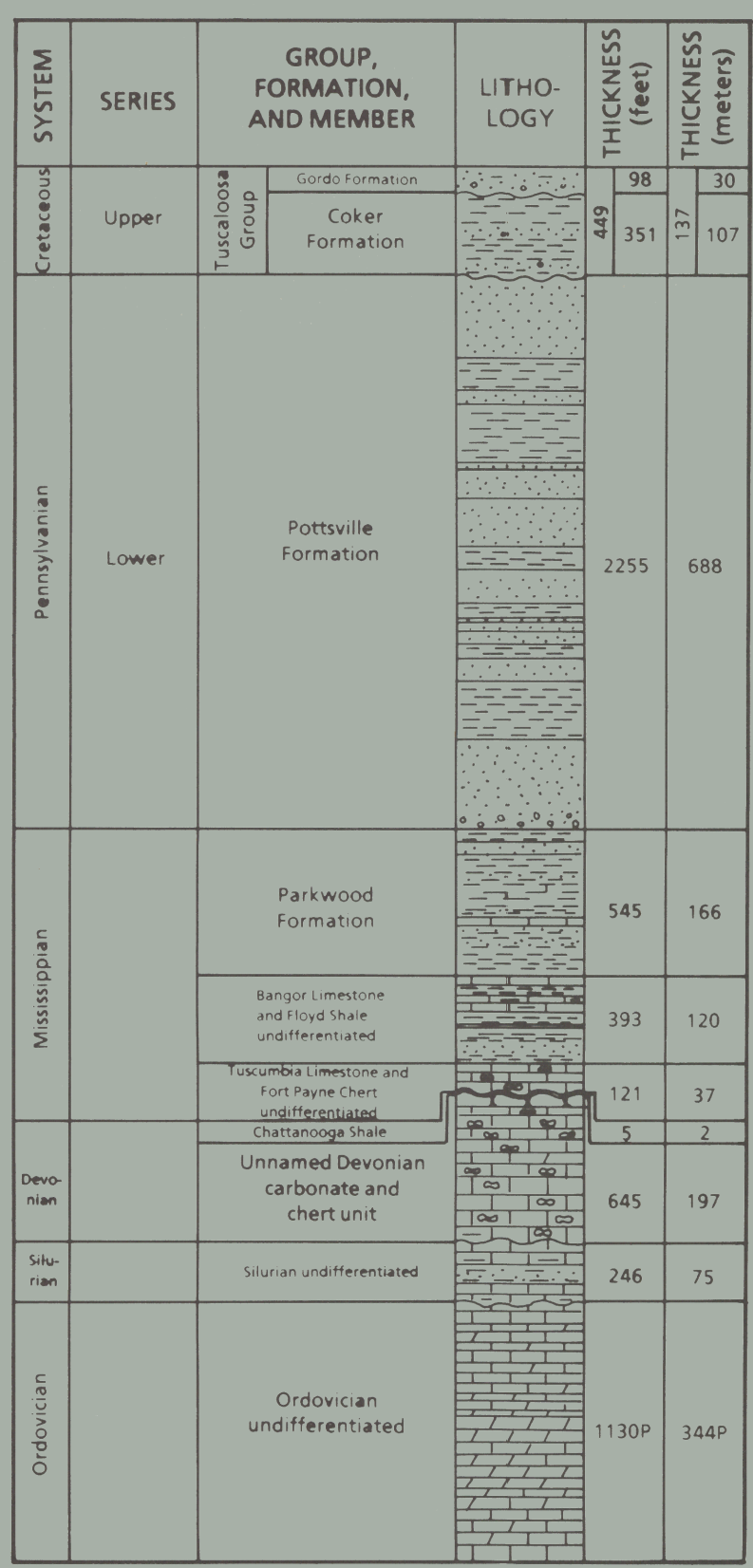
SELECTED COLUMNAR SECTIONS FOR THE COASTAL PLAIN, APPALACHIAN PLATEAUS, INTERIOR LOW PLATEAUS, AND VALLEY AND RIDGE PROVINCES IN ALABAMA

LAMAR COUNTY



GEOLOGICAL SURVEY OF ALABAMA

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Chief Geologist

ATLAS SERIES 20

SELECTED COLUMNAR SECTIONS FOR THE COASTAL PLAIN, APPALACHIAN PLATEAUS, INTERIOR LOW PLATEAUS, AND VALLEY AND RIDGE PROVINCES IN ALABAMA

By

Dorothy E. Raymond and Charles W. Copeland

GEOLOGICAL SURVEY OF ALABAMA

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ERNEST A. MANCINI
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and
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October 23, 1987

Honorable Guy Hunt
Governor of Alabama
Montgomery, Alabama

Dear Governor Hunt:

I have the honor to transmit herewith a report entitled "Selected Columnar Sections for the Coastal Plain, Appalachian Plateaus, Interior Low Plateaus, and Valley and Ridge Provinces in Alabama" by Dorothy E. Raymond and Charles W. Copeland, which has been printed as Atlas Series 20 of the Geological Survey of Alabama.

The report graphically illustrates the stratigraphy of the state through columnar sections showing rock units and assigned formations encountered by oil, gas and water wells that have been drilled in Alabama. The details of lithology, age, and thickness of individual formations should make this publication useful in the exploration for water, mineral and energy resources.

The columnar sections selected for inclusion in the atlas typify the formations occurring in the different parts of the state and the facies changes that occur. Also included are columnar sections of some of the newer wells that have been drilled in previously unexplored areas.

Respectfully,

Ernest A. Mancini

Ernest A. Mancini
State Geologist

CONTENTS

INTRODUCTION

This atlas is a compilation of stratigraphic columns for selected areas of Alabama and is designed to summarize the stratigraphy of the state, exclusive of the igneous and metamorphic rocks of the Piedmont physiographic province. Locations of columns were selected to illustrate facies changes and thickness changes across the state. Research for most of the columns was initiated during the preparation of stratigraphic columns for the COSUNA (Correlation of Stratigraphic Units for North America) Project under the auspices of the American Association of Petroleum Geologists.

The columns are based on data from oil and gas test wells, water wells, published literature, and open-file reports. In some areas of the state considerable information is available either owing to better outcrops or more test holes; consequently, columns for these areas are more detailed. In areas where outcrops are few and scattered and where test drilling is limited, the columns are more generalized and represent larger areas (two or more counties).

Specific sources of information used to generate each column are given below the respective column. Selected references on the area of concern are given on the page facing the column.

ACKNOWLEDGMENTS

The authors wish to express appreciation to colleagues, Gary V. Wilson, Assistant Oil and Gas Supervisor, State Oil and Gas Board (Alabama), for helpful suggestions and assistance concerning formation tops in wildcat oil and gas test wells, and W. Edward Osborne, stratigrapher, Geological Survey of Alabama, for invaluable assistance with thickness data on formations in the Valley and Ridge and Plateaus.

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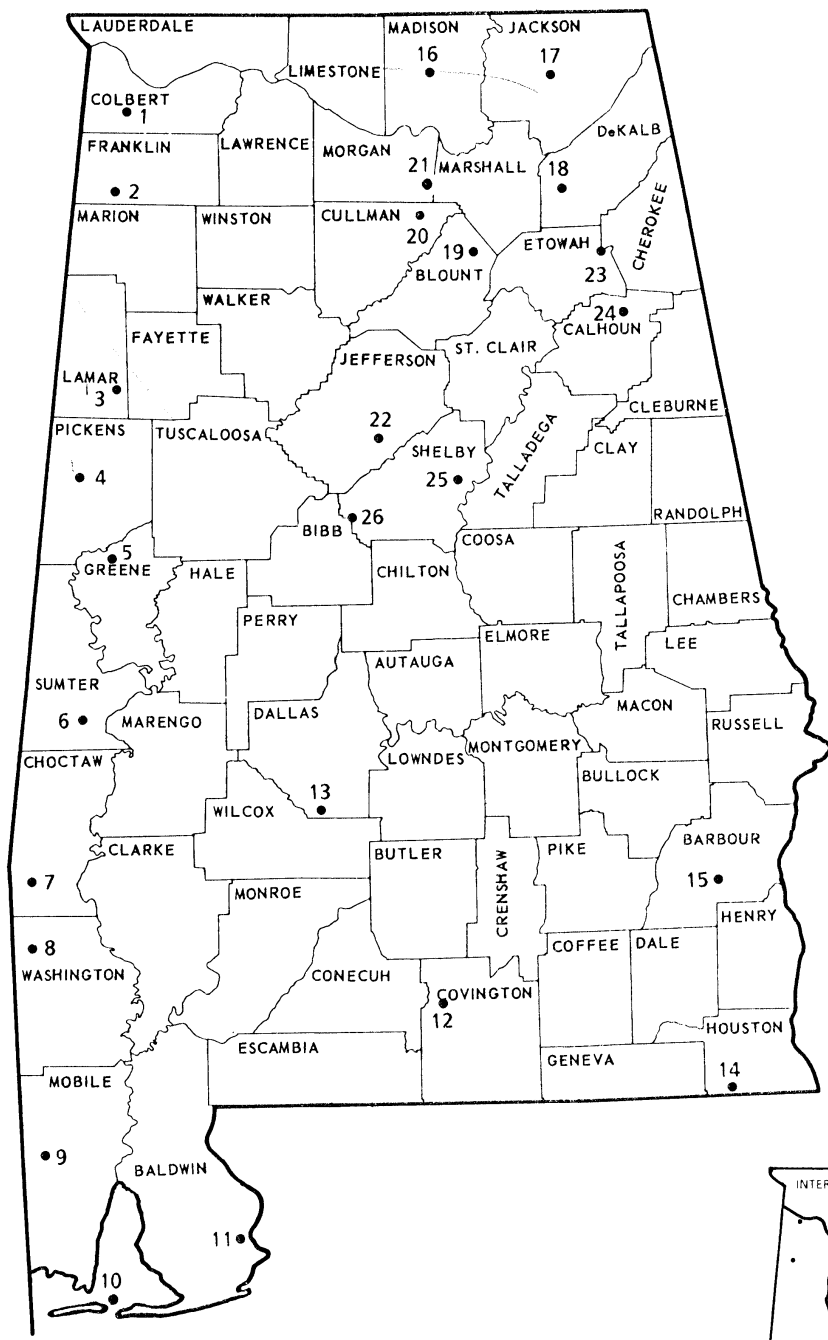
Copeland, C. W., 1985, Column 29, *in* Shaver, R. H., regional coordinator, Midwestern Basin and Arches region, Correlation of Stratigraphic Units of North America (COSUNA) Project: American Association of Petroleum Geologists Correlation Chart Series, 1984.

