embayment, and the Okefenokee Embayment are recognized.

[PRITCHARD, JAMES]

1. Mapping of large [Dade County] Georgia cave completed: Georgia Spelunker, v. 4, no. 2, p. 61-63, illus., 1960. Howard's Waterfall Cave in Dade County is mapped on a scale of 1 inch to 100 feet. The cave is near Trenton.

PUGLIESE, JOSEPH M., *see* Atchison, Thomas Calvin, Jr., 1.

RAINWATER, EDWARD HARRIMAN, 1909-

1. Mrs. Esther [English] Richards Applin: Gulf Coast Assoc. Geol. Socs. Trans., v. 10, p. 305, 1960.
2. Paleocene of the Gulf Coastal Plain of the United States

of America: Internatl. Geol. Cong. 21, Rept. Pt. 5, p. 97-116, illus., 1960. The Paleocene in Georgia consists of a basal Clayton Formation, a middle Porters Creek Clay, and an upper Naheola Sandstone. In southeastern Georgia, the Cedar Keys Limestone occupies the Paleocene interval, and it contains evaporite.

3. Stratigraphy and its role in the future exploration for oil and gas in the Gulf Coast: Gulf Coast Assoc. Geol. Socs. Trans., v. 10, p. 33-75, illus., 1960. The general stratigraphic framework of the Gulf Coast is reviewed as a preview to detailed investigations of potentially productive areas. The need for general rather than specific studies of rocks is stressed. The Cretaceous and Tertiary history of Georgia is included in the examples. Cross sections along the Central Georgia Uplift are used to demonstrate examples.
4. Regional stratigraphy of the Gulf Coast Miocene: Gulf Coast Assoc. Geol. Socs. Trans., v. 14, p. 81-124, illus., 1964. The southern part of the Coastal Plain of Georgia was a sand, gravel, and clay environment during the upper Miocene and a carbonate platform during lower Miocene time.
5. Transgressions and regressions in the Gulf Coast Tertiary: Gulf Coast Assoc. Geol. Socs. Trans., v. 14, p. 217-230, illus., 1964. The carbonate sequences of Georgia and Florida are taken as evidence of a stable shelf area in the Tertiary in this area whereas great changes in the type of sedimentation occur elsewhere throughout the Gulf Coast Tertiary.

RAINWATER, FRANK HAYES, 1921-

1. Stream composition of the conterminous United States: U. S. Geol. Survey Hydrol. Invs. Atlas HA 61, 3 sheets and text, 1962, scale 1:7,000,000. The map showing sediment concentration shows that Coastal Plain and Blue Ridge rivers are very high and the Piedmont rivers are relatively low. Another map shows Georgia's rivers to contain mostly Ca and Mg carbonates and bicarbonates except along the coast where there is more variation. In general, the dissolved solid content is low throughout the state.

RAMSPOTT, LAWRENCE DEWEY, 1934-

1. The Elberton Batholith; *Southeastern Geology*, v. 5, no. 4, p. 223-230, illus., 1964. The batholith occupies over 900 square miles of the east-central Piedmont. It is fine-grained adamellite and porphyritic adamellite. It is late or post-tectonic in origin. Mica dates are 250 m.y. whereas zircon dates are 450 m.y. It was probably metamorphosed following emplacement.
2. Inclusions in the Acme Quarry, Elbert County, Georgia: *Georgia Acad. Sci. Bull.*, v. 22, no. 1, p. 32-35, illus., 1964. The alignment of inclusions (of which there are several types) and the random structures in the inclusions show flow structure. The roof of the pluton was not far above the present level of exposure. Various petrographic determinations are included.
3. Variable appearance of Elberton granites [Elbert County] [abs.]: *Georgia Acad. Sci. Bull.*, v. 22, no. 2, p. 19-20, 1964.

RANSOM, JAY ELLIS, 1914-

1. The rock-hunter's range guide—How and where to find minerals and gem stones in the United States: New York, New York, Harper and Bros., 213 p., illus., 1962. This is a popular guide to rock and mineral collecting localities in all of the states, including Georgia, to which about 2 pages are devoted. The locations are very generalized.

READE, ERNEST HERBERT, JR., 1936- , *see also* Power, Walter Robert, Jr., 1.

1. The geology of a portion of Newton and Walton Counties, Georgia: M. S. Thesis, Emory Univ., 1960; [abs.]: *Georgia Mineral Newsletter*, v. 13, no. 2, p. 107, 1960.

REED, JOHN CALVIN, JR., 1930-

1. (and Johnson, Henry Stanley, Jr., and Bryant, Bruce Hazelton, and Bell, Henry, 3d, and Overstreet, William Courtney). Brevard fault in North Carolina, South Carolina, and [Piedmont] Georgia [abs.]: *Geol. Soc. America Spec. Paper* 68, p. 79, 1962.

REIGHARD, KENNETH FREDERICK, 1938-

1. A portion of the Rome Fault of northwestern Georgia: M. S. Thesis, Emory Univ., 1963.

REPUBLIC EXPLORATION COMPANY

1. Major geologic features of the United States and Cuba: Tulsa, Oklahoma, Republic Exploration Co., scale 1 inch to about 73 miles, [1964?]. An outline map shows the major features of Georgia to be the Southeast Georgia Embayment, the Southwest Georgia Embayment, and the Appalachian Uplift.

REYNOLDS, JOHN HAMILTON, 1923-

1. Rare gasses in tektites: *Geochimica et Cosmochimica Acta*, v. 20, no. 2, p. 101-114, illus., 1960. The contents of potassium, atmospheric argon, radiogenic argon, atmospheric neon, and possibly cosmogenic neon from the tektite found at Empire, Dodge Co., are determined. The K-Ar age has been computed also. It is 32 ± 1.0 m.y. old and is therefore not part of the same fall as moldavites, as suggested by Cohen.
2. (and Merrihue, Craig M., and Pepin, Robert Osborne). Extinct radioactivity and primordial rare gases in [Jenkins County] iron meteorites [abs.]: *Am. Physical Soc. Bull.*, 2d ser. v. 7, p. 35, 1962.

RICHARD, LOUIS M.

1. Gold bearing black sand found in Georgia near the mouth of the Altamaha River above the town of Darien [Glynn-McIntosh Counties]: *Georgia Mineral Newsletter*, v. 15, nos. 3-4, p. 92-93, 1962. Gold is reported from the sands of the beaches and bars. It is microscopic and only appears after smelting. It no doubt comes from the Piedmont and Blue Ridge gold fields.

RICHARDS, HORACE GARDINER, 1906-

1. Correlation of Pleistocene shorelines of North America with those of Europe: *Internatl. Geol. Cong.* 21, Rept. Pt. 4, p. 58-61, 1960. The Sangamon interglacial is shown by one high-level terrace with a warm-water fauna. It is at 25 feet, and there is possibly a higher Sangamon shoreline at 90 feet. Higher ones are questionable. Correlations with terraces in the Mediterranean area are suggested.

2. Pleistocene shorelines of North and South America [abs.]: Internatl. Assoc. Quarternary Research Cong. 6, Abstract papers, p. 178-179, 1961.
3. Studies on the marine Pleistocene — Part 1, the marine Pleistocene of the Americas and Europe; Part 2, the marine Pleistocene mollusks of eastern North America: Am. Philos. Soc. Trans. 1962, v. 52, no. 3, 141 p., illus., 1962. A very cursory description of the terraces throughout the Americas and Europe. Many mollusks from Pleistocene deposits in Chatham County are listed and illustrated.

RICHARDSON, KEITH ALLAN, *see* Adams, John Allan Stewart, 1.

RICHTER, DENNIS M., *see* Pilkey, Orrin Hendren, 2.

RIGGS, ELLIOTT ARTHUR, 1929-

1. Major basins and structural features of the United States: Maplewood, New Jersey, Geographic Press, scale 1 inch to 75 miles, 1960.

RITCHIE, FRANK T., JR., *see also* Buie, Bennett Frank, 3.

1. (and Powell, James C.). Soils of Twiggs, Decatur, Grady, and Thomas Counties, Georgia: Georgia Mineral Newsletter, v. 16, nos. 1-2, p. 29-38, illus., 1963. The physical and chemical composition of soils in fuller's earth-bearing rock terrains are described. Small-scale maps of each county are included.

