S. D. Herr

Southeastern Geology

VOL. 2 NO. 2

1960

SOUTHEASTERN GEOLOGY
PUBLISHED QUARTERLY BY THE
DEPARTMENT OF GEOLOGY
DUKE UNIVERSITY

This journal welcomes original papers on all phases of geology, geophysics, and geochemistry as related to the Southeast. Transmit manuscripts to S. DUNCAN HERON, JR., BOX 6665, COLLEGE STATION, DURHAM, NORTH CAROLINA. Please observe the following:

(1) Type the manuscript with double space lines and submit in duplicate.
(2) Cite references and prepare bibliographic lists in accordance with the method found within the pages of this journal.
(3) Submit line drawing and complex tables as finished copy.
(4) Make certain that all photographs are sharp, clear, and of good contrast.

Proofs will not be sent authors unless a request to this effect accompanies the manuscript.

Reprints must be ordered prior to publication. Prices are available upon request.

* * *

Subscriptions to Southeastern Geology are $5.00 per year. Inquiries should be addressed to WM. J. FURBISH, BOX 6665, COLLEGE STATION, DURHAM, NORTH CAROLINA. Make check payable to Southeastern Geology.

SOUTHEASTERN GEOLOGY

Table of Contents
Vol. 2, No. 2
1960

SOUTHEASTERN GEOLOGY

Table of Contents
Vol. 2, No. 2
1960

A CATALOG OF TYPE LOCALITIES

OF

COASTAL PLAIN STRATIGRAPHIC UNITS

by

James F. L. Connell
Department of Geology
University of Southwestern Louisiana

ABSTRACT

A list of the majority of the surface and subsurface units occurring in the Atlantic and Gulf Coastal Plain is presented. Where possible these are arranged in proper stratigraphic sequence. Units are listed by States from Texas to Massachusetts. Discarded names, synonyms, and neotype localities are included for clarity and completeness. Geographic locations are described as completely as possible.

INTRODUCTION

This catalog was written to serve as a ready reference, first, for advanced undergraduate students who pursue courses in Coastal Plain geology, second, for graduate students in advanced stratigraphy courses, or who may have selected a particular stratigraphic unit for thesis research, and third, for academic and petroleum geologists who may not be familiar with many of the units or their type localities.

The writer has assembled 324 names, and as far as possible, arranged them in correct stratigraphic sequence. In a few cases, old names which have been replaced because of priority of other names have been included. Where a new type locality has been selected and a new name recognized, such are included in the catalog, along with the previous name and type locality. Where certain names are recognized in only one State, as is the case with several formations and members in Mississippi, such synonymous units are included.

The writer has attempted to make this catalog as complete as pos-

sible. Any criticisms, suggestions, or additions are invited. If a particular stratigraphic name has been omitted, the writer was unable to find the original literature describing that unit, or was unable to determine the nomenclator and the location of the type locality.

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
HOUSTON	Exposures in the vicinity of Houston, Texas. Plummer, University of Texas Bulletin 3232, 1933
BEAUMONT	Exposures at Beaumont, Jefferson County, Texas. Kennedy, U. S. Geological Survey Bulletin 212, 1903
LISSIE	Exposures at Lissie, Wharton County, Texas. Deussen, U. S. Geological Survey Water Supply Paper 335, 1914
WILLIS	Exposures at Willis, Montgomery County, Texas. Doering, American Association of Petroleum Geologists Bulletin, Volume 19, No. 5, 1935
GOLIAD	Exposures at Goliad, Goliad County, Texas. Plummer, University of Texas Bulletin 3232, 1933
LAGARTO	Exposures along Lagarto Creek, Live Oak County, Texas. Dumble, Journal of Geology, Volume 2, 1894
OAKVILLE	Exposures at Oakville, Live Oak County, Texas. Dumble, Journal of Geology, Volume 2, 1894
FLEMING	Exposures at Fleming, Tyler County, Texas. Kennedy, Texas Geological Survey 3rd Annual Report, 1892

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
ONALASKA	Exposures in Polk County, Texas. Dumble, Geological Society of America Bulletin, Volume 26, 1915
CHITA	Exposures at Chita, Trinity County, Texas. Plummer, University of Texas Bulletin 3232, 1933
GUEYDAN	Exposures at Gueydan Ranch, McMullen County, Texas. Plummer, University of Texas Bulletin 3232, 1933
ANAHUAC	Occurs in subsurface only. Anahuac Field, Chambers County, Texas. Ellisor, American Association of Petroleum Geologists Bulletin, Volume 24, 1940; Volume 28, 1944
FRIO	Exposures at the mouth of the Frio River in Live Oak County, Texas. Dumble, Journal of Geology, Volume 2, 1894
FAYETTE	Exposures in Fayette County, Texas. Dumble and Penrose, Texas Geological Survey 1st Annual Report, 1890
WHITSETT	Exposures at Whitsett, Live Oak County, Texas. Dumble, American Association of Petroleum Geologists Bulletin, Volume 8, 1894
MCELROY	Exposures at McElroy, Sabine County, Texas. Brace, American Association of Petroleum Geologists Bulletin, Volume 15, No. 7, 1931

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
CADDELL	Exposures at Caddell, San Augustine County, Texas. Dumble, Geological Society of America Bulletin, Volume 26, 1915
YEGUA	Exposures at the mouth of Elm Creek on the Yegua River in Lee County, Texas. Dumble, The Brown Coal and Lignite of Texas, 1892
CROCKETT	Exposures at Crockett, Houston County, Texas. Ellisor, American Association of Petroleum Geologists Bulletin, Volume 13, 1929
COOK MOUNTAIN	Exposures at Cook Mountain, Houston County Texas. Kennedy, Texas Geological Survey 3rd Annual Report, 1892
MT. SELMAN	Exposures at Mt. Selman, Cherokee County, Texas. Kennedy, Texas Geological Survey 3rd Annual Report, 1892
WECHES	Exposures at Weches, Houston County, Texas. Ellisor, American Association of Petroleum Geologists Bulletin, Volume 13, 1929
QUEEN CITY	Exposures at Queen City, Cass County, Texas. Kennedy, Texas Geological Survey 3rd Annual Report, 1892
REKLAW	Exposures at Reklaw Cherokee County, Texas, Ellisor, American Association of Petroleum Geologists Bulletin, Volume 13, 1929

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
CARRIZO	Exposures west of Carrizo Springs, Dimmit County, Texas. Owen, Texas Geological and Mineralogical Survey 1st Report, 1889
SABINETOWN	Exposures at Sabinetown, Sabinet County, Texas. Plummer, University of Texas Bulletin 3232, 1933
ROCKDALE	Exposures at Rockdale, Milam County, Texas. Plummer, University of Texas Bulletin 3232, 1933
SEGUIN	Exposures on Moss Branch, northwestern Bastrop County, Texas, Plummer, University of Texas Bulletin 3232, 1933
CALVERT BLUFF	Exposures at Calvert Bluff on the Brazos River, Robertson County, Texas. Plummer, University of Texas Bulletin 3232, 1933
SIMSBORO	Exposures at Simsboro, Freestone County, Texas. Plummer, University of Texas Bulletin 3232, 1933
BUTLER	Exposures at Butler, Freestone County, Texas. Plummer, University of Texas Bulletin 3232, 1933
CALDWELLS KNOB	Exposures at Caldwells Knob, 10 miles north of Bastrop, Bastrop County, Texas. Plummer, University of Texas Bulletin 3232, 1933

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
SOLOMON CREEK	Exposures along Solomon Creek, Bastrop County, Texas. Plummer, University of Texas Bulletin 3232, 1933
WILLS POINT	Exposures at Wills Point, Van Zandt County, Texas. Penrose, Texas Geological Survey 1st Annual Report, 1890
KINCAID	Exposures at Kincaid Ranch (now Lewis Ranch) southern Uvalde County, Texas. Gardner, American Association of Petroleum Geologists Bulletin, Volume 17, No. 6, 1933
NAVARRO	Exposures in Navarro County, Texas. Shumard, Boston Society of Natural History Proceedings, Volume 8, 1862
ANNONA	Exposures at Annona, Red River County, Texas. Hill, Geological Society of America Bulletin, Volume 5, 1894
TAYLOR	Exposures on the Taylor Prairie, central Texas. Hill, Artesian Investigations, Final Report, 1892
AUSTIN	Exposures at Austin, Texas. Shumard, St. Louis Academy of Science Transactions, Volume 1, 1860
EAGLEFORD	Exposures at Eagleford, Dallas County, Texas. Hill, American Journal of Science, 3rd Series, Volume 33, 1887

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
WOODBINE	Exposures at Woodbine, Cooke County, Texas. Hill, U. S. Geological Survey 21st Annual Report, Part 7, 1901
WASHITA	Exposures at Fort Washita, Bryan County, Texas. Hill, American Journal of Science, 3rd Series, Volume 33, 1887
BUDA	Exposures at Buda, Hays County, Texas. Vaughan, U. S. Geological Survey Bulletin 164, 1900
DEL RIO	Exposures at Del Rio, Valverde County, Texas. Hill and Vaughan, U. S. Geological Survey Folio No. 42, 1898; U. S. Geological Survey 18th Annual Report, Part 2, 1898
GEORGETOWN	Exposures at Georgetown, Williamson County, Texas. Hill, in Vaughan, U. S. Geological Survey Folio No. 64, 1900
MAIN STREET	Exposures underlying Main Street, at Denison, Grayson County, Texas. Hill, Geological Society of America Bulletin, Volume 5, 1894
DENISON	Exposures at Denison, Grayson County, Texas. Hill, American Journal of Science, 3rd Series, Volume 37, 1889
PAWPAW	Exposures along Pawpaw Creek, south and east of Denison, Grayson County, Texas. Hill, Geological Society of America Bulletin, Volume 5, 1894

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
WENO	Exposures at Weno, Grayson County, Texas. Hill, U. S. Geological Survey 21st Annual Report, Part 7, 1901.
DENTON	Exposures along Denton Creek, Denton County, Texas. Taff, Texas Geological Survey 4th Annual Report, Part 1, 1893
FORT WORTH	Exposures at Fort Worth, Tarrant County, Texas. Hill, Texas Geological Survey Bulletin 4, 1889
DUCK CREEK	Exposures along Duck Creek, Grayson County, Texas. Hill, Geological Society of America Bulletin, Volume 2, 1891
FREDERICKSBURG	Exposures at Fredericksburg, Gillespie County, Texas. Hill, American Journal of Science, 3rd Series, Volume 33, 1887
EDWARDS	Exposures on the Edwards Plateau, Nueces and Uvalde quadrangles, southwestern Texas. Hill and Vaughan, U. S. Geological Folio No. 42, 1898; U. S. Geological Survey 18th Annual Report, Part 2, 1898
FINLAY	Exposures in the Finlay Mountains, El Paso County, Texas. Richardson, University of Texas Mineralogical Survey Bulletin 9, 1904
COMANCHE PEAK	Exposures at Comanche Peak, Hood County, Texas. Hill, Texas Geological Survey Bulletin 4, 1889

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
WALNUT	Exposures at Walnut (Walnut Springs), Bosque County, Texas. Hill, Geological Society of America Bulletin, Volume 2, 1891
TRINITY	Exposures along the Trinity River in North Texas. Hill, Science, Volume 11, 1888
PALUXY	Exposures at Paluxy and along Paluxy Creek, Somervell County, Texas. Hill, Geological Society of America Bulletin, Volume 2, 1891
GLEN ROSE	Exposures at Glen Rose, Somervell County, Texas. Hill, Geological Society of America Bulletin, Volume 2, 1891
TRAVIS PEAK	Exposures at Travis Peak post office, Burnet County, Texas. Hill, Texas Geological Survey 1st Annual Report, 1890

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
PRAIRIE	Exposures at Aloha, near the Red River in Grant Parish, Louisiana. Fisk, Louisiana Geological Survey Bulletin 10, 1938
MONTGOMERY	Exposures at Montgomery, near the Red River in Grant Parish, Louisiana. Fisk, Louisiana Geological Survey Bulletin 10, 1938
BENTLEY	Exposures at Bentley, along U. S. Highway 167, southern Grant Parish, Louisiana. Fisk, Louisiana Geological Survey Bulletin 10, 1938
WILLIANA	Exposures along U. S. Highway 167 at Williana, 7 miles north of Dry Prong, Grant Parish, Louisiana. Fisk, Louisiana Geological Survey Bulletin 10, 1938
CATAHOULA	Exposures along the west bank of the Ouachita River in Caldwell Parish, Louisiana. Veatch, Louisiana Geological Survey Bulletin 1, 1905
ROSEFIELD	Exposures at Rosefield Cemetery, near the junction of Louisiana State Highways 112 and 126, northwestern Catahoula Parish, Louisiana. Delaney, Unpublished Masters Thesis. Forthcoming in future Louisiana Geological Survey Bulletin
MOSLEY HILL	Exposures on Mosley Hill on U. S. Highway 167, two miles north of Williana, Grant Parish, Louisiana. Murray, American Association of Petroleum Geologists Bulletin, Volume 36, No. 4, 1952