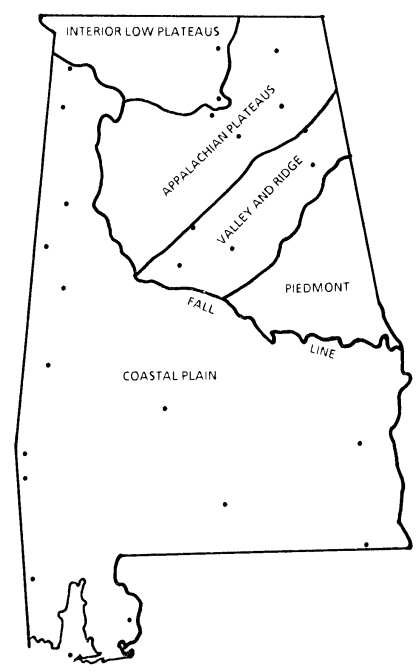
_____ 1987, Column 19, *in* Mankin, C. J., regional coordinator, Texas-Oklahoma tectonic region, Correlation of Stratigraphic Units of North America (COSUNA) Project: American Association of Petroleum Geologists Correlation Chart Series, 1986.

Copeland, C. W., and Raymond, D. E., 1985, Columns 1 through 8, *in* Patchen, D. G., Avary, K. L., and Erwin, R. B., regional coordinators, Southern Appalachian region, Correlation of Stratigraphic Units of North America (COSUNA) Project: American Association of Petroleum Geologists Correlation Chart Series, 1984.

_____ in press, Columns 15 through 20, *in* Gulf Coast region, Correlation of Stratigraphic Units of North America (COSUNA) Project: American Association of Petroleum Geologists Correlation Chart Series.

INDEX MAPS





EXPLANATION

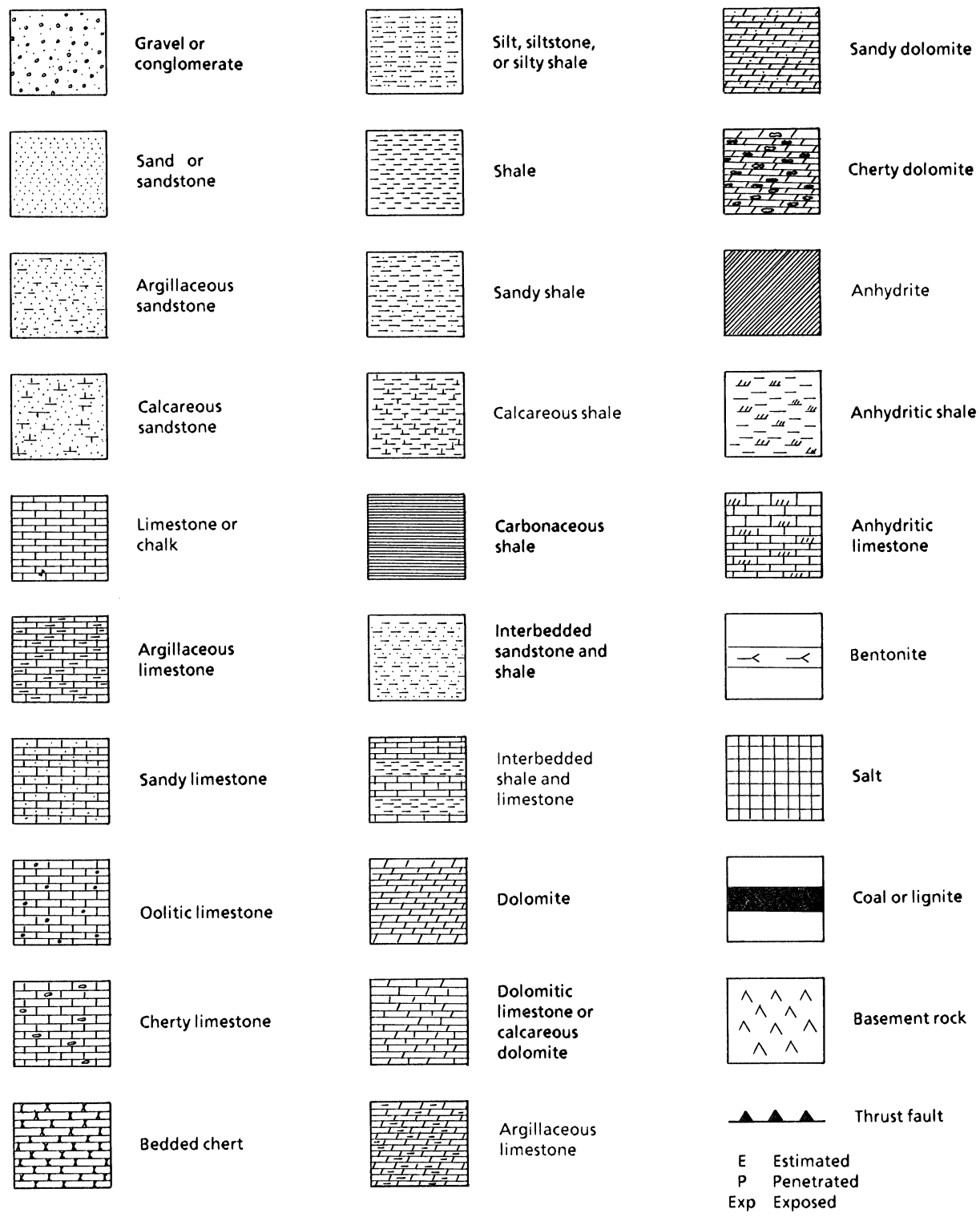
2 Column number

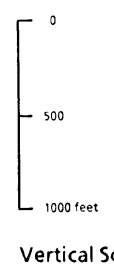
● Location of column

The locations represented by columns are indicated on the above index maps. Locations are shown by county and physiographic province. All columns are located in the Coastal Plain, Valley and Ridge, Appalachian Plateaus, and Interior Low Plateaus physiographic provinces, which are underlain by sedimentary rocks. No columns were attempted for the Piedmont province because well data in this area are generally lacking.

Although most columns are generalized to represent a large area, many columns are based in large part on stratigraphy in specific oil and gas test wells. In these cases, locations shown on the index map represent the locations of these specific wells. In some cases, however, columns are composited entirely on the basis of stratigraphy in scattered outcrops over a two or three county area. In these cases, primarily in the Valley and Ridge province, locations given on the index map represent hypothetical locations, generally near the centers of the areas of concern.

LEGEND





Vertical Scale

COASTAL PLAIN PROVINCE

SELECTED REFERENCES

Column 1

Harris, H. B., Moore, G. K., and West, L. R., 1963, Geology and ground-water resources of Colbert County, Alabama: Alabama Geological Survey County Report 10, 71 p.

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Jewell, J. W., 1969, An oil and gas evaluation of north Alabama: Alabama Geological Survey Bulletin 93, 65 p.

Kidd, J. T., 1975, Pre-Mississippian subsurface stratigraphy of the Warrior Basin in Alabama: Gulf Coast Association Geological Societies Transactions, v. 25, p. 20-39.

Kidd, J. T., and Neathery, T. L., 1976, Correlation between Cambrian rocks of the southern Appalachian geosyncline and Interior Low Plateaus: Geology, v. 4, p. 767-769.

Thomas, W. A., 1972, Mississippian stratigraphy of Alabama: Alabama Geological Survey Monograph 12, 121 p.

Column 2

Jewell, J. W., 1969, An oil and gas evaluation of north Alabama: Alabama Geological Survey Bulletin 93, 65 p.

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Kidd, J. T., and Neathery, T. L., 1976, Correlation between Cambrian rocks of the southern Appalachian geosyncline and Interior Low Plateaus: Geology, v. 4, p. 767-769.

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Thomas, W. A., 1972, Mississippian stratigraphy of Alabama: Alabama Geological Survey Monograph 12, 121 p.

COLUMN 1

COLBERT COUNTY

SYSTEM	SERIES	GROUP, FORMATION AND MEMBER	LITHOLOGY	THICKNESS (feet)	THICKNESS (meters)
Cretaceous	Upper	Tuscaloosa Group		50	15
Mississippian	Upper	Bangor Limestone		90	27
		Hartselle Sandstone		140	43
		Pride Mountain Formation		260	79
		Tuscumbia Limestone		200	61
	Lower	Fort Payne Chert		183	56
Devonian		Chattanooga Shale		22	7
Silurian		Unnamed Silurian and Devonian carbonate		180	55
		Wayne Group		83	25
Ordovician	Upper	Maysville and Nashville Groups undifferentiated		240	73
	Middle	Stones River Group		639	195
	Lower	Knox Group undifferentiated		3500 E	1067 E
Cambrian	Upper	Ketona Dolomite		1100 E	335 E
	Middle	Conasauga Formation		500 E	152 E
		Basement complex			

From Lower Ordovician to Upper Cretaceous, the Colbert County section is based on cited references, outcrops, and the sample description of an oil and gas test well (Alabama State Oil and Gas Board Permit Number 576). The Precambrian to Lower Ordovician section is based on data from wells drilled in Cullman and Morgan Counties, Alabama. Total depth of well Permit Number 576 is 1,978 feet.

COLUMN 2

FRANKLIN COUNTY

SYSTEM	SERIES	GROUP, FORMATION AND MEMBER	LITHOLOGY	THICKNESS (feet)	THICKNESS (meters)
Cretaceous	Upper	Tuscaloosa Group		50	15
Pennsylvanian	Lower	Pottsville Formation		197	60
		Parkwood Formation		222	67
Mississippian	Upper	Bangor Limestone		650	198
		Hartselle Sandstone		57	17
		Pride Mountain Formation		283	86
		Tuscumbia Limestone		125	38
	Lower	Fort Payne Chert		125	38
Devonian		Chattanooga Shale		20	6
		Unnamed Devonian carbonate and chert unit		62	19
Silurian		Silurian undifferentiated		285	87
Ordovician	Upper	Maysville and Nashville Groups undifferentiated		233	71
	Middle	Stones River Group		540	165
	Lower	Knox Group undifferentiated		3500 E	1067 E
Cambrian	Upper	Ketona Dolomite		1100 E	335 E
	Middle	Conasauga Formation		750 E	229 E
		Basement complex			

From Lower Ordovician to Upper Cretaceous, the Franklin County section is based on cited references, outcrops and the sample description of an oil and gas test well (Alabama State Oil and Gas Board Permit Number 2051). The Precambrian-Lower Ordovician section is based on data from wells drilled in Cullman and Morgan Counties, Alabama. The total depth of well Permit Number 2051 is 4,000 feet.