ROBERTS, CARLYLE JONES, 1928-

1. (editor). Physiography and climatology of the Atlanta area [Fulton County]: Georgia Inst. Technology Eng. Exper. Sta. Bull. 24, 59 p., illus., 1960. A general summary of the physiography and drainage of the area is given. The relation of Atlanta to the drainage divide of the Chattahoochee and Flint Rivers is important to planning for waste disposal.

ROBERTS, WILLIAM B.

1. A study of the river terraces of the Chattahoochee River between Chattahoochee, Florida and Fort Gaines [Clay County] Georgia: M. S. Thesis, Florida State Univ., 1958.

ROBERTSON, EUGENE CORLEY, 1915-

1. The Carolina Bays and emergence of the Coastal Plain of the Carolinas and Georgia, in Geological Survey research 1962: U. S. Geol. Survey Prof. Paper 450-C, p. C87-C93, illus., 1962. The bays could have come about by the segmentation of marginal marine lagoons, resulting from the growth of spits and bars due to prevailing wind directions. Since many of the bays are now above sea level, a change of 0.1 to 0.01 cm/year is suggested.

ROGERS, CLEAVES LINCOLN, 1916-

1. (and Jaster, Marion Charlotte). Titanium in the United States, exclusive of Alaska and Hawaii: U. S. Geol. Survey Mineral Invs. Resources Map MR 29, scale 1:3,168,000, with text, 1962. Titanium occurs in the Graves Mountain deposits in Lincoln County and in the heavy minerals in the coastal beach sands.

ROWLAND, GERALD LEE, 1928-

1. Frederick Charles Leonard, 1896-1960: Meteoritics, v. 2, no. 1, p. i, vi-vii, port., 1963.

RUBIN, MEYER, 1924- , see Hanshaw, Bruce Busser, 1.

RUSNAK, GENE ALEXANDER, 1925-

1. (and Bowman, Albert L., and Ostlund, H. Gote). Miami natural radiocarbon measurements II: Radiocarbon, v. 5, p. 23-33, 1963. Radiocarbon measurements from various places along the Atlantic coast are included. All are from or near Sapelo Island in McIntosh County. The dates vary from 480 to 8195 years old.
2. (and Bowman, Albert L., and Ostlund, H. Gote). Miami natural radiocarbon measurements III: Radiocarbon, v. 6, p. 208-214, 1964. Shell material from cores 47 feet deep on Cabretta Island, McIntosh County, is dated 42,200-40,000 years old. Material from a borrow pit on Wilmington Island, Chatham County, is 40,750 to 42,700 years old. These are from the Silver Bluff sediments of Pleistocene age.

SACHS, KELVIN NORMAN, JR.

1. Revision of American *Lepidocyclinas*: Ph D Thesis, Cornell

Univ., 1960; [abs.] *Dissert. Abs.*, v. 21, no. 6, p. 1528, 1960.

ST. JOHN, F. B., JR.

1. (and Lusk, Tracy Wallace). Developments in southeastern states in 1959: *Am. Assoc. Petroleum Geologists Bull.*, v. 44, no. 6, p. 842-850, illus., 1960. Two wells are reported drilled in Georgia. One is from Pulaski County and the other is from Seminole County. Both are dry, and no details are given.

SALISBURY, JOHN WILLIAM, JR., 1933-

1. Geology and mineral resources of the northwest quarter of the Cohutta Mountain Quadrangle [Murray County]: Ph D Thesis, Yale Univ., 1959; *Georgia Geol. Survey Bull.* 71, 61 p., illus. incl. geol. map, 1961. A complete geologic description of the area is given. Pre-Cambrian to Ordovician rocks are mapped and described. The rocks are almost entirely metamorphic, and are tightly folded and extensively faulted. Iron, manganese, and limestone are the mineral resources present.

SANDLIN, WALTER LEE, JR., 1935-

1. A facies study of the Red Mountain Formation of northwestern Georgia: M. S. Thesis, Emory Univ., 1960; [abs.]: *Georgia Mineral Newsletter*, v. 13, no. 2, p. 106-107, 1960.

SAUER, HERBERT I., see Shacklette, Hansford Threlkeld, 1.

SAYRE, ALBERT NELSON, 1901-

1. Julia Anna Gardner (1882-1960): *Am. Assoc. Petroleum Geologists Bull.*, v. 45, no. 8, p. 1418-1421, port., 1961.

SCHACKLETTE, HANSFORD THRELKELD, 1914-

1. (and Sauer, Herbert I.). The association of cardiovascular mortality rates in Georgia with the abundance and distribution of certain elements in rocks, soils, and plants: *U. S. Geol. Survey Repts. Open File* [no. 753], 21 p., 1964. Mortality rates for the counties show a remarkable correlation with a geological and a soils map. Analyses of soil, rock, and plants for 33 elements show that they could not

definitely associate the patterns of chemical-element abundance with specific geologic formation, soil associations, or physiographic provinces, but at least approximate associations are possible. No specific evidence occurs that individual chemical factors are related to cardiovascular mortality.

SCHLEE, JOHN STEVENS, 1928- , *see also* Hurst, Vernon James, 5.

1. Early Pennsylvanian currents in the southern Appalachian Mountains: *Geol. Soc. America Bull.*, v. 74, no. 12, p. 1439-1451, illus., 1963. Cross bedding measurements were made from 12 locations in northwestern Georgia. The current pattern follows the general trend of the Appalachian Basin from the northeast to southwest, and then in Georgia it bends toward the west.

SCHMIDT, ROBERT GORDON, 1921- , *see also* Guillou, Robert Barton, 1.

1. Natural gamma aeroradioactivity of the Savannah River Plant area, South Carolina and Georgia: *U. S. Geol. Survey Geophys. Inv. Map GP-306*, scale 1:250,000 with text, geol. map, 1961. Portions of Bulloch, Emmanuel, Burke, Jefferson, Richmond and Glascock Counties are included. Shaded areas between contours indicate the gamma-ray intensity. The ground component of the reading comes from the upper six inches of ground and come principally from members of the uranium and thorium decay series and K-40.
2. Aeroradioactivity survey and areal geology of the Savannah River Plant area, South Carolina and Georgia (ARMS-1): *U. S. Atomic Energy Comm. Rept. CEX-58.4.2*, 42 p., illus., 1962. Continuous radioactivity profiles were made with a scintillation counter in an airplane at elevations of about 500 feet. A general geological description of the Piedmont and Coastal Plain in the area is given. The aeroradioactivity of various units in the provinces is described.

SCHNETZLER, CHARLES CARTER, 1930- , *see also* Pinson, William Hamet, Jr., 1.

1. (and Pinson, William Hamet, Jr.). The chemical composition of tektites, Chap. 4, *in* *Tektites*: Chicago, Illinois,

Univ. Chicago Press, p. 95-129, illus., 1963. Data from a specimen from Empire, Dodge County, is included among many others, in tables which give major element analyses. Various ratios and proportions are analyzed. Trace element contents are also tabulated.

2. (and Pinson, William Hamet, Jr.). Variation of strontium isotopes in tektites: *Geochimica et Cosmochimica Acta*, v. 28, no. 6, p. 953-969, 1964. A tektite from near Empire, Dodge County, is included along with many others from elsewhere. It has 74 ppm Rb and 170 ppm Sr. The slight variations in isotopic composition exhibited in all the tektites suggest that if they are of terrestrial origin they must be derived from a widespread, uniform source material.

SCHUCHERT, CHARLES, 1858-1942.

1. Lower Devonian aspect of the lower Helderberg and Oriskany Formations: *Geol. Soc. America Bull.*, v. 11, no. 2, p. 241-332, illus., 1900. The Oriskany Sandstone age equivalents are identified from Floyd County where they are called Frog Mountain Sandstone. A suite of 6 fossils from the overlying chert formation is listed.

SCHULTZ, ROGER STEPHEN, 1937-

1. The geology of northwestern Newton and southwestern Walton Counties, Georgia: M. S. Thesis, Emory Univ., 1961; [abs.]: *Georgia Mineral Newsletter*, v. 14, no. 4, p. 119, 1961.

SCOTT, ROBERT CLYDE, 1921-

1. (and Barker, Franklin Brett). Data on uranium and radium in ground water in the United States 1954 to 1957: U. S. Geol. Survey Prof. Paper 426, 115 p., illus., 1962. Much data is included in tables; much is from Georgia. The tables include location, yield, use, well characteristics, water-bearing unit, water source, temperature, date, remarks, and various ion concentrations including uranium and radium.