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
SANDEL	Exposure inside the fence of the Hodges Estate on U. S. Highway 171 at Sandel, Sabine Parish, Louisiana. Delaney, Unpublished Masters Thesis. Forthcoming in future Louisiana Geological Survey Bulletin
DANVILLE LANDING	Exposures along the Ouachita River at Danville Landing, near Duty, 6 miles northeast of Rosefield, northwestern Catahoula Parish, Louisiana. Hanna, Gravell, and McGuirt, Shreveport Geological Society 11th Annual Field Trip Guidebook, 1934
VERDA	Exposures at Verda, northern Grant Parish, Louisiana. Fisk, Louisiana Geological Survey Bulletin 10, 1938
TULLOS	Exposures along U. S. Highway 84 west of Tullos, northwestern LaSalle Parish, Louisiana. Fisk, Louisiana Geological Survey Bulletin 10, 1938
COCKFIELD	Exposures at Cockfield Ferry on the Red River, Winn Parish, Louisiana. Vaughan, American Geologist, Volume 15, 1895
SPARTA	Exposures along Louisiana State Highway 13 at Sparta, western Bienville Parish, Louisiana. Spooner, American Association of Petroleum Geologists Bulletin, Volume 10, No. 1, 1926
CANE RIVER	Exposures along the Cane River north of Natchitoches, eastern Natchitoches Parish, Louisiana. Spooner, American Association of Petroleum Geologists Bulletin, Volume 10, No. 1, 1926

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
SABINE	Exposures along the Sabine River, western Sabine Parish, Louisiana. Veatch, Louisiana Geological Survey Bulletin 1, Part 2, 1905
PENDLETON	Exposures at Pendleton Bluff on the Sabine River, western Sabine Parish, Louisiana. Claypool, University of Illinois Abstract of Thesis, 1933
MARTHAVILLE	Exposures at Marthaville, southwestern Natchitoches Parish, Louisiana. Murray and Thomas, American Association of Petroleum Geologists Bulletin, Volume 29, 1945
HALL SUMMIT	Exposures at Hall Summit, northern Red River Parish, Louisiana. Murray and Thomas, American Association of Petroleum Geologists Bulletin, Volume 29, 1945
LOGANSPORT	Exposures at Logansport, southwestern DeSoto Parish, Louisiana. Murray and Thomas, American Association of Petroleum Geologists Bulletin, Volume 29, 1945
NABORTON	Exposures at Naborton, eastern DeSoto Parish, Louisiana. Murray and Thomas, American Association of Petroleum Geologists Bulletin, Volume 29, 1945
MOORINGSPORT	Occurs in subsurface only. Mooringsport, western Caddo Parish, Louisiana. Imlay, Arkansas Resources and Development Commission Information Circular No. 12, 1940

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
FERRY LAKE	Ferry Lake, west of Oil City, western Caddo Parish, Louisiana. Imlay, Arkansas Resources and Development Commission Information Circular No. 12, 1940
RODESSA	Rodessa Oil Field, northwestern Caddo Parish, Louisiana. Weeks, American Association of Petroleum Geologists Bulletin, Volume 22, No. 8, 1938; Grage and Warren, American Association of Petroleum Geologists Bulletin, Volume 23, No. 3, 1939; Hazzard, Shreveport Geological Society 14th Annual Field Trip Guidebook, 1939
JAMES	Occurs in subsurface only. Arkansas Fuel Oil Company James No. 1 well, Sec. 14 T. 20 N., R. 1 E., Union Parish, Louisiana. Grage and Warren, American Association of Petroleum Geologists Bulletin, Volume 23, No. 3, 1939
PINE ISLAND	Occurs in subsurface only. Pine Island Oil Field, Caddo Parish, Louisiana. Crider, American Association of Petroleum Geologists Bulletin, Volume 22, No. 12, 1938
SLIGO	Occurs in subsurface only. Sligo Oil Field, near Sligo, southern Bossier Parish, Louisiana. Imlay, Arkansas Resources and Development Commission Information Circular No. 12, 1940
HOSSTON	Occurs in subsurface only. Dixie Oil Company Robertshaw No. 92 well, in Sec. 13, T. 21 N., R. 15 W., near Hosston, northeastern Caddo Parish, Louisiana. Imlay, Arkansas Resources and Development Commission Information Circular No. 12, 1940

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
COTTON VALLEY	Occurs in subsurface only. Cotton Valley Oil Field, at Cotton Valley, northwestern Webster Parish, Louisiana. Hazzard, Shreveport Geological Society 14th Annual Field Trip Guidebook, 1939
SHONGALOO	Occurs in subsurface only. Shongaloo Oil Field, near Shongaloo, northeastern Webster Parish, Louisiana. Swain, American Association of Petroleum Geologists Bulletin, Volume 28, No. 5, 1944
BOSSIER	Occurs in subsurface only. Bellevue Oil Field in east-central Bossier Parish, Louisiana. Swain, American Association of Petroleum Geologists Bulletin, Volume 28, No. 5, 1944
LOUARK	Occurs in subsurface only. Underlies northern Louisiana and southern Arkansas. Philpott and Hazzard, Shreveport Geological Society 17th Annual Field Trip Guidebook, 1949
HAYNESVILLE	Occurs in subsurface only. Haynesville Oil Field, near Haynesville, northwestern Claiborne Parish, Louisiana. Philpott and Hazzard, Shreveport Geological Society 17th Annual Field Trip Guidebook, 1949

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
ARKADELPHIA	Exposures at Arkadelphia, Clark County, Arkansas. Hill, Arkansas Geological Survey Annual Report, Volume 2, 1888
NACATOCH	Exposures at Nacatoch Bluff on the Little Missouri River, Clark County, Arkansas. Veatch, Louisiana Geological Survey Bulletin 1, 1905
SARATOGA	Exposures at Saratoga, Hempstead County, Arkansas. Branner, American Institute of Mining Engineers Transactions, Volume 27, 1897
MARLBROOK	Exposures 1 mile north of Saratoga, in Howard County, Arkansas. Hill, Arkansas Geological Survey Annual Report, Volume 2, 1888
OZAN	Exposures at Ozan, Hempstead County, Arkansas. Dane, U. S. Geological Survey Press Bulletin 8823, 1926
BROWNSTOWN	Exposures at Brownstown, Sevier County, Arkansas. Hill, Arkansas Geological Survey Annual Report, Volume 2, 1888
TOKIO	Exposures at Tokio, Hempstead County, Arkansas. Miser and Perdue, U. S. Geologi cal Survey Bulletin 690, 1918
DE QUEEN	Exposures at De Queen, central Sevier County, Arkansas. Miser and Perdue, U.S. Geological Survey Bulletin 690, 1918

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
HOLLY CREEK	Exposures along Little Holly and Holly Creeks, southeast of Dierks, Howard County, Arkansas. Vanderpool, American Association of Petroleum Geologists Bulletin, Volume 12, 1928
DIERKS	Exposures near Dierks, west-central Howard County, Arkansas. Miser and Perdue, U. S. Geological Survey Bulletin 690B, 1918
PIKE	Exposures at Pike, northeast of Murfreesboro, Pike County, Arkansas. Miser and Perdue, U. S. Geological Survey Bulletin 690B, 1918
SCHULER	Occurs in subsurface only. Schuler Oil Field, near Schuler, western Union County, Arkansas. Swain, American Association of Petroleum Geologists Bulletin, Volume 28, No. 5, 1944
DORCHEAT	Occurs in subsurface only. Dorcheat Oil Field, Columbia County, Arkansas. Swain, American Association of Petroleum Geologists Bulletin, Volume 28, No. 5, 1944
BUCKNER	Occurs in subsurface only. Buckner Oil Field, near Buckner, northwestern Columbia County, Arkansas. Grage and Warren, American Association of Petroleum Geologists Bulletin, Volume 23 No. 3, 1939; Weeks, American Association of Petroleum Geologists Bulletin, Volume 22, No. 8, 1938

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
SMACKOVER	Occurs in subsurface only. Smackover Oil Field, near Smackover, northern Union County, Arkansas. Bingham, American Association of Petroleum Geologists Bulletin, Volume 21, No. 8, 1937
REYNOLDS	Occurs in subsurface only. Phillips Petroleum Company's J. D. Reynolds No. 1 well, in Sec. 27, T. 15 S., R. 15 W., near Snow Hill, southeastern Ouachita County, Arkansas. Weeks, American Association of Petroleum Geologists Bulletin, Volume 22, No. 8, 1938
NORPHLET	Occurs in subsurface only. Norphlet, southeast of Smackover, in northern Union County, Arkansas. Hazzard, Spooner, and Blanpied, Shreveport Geological Society 1945 Reference Report, Volume 2, 1947
EAGLE MILLS	Occurs in subsurface only. Amerada Petroleum Company's Eagle Mills well No. 1, in Sec. 11, T. 12 S., R. 16 W., north of Eagle Mills, Ouachita County, Arkansas. Weeks, American Association of Petroleum Geologists Bulletin, Volume 22, No. 8, 1938; Grage and Warren, American Association of Petroleum Geologists Bulletin, Volume 23, No. 3, 1939

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
BENNINGTON	Exposures at Bennington, Bryant County, Oklahoma, Taff, U. S. Geological Survey Folio No. 79, 1902
BOKCHITO	Exposures along Bokchito Creek, near Bokchito, Bryan County, Oklahoma. Taff, U.S. Geological Survey Folio No. 79, 1902
CADDO	Exposures at Caddo, Bryan County, Oklahoma. Taff, U. S. Geological Survey Folio No. 79, 1902
KIAMICHI	Exposures along the Kiamichi River near Fort Dawson, Choctaw County, Oklahoma. Hill, Geological Society of America Bulletin, Volume 2, 1891
GOODLAND	Exposures at Goodland, Choctaw County, Oklahoma. Hill, Geological Society of America Bulletin, Volume 2, 1891

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
PORTERS CREEK	Exposures along Porters Creek, west of Middleton, southern Hardeman County, Tennessee. Safford, American Journal of Science, 2nd Series, Volume 37, 1864
MCNAIRY	Exposures near Cypress, southern McNairy County, Tennessee. Stephenson, U. S. Geological Survey Professional Paper 81, 1914
COON CREEK	Exposures along Coon Creek, Hardin County, Tennessee. Wade, U. S. Geological Survey Professional Paper 137, 1926
COFFEE	Exposures at Coffee Landing on the Tennessee River, Hardin County, Tennessee. Safford, American Journal of Science, 2nd Series, Volume 37, 1864

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
LAFAYETTE	Exposures in Lafayette County, Mississippi. Hilgard, American Geologist, Volume 8, 1891
GRAND GULF	Exposures at Grand Gulf, northwest of Port Gibson, Western Claiborne County, Mississippi. Wailes, Report on the Agriculture and Geology of Mississippi, 1854
PASCAGOULA	Exposures along the Pascagoula River, Jackson County, Mississippi. McGee, U. S. Geological Survey 12th Annual Report, Part I, 1891
HATTIESBURG	Exposures at Hattiesburg, Forrest County, Mississippi. Johnson, Science, Volume 21, 1893
CHICKASAWHAY	Exposures along the Chickasawhay River in Wayne County, Mississippi. Blanpied, Shreveport Geological Society 11th Annual Field Trip Guidebook, 1934
VICKSBURG	Exposures in bluffs along U. S. Highway 61 north of Vicksburg, Warren County, Mississippi. Conrad, Philadelphia Academy of Natural Science Proceedings, Volume 3, 1848
BUCATUNNA	Exposures along Bucatunna Creek, southeastern Wayne County, Mississippi. Blanpied, Shreveport Geological Society 11th Annual Field Trip Guidebook, 1934

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
BYRAM	Exposures along the Pearl River east of Byram, Hinds County, Mississippi. Casey, Philadelphia Academy of Natural Science Proceedings, Volume 53, 1902
MINT SPRING	Exposures along Mint Spring Bayou, west side of Vicksburg National Cemetery, north of Vicksburg, Warren County, Mississippi. Cooke, Washington Academy of Natural Science Journal, Volume 8, 1918
FOREST HILL	Exposures at Forest Hill, 5 1/2 miles southwest of Jackson, Hinds County, Mississippi. Cooke, Washington Academy of Natural Science Journal, Volume 8, 1918
RED BLUFF	Exposures at Red Bluff on the Chickasawhay River, 1 1/2 miles south of Shubuta, in Wayne County, Mississippi. Hilgard, Report on the Agriculture and Geology of Mississippi, 1860
JACKSON	Exposures at Jackson, Hinds County, Mississippi. Conrad, Philadelphia Academy of Natural Science Proceedings, Volume 7, 1856
YAZOO	Exposures at Yazoo City, Yazoo County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 12, 1915
SHUBUTA	Exposures along the east bank of the Chickasawhay River, north of the old U.S. Highway 45 bridge east of Shubuta, Clarke County, Mississippi. Murray, American Association of Petroleum Geologists Bulletin, Volume 31, No. 10, 1947

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
PACHUTA	Exposures along the south bank of Pachuta Creek, 1 1/4 miles south-southeast of Pachuta, Clarke County, Mississippi. Murray, American Association of Petroleum Geologists Bulletin, Volume 31, No. 10, 1947
NORTH CREEK	Exposures along the west side of the North Creek, 2 miles southwest of Rose Hill, Jasper County, Mississippi. Murray, American Association of Petroleum Geologists Bulletin, Volume 31, No. 10, 1947
MOODYS BRANCH	Exposures along Moodys Branch, a tributary of the Pearl River at Jackson, Hinds County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 12, 1915. Neotype Locality- deep gullies in Riverside Park, Jackson, Mississippi
WAUTUBBEE	Exposures near Wautubbee Station, northwestern Clarke County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 14, 1919
GORDON CREEK	Exposures along Gordon Creek at Wautubbee Station, where the creek crosses U.S. Highway 11 between Enterprise and Pachuta, Clarke County, Mississippi. Thomas, Mississippi Geological Survey Bulletin 48, 1942