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Column 3

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Thomas, W. A., 1972, Mississippian stratigraphy of Alabama: Alabama Geological Survey Monograph 12, 121 p.

Column 4

Kidd, J. T., 1975, Pre-Mississippian subsurface stratigraphy of the Warrior Basin in Alabama: Gulf Coast Association Geological Societies Transactions, v. 25, p. 20-39.

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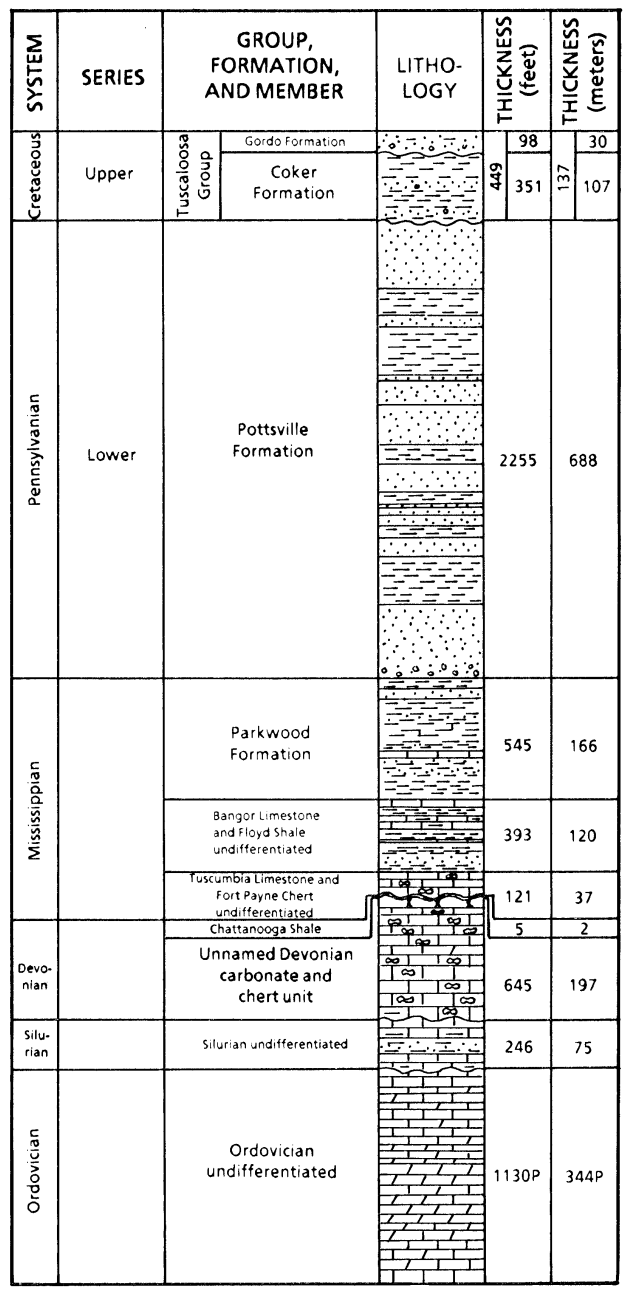
Wahl, K. D., 1965, Ground-water resources of Pickens County, Alabama, a reconnaissance: Alabama Geological Survey Bulletin 83, 84 p.

COLUMN 3

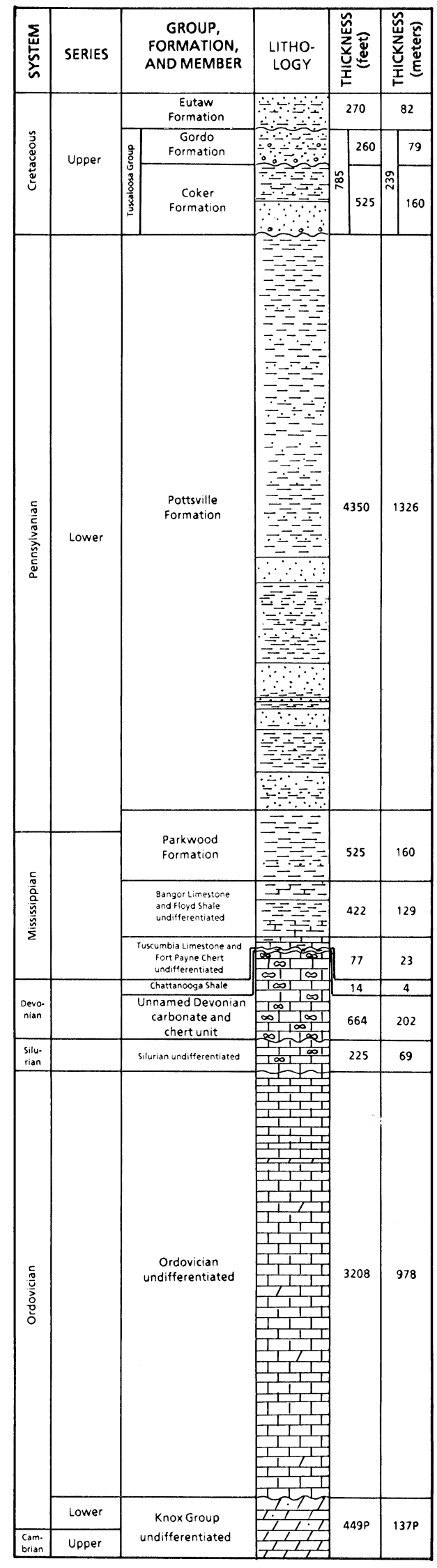
LAMAR COUNTY



The Lamar County section is based on cited references and data from an oil and gas test well (Alabama State Oil and Gas Board Permit Number 2527). Total depth of the well is 5,990 feet.

COLUMN 4

PICKENS COUNTY



The Pickens County section is based on cited references and the sample description of an oil and gas test well (Alabama State Oil and Gas Board Permit Number 1634). Total depth of the well is 10,995 feet.

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Column 5

Kidd, J. T., 1975, Pre-Mississippian subsurface stratigraphy of the Warrior Basin in Alabama: Gulf Coast Association Geological Societies Transactions, v. 25, p. 20-39.

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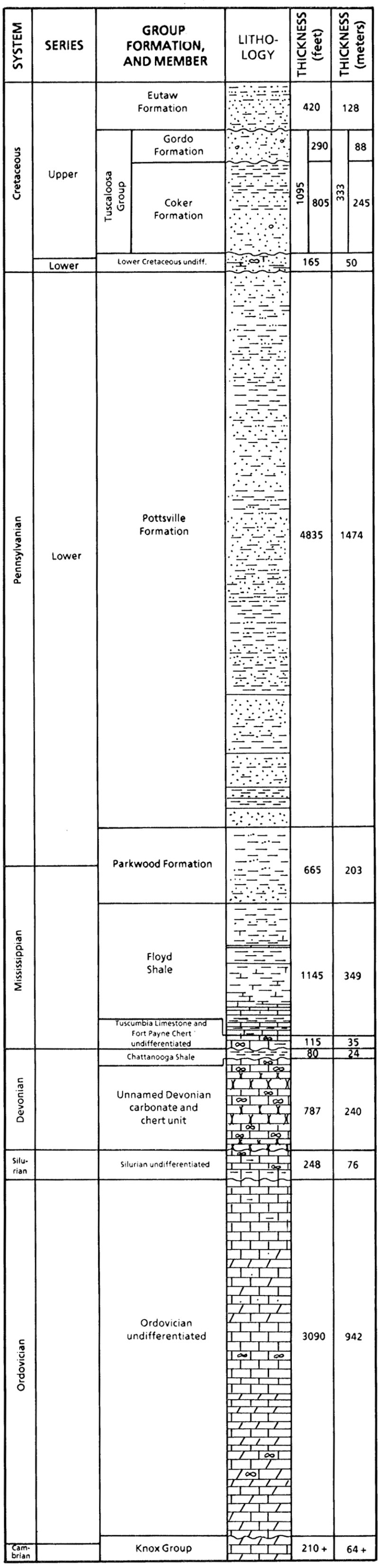
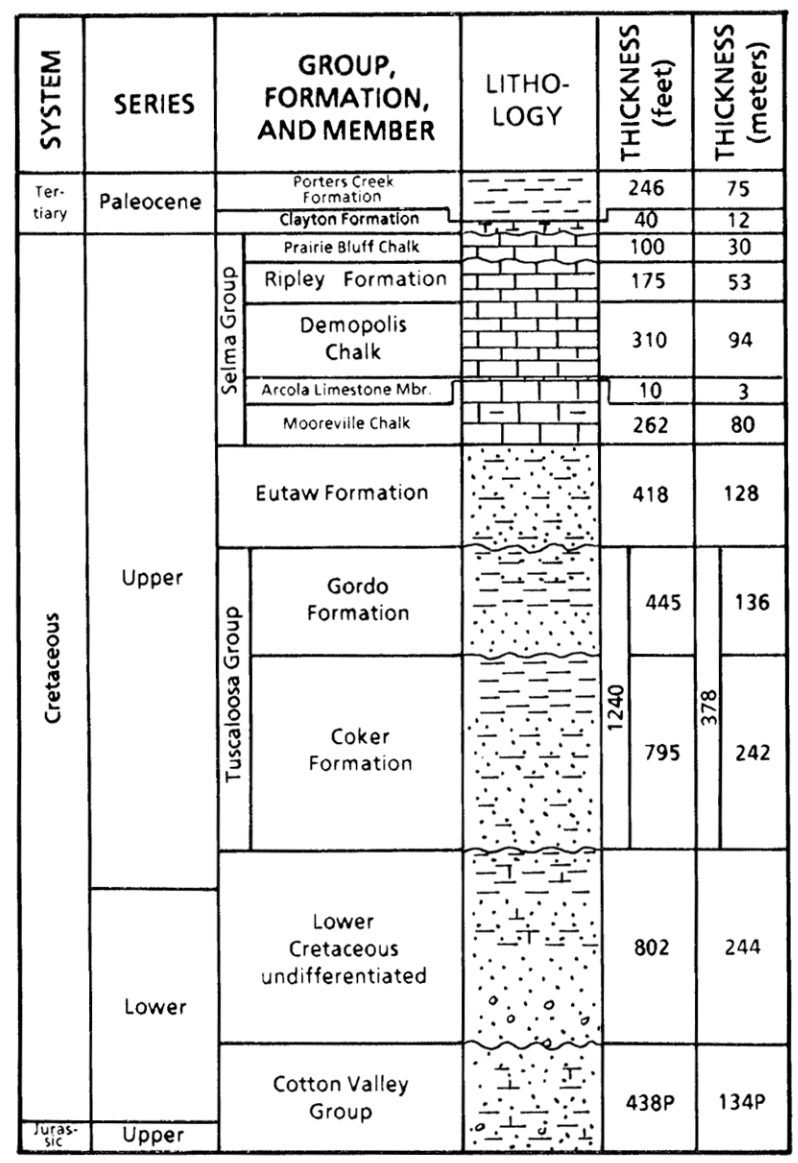
COLUMN 5

GREENE COUNTY



COLUMN 6

SUMTER COUNTY



The Sumter County section is based on the sample and electric logs of an oil and gas test well (Alabama State Oil and Gas Board Permit Number 445). Total depth of the well is 4,010 feet.

