Measured Sections of Upper Ordovician Strata in Central Kentucky

by
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CONTENTS

ILLUSTRATIONS

INTRODUCTION

The following sections in central Kentucky (fig. 1) are part of the data used in our studies of the Upper Ordovician rocks of Kentucky. The studies were part of a geologic mapping program by the U.S. Geological Survey in cooperation with the Kentucky Geological Survey.

Where not otherwise noted, sections were measured in the field with Jacob staff and tape. Color names with numbers are based on comparison with the rock chart by Goddard and others (1948).

The following sections, also in central Kentucky, have been published previously:

C-1, Rowland West (Weir and others, 1965, p. D32-D33);

C-2, Ashlock Cemetery West (Weir and others, 1965, p. D23); and

C-3, Clays Ferry (Weir and Greene, 1965, p. B14-B17; Black and MacQuown, 1965, fig. 10).

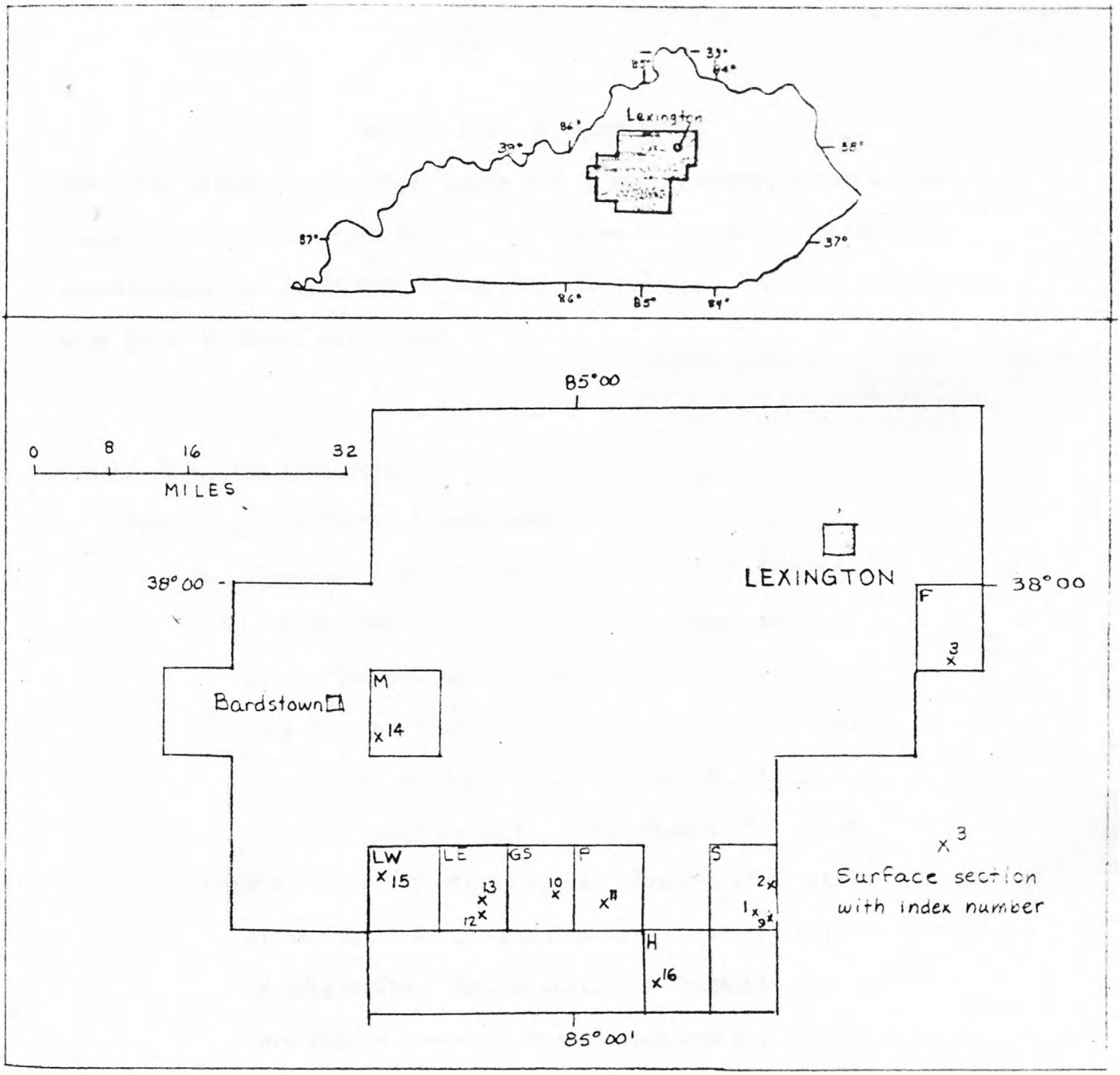

Figure 1. Map of part of central Kentucky showing localities of measured sections of Upper Ordovician rocks.

Measured sections: [C-] 1, Rowland West; 2, Ashlock Cemetery West; 3, Clays Ferry; 9, Rowland South; 10, Hagan Hill Road; 11, Forkland East; 12, The Narrows North; 13, Wheeler Branch; 14, Fredericktown; 15, Lebanon Quarry; 16, Kidds Store.

Quadrangles containing measured sections: F, Ford; GS, Gravel Switch; H, Hustonville; LE, Lebanon East; LW, Lebanon West; M, Maud; P, Parksville; S, Stanford.

Section C-9 Rowland South

[Measured along road to Sugar Grove and in nearby quarry about 1.5 miles south of Rowland, Lincoln County, Ky. (Stanford quadrangle); Kentucky coordinates: C. 2,325,000, N. 427,000, south zone. Measured with barometer by G. W. Weir, July 1964]

	Thickness (feet)
Drakes Formation (incomplete);	
Preachersville Member (incomplete):	