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
POTTERCHITTO	Exposures along the south bank of Potterchitto Creek, along Mississippi State Highway 15, two miles northeast of Newton, Newton County, Mississippi. Thomas, Mississippi Geological Survey Bulletin 48, 1942
SHIPPS CREEK	Exposures along Shipps Creek, a tributary of Black Creek in east-central Holmes County, Mississippi. Thomas, Mississippi Geological Survey Bulletin 48, 1942
ARCHUSA	Exposures at Archusa Springs, south of Quitman on the Chickasawhay River, central Clarke County, Mississippi. Thomas, Mississippi Geological Survey Bulletin 48, 1942
KOSCIUSKO	Exposures at Kosciousko, Attala County, Mississippi. Cooke, U. S. Geological Survey Professional Paper 140E, 1925
WINONA	Exposures at Winona, southwestern Montgomery County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 14, 1919
ZILPHA	Exposures at Bucksnort Hill, 1 1/2 miles north of Zilpha Creek, northwestern Attala County, Mississippi. Moore, Mississippi Geological Society Field Trip Guidebook, 1940; Thomas, Mississippi Geological Survey Bulletin 48, 1942

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
HOLLY SPRINGS	Exposures at Holly Springs, east-central Marshall County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 10, 1913
NESHOBA	Exposures at Neshoba, southern Neshoba County, Mississippi. Thomas, Mississippi Geological Survey Bulletin 48, 1942
BASIC	Exposures in the railroad cut just north of Basic City, northwestern Clarke County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 14, 1919; Foster, Mississippi Geological Survey Bulletin 41, 1940
MERIDIAN	Exposures at Meridian, central Lauderdale County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 25, 1933
GRENADA	Exposures along the Yalobusha and Bogue Rivers near Grenada, central Grenada County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 10, 1913
ACKERMAN	Exposures at Blanton's Gap, 1 1/2 miles northeast of Ackerman, in southeastern Choctaw County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 10, 1913; Cooke, American Association of Petroleum Geologists Bulletin, Volume 17, 1933

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
FEARN SPRINGS	Exposures 1/4 mile west of Fearn Springs, southeastern Winston County, Mississippi. Mellen, Mississippi Geological Survey Bulletin 38, Part I, 1939
BETHEDEN	Exposures at Livingston's Spring, east of Betheden, Winston County, Mississippi. Mellen, Mississippi Geological Survey Bulletin 38, 1939
TIPPAH	Exposures in Tippah County, Mississippi. Lowe, Mississippi Geological Survey Bulletin 20, 1925
CHALYBEATE	Exposures in a ravine north of the main street of Chalybeate, northeastern Tippah County, Mississippi, 3 miles south of U.S. Highway 72. MacNeil, U. S. Geological Survey Strategic Minerals Investigations Preliminary Report No. 3-195, 1946
OWL CREEK	Exposures along Owl Creek, 2 1/2 miles northeast of Ripley, Tippah County, Mississippi. Wade, U. S. Geological Survey Professional Paper 137, 1926
RIPLEY	Exposures at Ripley, west-central Tippah County, Mississippi. Hilgard, Report on the Agriculture and Geology of Mississippi 1860

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
CHIWAPA	Exposures along Chiwapa Creek at the old CWA quarry, 1 1/2 miles south of Pontotoc, north-central Pontotoc County, Mississippi. Mellen, Mississippi Geological Survey Bulletin 85, 1958
MOOREVILLE	Exposures along U. S. Highway 78, 1/2 to 3/4 mile west of Mooreville, in eastern Lee County, Mississippi. Stephenson, Washington Academy of Natural Science Journal, Volume 7, 1917
TUPELO	Exposures in East Tupelo, south-central Lee County, Mississippi. Stephenson and Monroe, Mississippi Geological Survey Bulletin 40, 1940
TOMBIGBEE	Type locality not specified. Probably Plymouth Bluff on the Tombigbee River, 4 miles northwest of Columbus, Lowndes County, Mississippi. Smith and Johnson, U. S. Geological Survey Bulletin 43, 1887

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
CITRONELLE	Exposures at Citronelle, northern Mobile County, Alabama. Matson, U. S. Geological Survey Professional Paper 98L and 98M, 1916
PAYNES HAMMOCK	Exposures at Paynes Hammock, Clarke County, Alabama. MacNeil, American Association of Petroleum Geologists Bulletin, Volume 28, No. 9, 1944
GLENDON	Exposures at Glendon, Clarke County, Alabama. Hopkins, U. S. Geological Survey Bulletin 661, 1917
COCOA	Exposures at old Cocoa Post Office, 2 1/2 miles east of Melvin, Choctaw County, Alabama. Cooke, U. S. Geological Survey Professional Paper 95 (I), 1915
CLAIBORNE	Exposures at Claiborne Bluff on the Alabama River, in Monroe County, Alabama. Hilgard, Report on the Agriculture and Geology of Mississippi, 1860
GOSPORT	Exposures at Gosport Landing on the Alabama River, in Clarke County, Alabama. Smith, Alabama Geological Survey Bulletin 9, 1907
LISBON	Exposures at Lisbon Bluff on the Alabama River, Clarke County, Alabama. Smith, Johnson, and Langdon, Alabama Geological Survey Special Report No. 6, 1894

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
TALLAHATTA	Exposures in the Tallahatta Hills, Choctaw County, Alabama. Dall, U. S. Geological Survey 18th Annual Report, Part 2, 1898
WILCOX	Type locality not specified. May be the now abandoned settlement of Wilcox, or, all of Wilcox County, Alabama. Crider and Johnson, U.S. Geological Survey Water Supply Paper 159, 1906
HATCHETIGBEE	Exposures at Hatchetigbee Bluff on the Tombigbee River, Washington County, Alabama. Smith, Johnson, and Langdon, Alabama Geological Survey Special Report No. 6, 1894
BASHI	Exposures on Bashi Creek, northwestern Clarke County, Alabama. Smith, Johnson, and Langdon, Alabama Geological Survey Special Report No. 6, 1894
TUSCAHOMA	Exposures at Tuscahoma Landing on the Tombigbee River, Choctaw County, Alabama. Smith and Johnson, U. S. Geological Survey Bulletin 43, 1887
BELLS LANDING	Exposures at Bells Landing on the Alabama River, Monroe County, Alabama. Smith, Johnson, and Langdon, Alabama Geological Survey Special Report No. 6, 1894

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
GREGGS LANDING	Exposures at Greggs Landing on the Alabama River, Monroe County, Alabama. Smith, Johnson, and Langdon, Alabama Geological Survey Special Report No. 6, 1894
NANAFALIA	Exposures at Nanafalia Landing on the Tombigbee River, Marengo County, Alabama. Smith, Alabama Geological Survey Bulletin No. 1, 1886
SALT MOUNTAIN	Exposures at Salt Mountain, Clarke County, Alabama. Langdon, Geological Society of America Bulletin, Volume 2, 1891
GRAMPIAN HILLS	Exposures near Grampian Hills, 2 miles southeast of Camden, Wilcox County, Alabama. Brantly, Alabama Geological Survey Bulletin No. 22, Part 2, 1920
MIDWAY	Exposures at Midway Landing on the Alabama River, Wilcox County, Alabama. Harris, American Journal of Science, 3rd Series, Volume 47, 1894
NAHEOLA	Exposures at Naheola Landing on the Tombigbee River, Choctaw County, Alabama. Smith and Johnson, U. S. Geological Survey Bulletin 43, 1887
COAL BLUFF	Exposures at Coal Bluff on the Alabama River, Wilcox County, Alabama. Toulmin, Guidebook of the First Annual Field Trip of the Southeastern Geological Society, 1944

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
OAK HILL	Exposures at Oak Hill, Wilcox County, Alabama. Toulmin, LaMoreaux, and Lanphere, Alabama Geological Survey Special Report No. 21, 1951
SUCARNOOCHEE	Exposures at Blacks Bluff on the Tombigbee River, Sumter County, Alabama. Smith and Johnson, U. S. Geological Survey Bulletin 43, 1887
MATTHEWS LANDING	Exposures at Matthews Landing on the Alabama River, Wilcox County, Alabama. Smith, Johnson, and Langdon, Alabama Geological Survey Special Report No. 6, 1894
CLAYTON	Exposures in a railroad cut one mile east of Clayton, Barbour County, Alabama. Smith, Alabama Geological Survey Bulletin No. 2, 1892
MCBRYDE	Exposures 3 miles west of McBryde Station along Alabama State Highway 100, Wilcox County, Alabama. MacNeil, U. S. Geological Survey Strategic Minerals Investigations Preliminary Report No. 3-195, 1946
PINE BARREN	Exposures in Pine Barren Creek along Alabama State Highway 100, Wilcox County, Alabama. MacNeil, U. S. Geological Survey Strategic Minerals Investigations Preliminary Report No. 3-195, 1946

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
PRAIRIE BLUFF	Exposures at Prairie Bluff on the Alabama River, Wilcox County, Alabama. Winchell, American Association for the Advancement of Science Proceedings, Volume 10, Part 2, 1857
SELMA	Exposures in bluffs along the Alabama River at Selma, Dallas County, Alabama. Smith, Johnson, and Langdon, Alabama Geological Survey Special Report No. 6, 1894
DEMOPOLIS	Exposures at Demopolis on the Tombigbee River, Marengo County, Alabama. Smith, U. S. Geological Survey Bulletin 225, 1903
ARCOLA	Exposures in the bluff at old Arcola Landing on the Black Warrior River, Hale County, Alabama. Stephenson and Monroe, American Association of Petroleum Geologists Bulletin, Volume 22, 1938
BLUFFPORT	Exposures at Bluffport Bluff along the Tombigbee River, Sumter County, Alabama. Monroe, American Association of Petroleum Geologists Bulletin, Volume 40, No. 11, 1956
EUTAW	Exposures at Eutaw, eastern Greene County, Alabama. Hilgard, Report on the Agriculture and Geology of Mississippi, 1860

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
MCSHAN	Exposures in road cuts along U. S. Highway 82, 1 1/2 miles north of McShan, in northeast-central Pickens County, Alabama. Monroe, Conant, and Eargle, American Association of Petroleum Geologists Bulletin, Volume 30, No. 2, 1946
TUSCALOOSA	Exposures along the Black Warrior River at Tuscaloosa, Tuscaloosa County, Alabama. Smith and Johnson, U. S. Geological Survey Bulletin 43, 1887
GORDO	Exposures along the south slope of Little Bear Creek Valley, 2 miles southwest of Gordo, eastern Pickens County, Alabama. Monroe, Conant, Eargle, American Association of Petroleum Geologists Bulletin, Volume 30, No. 2, 1946
COKER	Exposures east of Spring Hill school on the west valley wall of the Black Warrior River, 3 miles south of Coker, western Tuscaloosa County, Alabama, Monroe, Conant, and Eargle, American Association of Petroleum Geologists Bulletin, Volume 30, No. 2, 1946
EOLINE	Exposures along Alabama State Highway 6, 1 1/2 miles east of Eoline, west-central Bibb County, Alabama. Monroe, Conant, and Eargle, American Association of Petroleum Geologists Bulletin, Volume 30, No. 2, 1946

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
COTTONDALE	Exposures in cuts along the Southern Railroad, 1/2 to 1 1/2 miles east of Cottondale, Tuscaloosa County, Alabama. Monroe, Conant, and Eargle, American Association of Petroleum Geologists Bulletin, Volume 30, No. 2, 1946
VICK	Exposures along the old Centerville-Randolph road north of Alabama State Highway 6, east of the community of Vick, 4 miles east of Centerville, Bibb County, Alabama. Conant, American Association of Petroleum Geologists Bulletin, Volume 30, No. 5, 1946

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
LAKE FLIRT	Exposures on Lake Flirt, a shallow expansion of the Caloosahatchee River east of La Belle, northern Hendry County, Florida. Sellards, Florida Geological Survey Annual Report 12, 1919
ANASTASIA	Exposures on Anastasia Island opposite St. Augustine, St. Johns County, Florida. Sellards, Florida Geological Survey Annual Report 4, 1912
KEY LARGO	Exposures on Key Largo, the largest of the Florida Keys, Dade County, Florida. Sanford, Florida Geological Survey Annual Report 2, 1909
MIAMI	Exposures at Miami, Dade County, Florida. Cooke and Mossom, Florida Geological Survey Annual Report 20, 1929
FORT THOMPSON	Exposures at Fort Thompson on the Caloosahatchee River, 1 3/4 miles east of La Belle, Hendry County, Florida. Sellards, Florida Geological Survey Annual Report 12, 1919
TAMIAMI	Exposures along the Tamiami Trail in Collier and Monroe Counties, Florida. Mansfield, Florida Geological Survey Bulletin 18, 1939
ALACHUA	Exposures in Alachua County, Florida. Dall, in Dall and Harris, U. S. Geological Survey Bulletin 84, 1892

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
BONE VALLEY	Exposures west of Bartow, Polk County, Florida. Matson and Clapp, Florida Geological Survey Annual Report 2, 1909
BUCKINGHAM	Exposures along the Caloosahatchee River near the settlement of Buckingham, northeastern Lee County, Florida. Mansfield, Florida Geological Survey Bulletin 18, 1939
CALOOSAHATCHEE	Exposures along the Caloosahatchee River near La Belle, Hendry County, Florida. Dall, American Journal of Science, 3rd Series, Volume 34, 1887
CHOCTAWHATCHEE	Exposures on the Choctawhatchee River near Red Bay, Walton County, Florida. Matson and Clapp, Florida Geological Survey Annual Report 2, 1909
ALUM BLUFF	Exposures on the Apalachiocola River above Blountstown, eastern Calhoun County, Florida. Dall, in Dall and Harris, U. S. Geological Survey Bulletin 84, 1892
SHOAL RIVER	Exposures on the right bank of the Shoal River, 5 miles north of Mossy Head, Walton County, Florida. Gardner, U. S. Geological Survey Professional Paper 142, 1926
OAK GROVE	Exposures at Oak Grove on the Yellow River, Okaloosa County, Florida. Dall and Stanley-Brown, Geological Society of America Bulletin Volume 5, 1894