The Greene County section is based on the sample and electric logs of an oil and gas test well (Alabama State Oil and Gas Board Permit Number 1810) Total depth of the well is 12,850 feet.

SELECTED REFERENCES

Column 7

Moore, D. B., 1971, Subsurface geology of southwest Alabama: Alabama Geological Survey Bulletin 99, 80 p.

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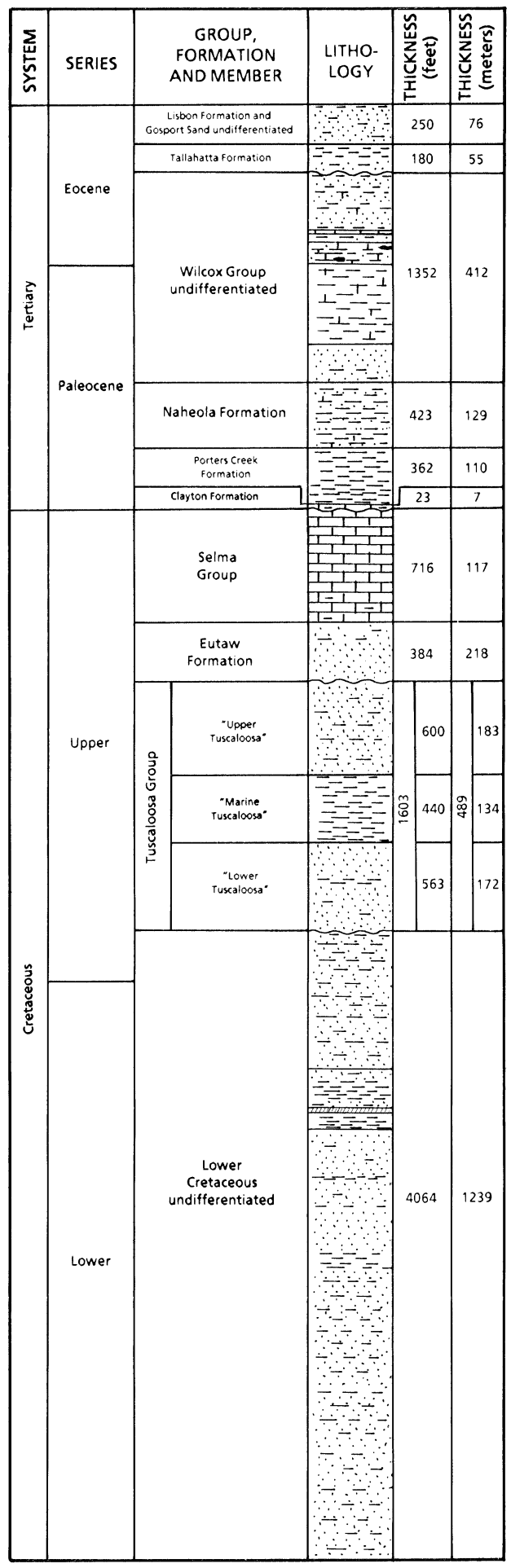
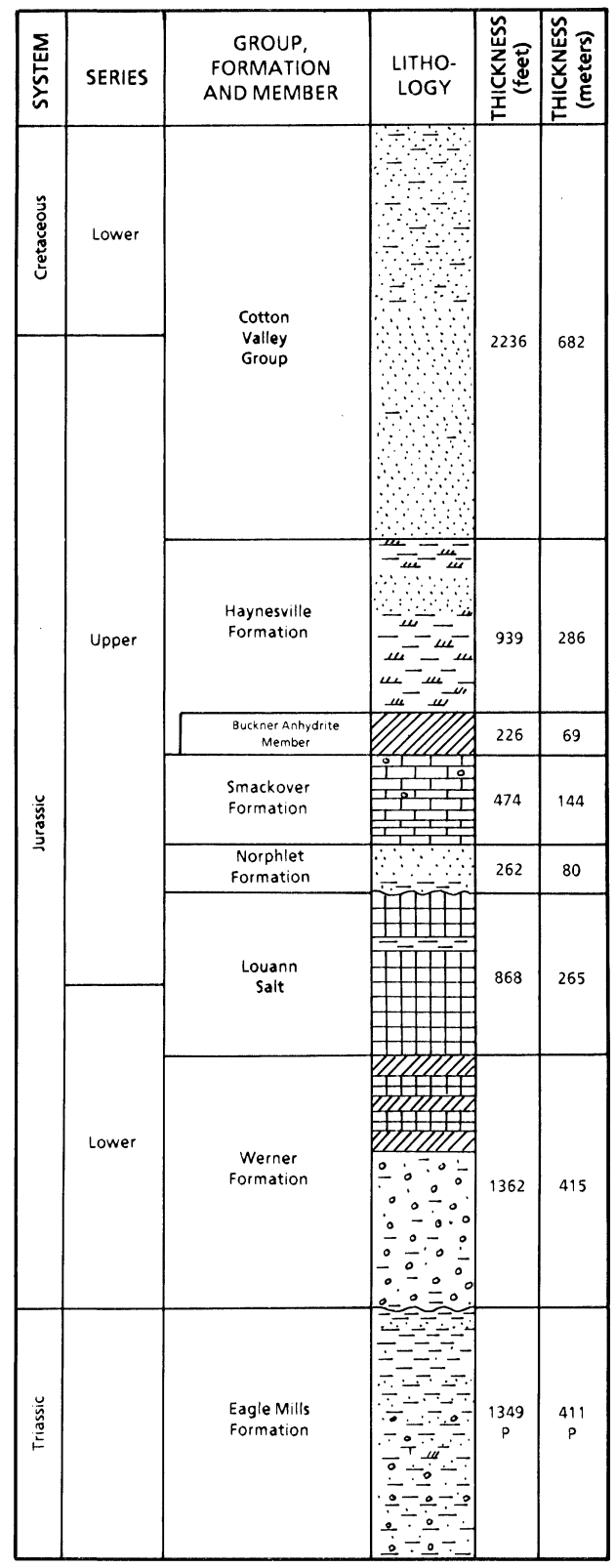
Turner, J. D., and Newton, J. G., 1971, Geology of Choctaw County, Alabama: Alabama Geological Survey Special Map 102, with text, 15 p.

COLUMN 7

CHOCTAW COUNTY





The Choctaw County column is based on outcrop and subsurface data. The Tertiary and uppermost Cretaceous is based primarily on the electric log and sample log from an oil and gas test well (Alabama State Oil and Gas Board Permit Number 502). The Cretaceous through Triassic section is based on the electric logs and sample log from an oil and gas test well (Alabama State Oil and Gas Board Permit Number 3589). Total depths of the two wells are 4,116 and 17,403 feet, respectively.

SELECTED REFERENCES

Column 8

Moore, D. B., 1971, Subsurface geology of southwest Alabama: Alabama Geological Survey Bulletin 99, 80 p.

Tolson, J. S., Copeland, C. W., and Bearden, B. L., 1983, Stratigraphic profiles of Jurassic strata in the western part of the Alabama Coastal Plain: Alabama Geological Survey Bulletin 122, 425 p.

Turner, J. D., and Newton, J. G., 1971, Geologic map of Washington County, Alabama: Alabama Geological Survey Special Map 100, with text, 9 p.

COLUMN 8

WASHINGTON COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER		LITHO-LOGY	THICKNESS (feet)	THICKNESS (meters)
Tertiary	Miocene	Miocene undifferentiated			328	100
	Oligocene	Oligocene undifferentiated			216	66
	Eocene	Jackson Group			272	83
		Claiborne Group			728	222
		Wilcox Group			1312	400
	Paleocene	Naheola Formation			572	174
		Porters Creek Formation			473	144
		Clayton Formation			7	2
Cretaceous	Upper	Selma Group			1165	355
		Eutaw Formation			538	164
		Tuscaloosa Group	"Upper Tuscaloosa"		683	208
			"Marine Tuscaloosa"		197	60
			"Lower Tuscaloosa"		594	181
					1474	449
	Lower	Lower Cretaceous undifferentiated			4918	1499

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER		LITHO-LOGY	THICKNESS (feet)	THICKNESS (meters)
Cretaceous	Lower	Cotton Valley Group			2466	752
Jurassic	Upper	Haynesville Formation			1686	514
			Buckner Anhydrite Member		151	46
		Smackover Formation			525	160
		Norphlet Formation			161P	49P

The Washington County section is a composite from adjacent oil and gas test wells. The Mesozoic section is from data interpreted from Alabama State Oil and Gas Board Permit Number 1997, and the Cenozoic section is based on the sample description of Alabama State Oil and Gas Board Permit Number 982. Total depths of the two wells are 16,950 and 12,209 feet, respectively.

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Column 9

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Maher, J. C., and Applin, E. R., 1968, Correlation of subsurface Mesozoic and Cenozoic rocks along the Eastern Gulf Coast: American Association Petroleum Geologists Cross Section Publication 6, p. 11 and 12.

Mancini, E. A., and Payton, J. W., 1981, Petroleum geology of South Carlton Field, Lower Tuscaloosa "Pilot sand," Clarke and Baldwin Counties, Alabama: Gulf Coast Association Geological Societies Transactions, v. 31, p. 139-147.

Moore, D. B., 1971, Subsurface geology of southwest Alabama: Alabama Geological Survey Bulletin 99, 80 p.

Raymond, D. E., 1985, Depositional sequences in the Pensacola Clay (Miocene) of southwest Alabama: Alabama Geological Survey Bulletin 114, 87 p.

Reed, P. C., 1971, Geologic map of Mobile County, Alabama: Alabama Geological Survey Special Map 93, with text, 22 p.

Tolson, J. S., Copeland, C. W., and Bearden, B. L., 1983, Stratigraphic profiles of Jurassic strata in the western part of the Alabama Coastal Plain: Alabama Geological Survey Bulletin 122, 425 p.