SEVER, CHARLES WILLIAM, JR., 1931-

1. Geologic control of movement of ground water in crystal-

- line rocks in Dawson County, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 18, nos. 1-2, p. 16, 1960.
2. Acid water in the crystalline rocks of Dawson County, Georgia: Georgia Mineral Newsletter, v. 15, nos. 3-4, p. 57-61, illus., 1962. The large carbon dioxide/bicarbonate ratio of the water is apparently related to the rock type, depth of aquifer, and topography. Water from valley springs underlain by metagraywacke usually has a high ratio whereas water from deep wells in hills underlain by quartzite has a lower ratio.
 3. (and Callahan, Joseph Thomas). The temperatures of ground and ground-water, Dawson County, Georgia: Georgia Mineral Newsletter, v. 15, nos. 1-2, p. 25-28, illus., 1962. Graphs and charts show the relation of these components to each other for the various months of the year. The mean annual temperature of the ground water closely approximates the mean annual temperature of the air.
 4. Water-quality differences used in mapping geologic structures in the Coastal Plain of [southwestern] Georgia [abs.]: Georgia Acad. Sci. Bull., v. 20, nos. 1-2, p. 12, 1962.
 5. Cross structures in the Oligocene rocks in southwestern Georgia [abs.]: Georgia Acad. Sci. Bull., v. 21, nos. 1-2, p. 10, 1963.
 6. Geologic, hydraulic, physiographic, and geophysical data indicating a regional structure transecting the Coastal Plain of Georgia [abs.]: Geol. Soc. America Spec. Paper 73, p. 16, 1963.
 7. Ground-water resources of Bainbridge Air Base, Decatur County, Georgia: Georgia Mineral Newsletter, v. 16, nos. 1-2, p. 39-43, illus., 1963. Fifty to 90 feet of residual sand and clay are underlain by the Eocene Ocala, Lisbon, and Tallahatta Formations. All the rocks are good aquifers and total 1200 feet.
 8. Fuller's earth clay found in Cook County, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 17, 1964.
 9. Geology and ground-water resources of crystalline rocks, Dawson County, Georgia: Georgia Geol. Survey Inf. Circ. 30, 32 p., illus., 1964. Rocks in the county are grouped into five divisions: A, B, C, Great Smoky Group and

Alluvium. The ages of A, B, and C are uncertain. A is composed largely of five different schists; B is a migmatite zone; and C is schist, amphibolite, and quartzite. B is separated from the others by faults. Water occurs in the cleavage, schistosity, and bedding planes of the rocks.

10. Ground-water conduits in the Ashland Mica Schist, [Dawson County] northern Georgia, in Geological Survey research 1964: U. S. Geol. Survey Prof. Paper 501-D, p. D141-D143, illus., 1964. Although joints in the rocks govern the course of streams that drain outcrops of the Ashland Mica Schist, they are not the principal conduits through which ground water moves toward the streams. Instead, ground water moves mainly through planar openings parallel to the bedding, schistosity, and axial-plane cleavage of the schist.
11. Prospecting for limestone in Thomas County, Georgia [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 17, 1964.
12. Relation of economic deposits of attapulgite and fuller's earth to geologic structure in southwestern Georgia, in Geological Survey research 1964: U. S. Geol. Survey Prof. Paper 501-B, p. B116-B118, illus., 1964. All existing mines in deposits of attapulgite and fuller's earth in Decatur and Grady Counties are near the axis of a southwest-plunging structural trough.

SHARTSIS, JACK MORRIS, *see* Ormsby, Walter Clayton, 1, 2.

SHEFFEY, NOLA BEWLEY, 1929- , *see* Stadnichenko, Taisia Maximovna, 1.

SHIRLEY, LAWRENCE P., *see* Geise, Fred P., 1.

SHOTTS, REYNOLD QUINN, 1909-

1. Correlations in the "Coal Measures" of the southeast: Alabama Acad. Sci. Jour., v. 31, no. 6, p. 427-446, illus., 1960. A general survey of Pennsylvanian stratigraphy includes northwestern Georgia. Suggestions are made for the correlation of the Alabama rocks with those which are better known in Tennessee. Several of the units in Georgia are included.

SILVER, LEON THEODORE, 1925-

1. (and Grunenfelder, Marc H.). Alteration of accessory allanite in granites of the Elberton area, Georgia [abs.]: Geol. Soc. America Bull., v. 68, no. 12, p. 1796, 1957.

SINHA, EVELYN ZEPEL

1. Geomorphology of the lower Coastal Plain from the Savannah River area, Georgia, to the Roanoke River area, North Carolina [abs.]: Dissert. Abs., v. 20, no. 7, p. 2759, 1960.

SIPLE, GEORGE E., 1914-

1. Piezometric levels in the Cretaceous sand aquifer of the Savannah River basin: Georgia Mineral Newsletter, v. 13, no. 4, p. 163-166, illus., 1960; South Carolina Devel. Board Div. Geology, Geol. Notes, v. 5, no. 4, p. 54-57, illus., 1961. A small-scale map shows the piezometric surface in the Tuscaloosa Sand in the area. Artesian conditions occur in all but the topmost beds. The surface suggests that the only discharge is natural, there being very little discharge of the aquifer by pumping.

SMALL, JAMES BARTER, 1907- , see Davis, George Hamilton, 1.

SMITH, JAMES WILLIAM, 1934-

1. Geology of an area along the Cartersville fault near Fairmount, [Gordon County] Georgia [abs.]: Georgia Mineral Newsletter, v. 13, no. 2, p. 107, 1960.

SMITH, RICHARD WELLINGTON, 1898-

1. Andrew Brown [1896-1963]: Mining Engineering, v. 16, no. 8, p. 85-86, 1964.

SNIPES, DAVID STRANGE, 1928-

1. An hypothesis for the absence of fissility in the kaolinite deposits of the Tuscaloosa Formation [abs.]: South Carolina Acad. Sci. Bull., v. 26, p. 38-39, 1964.

SOHL, NORMAN FREDERICK, 1924-

1. New gastropod genera from the late Upper Cretaceous of the east Gulf Coastal Plain: Jour. Paleontology, v. 37, no. 4, p. 747-757, illus., 1963. *Aciculiscala acuta* from the Ripley Formation, and *Sulcoretusa (Moniliretusa) spinosa*,

Scobinidola guttatus, *Paleofusimitra elongata*, *Zikkurattia tabanneensis*, and *Myobarbium laevigatum* from the Providence Sand of Clay County are illustrated.

2. (and Kauffman, Erle Galen). Giant Upper Cretaceous oysters from the Gulf Coast and Caribbean: U. S. Geol. Survey Prof. Paper 483-H, p. H1-H22, illus., 1964. *Crassostrea cusseta* occurs in the Cusseta Sand and rarely in the Blufftown Formation in exposures along the Chattahoochee River. Its stratigraphic and evolutionary significance is discussed also. It occurs in the Blufftown Formation at Florence, in Stewart County.

SOHN, ISRAEL GREGORY, 1911-

1. Memorial to Wilbert Henry Hass (1906-1959): Geol. Soc. America Proc. 1960, p. 104-106, port., 1962.

SOLLIDAY, JAMES R., see Du Bar, Jules Ramon, 1.

SOSMAN, ROBERT BROWNING, 1881-

1. Memorial to Arthur Louis Day (1896-1960): Geol. Soc. America Bull., v. 75, no. 11, p. P147-P155, port., 1964.

STADNICHENKO, TAISIA MAXIMOVNA, 1894-1958.

1. (and Zubovic, Peter, and Sheffey, Nola Bewley). Beryllium content of American coals: U. S. Geol. Survey Bull. 1084-K, p. 253-295, illus., 1961. Coal from Walker County is included. Three samples were burned and the ash examined. The coals contained 0.8, 2.2, and 1.7 ppm Be on the average, respectively.

STAIR, RALPH, 1900-

1. Tektites and the lost planet: Smithsonian Inst. Ann. Rept. 1954, p. 217-230, illus., 1955; Scientific Monthly, v. 83, no. 1, p. 3-12, illus., 1955. The spectral transmittance of the tektite from Empire, Dodge County, along with others from other places, is used as a demonstration of its physical and chemical properties. The case is made that these are parts of another planet which was disrupted.