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
HAWTHORN	Exposures at Hawthorn, southeastern Alachua County, Florida. Dall, in Dall and Harris, U. S. Geological Survey Bulletin 84, 1892
CHIPOLA	Exposures on the west bank of the Chipola River, 2 1/4 miles east of Carr, northern Calhoun County, Florida. Gardner, U. S. Geological Survey Professional Paper 142, 1926
TAMPA	Exposures at Tampa, central Hillsborough County, Florida. Johnson, American Journal of Science, 3rd Series, Volume 36, 1888
CHATTAHOOCHEE	Exposures at Chattahoochee Landing on the Chattahoochee River, northwestern Gadsden County, Florida. Langdon, American Journal of Science, 3rd Series, Volume 38, 1889
ST MARKS	Exposures at St. Marks, southeastern Wakulla County, Florida. Finch, American Journal of Science, Volume 7, 1823
SUWANNEE	Exposures along the Suwannee River at Ellaville, eastern Madison County, Florida. Cooke and Mansfield, Geological Society of America Proceedings for 1935 (Abstract)
MARIANNA	Exposures at Marianna, central Jackson County, Florida. Matson and Clapp, Florida Geological Survey Annual Report 2,1909

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
OCALA	Exposures in the vicinity of Ocala, west-central Marion County, Florida. Dall, in Dall and Harris, U. S. Geological Survey Bulletin 84, 1892
CRYSTAL RIVER	Exposures in the Crystal River Rock Company quarry, near the town of Crystal River, northwestern Citrus County, Florida. Puri, Abstract, Journal of Sedimentary Petrology, Volume 23, 1953
WILLISTON	Exposures west of Williston, eastern Levy County, Florida. Vernon, Florida Geological Survey Bulletin 33, 1951
INGLIS	Exposures at Inglis, southwestern Levy County, Florida. Vernon, Florida Geological Survey Bulletin 33, 1951
AVON PARK	Occurs in subsurface only. Avon Park Bombing Range wells, Polk County, Florida. Applin and Applin, American Association of Petroleum Geologists Bulletin, Volume 28, No. 12, 1944
TALLAHASSEE	Occurs in subsurface only. Central Oil and Gas Company well, 3 miles east of Woodville, southeastern Leon County, Florida. Applin and Applin, American Association of Petroleum Geologists Bulletin, Volume 28, No. 12, 1944

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
LAKE CITY	Occurs in subsurface only. City well at Lake City, Columbia County, Florida. Applin and Applin, American Association of Petroleum Geologists Bulletin, Volume 28, No. 12, 1944
OLDSMAR	Occurs in subsurface only. R. V. Hill's "Oldsmar well" (Sec. 18, T. 28 S., R. 17 E.) in Hillsborough County, Florida. Applin and Applin. American Association of Petroleum Geologists Bulletin, Volume 28, No. 12, 1944
CEDAR KEYS	Occurs in subsurface only. Florida Oil Discovery Company Well No. 2 Sholtz, at Cedar Keys, southwestern Levy County, Florida. Cole, Florida Geological Survey Bulletin 26, 1944
LAWSON	Occurs in subsurface only. J. S. Cosden No. 1 Lawson well (Sec. 25, T. 13 S., R. 20 E.) in Marion County, Florida. Applin and Applin, American Association of Petroleum Geologists Bulletin, Volume 28, No. 12, 1944

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
PENHOLOWAY	Exposures along Penholoway Creek, Wayne County, Georgia. Cooke, Georgia Geological Survey Bulletin 42, 1925
CHARLTON	Exposures in bluffs on the Florida side of the St. Marys River opposite Charlton County, Georgia, between Stokes Ferry and Orange Bluff. Veatch and Stephenson, Georgia Geological Survey Bulletin 26, 1911
FLINT RIVER	Exposures along the Flint River, near Bainbridge, central Decatur County, Georgia. Cooke, American Association of Petroleum Geologists Bulletin, Volume 19, No. 8, 1935
ROBERTA	Exposures at Rich Hill, 6 miles east of Roberta, Crawford County, Georgia, on Georgia State Highway 42. Connell, Southwestern Louisiana Journal, Volume 2, No. 4, 1958
SANDERSVILLE	Exposures at the Old Champion Clay mine .8 mile south of the court house at Sandersville, central Washington County, Georgia. Cooke, U. S. Geological Survey Bulletin 941, 1943
IRWINTON	Exposures south of Irwinton, central Wilkinson County, Georgia. LaMoreaux, Georgia Geological Survey Bulletin 50, Part I, 1946

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
TWIGGS	Exposures in the kaolin quarry at Pikes Peak Station on the Macon, Dublin, and Savannah Railroad, northern Twiggs County, Georgia. Cooke and Shearer, U. S. Geological Survey Professional Paper 120, 1918
TIVOLA	Exposures along the Southern Railroad at the settlement of Tivola, 1 mile north of Clinchfield, Houston County, Georgia. Connell, Southeastern Geology, Volume 1, No. 2, 1959
MCBEAN	Exposures along McBean Creek, near McBean, Richmond County, Georgia. Veatch and Stephenson, Georgia Geological Survey Bulletin 26, 1911
PROVIDENCE	Exposures in "Providence Canyon" near old Providence Post Office, 7 miles west of Lumpkin, Stewart County, Georgia. Veatch, Georgia Geological Survey Bulletin 18, 1909; Cooke, U. S. Geological Survey Bulletin 941, 1943
CUSSETA	Exposures in railroad cuts west of Cusseta, Chattahoochee County, Georgia. Veatch, Georgia Geological Survey Bulletin 18, 1909
BLUFFTOWN	Exposures in bluffs on the Chattachoochee River at the abandoned settlement of Blufftown, northwestern Stewart County, Georgia. Veatch, Georgia Geological Survey Bulletin 18, 1909

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
HORRY	Exposures along the Intracoastal Waterway canal, 2 1/2 miles northwest of Myrtle Beach, Horry County, South Carolina. Cooke, Journal of the Washington Academy of Science, Volume 27, 1937
WACCAMAW	Exposures along the Waccamaw River in Horry County, South Carolina. Dall, Wagner Free Institute of Science Transactions, Volume 3, Part 2, 1892
RAYSOR	Exposures at Raysor Bridge on the Edisto River, 8 miles southwest of St. George, Colleton County, South Carolina. Cooke, U. S. Geological Survey Bulletin 867, 1936
COOPER	Exposures along the Cooper River in Charleston, Berkley, and Dorchester Counties, South Carolina. Tuomey, Agricultural Survey of South Carolina 1st Report, 1848
BARNWELL	Exposures in a cut along the Atlantic Coast Line Railroad extending 1 mile east of Barnwell, in Barnwell County, South Carolina. Sloan, Catalogue of the Mineral Localities of South Carolina, 1908; Handbook of South Carolina, 1907
SANTEE	Exposures near Eutaw Springs, a tributary of the Santee River, Orangeburg County, South Carolina. Lyell, Geological Society of London Quarterly Journal, Volume 1, 1345

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
CONGAREE	Exposures along the Congaree River in Calhoun County, South Carolina. Neotype locality: road cut on South Carolina State Highway 33, one-half mile east of Creston, and west of Halfway Swamp, southeastern Calhoun County, South Carolina. Sloan, Catalogue of the Mineral Localities of South Carolina: South Carolina Geological Survey, Series 4, Bulletin 2, 1908. Cooke, U. S. Geological Survey Bulletin 867, 1936; Smith, South Carolina State Development Board, Bulletin of Division of Geology, Volume 2, No. 8, 1958
WARLEY HILL	Exposures at Warley Hill, south of Warley Creek, 3 miles north-northwest of Lone Star, Calhoun County, South Carolina. Sloan, Catalogue of the Mineral Localities of South Carolina: South Carolina Geological Survey, Series 4, Bulletin 2, 1908; Cooke and MacNeil, U. S. Geological Survey Professional Paper 243B, 1952
BLACK MINGO	Exposures along Black Mingo Creek, a tributary of the Black River in Williamsburg and Georgetown Counties, South Carolina. Sloan, Handbook of the South Carolina Department of Agriculture, Commerce, and Immigration, 1907
PEEDEE	Exposures at Burches Ferry on the Pee Dee River, 9 miles south of Mars Bluff, Florence County, South Carolina. Ruffin, Report on the Commencement and Progress of the Agricultural Survey of South Carolina, 1843

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
BLACK CREEK	Exposures along Black Creek near the Cashua Ferry Road, one mile northeast of Mechanicsville, Darlington County, South Carolina. Sloan, South Carolina Geological Survey, Series 4, Bulletin 2, 1908
MIDDENDORF	Exposures in the railroad cut on the Seaboard Airline Railway, 2 miles northeast of Middendorf, southwest-central Chesterfield County, South Carolina. Sloan, South Carolina Geological Survey, Series 4, Bulletin 1, 1904; Berry, U. S. Geological Survey Professional Paper 84, 1914; Cooke, U.S. Geological Survey Professional Paper 140, 1926; Cooke, U. S. Geological Survey Bulletin 867, 1936; Dorf, American Association of Petroleum Geologists Bulletin, Volume 36, 1952; Heron, South Carolina State Development Board, Bulletin of Division of Geology, Volume 2, No. 11-12, 1958
HAMBURG	Exposures along U. S. Highway 1 at Hamburg, near North Augusta, southwestern Aiken County, South Carolina. Sloan, South Carolina Geological Survey, Series 4, Bulletin 1, 1904; Handbook of South Carolina, South Carolina State Department of Agriculture, Commerce, and Immigration, 1907; South Carolina Geological Survey, Series 4, Bulletin 2, 1908; Berry, U. S. Geological Survey Professional Paper 84, 1914; Stephenson, North Carolina Geological and Economic Survey, Volume 5, 1923; Cooke, U. S. Geological Survey Professional Paper 140, 1926; Cooke, U. S. Geological Survey Bulletin 867, 1936; Richards

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
	American Philosophical Society Transactions, Volume 40, Part 1, 1950; Heron, South Carolina State Development Board, Bulletin of Division of Geology, Volume 2, No. 11-12, 1958

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
PAMLICO	Exposures along Pamlico Sound from Currituck County southward into Brunswick County, North Carolina. Stephenson, North Carolina Geological and Economic Survey, Volume III, 1912
COHARIE	Exposures along Great Coharie Creek, Sampson County, North Carolina. Stephenson, North Carolina Geological and Economic Survey, Volume III, 1912
CROATAN	Exposures along the estuary of the Neuse River near the Settlement of Croatan, 10 miles below New Bern, in Craven County, North Carolina. Dall, Wagner Free Institute of Science Transactions, Volume 3, Part 2, 1892
DUPLIN	Exposures in Duplin County, North Carolina. Dall, U. S. National Museum Proceedings, Volume 18, 1895
TRENT	Exposures along the Trent River, from the vicinity of Trenton, Jones County, to a point near the junction of the Trent and Neuse Rivers, Craven County, North Carolina. Miller, in North Carolina Geological and Economic Survey, Volume III, 1912
CASTLE HAYNE	Exposures at the village of Castle Hayne, northern New Hanover County, North Carolina. Miller, in North Carolina Geological and Economic Survey, Volume III, 1912

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
BEAUFORT	Occurs in subsurface only. Nelson Motel well, 1 1/2 miles south of Chocowinity on U. S. Highway 17, 4 miles southwest of Washington, western Beaufort County, North Carolina. Brown, North Carolina Division of Mineral Resources Bulletin 73, 1959
SNOW HILL	Exposures at Snow Hill, south-central Greene County, North Carolina. Stephenson, North Carolina Geological and Economic Survey, Volume 5, Part 1, 1923
BLADEN	Exposures in bluffs along the Cape Fear River in Bladen County, North Carolina. Stephenson, Johns Hopkins University Circulars, No. 7, 1907; Stephenson, in Clark, North Carolina Geological and Economic Survey, Volume III, 1912; Richards, American Philosophical Society Transactions, Volume 40, Part 1, 1950; Heron, South Carolina State Development Board, Bulletin of Division of Geology, Volume 2, No. 11-12, 1958; Heron, Seventh National Conference on Clays and Clay Minerals, Pergamon Press, 1959
CAPE FEAR	Exposures along the Cape Fear River near Fayetteville, central Cumberland County, North Carolina. Stephenson, Johns Hopking University Circulars, No. 7, 1907; Heron, South Carolina State Development Board, Bulletin of Division of Geology, Volume 2, No. 11-12, 1958; Heron, Seventh National Conference on Clays and Clay Minerals, Pergamon Press, 1959

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
CHESAPEAKE	Extensive exposures along the west shore of Chesapeake Bay in Virginia and Maryland. Darton, Geological Society of America Bulletin, Volume 2, 1891
YORKTOWN	Exposures in prominent cliffs on the York River at Yorktown, southeastern York County, Virginia. Clark and Miller, Virginia Geological Survey Bulletin No. 11, 1906
CHICKAHOMINY	Occurs in subsurface only. Wells 3 and 4, Navy Mine Depot, Yorktown, York County, Virginia. Cushman and Cederstrom, Virginia Geological Survey Bulletin 67, 1945
PAMUNKEY	Exposures in the valley of the Pamunkey River in Hanover County, Virginia. Darton, Geological Society of America Bulletin, Volume 2, 1891
WOODSTOCK	Exposures at old homestead called Woodstock (now Mathias Point), on the south bank of the Potomac River, King George County, Virginia. Clark, Johns Hopkins University Circulars, Volume 15, 1895
AQUIA	Exposures along Aquia Creek, Stafford County, Virginia. Clark, Johns Hopkins University Circulars, Volume 15, 1895; American Journal of Science, 4th Series, Volume I, 1896