COLUMN 9

MOBILE COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER		THICKNESS (feet)	THICKNESS (meters)
Quaternary	Holocene	Coastal and low-level fluvial deposits		10 - 150	3 - 46
	Pleistocene	High-level fluvial deposits		13-40	4 - 12
		Citronelle Formation		0 - 197	0 - 60
Tertiary	Pliocene				
	Miocene	Miocene undifferentiated		1687	514
	Oligocene	Tampa Formation and Chickasawhay Limestone undifferentiated		193	59
		Bucatunna Clay Mbr. of Byram Formation		140	43
	Eocene	Jackson Group		170	52
		Claiborne Group	Lisbon Formation	160	49
			Tallahatta Formation	350	107
				510	156
		Bashi Marl		10	3
		Wilcox Group		1750	533
	Paleocene	Salt Mountain Limestone		36	11
		Midway Group		1010	308
		Clayton Formation		20	6
Cretaceous	Upper	Selma Group		1260	384
		Eutaw Formation		165	50
		Tuscaloosa Group	"Upper Tuscaloosa"	410	125
			"Marine Tuscaloosa"	362	110
			"Lower Tuscaloosa"	703	214
				1475	449
		Washita and Fredericksburg Groups undifferentiated		2106	642
	Lower				

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER		THICKNESS (feet)	THICKNESS (meters)
Cretaceous	Lower	Paluxy Formation		1246	380
		Mooringsport Formation		235	72
		Ferry Lake Anhydrite		233	71
		Rodessa Formation		417	127
		Sligo Formation		531	162
		Hosston Formation		1652	504
		Cotton Valley Group		2431	741
Jurassic	Upper	Haynesville Formation		1142	348
			Buckner Anhydrite Member	249	76
		Smackover Formation		44	13
		Norphlet Formation		406	124
		Louann Salt		542	165
	Middle	Werner Formation		92	28
Devonian	Upper	Basement complex (phyllite)		226 P	69 P

The information on Pliocene and younger units is from surface exposures and cited references. The remainder of the section is from the sample descriptions and other records of oil and gas test wells (Alabama State Oil and Gas Board Permit Numbers 1862 and 971. Thickness data on the Jurassic section are from Permit Number 1862. This well is near the crest of the Wiggins arch and has a total depth of 20,089 feet.

SELECTED REFERENCES

Column 10

Eaves, Everett, 1976, Citronelle Oil Field, Mobile County, Alabama: American Association Petroleum Geologists Memoir 24, p. 259-275.

Maher, J. C., and Applin, E. R., 1968, Correlation of subsurface Mesozoic and Cenozoic rocks along the Eastern Gulf Coast: American Association Petroleum Geologists Cross Section Publication 6, p. 11 and 12.

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COLUMN 10

MOBILE BAY

SYSTEM	SERIES	GROUP, FORMATION AND MEMBER		THICKNESS (feet)	THICKNESS (meters)
	Holocene	Coastal deposits		40	12
Tertiary	Pliocene	Miocene undifferentiated		1086	331
	Miocene	Pensacola Clay		1630	497
	Oligocene	Tampa Formation and Chickasawhay Limestone undifferentiated		432	132
		Bucatunna Clay Mbr. of Byram Formation		274	84
	Eocene	Jackson Group		50	15
		Claiborne Group	Lisbon Fm.	76	23
			Tallahatta Formation	192	58
				268	81
		Wilcox Group		1076	328
	Paleocene	Midway Group		942	287
Cretaceous	Upper	Selma Group		1402	427
		Eutaw Formation		148	45
		Tuscaloosa Group	"Upper Tuscaloosa"	408	124
			"Marine Tuscaloosa"	330	101
			"Lower Tuscaloosa"	788	240
				1526	465
		Washita and Fredericksburg Groups undifferentiated		2529	771
	Lower				

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER	THICKNESS (feet)	THICKNESS (meters)
Cretaceous	Lower	Paluxy Formation	725	221
		Mooringsport Formation	864	263
		Ferry Lake Anhydrite	293	89
		Rodessa Formation	669	204
		Sligo Formation	256	78
		Hosston Formation	2149	655
		Cotton Valley Group	2709	826
Jurassic	Upper	Haynesville Formation	785	239
		Smackover Formation	711	217
		Norphlet Formation	622	190
		"Pine Hill anhydrite"	37P	11P
		Louann Salt		

The column is based on sample descriptions and electric logs for an oil and gas test well (Alabama State Oil and Gas Board Permit Number 2543). Interpretation of lithologies and stratigraphic units in the Lower Cretaceous was aided by the use of unpublished descriptions of a nearby well (Alabama State Oil and Gas Board Permit Number 3127) by H. V. Wuerch. Total depth of well Permit Number 2543 is 21,113 feet.

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COLUMN 11

BALDWIN COUNTY

SYSTEM	SERIES	GROUP, FORMATION AND MEMBER		THICKNESS (feet)	THICKNESS (meters)
Tertiary	Holocene	Coastal and low-level fluvial deposits		10 - 150	3 - 46
	Pleistocene	High-level fluvial deposits		13 - 49	4 - 15
		Citronelle Formation		0 - 130	0 - 40
	Pliocene	Miocene undifferentiated		669	204
	Miocene	Pensacola Clay	Upper member	321	98
			Escambia Sand Mbr.	56	17
			Lower member	334	102
		Tampa Formation and Chickasawhay Limestone undifferentiated		315	96
	Oligocene	Bucatunna Clay Mbr. of Byram Formation		184	56
	Eocene	Jackson Group		256	78
		Lisbon Formation		216	66
		Tallahatta Formation		341	104
		Wilcox Group		1161	354
	Paleocene	Midway Group		879	268
Cretaceous	Upper	Selma Group		1547	472
		Eutaw Formation		254	77
		Tuscaloosa Group	"Upper Tuscaloosa"	190	58
			"Marine Tuscaloosa"	535	163
			"Lower Tuscaloosa"	611	186
				1336	407
		Lower Cretaceous undifferentiated			
	Lower				

SYSTEM	SERIES	GROUP, FORMATION AND MEMBER	LITHO-LOGY	THICKNESS (feet)	THICKNESS (meters)
Cretaceous	Lower	Lower Cretaceous undifferentiated		7310	2228
		Cotton Valley Group		1925	587
Jurassic	Upper	Haynesville Formation		1926	587
		Smackover Formation		500	152
	Middle	Norphlet Formation		105	32
		Louann Salt		52P	16P

The information on Pliocene and younger units is from surface exposures. The remainder of the section is from the sample description and other records of an oil and gas test well (Alabama State Oil and Gas Board Permit Number 2339). Total depth of the well is 19,402 feet.

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COLUMN 12

COVINGTON COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER		THICKNESS (feet)		THICKNESS (meters)	
Tertiary	Oligocene	Bumpnose Limestone		16		5	
		Crystal River Formation		121		37	
	Eocene	Yazoo Clay		59		18	
		Moodys Branch Formation		59		18	
		Lisbon Formation		170		52	
		Tallahatta Formation		170		52	
		Hatchetigbee Formation		56		17	
		Bashi Marl Member		36		11	
	Paleocene	Tuscahoma Sand		266		81	
		Nanafalia Formation		354		108	
		Midway Group		334		102	
		Clayton Formation		95		29	
Cretaceous	Upper	Selma Group undifferentiated		1433		437	
		Eutaw Formation		222		68	
		Tuscaloosa Group	"Upper Tuscaloosa"	605	1115	184	339
			"Marine Tuscaloosa"	128		39	
			"Lower Tuscaloosa"	382		116	
	Lower	Lower Cretaceous undifferentiated		4116		1255	
Jurassic	Upper	Cotton Valley Group		1316		401	
Triassic	Upper	Haynesville Formation		170		52	
		Smackover Formation		98		30	
		Norphlet Formation		88		27	
	Middle	Werner Formation		10		3	
	Upper	Eagle Mills Formation		22P		7P	

The Covington County section is based on surface exposures, a description of samples from a water well in the town of Florala and the sample descriptions and electric logs from oil and gas test wells (Alabama State Oil and Gas Board Permit Numbers 183 and 1951). Total depths of these two wells are 4,510 and 10,020 feet, respectively.

COLUMN 13

DALLAS COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER			THICKNESS (feet)			THICKNESS (meters)		
Tertiary	Paleocene	Clayton Formation	McBryde Ls. Mbr.		30			9		
			Pine Barren Mbr.		112			34		
Cretaceous	Upper	Selma Group	Prairie Bluff Chalk		10 - 56			3 - 17		
			Ripley Formation		180			55		
			Demopolis Chalk		390	990 - 1036		119	302 - 316	
			Arcola Ls. Mbr.		10			3		
			Mooreville Chalk		400			122		
		Eutaw Formation			390			119		
		Tuscaloosa Group	"Upper Tuscaloosa"		650	1325		198	404	
			"Marine Tuscaloosa"		140			43		
			"Lower Tuscaloosa"		535			163		
	Lower	Lower Cretaceous undifferentiated			1182			360		
		Cotton Valley Group			465			142		
Jurassic	Upper	Haynesville Formation			70			21		
		Smackover Formation			20			6		
		Norphlet Formation			300			91		
	Middle	Werner Formation			106			32		

The Tertiary and uppermost Cretaceous units are from surface exposures. The remainder of the column is from adjacent oil and gas test wells (Alabama State Oil and Gas Board Permit Numbers 849 and 1314). Total depths of these two wells are 5,205 and 4,210 feet, respectively.

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COLUMN 14

HOUSTON COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER		LITHO-LOGY	THICKNESS (feet)		THICKNESS (meters)	
Tertiary	Miocene-Oligocene	Residuum			60		18	
		Crystal River Formation			46		14	
	Eocene	Moodys Branch Formation			46		14	
		Lisbon Formation			60		18	
		Tallahatta Formation			370		113	
		Hatchetigbee Formation			95		29	
		Bashi Marl Member			25		8	
	Paleocene	Tuscahoma Sand			300		92	
		Nanafalia Formation			320		98	
		Midway Group			375		114	
Cretaceous	Upper	Selma Group correlatives			1005		306	
		Eutaw Formation			240		73	
		Tuscaloosa Group	"Upper Tuscaloosa"		570	165	173	50
			"Marine Tuscaloosa"			195		59
			"Lower Tuscaloosa"			210		64
	Lower	Lower Cretaceous undifferentiated			3495		1066	
Triassic		Triassic ? undifferentiated			545		166	
Ordovician	Lower	Ordovician undifferentiated			545 P		166 P	

The Houston County section is based on an oil and gas test well (Alabama State Oil and Gas Board Permit Number 186). Total depth of the well is 8,100 feet.