STEARNS, RICHARD GORDON, 1927-

1. (and Mitchum, Robert Mitchell, Jr.). Pennsylvanian rocks of southern Appalachians, in Pennsylvanian System in the

United States—a symposium: Tulsa, Oklahoma, Am. Assoc. Petroleum Geologists, p. 74-96, illus., 1962; reprinted as Tennessee Div. Geology Rept. Inv. 14, 1962. Lithologically, the strata in northwestern Georgia consist of sandstone, shale, conglomerate, and coal. The rocks in Georgia are correlated with those in Alabama and Tennessee. Depositional environments are described, as are structural trends. The New River equivalent within the Pottsville Series is present.

STEPHENS, RAYMOND WEATHERS, JR., 1928-

1. Stratigraphy and Ostracoda of the Ripley Formation of western Georgia: Ph D Thesis, Louisiana State Univ., 1960; [abs.]: Dissert. Abs., v. 20, no. 11, p. 4372, 1960.

STEWART, JOE WILLIAM, 1918-

1. (and Croft, Mack G.). Ground-water withdrawals and decline of artesian pressures in the coastal counties of Georgia: Georgia Mineral Newsletter, v. 13, no. 1, p. 84-93, illus., 1960. Artesian pressures have declined 10 to 90 feet since 1943 owing to great withdrawal, the largest being in the Brunswick area. Small-scale piezometric maps show the cones of depression around Savannah, Brunswick, Jesup, and St. Marys.
2. Relation of salty ground water to fresh artesian water in the Brunswick area, Glynn County, Georgia: Georgia Geol. Survey Inf. Circ. 20, 42 p., illus., 1960. Salt water occurs in some of the otherwise fresh-water aquifers in the area. Detailed investigations suggest that it is from the upward migration of connate water due to the reduction of pressure resulting from pumping. The principle aquifer is the Ocala Limestone although middle Eocene and lower Miocene and Oligocene limestones also serve as water sources.
3. Tidal fluctuations of water levels in wells in crystalline rocks in north Georgia [Dawson County], in Geological Survey research 1961: U. S. Geol. Survey Prof. Paper 424-B, p. B107-B109, illus., 1961. The continuous records in water wells in the area of the Georgia Nuclear Laboratory show regular fluctuations which are attributed to the influence of the moon.
4. Relation of permeability and jointing in crystalline meta-

morphic rocks near Jonesboro [Clayton County], Georgia, *in* Geological Survey research 1962: U. S. Geol. Survey Prof. Paper 450-D, p. D168-D170, illus., 1962. Cores taken from metamorphic rock were examined in the laboratory; most samples had no permeability, and most of the porosity was less than 1 percent. The total footage tested was from 185 to 244 feet deep. Joints are probably the source of the ground water, and wells drilled 500 feet or more deep probably will yield 10 to 25 gallons per minute.

5. Water-yielding potential of weathered crystalline rocks at the Georgia Nuclear Laboratory, [Dawson County], *in* Geological Survey research 1962: U. S. Geol. Survey Prof. Paper 450-B, p. B106-B107, illus., 1962. The direction and rate of ground-water movement in the saprolite are influenced by the degree of weathering to which the material has been subjected, by the mineral composition of the parent rock, by mineral-grain orientation, and by the presence of shear zones, quartz veins, and joints.
6. (and Herrick, Stephen Marion). Emergency water supplies for the Atlanta area in a national disaster: Georgia Geol. Survey Spec. Pub. 1, 1 sheet, text and maps, 1963. Maps show the locations of wells and springs in the Atlanta metropolitan area and within a radius of 25 miles of the city. No data are given save locations.
7. Infiltration rates in weathered crystalline rocks at the Georgia Nuclear Laboratory, Dawson County, Georgia, *in* Geological Survey research 1962: U. S. Geol. Survey Prof. Paper 450-E, p. E140-E142, illus., 1963. All the tests were made by single-ring infiltrimeters driven 4 to 5 feet in the saprolite. Great variations were detected, due largely to mineral composition or condition (dry or saturated) of the saprolite. Quartz veins, clay-cover thickness, and temperature changes are also factors.
8. Relation of ion-exchange capacity to mineral composition and grain size of weathered crystalline rocks at the Georgia Nuclear Laboratory, Dawson County, Georgia, *in* Geological Survey research 1963: U. S. Geol. Survey Prof. Paper 475-B, p. B32-B34, illus., 1963. Weathered, crystalline rocks have ion-exchange capacities ranging from 1.0 to

13.7 millequivalents per 100 g. In general, the higher ion-exchange capacities characterized the sample having the higher clay-content. The principal minerals were kaolinite muscovite, quartz, vermiculite-biotite, gibbsite, and vermiculite.

9. Water-yielding potential of weathered crystalline rocks at the Georgia Nuclear Laboratory [Dawson County] [abs.]: Geol. Soc. America Spec. Paper 73, p. 16, 1963.
10. (and Callahan, Joseph Thomas, and Carter, R. F., and others). Geologic and hydrologic investigation at the site of the Georgia Nuclear Laboratory, Dawson County, Georgia: U. S. Geol. Survey Bull. 1133-F, p. F1-F90, illus. incl. geol. map, 1964. A general geologic investigation is reported. Only metamorphic rocks of uncertain age are mapped. The saprolite and joints and fissures in the rocks determine the character of the ground-water movement. The water moves slow enough that radioactive waste will decay to harmless levels before the ground water discharges into streams.
11. Infiltration and permeability of weathered crystalline rocks, Georgia Nuclear Laboratory, Dawson County, Georgia: U. S. Geol. Survey Bull. 1133-D, p. D1-D59, illus., 1964. The mechanism for measuring infiltration rates into the saprolite is described. The water from the infiltration pits moves along the strike of the schistosity; some moves downdip, and some moves updip.

STOSE, GEORGE WILLIS, 1869-1960.

1. (and Ljungstedt, Olaf Axel). Geologic map of the United States, 4 sheets, scale 1:2,500,000: Washington, D. C., U. S. Geol. Survey, revised, 1960: originally published, 1932.

STRALEY, H. W., 3d., 1905- , see Burdick, Glenn Arthur, 1; Husted, John Edwin, 1, 2, 3.

STRINGFIELD, VICTOR TIMOTHY, 1902-

1. Geologic and hydrologic problems on the continental shelf of Florida, Georgia, and South Carolina, in Proceedings of the first national coastal and shallow water research conference: Tallahassee, Florida, Natl. Sci. Foundation and

Office Naval Research, p. 310-312, 1962. A general review of the problems encountered in ground-water investigation is given. The nature and extent of the principal artesian aquifer, for instance, is unknown. Information is needed on the location and depth of submarine outcrops of aquifers and the extent of the ground water in these aquifers; the origin, age, nature and structure of the aquifers below the continental shelf; the fresh-salt water interface; temperature and salinity problems, and ocean-floor topography.

2. Relation of surface-water hydrology to the principal artesian aquifer in Florida and southeastern Georgia, *in* Geological Survey research 1964: U. S. Geol. Survey Prof. Paper 501-C, p. C164-C169, illus., 1964. The main source of some of the largest limestone springs in the world and of some streams in Florida and Georgia is discharge from the principal artesian limestone aquifer where it is at or near the surface in a belt of outcrops in Georgia. During flood stage, water from some of the larger streams may enter the aquifer, but recharge is chiefly in interstream areas.

SWAIN, FREDERICK MORRILL, JR., 1916-

1. (and Brown, Philip Monroe). Cretaceous Ostracoda from wells in the southeastern United States: North Carolina Dept. Conserv. and Devel., Div. Mineral Resources Bull. 78, 55 p., illus., 1964. Ostracodes from the Atkinson Formation in Clinch and Echols Counties are included. Twelve different species are described and illustrated.

SWANSON, VERNON EMANUEL, 1922- , *see* Conant, Louis Cowles, 1.

TABER, STEPHEN, 1882-1963, *see* Watson, Thomas Leonard, 1.

TANNER, WILLIAM FRANCIS, JR., 1917-

1. Paleogeographic reconstructions from cross-bedding studies: Am. Assoc. Petroleum Geologists Bull., v. 39, no. 12, p. 2471-2483, illus., 1955. The dip of cross-bedding is used to show current directions and hence shorelines. Examples are cited for Cretaceous Tuscaloosa and Providence Sands in Georgia along the Fall Line and for the Miocene Hawthorn Formation in southwestern Georgia.