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
PASPOTANSA	Exposures along Paspotansa Creek, which enters the Potomac River from western King George County, Virginia. Clark and Martin, Maryland Geological Survey, Eocene text, 1901
POTOMAC	Extensive exposures in the Potomac River Basin near Washington, D. C. Rogers, Geology of the Virginias, 1884

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
TALBOT	Exposures in Talbot County, eastern Maryland. Shattuck, Johns Hopkins University Circulars, Number 152, May-June, 1901; American Geologist, Volume XXVIII, August, 1901
WICOMICO	Exposures along the Wicomico River in St. Mary's and Charles counties, southern Maryland. Shattuck, Johns Hopkins University Circulars, Number 152, May-June, 1901; American Geologist, Volume XXVIII, August, 1901
SUNDERLAND	Exposures at Sunderland, north-central Calvert County, Maryland, Shattuck, Johns Hopkins University Circulars, Number 152, May-June, 1901
COLUMBIA	Exposures in and around the District of Columbia. McGee, American Association for the Advancement of Science Proceedings, Volume XXXVI, 1888
BRANDYWINE	Exposures at Brandywine, southwestern Prince Georges County, Maryland. Clark, American Journal of Science, Series 4, Volume 40, 1915
ST. MARY'S	Exposures along the St. Mary's River, St. Mary's County, Maryland. Shattuck, Science, Volume 15, 1902
CHOPTANK	Exposures along the Choptank River, southern Talbot County, Maryland. Clark, Shattuck, and Dall, Maryland Geological Survey, Miocene text, 1904

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
CALVERT	Exposures in Calvert Cliffs along the Chesapeake Bay, Calvert County, Maryland. Shattuck, Science, Volume 15, 1902
NANJEMOY	Exposures along Nanjemoy Creek, a tributary of the Potomac River in southern Charles County, Maryland. Clark and Martin, Maryland Geological Survey, Eocene text, 1901
POTAPACO	Exposures along Port Tobacco Creek, southern Charles County, Maryland. Clark and Martin, Maryland Geological Survey, Eocene text, 1901
MARLBORO	Exposures at Upper Marlboro, eastern Prince Georges County, Maryland. Clark and Martin, Maryland Geological Survey, Eocene text, 1901
PISCATAWAY	Exposures along Piscataway Creek which enters the Potomac River from Prince Georges County, Maryland. Clark and Martin, Maryland Geological Survey, Eocene text, 1901
BRIGHTSEAT	Exposures 1 mile west-southwest of Brightseat, west-central Prince Georges County, Maryland. Bennett and Collins, Washington Academy of Science Journal, Volume 42, 1952

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
MAGOTHY	Exposures along the Magothy River in Anne Arundel County, Maryland. Darton, American Journal of Science, 3rd Series, Volume 45, 1893
PATAPSCO	Exposures in the valley of the Patapsco River, Anne Arundel County, Maryland. Clark and Bibbins, Journal of Geology, Volume V, 1897
ARUNDEL	Exposures in Anne Arundel County, Maryland. Clark, Maryland Geological Survey Volume I, 1897
PATUXENT	Exposures along the upper courses of Little and Big Patuxent Rivers in Montgomery, Howard, Anne Arundel, and Prince Georges Counties, Maryland. Clark, Maryland Geological Survey, Volume I, 1897

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
CAPE MAY	Exposures in Cape May County, New Jersey. Salisbury, New Jersey Geological Survey, Annual Report of the State Geologist, 1897
PENSAUKEN (Pennsauken of commercial highway maps)	Exposures at the mouth of Pensauken Creek, northwestern Burlington County, New Jersey. Salisbury, New Jersey Geological Survey, Annual Report, 1893
BRIDGETON	Exposures at Bridgeton, northwest-central Cumberland County, New Jersey. Salisbury, New Jersey Geological Survey, Annual Report, 1897
COHANSEY	Exposures along Cohansey Creek, western Cumberland County, New Jersey. Kummel and Knapp, New Jersey Geological Survey, Volume 6, 1904
KIRKWOOD	Exposures at Kirkwood, northwest-central Camden County, New Jersey. Knapp, New Jersey Geological Survey, Annual Report of the State Geologist, 1903
SHARK RIVER	Exposures in the Shark River Valley, southeastern Monmouth County, New Jersey. Conrad, Philadelphia Academy of Natural Science Proceedings, Volume 17, 1865
MANASQUAN	Exposures along the Manasquan River in southern Monmouth County, New Jersey. Clark, New Jersey Geological Survey, Annual Report, 1892

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
RANCOCAS	Exposures along Rancocas Creek in northwest-central Burlington County, New Jersey. Clark, New Jersey Geological Survey, Annual Report, 1893
VINCENTOWN	Exposures at Vincentown, northwest-central Burlington County, New Jersey. Clark, Bagg, and Shattuck, Geological Society of America Bulletin, Volume 8, 1897
HORNERSTOWN	Exposures at Hornerstown, southwestern Monmouth County, New Jersey. Clark, Johns Hopkins University Circulars, n. s., 1907, Number 7, whole number 199
MONMOUTH	Exposures in Monmouth County, New Jersey. Clark, Bagg, and Shattuck, Geological Society of America Bulletin, Volume 8, 1897
REDBANK	Exposures at Red Bank, northeastern Monmouth County, New Jersey. Clark, New Jersey Geological Survey, Annual Report, 1893
TINTON	Exposures at Tinton Falls, southwest of Red Bank, northeastern Monmouth County, New Jersey. Weller, New Jersey Geological Survey, Annual Report, 1904
NEW EGYPT	Exposure 1.5 miles north of New Egypt, on the south bank of Contact Creek, northwestern Ocean County, New Jersey. Olsson, Journal of Paleontology, Volume 34, Number 1, 1960

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
NAVESINK	Exposures in the vicinity of the village of Navesink and along the north bank of the Navesink River, northeastern Monmouth County, New Jersey. Clark, New Jersey Geological Survey, Annual Report, 1893
MOUNT LAUREL	Exposures at Mount Laurel, northwestern Burlington County, New Jersey. Clark, Bagg, and Shattuck, Geological Society of America Bulletin, Volume 8, 1897
MATAWAN	Exposures near Matawan and along Matawan Creek, northwestern Monmouth County, New Jersey. Clark, New Jersey Geological Survey, Annual Report, 1893
WENONAH	Exposures at Wenonah, northwestern Gloucester County, New Jersey. Knapp, in Salisbury, New Jersey Geological Survey, Annual Report of the State Geologist, 1898
MARSHALLTOWN	Exposures at Marshalltown, western Salem County, New Jersey. Knapp, in Salisbury, New Jersey Geological Survey, Annual Report of the State Geologist, 1898
ENGLISHTOWN	Exposures at Englishtown, western Monmouth County, New Jersey. Kummel, New Jersey Geological Survey, Paleontology, Volume 4, 1907
CROSSWICKS	Exposures at Crosswicks, on Crosswicks Creek, northern Burlington County, New Jersey. Conrad, American Journal of Science, 2nd Series, Volume 47, 1869

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
WOODBURY	Exposures in a railway cut at Woodbury, northwestern Gloucester County, New Jersey. Knapp, in Salisbury, New Jersey Geological Survey. Annual Report of the State Geologist, 1898
MERCHANTVILLE	Exposures at Merchantville, east of Camden, northwestern Camden County, New Jersey. Knapp, in Salisbury, New Jersey Geological Survey, Annual Report of the State Geologist, 1898
RARITAN	Exposures in the vicinity of the Raritan River and Raritan Bay, northeastern Middlesex County, New Jersey. Cook, American Geologist, Volume 2, 1888

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
BRYN MAWR	Exposures at Bryn Mawr, southeastern Montgomery County, Pennsylvania. Lewis, Philadelphia Academy of Natural Science Proceedings, Volume 32, 1881

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
MANHASSET	Exposures at Manhasset, northwestern Nassau County, northwestern shore of Long Island, New York. Woodworth, New York State Museum Bulletin 48, 1901
JACOB	Exposures near Jacob Hill, 8 miles northeast of Riverhead, northeastern Suffolk County, Long Island, New York. Fuller, Geological Society of American Bulletin, Volume 16, 1905
GARDINERS	Exposures on Gardiners Island, off the eastern end of Suffolk County, Long Island, New York. Fuller, Geological Society of America Bulletin, Volume 16, 1905
JAMECO	Occurs in borings at Jameco pumping station of the Brooklyn Water Works, south of Jamaica, Queens County, New York. Veatch, Journal of Geology, Volume 11, 1903
MANNETTO	Exposures forming part of the Mannetto Hills, southwest of Huntington, western Suffolk County, Long Island, New York. Fuller, Geological Society of America Bulletin, Volume 16, 1905; Veatch, U. S. Geological Survey Professional Paper 44, 1906

STRATIGRAPHIC NAME	TYPE LOCALITY AND NOMENCLATOR
VINEYARD	Exposures on Marthas Vineyard, Dukes County, off the southern coast of Massachusetts. Woodworth, U. S. Geological Survey, 17th Annual Report, Part I, 1896
SANKATY	Exposures at Sankaty Head on Nantucket Island, Nantucket County, southeast of Marthas Vineyard, Massachusetts. Woodworth, U. S. Geological Survey, 17th Annual Report, Part I, 1896
WEYQUOSQUE	Exposures at the eastern end of Nashaquitsa Cliffs on the south shore of Marthas Vineyard (known locally as "Weyquosque"), Dukes County, Massachusetts. Woodworth and Wigglesworth, Harvard College Museum of Comparative Zoology Memoirs, Volume 52, 1934
DUKES	Exposures at Gay Head Cliffs, Marthas Vineyard, Dukes County, Massachusetts. Woodworth and Wigglesworth, Harvard College Museum of Comparative Zoology Memoirs, Volume 52, 1934
AQUINNAH	Exposures at Gay Head Cliffs (Indian equivalent - Aquinnah) on Marthas Vineyard, Dukes County, Massachusetts. Woodworth and Wigglesworth, Harvard College Museum of Comparative Zoology Memoirs, 52, 1934

INDEX

A

B

BUCATUNNA, Oligocene, Mississippi
BUCKINGHAM, Pliocene, Florida
BUCKNER, Jurassic, Arkansas
BUDA, Lower Cretaceous, Texas
BUTLER, Eocene, Texas
BYRAM, Oligocene, Texas

C

CADDELL, Eocene, Texas
CADDO, Lower Cretaceous, Oklahoma
CALDWELLS KNOB, Eocene, Texas
CALOOSAHATCHEE, Pliocene, Florida
CALVERT, Miocene, Maryland
CALVERT BLUFF, Eocene, Texas
CANE RIVER, Eocene, Louisiana
CAPE FEAR, Lower Cretaceous, North Carolina
CAPE MAY, Pleistocene, New Jersey
CARRIZO, Eocene, Texas
CASTLE HAYNE, Eocene, North Carolina
CATAHOULA, Miocene, Louisiana
CEDAR KEYS, Paleocene, Florida
CHALYBEATE, Paleocene, Mississippi
CHARLTON, Pliocene, Georgia
CHATTAHOOCHEE, Miocene, Florida
CHESAPEAKE, Miocene, Virginia
CHICKASAWHAY, Oligocene, Mississippi
CHICKAHOMINY, Eocene, Virginia
CHIPOLA, Miocene, Florida
CHITA, Oligocene?, Texas
CHIWAPA, Upper Cretaceous, Mississippi
CHOCTAWHATCHEE, Miocene, Florida
CHOPTANK, Miocene, Maryland
CITRONELLE, Pliocene, Alabama
CLAIBORNE, Eocene, Alabama
CLAYTON, Paleocene, Alabama
COAL BLUFF, Paleocene, Alabama
COCKFIELD, Eocene, Louisiana
COCOA, Eocene, Alabama
COFFEE, Upper Cretaceous, Tennessee
COHANSEY, Miocene?, New Jersey
COHARIE, Pleistocene, North Carolina
COKER, Upper Cretaceous, Alabama

COLUMBIA, Pleistocene, District of Columbia
COMANCHE PEAK, Lower Cretaceous, Texas
CONGAREE, Eocene, South Carolina
COOK MOUNTAIN, Eocene, Texas
COON CREEK, Upper Cretaceous, Tennessee
COOPER, Oligocene, South Carolina
COTTONDALE, Upper Cretaceous, Alabama
COTTON VALLEY, Jurassic, Louisiana
CROATAN, Pliocene, North Carolina
CROCKETT, Eocene, Texas
CROSSWICKS, Upper Cretaceous, New Jersey
CRYSTAL RIVER, Eocene, Florida
CUSSETA, Upper Cretaceous, Georgia

D

DANVILLE LANDING, Eocene, Louisiana
DEL RIO, Lower Cretaceous, Texas
DEMOPOLIS, Upper Cretaceous, Alabama
DENISON, Lower Cretaceous, Texas
DENTON, Lower Cretaceous, Texas
DE QUEEN, Lower Cretaceous, Arkansas
DIERKS, Lower Cretaceous, Arkansas
DORCHEAT, Jurassic, Arkansas
DUCK CREEK, Lower Cretaceous, Texas
DUKES, Pleistocene, Massachusetts
DUPLIN, Miocene, North Carolina