COLUMN 15

BARBOUR COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER		LITHO-LOGY	THICKNESS (feet)		THICKNESS (meters)	
Tertiary	Paleocene	Clayton Formation			200		61	
Cretaceous	Upper	Selma Group	Providence Sand		1530	195	466	59
			Ripley Formation			275		84
			Cusseta Sand Mbr.			95		29
			Blufftown Formation			965		294
		Eutaw Formation			190		58	
		Tuscaloosa Group	"Upper Tuscaloosa"		755	365	229	111
			"Marine Tuscaloosa"			80		24
			"Lower Tuscaloosa"			310		94
	Lower	Lower Cretaceous undifferentiated			1731		528	
Triassic		Triassic undifferentiated			1140 P		347 P	

The Barbour County section is based on a sample description and electric log from an oil and gas test well (Alabama State Oil and Gas Board Permit Number B-321). Total depth of the well is 5,546 feet.

APPALACHIAN PLATEAUS PROVINCE

AND

INTERIOR LOW PLATEAUS PROVINCE

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COLUMN 16

MADISON COUNTY

SYSTEM	SERIES	GROUP, FORMATION AND MEMBER	LITHOLOGY	THICKNESS (feet)	THICKNESS (meters)
	Lower	Pottsville Formation		200	61
Mississippian	Upper	Bangor Limestone		400 - 500	122 - 152
		Hartselle Sandstone		0 - 26	0 - 8
		Pride Mountain Formation		10 - 23	3 - 7
		Monteagle Limestone		200 - 220	61 - 67
		Tuscumbia Limestone		150	46
Devonian	Lower	Fort Payne Chert		155 - 185	47 - 56
		Maury Formation		0 - 3	0 - 1
		Chattanooga Shale		0 - 23	0 - 7
Silurian		Wayne Group		0 - 15	0 - 5
		Brassfield Limestone		0 - 35	0 - 11
		Sequatchie Formation		0 - 45	0 - 14
	Upper	Leipers Limestone		20 - 60	6 - 18
		Inman Formation		20 - 43	6 - 13
Ordovician		Nashville Group		200 - 262	61 - 80
	Middle	Stones River Group undifferentiated		680 - 780	207 - 238
		Pond Spring Formation		59 - 151	18 - 46
	Lower	Knox Group undifferentiated		3200 E (977 P)	976 E (298 P)
Cambrian	Upper				
		Ketona Dolomite		750 E	229 E
	Middle	Conasauga Formation		1400 E	427 E
	Lower	Rome Formation		330E	101 E
Precambrian		Granitic rock			

The Pennsylvanian and Mississippian section was derived from published information. The Ordovician to Devonian section was based on published information and sample logs for several wells (Alabama State Oil and Gas Board Permit Numbers 1011, 1563, 1630, and 1640). The Cambrian section is based on data from wells drilled in Cullman and Morgan Counties, Alabama, and on published data.

COLUMN 17

JACKSON COUNTY

SYSTEM	SERIES	GROUP, FORMATION AND MEMBER	LITHOLOGY	THICKNESS (feet)	THICKNESS (meters)
Pennsylvanian	Lower	Pottsville Formation		100 - 394	30 - 120
Mississippian	Upper	Pennington Formation		228 - 445	70 - 136
		Bangor Limestone		200 - 400	61 - 122
		Monteagle Limestone		200 - 300	61 - 91
		Tuscumbia Limestone		200	61
	Lower	Fort Payne Chert		150	46
Devonian		Chattanooga Shale		12 - 40	4 - 12
Silurian		Red Mountain Formation equivalent		95 - 180	29 - 55
Ordovician	Upper	Sequatchie Formation		66	20
		Leipers Limestone			
		Inman Formation		56	17
		Nashville Group		320	98
	Middle	Stones River Group		675	206
		Pond Spring Formation		239	73
	Lower	Knox Group undifferentiated		3200 E	976 E
Cambrian	Upper				
		Ketona Dolomite		394 E	120 E
	Middle	Conasauga Formation		2000 E	610 E
	Lower	Rome Formation		590 E	180 E
Precambrian		Granitic rock			

The Devonian-Pennsylvanian section was derived from published information and from the Geological Survey of Alabama open-file geologic map of Jackson County. The Ordovician-Devonian section was based on published information and the sample log for an oil and gas test well (Alabama State Oil and Gas Board Permit Number 2059). The Cambrian-Precambrian section was based on data from wells drilled in Cullman and Morgan Counties, Alabama, and on published data.

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COLUMN 18

DE KALB COUNTY AND WESTERN ETOWAH COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER	LITHOLOGY	THICKNESS (feet)	THICKNESS (meters)
Pennsylvanian	Lower	Pottsville Formation		25 - 1400	8 - 427
Mississippian	Upper	Parkwood and Pennington Formations undifferentiated		150 - 550	46 - 168
		Bangor Limestone		295 - 550	90 - 168
		Hartselle Sandstone (Monteagle Limestone)		0 - 75	0 - 23
		Pride Mountain Formation (Monteagle Limestone)		0 - 75	0 - 23
		Monteagle Limestone		100 - 175	30 - 53
		Tuscumbia Limestone		15 - 25	4 - 8
	Lower	Fort Payne Chert		100 - 200	30 - 61
		Maury Formation		3 - 6	1 - 2
Devonian		Chattanooga Shale		3 - 50	1 - 15
Silurian	Upper	Red Mountain Formation		450 - 700	137 - 213
	Lower				
Ordovician	Upper	Sequatchie Formation		200	61
	Middle	Nashville and Stones River Groups undifferentiated or Chickamauga Limestone		200 - 1100	61 - 335
	Lower	Knox Group undifferentiated		3500	1067
Cambrian	Upper				

The entire section was based on data in published literature and cited references.

COLUMN 19

BLOUNT COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER	LITHOLOGY	THICKNESS (feet)	THICKNESS (meters)
Pennsylvanian	Lower	Pottsville Formation		33 - 984	10 - 300
Mississippian	Upper	Parkwood Formation		0 - 400	0 - 122
		Bangor Limestone		400 - 700	122 - 213
		Hartselle Sandstone		24 - 100	7 - 30
		Pride Mountain Formation		50 - 125	
		Tuscumbia Limestone		200 - 250	61 - 76
	Lower	Fort Payne Chert		150 - 210	46 - 64
Devonian		Chattanooga Shale		1 - 45	1 - 14
Silurian		Red Mountain Formation		158 - 350	48 - 107
Ordovician	Upper	Richmond, Maysville and Eden Groups undifferentiated		90	27
		Nashville Group		66 - 110	20 - 34
	Middle	Stones River Group		820	250
	Lower	Knox Group undifferentiated		3070	936
Cambrian	Upper				
		Ketona Dolomite		215	66
	Middle	Conasauga Formation		2015	614
	Lower	Rome Formation		410	125
		Granitic rock		50P	15P

The Pennsylvanian section was based on published literature and cited references. The pre-Pennsylvanian to Middle Ordovician section was based on cited references and the sample log for an oil and gas test well (Alabama State Oil and Gas Board Permit Number 2795). The section of Middle Ordovician and older rocks was based on the sample log of Permit Number 2795. Total depth of the well is 8,430 feet.

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COLUMN 20

CULLMAN COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER	LITHOLOGY	THICKNESS (feet)	THICKNESS (meters)
Pennsylvanian	Lower	Pottsville Formation		360	110
Mississippian	Upper	Bangor Limestone		520	158
		Hartselle Sandstone		15	4
		Pride Mountain Fm.-Monteagle Ls. undiff.		85	26
		Tuscumbia Limestone		260	79
	Lower	Fort Payne Chert		160	49
Devonian		Chattanooga Shale		24	7
Silurian		Silurian undifferentiated		22	7
	Upper	Richmond Group ?		50	15
Ordovician		Elkmont Limestone		130	40
		Hermitage Formation		50	15
	Middle	Stones River Group		695	212
		Pond Spring Formation		150	46
	Lower	Knox Group undifferentiated		3215	980
Cambrian	Upper				
		Ketona Dolomite		760	232
	Middle	Conasauga Formation		1400	427
Precambrian	Lower	Rome Formation		290	88
		Basement (granitic gneiss)		80P	24P

The entire column was based on the electric log and sample description of an oil and gas test well (Alabama State Oil and Gas Board Permit Number 1689). Total depth of the well is 8,270 feet.

COLUMN 21

MORGAN COUNTY

SYSTEM	SERIES	GROUP, FORMATION, AND MEMBER	LITHOLOGY	THICKNESS (feet)	THICKNESS (meters)
Mississippian	Upper	Bangor Limestone		180	55
		Hartselle Sandstone		4	1
		Pride Mountain Fm.-Monteagle Ls. undiff.		170	52
		Tuscumbia Limestone		218	66
	Lower	Fort Payne Chert		190	58
Devonian		Chattanooga Shale		18	5
Silurian		Silurian undifferentiated		100	30
Ordovician	Middle	Ordovician undifferentiated		226	69
		Stones River Group		774	236
	Lower	Knox Group undifferentiated		3500	1067
Cambrian	Upper				
		Ketona Dolomite		690	210
	Middle	Conasauga Formation		1250	381
Precambrian	Lower	Rome Formation		320	98
		Basement (granite)		28P	8P

The entire column was based on the electric log and sample description of an oil and gas test well (Alabama State Oil and Gas Board Permit Number 2794) Total depth of the well is 7,668 feet.

VALLEY AND RIDGE PROVINCE

SELECTED REFERENCES

Column 22

Butts, Charles, 1926, The Paleozoic rocks, *in* Geology of Alabama: Alabama Geological Survey Special Report 14, p. 41-230.

Kidd, J. T., 1979, Areal geology of Jefferson County, Alabama: Alabama Geological Survey Atlas 15, 89 p.

Tucker, W. E., and Kidd, R. E., 1973, Appendix G, Sample log U.S. Steel Corporation Disposal Well No. 1, Fairfield, Alabama, *in* Deep-well disposal in Alabama: Alabama Geological Survey Bulletin 104, p. 191-208.

Column 23

Causey, L. V., 1965a, Geologic map of Cherokee County, Alabama: Alabama Geological Survey Special Map 39.