2. Upper Cretaceous coast of Georgia and Alabama: Georgia Mineral Newsletter, v. 15, nos. 3-4, p. 89-92, illus., 1962. Cross bedding shows a convex, curving shoreline which passed south of Augusta, near Macon, and north of Columbus. The near-shore energy gradients are steep in eastern Georgia and gentle in western Georgia. Littoral drift was toward the shoals which may have been marked by a cusped shoreline or by a barrier and sound complex, or both.

TAPPAN, HELEN NINA, 1917- , *see* Loeblich, Alfred Richard, Jr., 1.

THOMAS, HENRY DIGHTON, 1900-

1. Ray Smith Bassler [1878-1961]: Geol. Soc. London Proc. 1961-62, no. 1602, p. 148-150, 1962; Nature, v. 195, no. 4846, p. 1049, 1962.

THORNE, ROBERT FOLGER, 1920-

1. Inland plants on the Gulf Coastal Plain of Georgia: Castanea, v. 14, no. 2, p. 88-97, illus., 1949. Plants common and rare on the Georgia Coastal Plain are listed. Many of those which are rare are very common in the Blue Ridge area of Georgia, and most are found in the Chattahoochee River drainage. The Pleistocene climate probably facilitated the migration. The area has been exposed for such occupancy since the Oligocene.

TILLEY, CECIL EDGAR

1. [Arthur Louis Day, 1869-1960]: Geol. Soc. London Proc. 1959-1960, no. 1582, p. 130-132, 1960.

TOULMIN, LYMAN DORGAN, JR., 1904-

1. (and LaMoreaux, Philip Elmer, and Newton, John G.). Profile showing geology along the Chattahoochee River: Alabama Geol. Survey Map 28, 1 sheet, 1963. A series of generalized stratigraphic sections measured along the river are presented in a scaled geographic line. The section ranges from the Upper Cretaceous Providence Sand behind the Walter George Dam in Clay County, to the Ocala Limestone exposed in the river in Early County. The sections are also described in the text.

2. (and LaMoreaux, Philip Elmer). Stratigraphy along Chattahoochee River, connecting link between Atlantic and Gulf Coastal Plains: *Am. Assoc. Petroleum Geologists Bull.*, v. 47, no. 3, p. 385-404, illus., 1963. The section from the Providence Sand of Upper Cretaceous age upward to the Ocala Limestone of upper Eocene age, is described in detail from exposures along the river. An unconformity between the Paleocene and Eocene is pronounced.

TRAUTMAN, MILTON A., *see* Walton, Alan, 1.

TRAYWICK, BEN T.

1. Staurolite: *Gems and Minerals*, no. 303, p. 20-22, illus., 1962. A popular account of the origin of twinned staurolite includes illustrations and descriptions of many from the Blue Ridge of Georgia.

TROUTMAN, ARTHUR

1. Prospective oil and gas areas of the United States: Houston, Texas, Oil Center Tool Co., 108 p., illus., 1960. The cross sections of Mesozoic rocks published by the Southeastern Geological Society (Jordan, 1949) are reproduced. Cretaceous rocks in southern Georgia are correlated with those from Alabama, Florida, and South Carolina.

TRUMBULL, JAMES VAN ALLEN, 1927- , *see also* Johnston, John Edward, 1.

1. Coal fields of the United States, sheet 1: Washington, D. C., U. S. Geol. Survey, scale 1:5,000,000, 1960.
2. Continental shelf of east coast as possible future petroleum producing province [abs.]: *Am. Assoc. Petroleum Geologists Bull.*, v. 44, no. 7, p. 1259, 1960.

TWENHOFEL, WILLIAM STEPHENS, 1918- , *see* Butler, Arthur Pierce, Jr., 1.

UCHUPI, ELAZAR, 1928-

1. Sediments on the continental margin off eastern United States, *in* Geological Survey research 1963: U. S. Geol. Survey Prof. Paper 475-C, p. C132-C137, illus., 1963. Calcareous organic and authigenic sediments are dominant on the continental margin off the Georgia coast. Present-

day detrital sediments are restricted to a narrow zone near shore. The predominance of relict and calcareous sediments indicates that the present rate of deposition of detritus derived from land is very low over most of the shelf.

U. S. ARMY CORPS OF ENGINEERS

1. Geology, Appendix 2 of Definite project report on Savannah River basin, Georgia and South Carolina—Clark Hill Project: U. S. Army Corps of Engineers South Atlantic Div., 13 p., illus., 1945. The details of the geology of the Clark Hill damsite along the Savannah River in Columbia County are given. Numerous cores are logged, and all of the rocks are crystalline. The foundation potential is very good.
2. Geology, Appendix 3 of Definite project report on Buford Dam, Chattahoochee River [Gwinnett and Forsyth Counties] Georgia, vol. 1: U. S. Army Corps of Engineers Mobile Dist., 6 p., 1949. A general geological description of the area is given. The rocks under the dam and reservoir are steeply dipping, highly metamorphosed granite gneiss, of which a little petrographic description is included. Some igneous intrusions are present also. Little detail is given.
3. Geology, Appendix 3 of Definite project report—Hartwell Reservoir—Savannah River, [Hart County] Georgia and South Carolina: U. S. Army Corps of Engineers Savannah Dist., 19 p., illus. incl. geol. map, 1952. Details of the geology of the dam site are given. All of the rocks are crystalline, and numerous cores are logged. Folds, faults, and joints are discussed, but the foundation is considered sound if set on unweathered rock.
4. Source of construction materials, Appendix 4 of Definite project report—Hartwell Reservoir—Savannah River, [Hart County] Georgia and South Carolina: U. S. Army Corps of Engineers Savannah Dist., 10 p., illus. incl. geol. map, 1952. Various rock sources for dam construction are described from the vicinity of the Hartwell damsite in Hart County. Most are crystalline, and many are described petrographically.
5. Geology and foundation, Design Memo. no. 2 of Columbia Lock and Dam, Chattahoochee River [Early County]

Georgia and Alabama: U. S. Army Corps of Engineers Mobile Dist., 7 p., illus., 1953. A detailed geologic description of the damsite is given. Numerous cores are described. The Eocene Lisbon Formation is at the surface, and the foundation of the dam is sound.

6. Geology, Design Memo. no. 10, of Fort Gaines Lock and Dam, Chattahoochee River [Clay County] Georgia and Alabama: U. S. Army Corps of Engineers Mobile Dist., 16 p., illus., [1956]. A detailed report of the geology of the Walter George damsite is given. Numerous cores are logged. The Providence Sand (Cretaceous) and Clayton Limestone (Paleocene) are the formations encountered. Grouting is required, but the foundation is considered sound.
7. Geology, Appendix 3 in General design, in Carter's Dam, Coosawattee River, [Murray County] Georgia, Design Memo. no. 5: U. S. Army Corps Engineers Mobile Dist., 4 p., 1963. The Ocoee Series underlies the dam site, and is primarily quartzite, argillite, and phyllite. The quartzite makes up most of the foundation. The structure of the rocks is very complex.
8. Site selection and geology, Design Memo. no. 2 of West Point project, Chattahoochee River, [Troup County] Georgia and Alabama, 3 vols.: U. S. Army Corps of Engineers Savannah Dist., 20 p., illus. incl. geol. maps, 1964 [vol. 1 incl. Appendix I, II; vol. 2 incl. Appendix III; vol. 3 incl. Appendix IV]. Details of the geology in the vicinity of the West Point damsite in Troup County are given. Numerous cores are logged. All of the rocks are crystalline; the foundation will be in gneissic rock, of which petrographic descriptions are included. The appendices include bore hole logs.

U. S. GEOLOGICAL SURVEY, *see* American Geophysical Union, 1.

VAIL, PETER ROBBINS

1. Stratigraphy and lithofacies of Upper Mississippian rocks in the Cumberland Plateau [northwestern Georgia]: Ph D Thesis, Northwestern Univ., 1959.

VALLELY, JAMES L., *see* Giese, Fred P., 1.

VANCE, MAURICE M.