E

EAGLEFORD, Upper Cretaceous, Texas
EAGLE MILLS, Jurassic, Arkansas
EDWARDS, Lower Cretaceous, Texas
ENGLISHTOWN, Upper Cretaceous, New Jersey
EOLINE, Upper Cretaceous, Alabama
EUTAW, Upper Cretaceous, Alabama

F

FAYETTE, Eocene, Texas
FEARN SPRINGS, Eocene, Mississippi
FERRY LAKE, Lower Cretaceous, Louisiana
FINLAY, Lower Cretaceous, Texas
FLEMING, Miocene, Texas
FLINT RIVER, Oligocene, Georgia

FOREST HILL, Oligocene, Mississippi
FORT THOMPSON, Pleistocene, Florida
FORT WORTH, Lower Cretaceous, Texas
FREDERICKSBURG, Lower Cretaceous, Texas
FRIO, Oligocene, Texas

G

GARDINERS, Pleistocene, New York
GEORGETOWN, Lower Cretaceous, Texas
GLENDON, Oligocene, Alabama
GLEN ROSE, Lower Cretaceous, Texas
GOLIAD, Pliocene, Texas
GOODLAND, Lower Cretaceous, Oklahoma
GORDO, Upper Cretaceous, Alabama
GORDON CREEK, Eocene, Mississippi
GOSPORT, Eocene, Alabama
GRAMPIAN HILLS, Eocene, Alabama
GRAND GULF, Miocene, Mississippi
GREGGS LANDING, Eocene, Alabama
GRENADA, Eocene, Mississippi
GUEYDAN, Miocene, Texas

H

HALL SUMMIT, Paleocene, Louisiana
HAMBURG, Upper Cretaceous, South Carolina
HATCHETIGBEE, Eocene, Alabama
HATTIESBURG, Miocene, Mississippi
HAWTHORN, Miocene, Florida
HAYNESVILLE, Jurassic, Louisiana
HOLLY CREEK, Lower Cretaceous, Arkansas
HOLLY SPRINGS, Eocene, Mississippi
HORNERSTOWN, Eocene, New Jersey
HORRY, Pleistocene, South Carolina
HOSSTON, Lower Cretaceous, Louisiana
HOUSTON, Pleistocene, Texas

I

INGLIS, Eocene, Florida
IRWINTON, Eocene, Georgia

J

JACKSON, Eocene, Mississippi
JACOB, Pleistocene, New York
JAMECO, Pleistocene, New York
JAMES, Lower Cretaceous, Louisiana

K

KEY LARGO, Pleistocene, Florida
KIAMICHI, Lower Cretaceous, Oklahoma
KINCAID, Paleocene, Texas
KIRKWOOD, Miocene, New Jersey
KOSCIUSKO, Eocene, Mississippi

L

LAFAYETTE, Pliocene, Mississippi
LAGARTO, Miocene, Texas
LAKE CITY, Eocene, Florida
LAKE FLIRT, Pleistocene, Florida
LAWSON, Upper Cretaceous, Florida
LISBON, Eocene, Alabama
LISSIE, Pleistocene, Texas
LOGANSPORT, Paleocene, Louisiana
LOUARK, Jurassic, Louisiana and Arkansas

M

MAGOTHY, Upper Cretaceous, Maryland
MAIN STREET, Lower Cretaceous, Texas
MANASQUAN, Eocene, New Jersey
MANHASSET, Pleistocene, New York
MANNETTO, Pliocene?, New York
MARIANNA, Oligocene, Florida
MARLBORO, Eocene, Maryland
MARLBROOK, Upper Cretaceous, Arkansas
MARSHALLTOWN, Upper Cretaceous, New Jersey
MARTHAVILLE, Eocene, Louisiana
MATTHEWS LANDING, Paleocene, Alabama
MATAWAN, Upper Cretaceous, New Jersey
MCBEAN, Eocene, Georgia
MCBRIDE, Paleocene, Alabama

MCELROY, Eocene, Texas
MCNAIRY, Upper Cretaceous, Tennessee
MCSHAN, Upper Cretaceous, Alabama
MERCHANTVILLE, Upper Cretaceous, New Jersey
MERIDIAN, Eocene, Mississippi
MIAMI, Pleistocene, Florida
MIDDENDORF, Upper Cretaceous, South Carolina
MIDWAY, Paleocene, Alabama
MINT SPRING, Oligocene, Mississippi
MONMOUTH, Upper Cretaceous, New Jersey
MONTGOMERY, Pleistocene, Louisiana
MOODYS BRANCH, Eocene, Mississippi
MOOREVILLE, Upper Cretaceous, Mississippi
MOORINGSPORT, Lower Cretaceous, Louisiana
MOSLEY HILL, Oligocene, Louisiana
MOUNT LAUREL, Upper Cretaceous, New Jersey
MT. SELMAN, Eocene, Texas

N

NABORTON, Paleocene, Louisiana
NACATOCH, Upper Cretaceous, Arkansas
NAHEOLA, Paleocene, Alabama
NANAFALIA, Eocene, Alabama
NANJEMOY, Eocene, Maryland
NAVARRO, Upper Cretaceous, Texas
NAVESINK, Upper Cretaceous, New Jersey
NESHOBA, Eocene, Mississippi
NEW EGYPT, Upper Cretaceous, Paleocene, New Jersey
NORTH CREEK, Eocene, Mississippi
NORPHLET, Jurassic, Arkansas

O

OAK GROVE, Miocene, Florida
OAK HILL, Paleocene, Alabama
OAKVILLE, Miocene, Texas
OCALA, Eocene, Florida
OLDSMAR, Eocene, Florida
ONALASKA, Oligocene?, Texas
OWL CREEK, Upper Cretaceous, Mississippi
OZAN, Upper Cretaceous, Arkansas

P

PACHUTA, Eocene, Mississippi
PALUXY, Lower Cretaceous, Texas
PAMLICO, Pleistocene, North Carolina
PAMUNKEY, Eocene, Virginia
PASCAGOULA, Miocene, Mississippi
PASPOTANSA, Eocene, Virginia
PATAPSCO, Lower Cretaceous, Maryland
PATUXENT, Lower Cretaceous, Maryland
PAWPAW, Lower Cretaceous, Texas
PAYNES HAMMOCK, Miocene, Alabama
PEEDEE, Upper Cretaceous, South Carolina
PENDLETON, Eocene, Louisiana
PENHOLOWAY, Pleistocene, Georgia
PENSAUKEN, Pleistocene, New Jersey
PIKE, Lower Cretaceous, Arkansas
PINE BARREN, Paleocene, Alabama
PINE ISLAND, Lower Cretaceous, Louisiana
PISCATAWAY, Eocene, Maryland
PORTERS CREEK, Paleocene, Tennessee
POTAPACO, Eocene, Maryland
POTOMAC, Lower Cretaceous, Virginia
POTTERCHITTO, Eocene, Mississippi
PRAIRIE, Pleistocene, Louisiana
PRAIRIE BLUFF, Upper Cretaceous, Alabama
PROVIDENCE, Upper Cretaceous, Georgia

Q

QUEEN CITY, Eocene, Texas

R

RANCOCAS, Eocene, New Jersey
RARITAN, Upper Cretaceous, New Jersey
RAYSOR, Miocene, South Carolina
REDBANK, Upper Cretaceous, New Jersey
RED BLUFF, Oligocene, Mississippi
REKLAW, Eocene, Texas
REYNOLDS, Jurassic, Arkansas
RIPLEY, Upper Cretaceous, Mississippi
ROBERTA, Eocene, Georgia

ROCKDALE, Eocene, Texas
RODESSA, Lower Cretaceous, Louisiana
ROSEFIELD, Oligocene, Louisiana

S

SABINE, Eocene, Texas
SABINETOWN, Eocene, Texas
SALT MOUNTAIN, Eocene, Alabama
SANDEL, Oligocene, Louisiana
SANDERSVILLE, Eocene, Georgia
SANKATY, Pleistocene, Massachusetts
SANTEE, Eocene, South Carolina
SARATOGA, Upper Cretaceous, Arkansas
SCHULER, Jurassic, Arkansas
SEGUIN, Eocene, Texas
SELMA, Upper Cretaceous, Alabama
SHARK RIVER, Eocene, New Jersey
SHIPPS CREEK, Eocene, Mississippi
SHOAL RIVER, Miocene, Florida
SHONGALOO, Jurassic, Louisiana
SHUBUTA, Eocene, Mississippi
SIMSBORO, Eocene, Texas
SLIGO, Lower Cretaceous, Louisiana
SMACKOVER, Jurassic, Arkansas
SNOW HILL, Upper Cretaceous, North Carolina
SOLOMON CREEK, Eocene, Texas
SPARTA, Eocene, Louisiana
ST. MARKS, Miocene, Florida
ST. MARY'S, Miocene, Maryland
SUCARNOOCHEE, Paleocene, Alabama
SUNDERLAND, Pleistocene, Maryland
SUWANNEE, Oligocene, Florida

T

TALBOT, Pleistocene, Maryland
TALLAHASSEE, Eocene, Florida
TALLAHATTA, Eocene, Alabama
TAMIAMI, Pliocene, Florida
TAMPA, Miocene, Florida
TAYLOR, Upper Cretaceous, Texas
TINTON, Upper Cretaceous, New Jersey
TIPPAH, Paleocene, Mississippi

TIVOLA, Eocene, Georgia
TOKIO, Upper Cretaceous, Arkansas
TOMBIGBEE, Upper Cretaceous, Mississippi
TRENT, Miocene, North Carolina
TRINITY, Lower Cretaceous, Texas
TULLOS, Eocene, Louisiana
TUPELO, Upper Cretaceous, Mississippi
TUSCAHOMA, Eocene, Alabama
TUSCALOOSA, Upper Cretaceous, Alabama
TWIGGS, Eocene, Georgia

V

VERDA, Eocene, Louisiana
VICK, Upper Cretaceous?, or Lower Cretaceous?, Alabama
VICKSBURG, Oligocene, Mississippi
VINCENTOWN, Eocene, New Jersey
VINEYARD, Pleistocene, Massachusetts

W

WACCAMAW, Pliocene, South Carolina
WALNUT, Lower Cretaceous, Texas
WARLEY HILL, Eocene, South Carolina
WASHITA, Lower Cretaceous, Texas
WAUTUBBEE, Eocene, Mississippi
WECHES, Eocene, Texas
WENO, Lower Cretaceous, Texas
WENONAH, Upper Cretaceous, New Jersey
WEYQUOSQUE, Pleistocene, Massachusetts
WHITSETT, Eocene, Texas
WICOMICO, Pleistocene, Maryland
WILCOX, Eocene, Alabama
WILLIANA, Pleistocene, Louisiana
WILLIS, Pliocene, Texas
WILLISTON, Eocene, Florida
WILLS POINT, Paleocene, Texas
WINONA, Eocene, Mississippi
WOODBINE, Upper Cretaceous, Texas
WOODBURY, Upper Cretaceous, New Jersey
WOODSTOCK, Eocene, Virginia

Y

YAZOO, Eocene, Mississippi
YEGUA, Eocene, Texas
YORKTOWN, Miocene, Virginia

Z

ZILPHA, Eocene, Mississippi

STRATIGRAPHIC INDEX

PLEISTOCENE

PLIOCENE

CHARLTON, Georgia
CITRONELLE, Alabama
CROATAN, North Carolina
GOLIAD, Texas
LAFAYETTE, Mississippi
MANNETTO, New York
TAMIAMI, Florida
WACCAMAW, South Carolina
WILLIS, Texas

MIOCENE

ALACHUA, Florida
ALUM BLUFF, Florida
ANAHUAC, Texas (Lower Miocene? or Oligocene?)
CALVERT, Virginia
CATAHOULA, Louisiana
CHATTAHOOCHEE, Florida
CHESAPEAKE, Virginia
CHIPOLA, Florida
CHOCTAWHATCHEE, Florida
CHOPTANK, Maryland
COHANSEY, New Jersey
DUPLIN, North Carolina
FLEMING, Texas
GRAND GULF, Mississippi
GUEYDAN, Texas
HATTIESBURG, Mississippi
HAWTHORN, Florida
KIRKWOOD, New Jersey
LAGARTO, Texas
OAK GROVE, Florida
OAKVILLE, Texas
PASCAGOULA, Mississippi
PAYNES HAMMOCK, Alabama
RAYSOR, South Carolina
SHOAL RIVER, Florida
ST. MARKS, Florida
ST. MARY'S, Maryland
TAMPA, Florida
TRENT, North Carolina
YORKTOWN, Virginia

OLIGOCENE

ANAHUAC, Texas (Oligocene? or Lower Miocene?)
BUCATUNNA, Mississippi
BYRAM, Mississippi
CHICKASAWHAY, Mississippi
CHITA, Texas (Oligocene?)
COOPER, South Carolina
FLINT RIVER, Georgia
FOREST HILL, Mississippi
FRIO, Texas
GLENDON, Alabama
MARIANNA, Florida
MINT SPRING, Mississippi
MOSLEY HILL, Louisiana
ONALASKA, Texas (Oligocene?)
RED BLUFF, Mississippi
ROSEFIELD, Louisiana
SANDEL, Louisiana
SUWANNEE, Florida
VICKSBURG, Mississippi

EOCENE

ACKERMAN, Mississippi
AQUIA, Virginia
ARCHUSA, Mississippi
AVON PARK, Florida
BARNWELL, South Carolina
BASHI, Alabama
BASIC, Mississippi
BELLS LANDING, Alabama
BLACK MINGO, South Carolina
BUTLER, Texas
CADDELL, Texas
CALDWELLS KNOB, Texas
CALVERT BLUFF, Texas
CANE RIVER, Louisiana
CARRIZO, Texas
CASTLE HAYNE, North Carolina
CHICKAHOMINY, Virginia
CLAIBORNE, Alabama
COCKFIELD, Louisiana
COCOA, Alabama