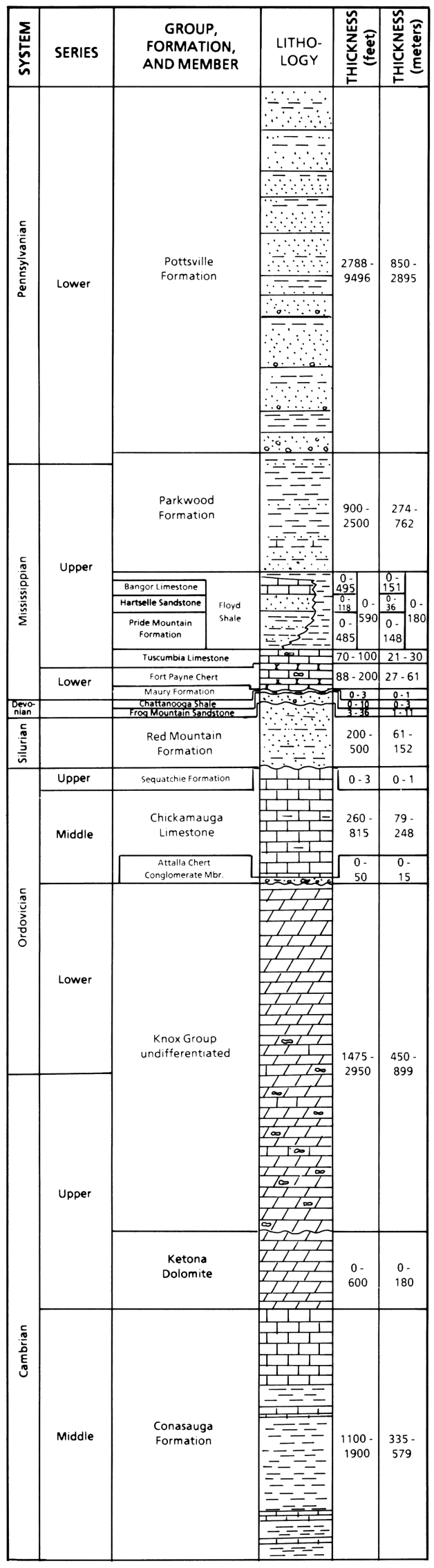
_____1965b, Geology and ground-water resources of Cherokee County, Alabama, a reconnaissance: Alabama Geological Survey Bulletin 79, 63 p.

Neathery, T. L., Smith, W. E., Clarke, O. M., Jr., and Szabo, M. W., 1968, Geology and mineral resources of Etowah County, Alabama: Alabama Geological Survey open-file report, 281 p.

Thomas, W. A., 1972, Mississippian stratigraphy of Alabama: Alabama Geological Survey Monograph 12, 121 p.

COLUMN 22

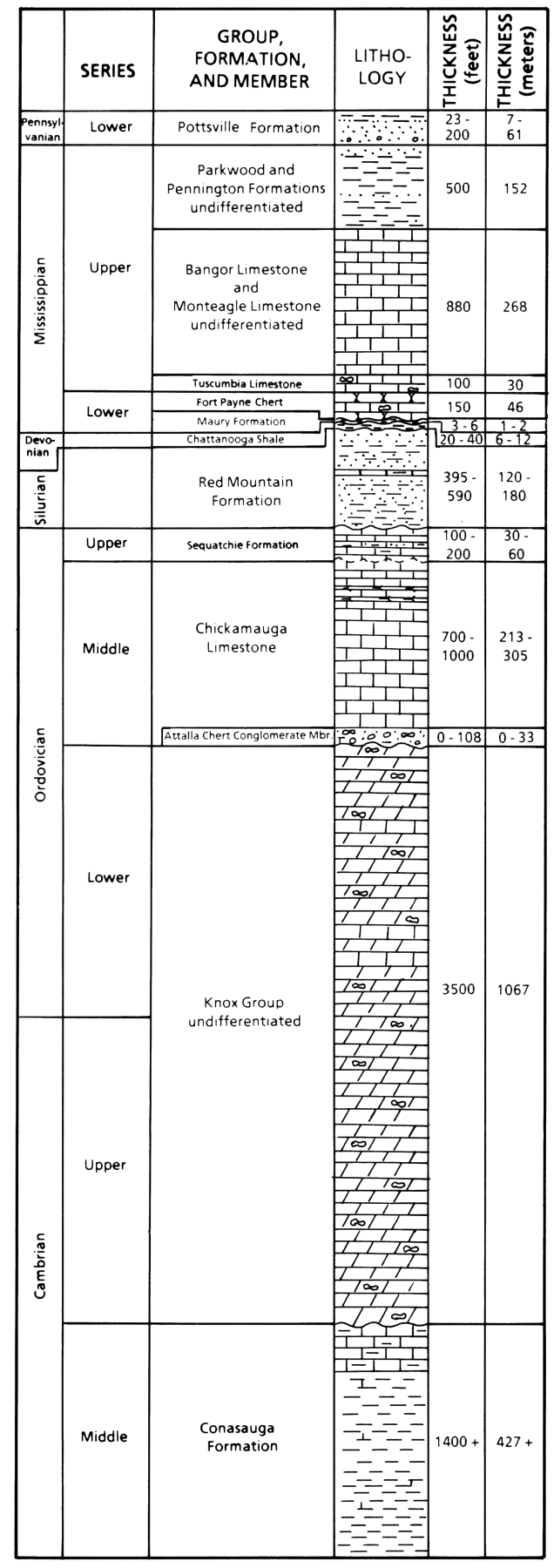
JEFFERSON COUNTY



This column is based on exposures in the Valley and Ridge part of Jefferson County northwest of the Helena fault and the sample log for a disposal well drilled by U.S. Steel in sec. 10, T. 18 S., R. 4 W. Total depth of the disposal well is 6,060 feet.

COLUMN 23

NORTHEASTERN ETOWAH AND NORTHWESTERN CHEROKEE COUNTIES



The entire column is based on data in published literature and cited references.

SELECTED REFERENCES

Column 24

Butts, Charles, 1926, The Paleozoic rocks, *in* Geology of Alabama: Alabama Geological Survey Special Report 14, p. 41-230.

Causey, L. V., 1965a, Geologic map of Cherokee County, Alabama: Alabama Geological Survey Special Map 39.

_____1965b, Geology and ground-water resources of Cherokee County, Alabama, a reconnaissance: Alabama Geological Survey Bulletin 79, 63 p.

Drahovzal, J. A., and Neathery, T. L., 1971, Middle and Upper Ordovician stratigraphy of the Alabama Appalachians, *in* The Middle and Upper Ordovician of the Alabama Appalachians: Alabama Geological Society Guidebook, Ninth Annual Field Trip, p. 1-62.

Drahovzal, J. A., and Thomas, W. A., 1977, Pre-Mississippian sandstones in the interior structures of the Appalachian fold and thrust belt of Eastern Alabama, *in* Bearce, D. N., ed., Cambrian and Devonian stratigraphic problems of eastern Alabama: Alabama Geological Society Guidebook, 15th Annual Field Conference, p. 29-36.

Mack, G. H., 1980, Stratigraphy and depositional environments of the Chilhowee Group (Cambrian) in Georgia and Alabama: American Journal of Science, v. 280, p. 497-517.

Neathery, T. L., Smith, W. E., Clarke, O. M., Jr., and Szabo, M. W., 1968, Geology and mineral resources of Etowah County, Alabama: Alabama Geological Survey open-file report, 281 p.

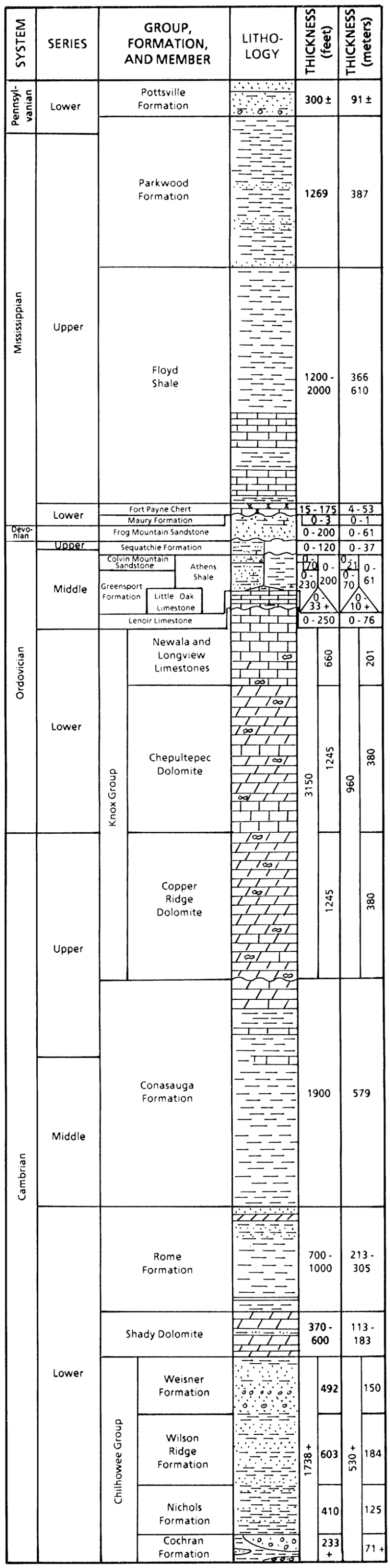
Thomas, W. A., 1972, Mississippian stratigraphy of Alabama: Alabama Geological Survey Monograph 12, 121 p.

Thomas, W. A., and Drahovzal, J. A., eds., 1974, The Coosa deformed belt in the Alabama Appalachians: Alabama Geological Society Guidebook, 12th Annual Field Trip, 98 p.

Warman, J. C., and Causey, L. V., 1962, Geologic map of Calhoun County, Alabama: Alabama Geological Survey Special Map 17.

COLUMN 24

CALHOUN, SOUTHEASTERN CHEROKEE AND SOUTHEASTERN ETOWAH COUNTIES



The Pennsylvanian part of the column is based on the westernmost part of Calhoun County. The Mississippian part is based on cited references on all three counties. The Devonian part is based on cited references and is present in all three counties. The Cambrian-Ordovician section is based on exposures in all three counties. The best exposures of the Ordovician are on Colvin and Greens Creek Mountains in Calhoun and Etowah Counties.