1. Charles Richard Van Hise [1857-1918] — scientist progressive: Madison, Wisconsin, State Historical Soc. Wisconsin, 146 p., illus., 1960.

VAUGHAN, THOMAS WAYLAND, 1870-1952.

1. A contribution to the geologic history of the Floridian Plateau, *in* Papers from the Tortugas Laboratory of the Carnegie Institution of Washington, vol. 4: Carnegie Inst. Washington Pub. 133, p. 99-185, illus., 1910. A general discussion of the stratigraphic and structural development of Florida includes much allusion to the southern Georgia Coastal Plain. Rocks of Eocene age to the Holocene are included.

VICKERS, EDDIE D.

1. Notes on Miocene mammal remains in the [Decatur County] Georgia-Florida district: Georgia Mineral Newsletter, v. 15, nos. 1-2, p. 28-29, illus., 1962. Bones of *Parahippus leonensis* from Miocene rocks containing fuller's earth are discussed.

VISTELIUS, ANDREW B.

1. (and Hurst, Vernon James). Phosphorus in granitic rocks of North America: Geol. Soc. America Bull., v. 75, no. 11, p. 1055-1092, illus., 1964. Analyses of over 600 granitic rocks, including many from the Piedmont of Georgia, are included. Phosphorous concentrations can be correlated with mineralogic composition; the higher the quartz, the lower the phosphorous. No correlation exists between phosphorous and alkalis or feldspars, but a close correlation exists between phosphorous and many minor oxides.

VORHIS, ROBERT CARSON, 1917- , see also Herrick, Stephen Marion, 4.

1. A hydrogeologic reconnaissance of reservoir possibilities in northern Lowndes County, Georgia: Georgia Mineral Newsletter, v. 14, no. 4, p. 123-129, illus., 1961. Limestone sinks occur in a region of proposed water storage reservoirs, but they need not be detrimental to the reservoirs as standing surface water is also present locally. The sinkholes would require plugs.

2. Location of a major structure in the Coastal Plain of Georgia [abs.]: Geol. Soc. America Spec. Paper 73, p. 17-18, 1963.
3. Earthquake-induced water-level fluctuations in a Dawson County well [abs.]: Georgia Acad. Sci. Bull., v. 22, no. 2, p. 17, 1964.
4. Ground-water data from the Prince William Sound earthquake [abs.]: Earthquake Notes, v. 35, nos. 3-4, p. 47, 1964.

WAIT, ROBERT LYLE, 1923- , *see also* Callahan, Joseph Thomas, 2, 4, 6.

1. Source and quality of ground water in southwestern Georgia: Georgia Geol. Survey Inf. Circ. 18, 74 p., illus., 1960. The area of the 25 counties from Dooly to Quitman and Dooly to Lowndes Counties is included. Rocks from Upper Cretaceous to Miocene, and of Holocene age are described, with special emphasis upon the water-bearing properties. Almost all of the intervals contain good aquifers. Tertiary-rock water is hard and alkaline whereas Cretaceous-rock water is soft. Analyses are included.
2. Summary of the geology and groundwater resources of Clay County, Georgia: Georgia Mineral Newsletter, v. 13, no. 2, p. 93-101, illus., 1960. Cretaceous to Oligocene rocks are present, along with Pleistocene terrace deposits along the Chattahoochee River. Water comes from all of the rocks but sand in the Claiborne Group; the Clayton Limestone is an important potential aquifer.
3. Summary of the ground-water resources of Calhoun County, Georgia: Georgia Mineral Newsletter, v. 13, no. 1, p. 26-31, illus., 1960. The principal aquifers are the Ocala Limestone, the sand and coquina of the Claiborne Group, the Clayton Formation, and the sands and coquinas of Upper Cretaceous age. Water comes from depths of 1000 to 2000 feet.
4. Summary of the ground-water resources of Terrell County, Georgia: Georgia Mineral Newsletter, v. 13, no. 3, p. 117-122, illus., 1960. The county is underlain by Eocene, Oligocene, and Pleistocene rocks. The chief water-bearing units are the Claiborne rocks of Eocene age and the Clay-

ton Limestone of Paleocene age.

5. Geology of the Albany West Quadrangle, Georgia: U. S. Geol. Survey Misc. Geol. Invs. Map I-348, with text, scale 1:24,000, 1962. Eocene, Pliocene (?) and Pleistocene, and Holocene materials are mapped, and the water-bearing properties of each discussed. Karst topography is well-developed, and the sinkholes are of two ages (Pliocene? and Pleistocene or Holocene). Dune sand east of the Flint River may be from old river-terrace deposits.
6. Interim report on test drilling and water sampling in the Brunswick area, Glynn County, Georgia: Georgia Geol. Survey Inf. Circ. 23, 46 p., illus., 1962. Water chemistry and ground-water dynamics are described. Salt water encroachment, as a result of water withdrawal, is detected in the Claiborne Group. A piezometric map of the area is included.
7. (and McCollum, Morris J.). Contamination of fresh water aquifers through an unplugged oil-test well in Glynn County, Georgia: Georgia Mineral Newsletter, v. 16, nos. 3-4, p. 74-80, illus., 1963. Salt water is entering a well and is working its way upward and entering into the fresh-water aquifers. Solutions are recommended.
8. Geology and ground-water resources of Dougherty County, Georgia: U. S. Geol. Survey Water-Supply Paper 1539-P, p. P1-P102, illus., 1963. Lower Cretaceous to Oligocene and Pleistocene rocks and sediments are described. They all dip gently southeastward. The water-bearing properties of each rock unit are described. The Eocene Tallahatta Formation is the largest source; the Ocala Limestone, second.

WALKER, KENNETH R.

1. Lithofacies map of Lower Mississippian clastics of eastern and east-central United States: Am. Assoc. Petroleum Geologists Bull., v. 46, no. 1, p. 105-111, illus., 1962. Northwestern Georgia is included on the small-scale maps. The rocks are from 100 to a bit over 300 feet in thickness, the greatest thickness in a northeast-southwest trending trough. They are predominantly shaley limestones.

WALTON, ALAN

1. (and Trautman, Milton A., and Friend, James P.). Isotopes, Inc. Radiocarbon measurements I: Radiocarbon, v. 3, p. 47-59, 1961. Peaty sediment from the Okefenokee Swamp [Echols County] is dated at 4475 ± 120 years.

WANLESS, HAROLD ROLLIN, 1899-1970.

1. Depositional basins of some widespread coal beds in the United States *in* Third conference on the origin and constitution of coal: Halifax, Nova Scotia, Nova Scotia Dept. Mines, p. 94-125, illus., 1961; discussions, p. 125-128. The lowermost coal basins of the Pennsylvanian of the eastern United States include northwestern Georgia and vicinity. Delta deposits occur to the southeast of the basin with low land to the northwest. Isopachs suggest 3 or so feet of coal formed in the low lands. No other preserved basins occupy the area.

WATERS, AARON CLEMENT, 1905-

1. Memorial to Bailey Willis (1857-1949): Geol. Soc. America Bull., v. 73, no. 7, p. P55-P72, port., 1962.

WATKINS, JOEL SMITH, JR., 1932-

1. (and Geddes, Wilburt H.). Magnetic anomaly and possible orogenic significance of geologic structure of the Atlantic Shelf [abs.]: Am. Geophysical Union Trans., v. 45, no. 1, p. 35, 1964.

WATSON, THOMAS LEONARD, 1871-1924.

1. (and Taber, Stephen). Geology of the titanium and apatite deposits of Virginia: Virginia Geol. Survey Bull. 3A, 308 p., illus., 1913. A description of the occurrence of rutile in Graves Mountain in Lincoln County is included. An analysis is given.

[WEBB, P. A.]

1. Powhatan Springs—located nine miles from Five Points, Atlanta: Priv. pub., 15 p., illus., [1929]. Several springs in southern DeKalb County are described and analyzed chemically. These are the springs for which Ponce de Leon had searched.

WEDOW, HELMUTH, JR., 1917-

1. Sequatchie and Rockwood Formations in southeast Tennessee and parts of northwest Georgia [abs.]: Geol. Soc. America Bull., v. 71, no. 12, p. 2028, 1960.

WEIMER, ROBERT JAY, 1926- , see also Hoyt, John Harger 5, 6, 8, 11, 12.