CONGAREE, South Carolina
COOK MOUNTAIN, Texas
CROCKETT, Texas
CRYSTAL RIVER, Florida
DANVILLE LANDING, Louisiana
FAYETTE, Texas
FEARN SPRINGS, Mississippi
GORDON CREEK, Mississippi
GOSPORT, Alabama
GRAMPIAN HILLS, Alabama
GREGGS LANDING, Alabama
GRENADA, Mississippi
HATCHETIGBEE, Alabama
HOLLY SPRINGS, Mississippi
HORNERSTOWN, New Jersey
INGLIS, Florida
IRWINTON, Georgia
JACKSON, Mississippi
KOSCIUSKO, Mississippi
LAKE CITY, Florida
LISBON, Alabama
MANASQUAN, New Jersey
MARLBORO, Maryland
MARTHAVILLE, Louisiana
MCBEAN, Georgia
MCELROY, Texas
MERIDIAN, Mississippi
MOODYS BRANCH, Mississippi
MT. SELMAN, Texas
NANAFALIA, Alabama
NANJEMOY, Maryland
NESHOBA, Mississippi
NORTH CREEK, Mississippi
OCALA, Florida
OLDSMAR, Florida
PACHUTA, Mississippi
PAMUNKEY, Virginia
PASPOTANSA, Virginia
PENDLETON, Louisiana
PISCATAWAY, Maryland
POTAPACO, Maryland
POTTERCHITTO, Mississippi
QUEEN CITY, Texas
RANCOCAS, New Jersey

REKLAW, Texas
ROBERTA, Georgia
ROCKDALE, Texas
SABINE, Texas
SABINETOWN, Texas
SALT MOUNTAIN, Alabama
SANDERSVILLE, Georgia
SANTEE, South Carolina
SEGUIN, Texas
SHARK RIVER, New Jersey
SHIPPS CREEK, Mississippi
SHUBUTA, Mississippi
SIMSBORO, Texas
SOLOMON CREEK, Texas
SPARTA, Louisiana
TALLAHASSEE, Florida
TALLAHATTA, Alabama
TIVOLA, Georgia
TULLOS, Louisiana
TUSCAHOMA, Alabama
TWIGGS, Georgia
VERDA, Louisiana
VINCENTOWN, New Jersey
WARLEY HILL, South Carolina
WAUTUBBEE, Mississippi
WECHES, Texas
WHITSETT, Texas
WILCOX, Alabama
WILLISTON, Florida
WINONA, Mississippi
WOODSTOCK, Virginia
YAZOO, Mississippi
YEGUA, Texas
ZILPHA, Mississippi

PALEOCENE

BEAUFORT, North Carolina
BETHEDEN, Mississippi
BRIGHTSEAT, Maryland
CEDAR KEYS, Florida
CHALYBEATE, Mississippi
CLAYTON, Alabama
COAL BLUFF, Alabama

HALL SUMMIT, Louisiana
KINCAID, Texas
LOGANSPORT, Louisiana
MATTHEWS LANDING, Alabama
MCBRYDE, Alabama
MIDWAY, Alabama
NABORTON, Louisiana
NAHEOLA, Alabama
NEW EGYPT, New Jersey (Upper Cretaceous and Paleocene)
OAK HILL, Alabama
PINE BARREN, Alabama
PORTERS CREEK, Tennessee
SUCARNOOCHEE, Alabama
TIPPAH, Mississippi
WILLS POINT, Texas

UPPER CRETACEOUS

ANNONA, Texas
ARCOLA, Alabama
ARKADELPHIA, Arkansas
AUSTIN, Texas
BLACK CREEK, South Carolina
BLADEN, North Carolina
BLUFFPORT, Alabama
BLUFFTOWN, Georgia
BROWNSTOWN, Arkansas
CHIWAPA, Mississippi
COFFEE, Tennessee
COKER, Alabama
COON CREEK, Tennessee
COTTONDALE, Alabama
CROSSWICKS, New Jersey
CUSSETA, Georgia
DEMOPOLIS, Alabama
EAGLEFORD, Texas
ENGLISHTOWN, New Jersey
EOLINE, Alabama
EUTAW, Alabama
GORDO, Alabama
HAMBURG, South Carolina
LAWSON, Florida
MAGOTHY, Maryland
MARLBROOK, Arkansas
MARSHALLTOWN, New Jersey

MATAWAN, New Jersey
MCNAIRY, Tennessee
MCSHAN, Alabama
MERCHANTVILLE, New Jersey
MIDDENDORF, South Carolina
MONMOUTH, New Jersey
MOOREVILLE, Mississippi
MOUNT LAUREL, New Jersey
NACATOCH, Arkansas
NAVARRO, Texas
NAVESINK, New Jersey
NEW EGYPT, New Jersey (Upper Cretaceous and Paleocene)
OWL CREEK, Mississippi
OZAN, Arkansas
PEEDEE, South Carolina
PRAIRIE BLUFF, Alabama
PROVIDENCE, Georgia
RARITAN, New Jersey
REDBANK, New Jersey
RIPLEY, Mississippi
SARATOGA, Arkansas
SELMA, Alabama
SNOW HILL, North Carolina
TAYLOR, Texas
TINTON, New Jersey
TOKIO, Arkansas
TOMBIGBEE, Mississippi
TUPELO, Mississippi
TUSCALOOSA, Alabama
VICK, Alabama (Upper Cretaceous? or Lower Cretaceous?)
WENONAH, New Jersey
WOODBINE, Texas
WOODBURY, New Jersey

LOWER CRETACEOUS

ARUNDEL, Maryland
BENNINGTON, Oklahoma
BOKCHITO, Oklahoma
BUDA, Texas
CADDO, Oklahoma
CAPE FEAR, North Carolina
COMANCHE PEAK, Texas
DEL RIO, Texas

DENISON, Texas
DENTON, Texas
DE QUEEN, Arkansas
DIERKS, Arkansas
DUCK CREEK, Texas
EDWARDS, Texas
FERRY LAKE, Louisiana
FINLAY, Texas
FORT WORTH, Texas
FREDERICKSBURG, Texas
GEORGETOWN, Texas
GLEN ROSE, Texas
GOODLAND, Oklahoma
HOLLY CREEK, Arkansas
HOSSTON, Louisiana
JAMES, Louisiana
KIAMICHI, Oklahoma
MAIN STREET, Texas
MOORINGSPORT, Louisiana
PALUXY, Texas
PATAPSCO, Maryland
PATUXENT, Maryland
PAWPAW, Texas
PIKE, Arkansas
PINE ISLAND, Louisiana
POTOMAC, Virginia
RODESSA, Louisiana
SLIGO, Louisiana
TRAVIS PEAK, Texas
TRINITY, Texas
VICK, Alabama (Lower Cretaceous? or Upper Cretaceous?)
WALNUT, Texas
WASHITA, Texas
WENO, Texas

JURASSIC

BOSSIER, Louisiana
BUCKNER, Arkansas
COTTON VALLEY, Louisiana
DORCHEAT, Arkansas
EAGLE MILLS, Arkansas
HAYNESVILLE, Louisiana
LOUARK, Louisiana and Arkansas
NORPHLET, Arkansas

REYNOLDS, Arkansas
SCHULER, Arkansas
SHONGALOO, Louisiana
SMACKOVER, Arkansas

CONJUGATE QUARTZ VEINS IN THE LYNCHBURG GNEISS NEAR FANCY GAP, CARROLL COUNTY, VIRGINIA

by

B. H. Richard
Department of Geology
Indiana University

ABSTRACT

Three sets of joints occur near Fancy Gap, Carroll County, Virginia. Two of these sets, which constitute a conjugate set of shear fractures, have been filled with quartz. That all joints cut the gneissosity of the Lynchburg gneiss shows clearly that the joints developed after the rock was metamorphosed. The joints formed in three stages: 1) a set of nearly vertical shear joints that strike N 55° E developed and was filled with quartz; 2) a set of nearly vertical shear joints that strike N 75° W developed, locally displaced the first set, and was filled with quartz; 3) another set of joints was formed and displaced the second set with movement essentially parallel to the plane of the first set. The gneiss was deformed plastically subsequent to all jointing and this resulted in the filling of all voids.

* * *

The purpose of the investigation of the quartz veins in the Lynchburg gneiss exposed along U.S. Highway 52 South of Hillsville was to determine the type of veins, their mode of formation, and their relationship to the country rock. The investigation was conducted near Fancy Gap, Virginia and was concentrated along Highway 52 approximately 10 miles south of Hillsville, Virginia. A reconnaissance was made of the surrounding area. More than one hundred veins were examined. A contour diagram of an equal area projection was prepared to illustrate the compiled data (Figure 1).

The country rock is the Lynchburg gneiss which locally ranges from a microgranite gneiss (64 percent quartz, 35 percent pink K-spar, and 1 percent biotite) to a garnetiferous, chlorite-biotite gneiss (90 percent quartz, 5 percent chlorite and 5 percent biotite). The chlorite plus

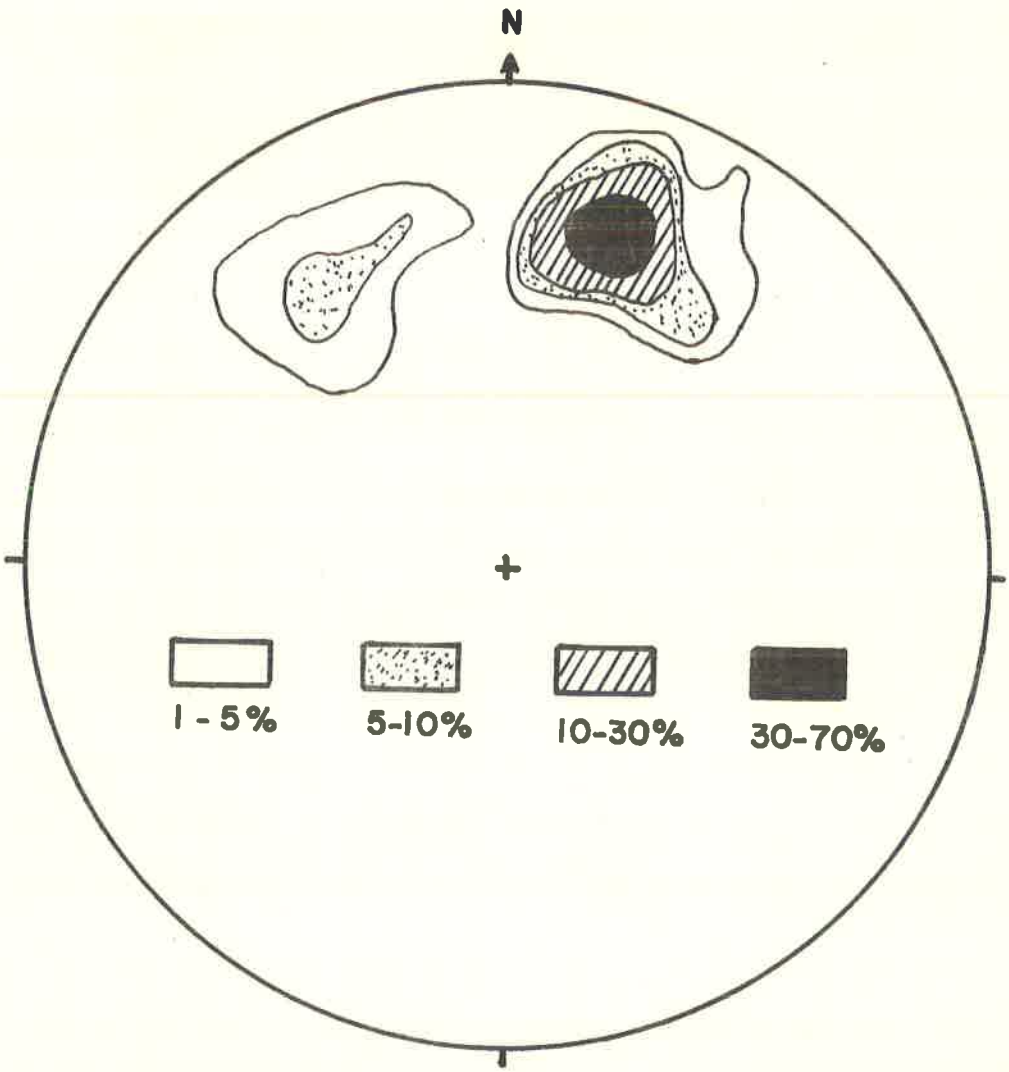
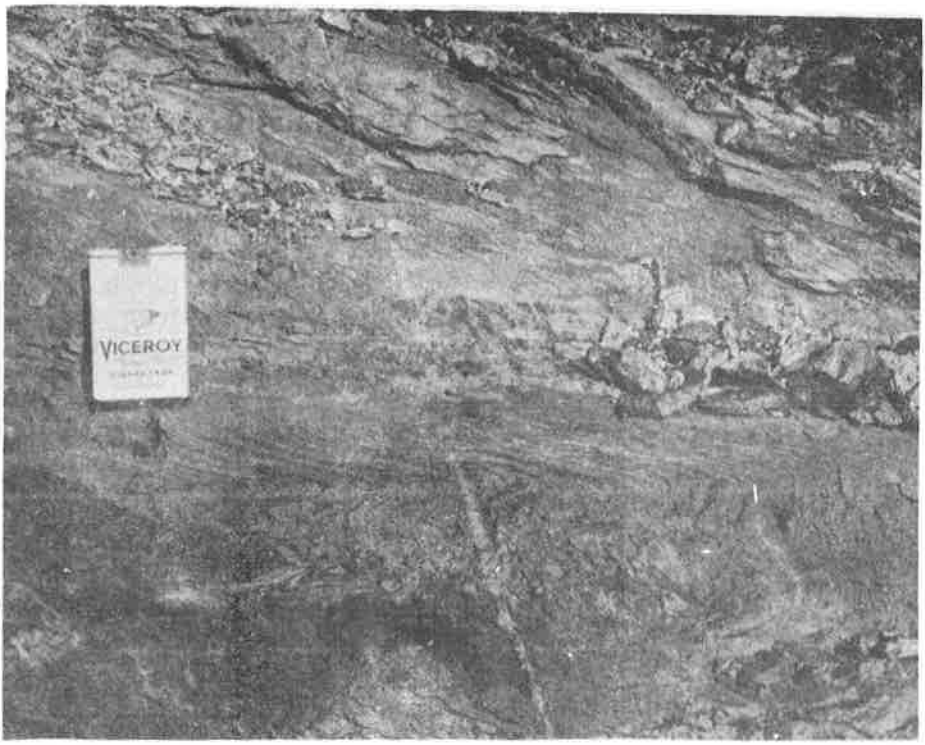


Figure 1. Contour diagram of 100 quartz veins plotted on lower hemisphere

---

biotite content is greater than 10 percent near the vein concentration. Locally the gneiss is highly crenulated and has axial plane slippage and thus appears to be a typical "folded gneiss with transposition cleavage." The intensity of the crenulations is exceptionally great near the vein swarm. All quartz veins cut the gneissosity of the host rock.