SELECTED REFERENCES

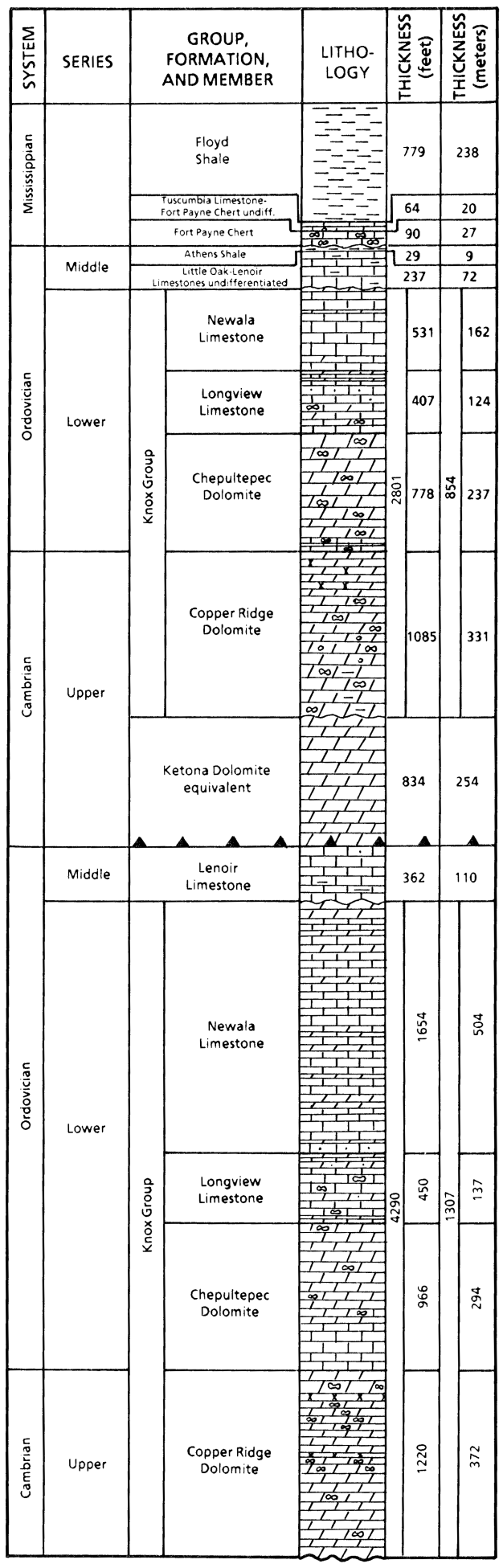
Column 25

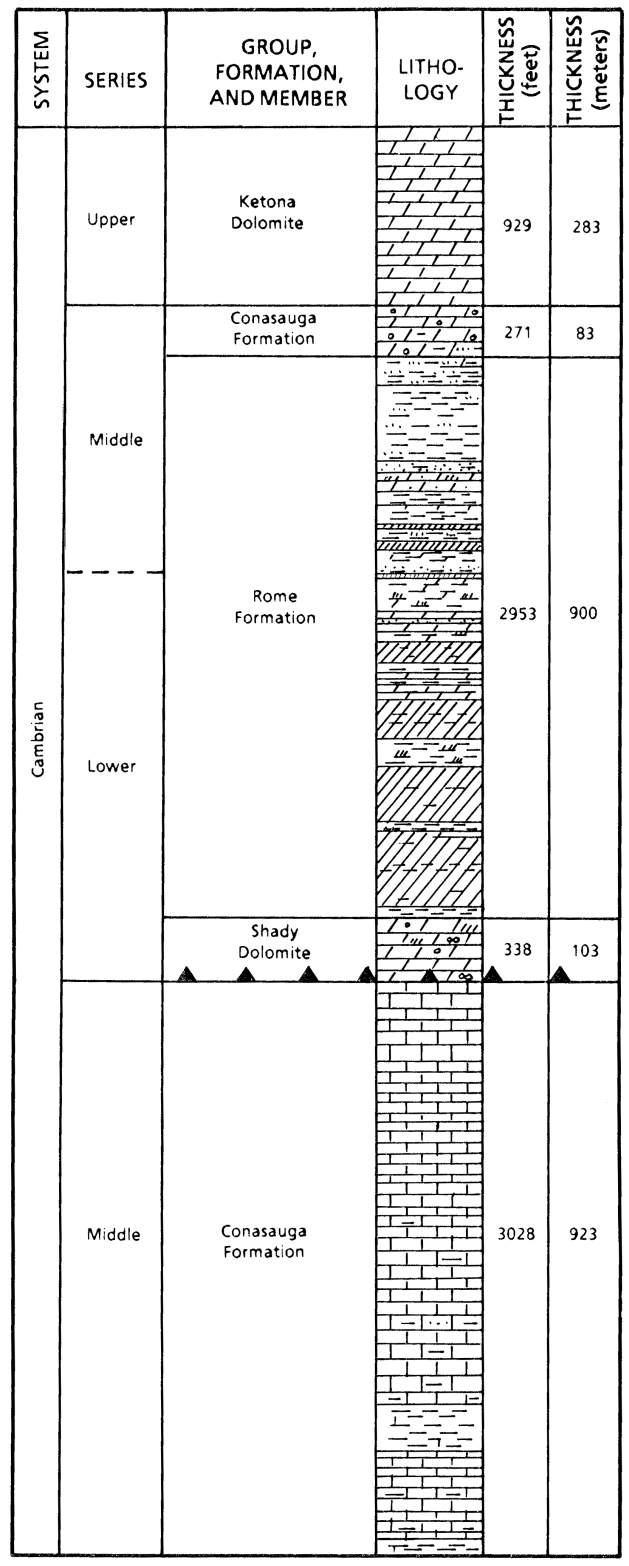
Butts, Charles, 1926, The Paleozoic rocks, *in* Geology of Alabama: Alabama Geological Survey Special Report 14, p. 41-230.

Raymond, D. E., 1985, New information on lower Paleozoic stratigraphy of the Alabama fold and thrust belt: Geological Society of America Southeastern Section, 34th Annual Meeting, Abstracts with Programs, v. 17, no. 2, p. 130.

COLUMN 25

SHELBY COUNTY SUBSURFACE





This column for Shelby County is based on the density log and sample log for an oil and gas test well (Alabama State Oil and Gas Board Permit Number 3518). Total depth of the well is 17,005 feet. The well is in the vicinity of the Page Springs anticline in sec. 15, T. 20 S., R. 1 E.

SELECTED REFERENCES

Column 26

Butts, Charles, 1926, The Paleozoic rocks, *in* Geology of Alabama: Alabama Geological Survey Special Report 14, p. 41-230.

——— 1927, Description of Bessemer-Vandiver quadrangles [Alabama]: U.S. Geological Survey Geologic Atlas, Folio 221, 22 p.

——— 1940, Description of Montevallo-Columbiana quadrangles [Alabama]: U.S. Geological Survey Geologic Atlas, Folio 226, 20 p.

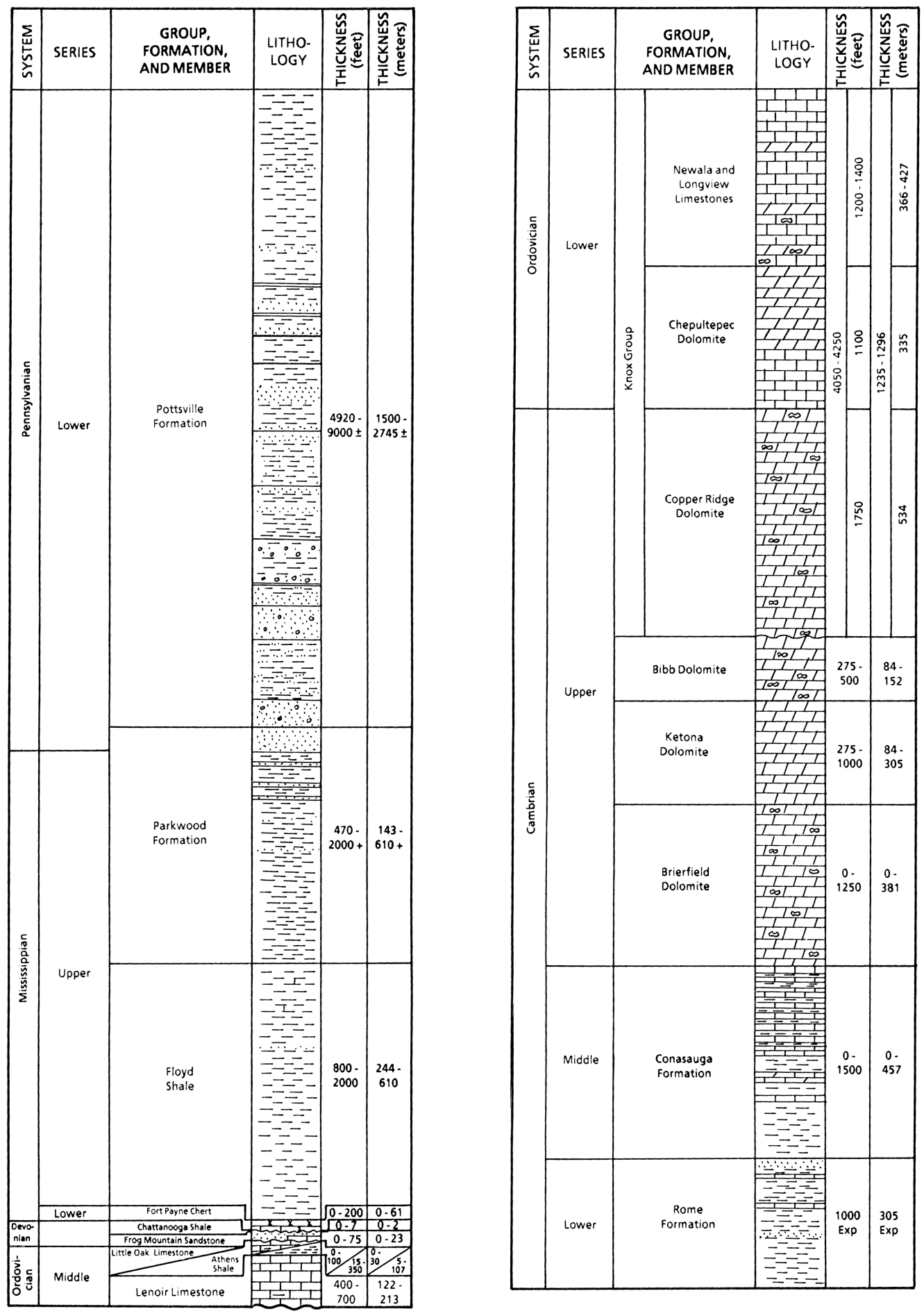
Drahovzal, J. A., and Neathery, T. L., 1971, Middle and Upper Ordovician stratigraphy of the Alabama Appalachians, *in* The Middle and Upper Ordovician of the Alabama Appalachians: Alabama Geological Society Guidebook, Ninth Annual Field Trip, p. 1-62.

Raymond, D. E., 1985, New information on lower Paleozoic stratigraphy of the Alabama fold and thrust belt: Geological Society of America Southeastern Section, 34th Annual Meeting, Abstracts with Programs, v. 17, no. 2, p. 130.

Thomas, W. A., 1972, Mississippian stratigraphy of Alabama: Alabama Geological Survey Monograph 12, 121 p.

COLUMN 26

BIBB AND SHELBY COUNTIES



This is a composite column based on exposures throughout the eastern Valley and Ridge in both counties.

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