1. (and Hoyt, John Harger). Burrows of *Callianassa major* Say, [McIntosh County] geologic indicators of littoral and shallow neritic environments: Jour. Paleontology, v. 38, no. 4, p. 761-767, illus., 1964. Burrows of this decapod are described from Pleistocene sediments of Sapelo Island and the nearby mainland, and they are shown to represent a littoral or shallow neritic environment.

WHITLACH, GEORGE ISSAC, 1905-1971.

1. (and Choquette, Joseph A., and Husted, John Edwin, and Benton, Nathan Hoke). Georgia's mineral resources — a summary of available data on their past, present, and future status: Atlanta, Georgia, Georgia Inst. Tech. Eng. Exper. Sta., 130 p., illus., 1962. This is a complete survey of the mineral resources of the state, including minerals in production (18), minerals formerly in production (9), and minerals of possible or uncertain value (7). Analyses are included, as are various economic factors.
2. Summary of the industrial water resources of Georgia: Georgia Inst. Technology Eng. Exper. Sta. Spec. Rept. 44, 121 p., illus., 1964. A general description of the geology of the state includes a summary of the ground-water resources mostly of the Coastal Plain. Water analyses from springs and ground water are included.

WHITLOW, JESSE WILLIAM, 1915-

1. Red iron-ore beds of Silurian age in northeastern Alabama, northwestern Georgia, and eastern Tennessee: U. S. Geol. Survey Mineral Inv. Field Studies Map MF-175, 2 sheets with text, scale 1:250,000, 1962. A map shows the distribution of the Silurian iron-bearing rocks in northwestern Georgia; cross sections and analyses are also included. Most of the ore is in the western part of the area at specific locations; the thickness, in inches, of the principal

iron ore bed, the total of other iron ore beds, and the total thickness of the iron-bearing section, are given.

WILLARD, BRADFORD, 1894-

1. Memorial to Ralph Walter Stone (1876-1964): Geol. Soc. America Bull., v. 75, no. 12, p. P169-P173, port., 1964.

WILLMAN, LEON D.

1. Gem and mineral localities of southeastern United States: Anniston, Alabama, Higginbotham and Sawyer, 97 p., illus., 1963 [not seen].

WILSON, DRUID

1. Julia Anna Gardner, 1882-1960: Nautilus, v. 75, no. 3, p. 122-123, 1962.

WOLFSON, SUMNER H., see Hawkins, Gerald Stanley, 1.

WOODRUFF, JAMES FREDERICK, see also Hill, Carl R., 1.

1. (and Evenden, Leonard Jesse). Some quantitative aspects of the geomorphology of the Georgia Piedmont: Assoc. Am. Geographers Southeastern Div. Memo. Folio, v. 13, p. 127-134, illus., 1961. A preliminary study, using areal photos and applications of Horton's Laws of stream lengths and stream numbers, to Shoals Creek in Clarke County and Broad Branch Creek in Columbia County, shows that the lack of topographic maps need not preclude quantitative study of the Georgia Piedmont.
2. (and Evenden, Leonard Jesse). Geomorphic measurements from aerial photos: Prof. Geographer, v. 14, no. 3, p. 23-26, illus., 1962. Examples from the Georgia Piedmont are used to show that large provinces could be subdivided more accurately into smaller ones by measuring linear, areal, and gradient parameters of streams from aerial photos.
3. Some quantitative differences in Piedmont morphology: Assoc. Am. Geographers Southeastern Div. Memo. Folio, v. 15, p. 132-138, illus., 1963; with title, A morphometric analysis of some Piedmont sub-regions: Southeastern Geographer, v. 3, p. 17-24, illus., 1963. Quantitative evaluation of drainage basins is used to verify the subdivisions of the Piedmont suggested by LaForge. In general, the system

verified the existence of the Washington Plateau, the Midland Slope, and the Atlanta Plateau.

4. The Piedmont peneplain: Assoc. Am. Geographers Southeastern Div. Memo. Folio, v. 16, p. 121-124, 1964. A statistical analysis of the elevation of crests of ridges in the Piedmont seems to verify the presence of an old upper surface of erosion, but there is no distinct accordant upper surface even vaguely resembling that surface so often diagrammed. The flat horizon is the result of a relatively few accordant crests hiding the intervening lower hill tops.

WOODSIDE, K. H., *see* Ormsby, Walter Clayton, 2.

WOOLLARD, GEORGE PRIOR, 1908- , *see* Bonini, William Emory, 1; Pooley, Robert Neville, 2.

WORTHINGTON, HELEN WEISSENBORN, *see* Chidester, Alfred Herman, 1.

WORTHINGTON, JOSEPH E.

1. An exploration program for nickel in the southeastern United States: Econ. Geology, v. 59, no. 1, p. 97-109, illus., 1964. The Piedmont of Georgia was included in a broad program. Ultramafic rock bodies and their soils were mapped and sampled. The rocks (near Elberton and Atlanta) had 0.4 to 0.2 percent primary nickel and some residual soils (near Augusta and Atlanta) had up to 0.4% nickel.

WRIGHT, LAUREN ALBERT, 1918- , *see* Chidester, Alfred Herman, 2.

WRIGHT, NANCY ELIN PECK, 1941-

1. Compositional variation in the Stone Mountain Granite [DeKalb County] Georgia: M. S. Thesis, Emory Univ., 1963.

YARBROUGH, EDDY

1. Fox Mountain pit (Georgia). Nashville Grotto Speleoneus, v. 6, no. 2, p. 10-12, illus., 1962; Speleo Digest 1962; p. I27-I28, illus., 1964. The cave in Dade County (?) is described and a sketch map is included.

YOUNG, DAVID

1. Commissary Cave [Dade County]: Georgia Spelunker, v. 7, no. 2, p. 15, illus., 1963. A very cursory description and a map of this small cave is given.

ZIETZ, ISIDORE, 1919- , *see* Griscom, Andrew, 2.

ZUBOVIC, PETER, 1915- , *see* Stadnichenko, Taisia Maximovna, 1.

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BIBLIOGRAPHY (of Georgia authors)

- Gardner, J. A.: Ladd, H. S., 1
Hass, W. H.: Sohn, I. G., 1
Leonard, F. C.: Rowland, G. L., 1
Prindle, L. M.: Mertie, J. B., Jr., 1
Stose, G. W.: Miser, H. D., 1
Trask, P. D.: Gilluly, J., 1
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BIOGRAPHY (of Georgia authors)

- Applin, E. E. R.: Rainwater, E. H., 1
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Bassler, R. S.: Thomas, H. D., 1
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 paleogeography: Tanner, W. F., Jr., 1
 Decatur County, Tampa Limestone: Mansfield, W. C., 1
 Mitchell County: Owen, V., Jr., 3

MISSISSIPPIAN, see also Paleozoic
 Northwestern: Vail, P. R., 1; Walker, K. R., 1

MITCHELL COUNTY, see also Georgia, and Georgia-Coastal Plain
 Areas described
 Mitchell County: Owen, V., Jr., 1, 3
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 karst topography: Herrick, S. M., 5
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 groundwater resources: Owen, V., Jr., 1, 3
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 Tertiary: Owen, V., Jr., 3

MOLLUSCA, see also individual groups
 Miocene
 Coastal Plain, Duplin Marl: Darby, D. G., 1; DuBar, J. R., 1
 Decatur County, Tampa Limestone: Mansfield, W. C., 1
 Oligocene, Decatur County, Suwannee Limestone: Mansfield, W. C., 1
 Pleistocene, Chatham County, terrace deposits: Richards, H. G., 3

MONAZITE, see also Heavy minerals, and Mineral resources
 Crawford County, Culloden area: Fortson, C. W., Jr., 1