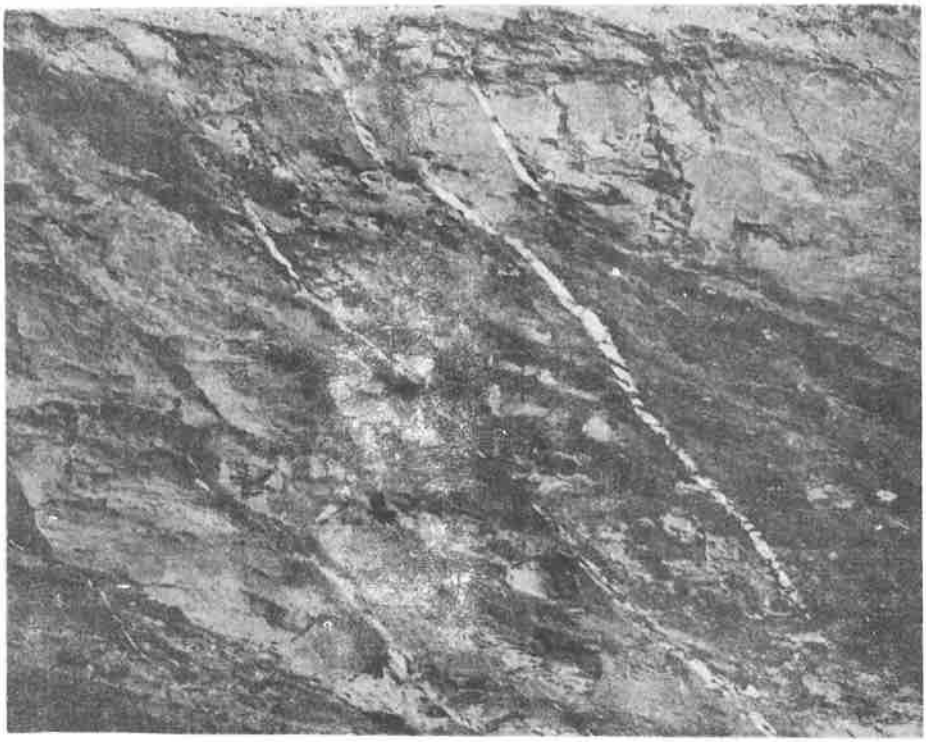


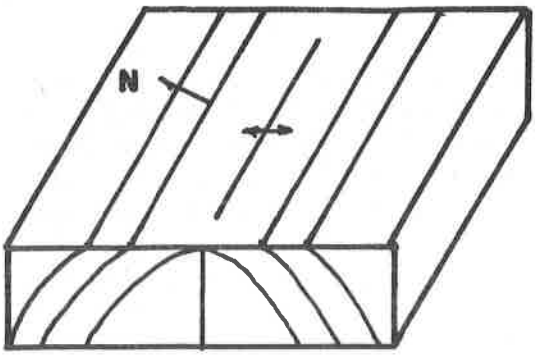
Plate 1. Typical outcrops of the quartz veins.

The veins investigated are coarsely crystalline quartz, most of which is white but some of which is smoky. The veins constitute a conjugate fracture system of which 13 percent strike N 45° - 60° E and dip 58° SE, and 74 percent strike N 65° - 75° W and dip 62° SW. These fractures were subsequently filled with quartz, and the veins range from a fraction of an inch to one foot six inches in thickness. Individual veins locally thicken and pinch out. According to Bateman's classification (1957, p. 112), the veins at the locality are of the following varieties: simple, lenticular, linked, chambered, and en echelon. Plate 1 shows typical outcrops. Of the veins studied, approximately 25 percent may be observed to pinch out upward, 16 percent may be observed to pinch out downward, and 42 percent are essentially uniform in thickness throughout their exposed lengths. The other 17 percent are hairline veins. One of the veins has banding parallel to its sides which is the result of filling of fractures within the vein. The fractures within this vein contain muscovite, biotite, magnetite, zircon, and interstitial quartz. Traces of orthoclase, rutile, and muscovite are present within the vein quartz. In thin section the quartz has elongation parallel to the sides of the vein; Böhm lamellae and a sutured texture suggest that the quartz has been subjected to pressure.

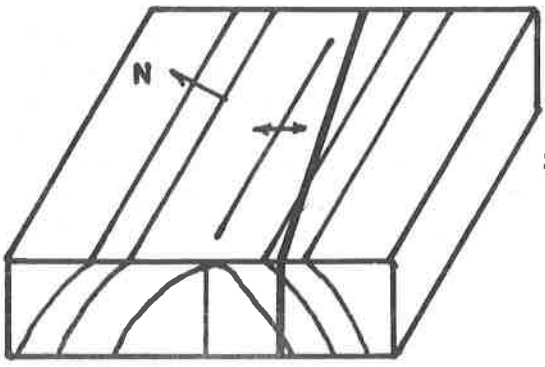
Some of the veins have nearly perpendicular off-shoots. In one case three veins merge upward into a single vein. Locally differences in the dips of the veins are controlled by compositional differences of the diverse "layers" of the host rock traversed, e.g., where the rock is a crenulated biotite gneiss, the dip of the veins is different from that in the chloritic gneiss. One vein shows displacement in a horizontal section. This vein strikes N 80° W and the displacement is along a fracture essentially parallel to the set of joints that strike N 50° E. The northwest section of this vein has moved to the northeast relative to the southeast section. Flow structure, apparently due to plastic deformation has resulted in the filling of all voids in the country rock. Where members of the conjugate system intersect, the northwest system cuts the northeast system. Further, the northeast member was displaced prior to the emplacement of quartz in the northwest member.

In a reconnaissance study of the surrounding area, calcite was found locally within some of the quartz veins. Veins are also present, though in lesser concentrations, in the rocks of the adjacent Blue Ridge.

The veins fill a conjugate set of joints which formed after the country rock became a gneiss. The joints are shear fractures which appear to have been formed in several different stages (figure 2): In

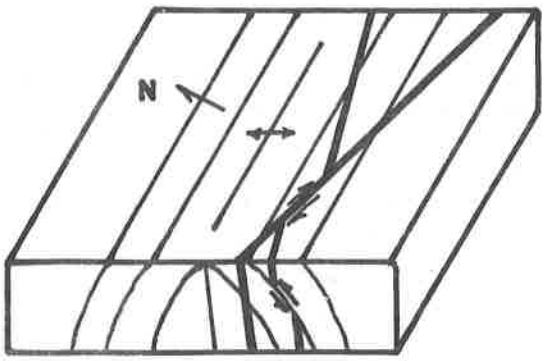


STAGE 1



STAGE 2

STAGE 3



STAGE 4

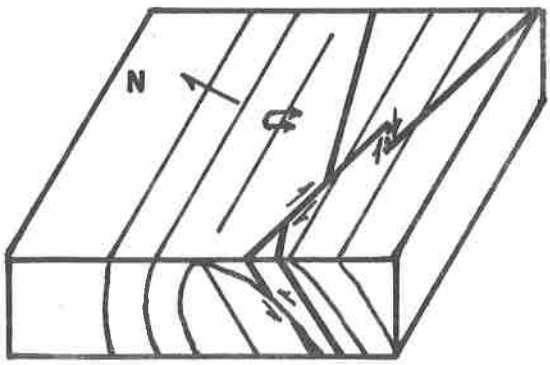


Figure 2. Stages in the formation of the veins.

the first stage, the rock was folded into an anticline and altered to a crenulated gneiss; in the next stage, a set of vertical shear joints striking N 55° E developed and was filled with quartz; in the third stage, a set of vertical shear joints striking N 75° W developed, locally displaced the first set, and was filled with quartz; in the fourth stage, there was rotation of the fold, the joints were broken transversely with the resulting displacement essentially parallel to the strike of the first set. At some time the gneiss was plastically deformed resulting in the filling of all voids.

There is no conclusive evidence as to the origin of the solutions that filled the fractures. Because the Mt. Airy granite mass is within a few miles of the veins, it is possible that they could have been filled by hydrothermal fluids associated with the magma that consolidated to form that mass or with a similar magma. Because the gneiss has a greater chlorite plus biotite content in the area of the vein swarm than elsewhere, it is also possible that the joints were filled by lateral secretion and as the result of mineralogic changes in the host rock.

CONCLUSIONS

The conjugate system of joints studied developed after the formation of the gneissosity and as the result of shearing of the host rock. The country rock had a greater weakness to shear in the northeast direction than in the northwest direction. The fractures which formed along the zone of greater weakness were filled with quartz. Subsequently the northwest set of shear fractures was formed and filled with quartz. Later, the gneiss was deformed plastically.

ACKNOWLEDGMENTS

This is a summary of a paper prepared while the writer was a student in the Department of Geological Sciences of the Virginia Polytechnic Institute. The writer wishes to thank R. V. Dietrich and W. D. Lowry for their helpful guidance and editing of this summary.

REFERENCE

Bateman, Alan M., 1957, Economic mineral deposits: John Wiley and Sons, New York.

'PERCHED' BARRIER ISLANDS, EAST FLORIDA COAST

by

William F. Tanner
Department of Geology
Florida State University

ABSTRACT

The ratio between lagoon width and barrier width is, typically, about six, and rarely less than about 2.5. Along the east coast of Florida, this ratio commonly falls in the interval, 0.5 to 2.0. This anomalous situation may be related to the unusual structure of east coast barrier islands, which are "perched" on ridges of lithified bedrock.

* * *

The barrier islands along the eastern coast of Florida are characteristically narrow, and separate the ocean from characteristically narrow lagoons. (The area around Cape Canaveral provides an exception to this generalization.) For the rest of the east coast, lagoon widths are typically a mile or less, and barrier island widths typically about the same. The ratio between lagoon width and barrier width is quite small, unlike most coasts.

Lagoon-barrier ratios have been obtained for 45 coastal points (Table 1): 12 of these are from east Florida, and the other 33 from various parts of the world, including western Florida, New Jersey, North Carolina, Texas, Poland, Russia, Holland, Denmark, Cuba, and Mexico. The assumption is made that the 33 ratios, obtained from coasts other than eastern Florida, are representative of lagoonal shores in general.

For the eastern coast of Florida, ratios (excepting the Cape Canaveral area) fall in the range, 0.5 to 2. All other ratios are 2 or larger; the mean is about 6, a spread of two standard deviations (i.e., $\bar{x} \pm s$) is about 3 to 11, and a spread of three standard deviations ($\bar{x} \pm 1.5s$) is about 2.3 to 15. This latter range includes 87% of the "typical" ratios, but none of the eastern Florida results.

TABLE I

Ratio of lagoon width to barrier width	INCIDENCE		
	"Normal" or typical coasts	"Perched" barrier	Total incidence
0.5	0	2	2
1.0	0	4	4
1.5	0	1	1
2.0	1	5	6
3	4		4
4	6		6
5	3		3
6	3		3
7	2		2
8	4		4
9	0		0
10	5		5
11	0		0
12	1		1
16	2		2
20	1		1
40	1		1

Table showing the incidence of "perched" barriers (column 3) and other (presumably "not perched") barriers (column 2). The ratio of lagoon width to barrier width is shown in column 1.

The difference in ratios suggests other differences between the eastern Florida barriers and barriers in other areas. The most obvious difference lies in the fact that the eastern coast of Florida is lined with "perched" barriers: that is, barrier islands which consist of relatively thin veneers of sand, draped over ridges of bedrock. At most places, the buried rock ridge is composed of Anastasia Limestone, a Pleistocene shell hash or coquinoid limestone which has been reasonably well cemented, and which is currently being carved into typical coastal erosive forms by the action of the waves. Excellent exposures of the

Anastasia, marked by wave-cut cliffs, notches, wave-cut platforms, and small sea-caves, arches, and stacks, may be seen on Jupiter Island (between Fort Pierce and West Palm Beach), and at a number of other places farther south. The fact that most of the good exposures occur in the southern portion of the eastern coast is thought to be due to a deficit of beach sands, for littoral drift, in that area.

As far as the present writer knows, a central core of solid rock is not a characteristic of barrier islands at most other places.