- MURRAY COUNTY**, *see also* Georgia, and Georgia-Blue Ridge, and Georgia-Northwestern
- Areas described*
Cohutta Quadrangle, northwestern: Salisbury, J. W., Jr., 1
- Economic geology*
Mineral resources, Cohutta Quadrangle: Salisbury, J. W., Jr., 1
tale, Chatsworth District: Chidester, A. H., 2
- Engineering geology*
Carter's Dam site: Coogan, R., 1; U. S. Army Corps of Engineers, 7
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Chatsworth talc district: Chidester, A. H., 2
Cohutta Quadrangle, northwestern: Salisbury, J. W., Jr., 1
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Precambrian-Ordovician, Cohutta Quadrangle: Salisbury, J. W., Jr., 1
- Structural geology*
Carter's Dam site, faulting: Coogan, R., 1
- NEWTON COUNTY**, *see also* Georgia, and Georgia-Piedmont
- Areas described*
Newton County: Reade, E. H., Jr., 1
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- Maps*
geologic
central: Gardner, C. H., 1
northwestern: Schultz, R. S., 1
- NICKEL**, *see also* Mineral resources
Piedmont, soils and rocks: Worthington, J. E., 1
- NODULES**
Floyd County, Mississippian: Coker, A. E., 1
- OLIGOCENE**, *see also* Cenozoic and Tertiary
Chatham County, offshore: McCollum, M. J., 1
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absent: Eames, F. E., 1
Miocene boundary: Butler, E. A. M., 1
southern: Vaughan, T. W., 1
southwestern, cross structures: Sever, C. W., Jr., 5
Coffee County, Foraminifera paleoecology: Applin, E. E. R., 1
Decatur County, Suwannee Limestone: Mansfield, W. C., 1
Dougherty County: Wait, R. L., 8
Mitchell County: Owen, V., Jr., 3
Terrell County: Wait, R. L., 4
Thomas County, Suwannee Limestone: Mansfield, W. C., 1
- ORDOVICIAN**, *see also* Paleozoic
Bartow County: Croft, M. G., 1
Murray County, Cohutta Quadrangle: Salisbury, J. W., Jr., 1
Northwestern, Sequatchie Formation: Wedow, H., Jr., 1
Walker County, petroleum-bearing vugs: Furcron, A. S., 8
- ORGANIC MATERIALS**
kerogen, Northwestern, Devonian: Bregger, I. A., 1
- OSTRACODA**, *see also* Crustacea
Cretaceous
Clinch County, Atkinson Formation: Swain, F. M., Jr., 1
Coastal Plain, Ripley Formation: Stephens, R. W., Jr., 1
Echols County, Atkinson Formation: Swain, F. M., Jr., 1
- PALEOCENE**, *see also* Cenozoic, and Tertiary
Coastal Plain
Chattahoochee River: Toulmin, L. D., Jr., 1, 2
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Midway Group: Fisher, W. L., 1
southern, Clayton Formation: Applin, E. E. R., 3
Dougherty County: Wait, R. L., 8
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Lumpkin Quadrangle: Almand, C. W., 1
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- PALEOECOLOGY**
marine
Coastal Plain, decapods, littoral: Weimer, R. J., 1
Coffee County, Paleocene: Applin, E. E. R., 1
- PALEOGEOGRAPHY**
Coastal Plain
Cretaceous, Tuscaloosa-Providence Formation: Tanner, W. F., Jr., 1
Miocene, Hoawthorn Formation: Tanner, W. F., Jr., 1
- PALEOZOIC**, *see also* individual periods
Coastal Plain, southwestern: King, P. B., 1
Echols County, shale-sandstone: Carroll, D., 1
- PALYNOLOGY**
Baldwin County, pollen, Cretaceous: Groot, J. J., 1
- Georgia, preliminary investigations: Lester, J. G., 1
- PEACH COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
Areas described
Peach County: LeGrand, H. E., 2
- Hydrogeology*
groundwater resources: LeGrand, H. E., 2
- PEAT**, *see also* Mineral resources
Coastal Plain: Fortson, C. W., Jr., 2
- PELECYPODA**, *see also* Mollusca
Cretaceous
Coastal Plain, evolution: Lerman, A., 1
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Blufftown Formation: Sohl, N. F., 2
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- PENNSYLVANIAN**, *see also* Paleozoic
Dade County, Sewanee Limestone: Chen, C. S., 1
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cross bedding directions: Schlee, J. S., 1
Walker County, Sewanee Sandstone: Chen, C. S., 1
- PETROLEUM**, *see also* Mineral resources
Brantley County: Adams, E. R., 1
Coastal Plain: Davis, D. C., 1; Johnston, J. E., 1; Trumbull, J. V. A., 2
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test wells: Hurst, V. J., 1
Glynn County: Adams, E. R., 1
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Walker County, vugs, Ordovician: Furcron, A. S., 8
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- PHOSPHOROUS**, *see also* Mineral resources
Piedmont, granitic rocks: Vistelius, A. B., 1
- PICKENS COUNTY**, *see also* Georgia, and Georgia-Blue Ridge
Economic geology
marble, Georgia Marble District: Power, W. R., Jr., 1
- Structural geology*
Tate Quadrangle, Murphy Syncline: Fairley, W. M., 1
- PIERCE COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
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Foraminifera, Eocene: Cole, W. S., 3
- PLEISTOCENE**, *see also* Cenozoic, and Quaternary
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- POPULAR AND ELEMENTARY**
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minerals, Georgia locations: Furcron, A. S., 5; Ransom, J. E., 1; Willman, L. D., 1
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- PORIFERA**
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Bartow County: Croft, M. G., 1
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Coastal Plain, basement configuration: Husted, J. E., 2
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- PULASKI COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
Areas described
Perry Quadrangle: Pickering, S. M., Jr., 1
- Economic geology*
iron, Perry Quadrangle: Pickering, S. M., Jr., 1
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- Maps*
geologic, Perry Quadrangle: Pickering, S. M., Jr., 1
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agate: Graves, H. B., 1

- PYROPHYLLITE**, *see also* Mineral resources
Piedmont: Espenshade, G. H., 2
- QUATERNARY**, *see also* Cenozoic, and Pleistocene
Bryant County: Counts, H. B., 2
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- RABUN COUNTY**, *see also* Georgia, and Georgia-Blue Ridge
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kyanite: Kliefelder, T. A., 1
- RADIOACTIVITY SURVEYS**
Coastal Plain, Atlantic beaches: Mahdavi, A., 1
Columbia County, geological controls: Guillou, R. B., 1
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- RANDOLPH COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
Paleontology
Nautiloidea, Paleocene, Clayton Formation: Cramer, H. R., 3
- RICHMOND COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
Paleontology
Bryozoa, Eocene, McBean Formation: Cheetham, A. H., 1, 2
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- SCHLEY COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
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- SEISMIC SURVEYS**
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- SEMINOLE COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
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- SILURLIAN**, *see also* Paleozoic
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- SOAPSTONE**, *see also* Mineral resources
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- SOILS**
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Fulton County, engineering properties: Krebs, R. D., 1
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- SPRINGS**, *see also* Groundwater
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Nautiloidea, Paleocene, Clayton Formation: Cramer, H. R., 3
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Lumpkin Quadrangle: Almond, C. W., 1
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- STREAMS**
Georgia, sediments: Kennedy, V. C., 1
- STRONTIUM**, *see also* Mineral resources
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- SUMTER COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
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groundwater, well locations: Owen, V., Jr., 2
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- TALC**, *see also* Mineral resources
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- TAYLOR COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
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groundwater resources: LeGrand, H. E., 2
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- TERRELL COUNTY**, *see also* Georgia, and Georgia-Coastal Plain
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- TERTIARY**, *see also* Cenozoic, and individual epochs
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Bryant County: Counts, H. B., 2
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- Houston County: LeGrand, H. E., 2
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- THOMAS COUNTY, see also Georgia, and Georgia-Coastal Plain**
Economic geology
 fuller's earth: Buie, B. F., 1, 3
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- THORIUM, see also Mineral resources, and Heavy minerals**
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- TIFT COUNTY, see also Georgia, and Georgia-Coastal Plain**
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- TITANIUM, see also Mineral resources, and Heavy minerals**
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- TOWNS COUNTY, see also Georgia, and Georgia-Blue Ridge**
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- TYPE SECTIONS (of formations in Georgia)**
 Roberta Sandstone Member (of the Barnwell Formation),
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- WALKER COUNTY, see also Georgia, and Georgia-Northwestern**
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 Walker County: Cressler, C. W., 3
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 Sewanee Sandstone, Lookout Mountain: Chen, C. S., 1
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- WALTON COUNTY, see also Georgia, and Georgia-Piedmont**
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- WASHINGTON COUNTY, see also Georgia, and Georgia-Coastal Plain**
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- WHITE COUNTY, see also Georgia, and Georgia-Blue Ridge**
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- WILCOX COUNTY, see also Georgia, and Georgia-Coastal Plain**
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