4. Dolomite, calcitic, olive-gray (5Y 4/2) flecked with grayish orange (10Y 7/4), weathers about same with coating of light olive gray (5Y 5/2); very fine grained with sparse scattered and small clusters of medium and coarse crystals of calcite. A single rough-surfaced, ledge-forming bed about 2 ft thick. Contains sparse clusters of crystals of barite, some of which contain small crystals of sphalerite. Sparse scattered fragments of very poorly preserved brachiopods and bryozoans. Obscure fault of base of unit; displacement about 5 to 15 ft down on east. Not measured; estimated thickness of exposure	2
Rowland Member (incomplete);	
3. Mudstone, dolomitic and calcitic, medium-yellowish-gray (5Y 6/2) and greenish-gray (5GY 6/1), muddy, very fine grained, some layers probably grade to muddy limestone. In	

	Thickness (feet)
Drakes Formation (incomplete)--Continued:	
Rowland Member (incomplete)--Continued:	
part laminated; in part in thin beds a fraction of an inch to a few inches thick; many bedding surfaces marked by small ripple marks and by mudcracks, irregular polygons, several inches across. Nonresistant, forms slope in natural outcrop; weathered rock yields abundant platy fragments; forms vertical walls in artificial cuts of small quarry; more dolomitic layers form minor ledges at top of quarry wall. Apparently unfossiliferous. Unit truncated at top by obscure fault	4
2. Mudstone, calcitic, greenish-gray (5GY 6/1), weathers light olive gray (5Y 6/1) and yellowish gray (5Y 7/2); similar to unit 3, but less resistant	44
Measured Rowland Member (incomplete)	48
Measured Drakes Formation (incomplete)	50
Ashlock Formation (incomplete):	
Reba Member (incomplete):	
1. Limestone, muddy, greenish-gray (5G 6/1), weathers about same, fine- to medium-grained intermixed with 10 to 30 percent mud; mostly obscurely bedded, at top in laminae and very	

	Thickness (feet)
Ashlock Formation (incomplete)--Continued:	
Reba Member (incomplete)--Continued:	
thin beds. Fossils common, chiefly large brachiopods and bryozoans, small branching bryozoans abundant at top. Outcrop yields abundant chips and plates; forms fossil-strewn slope. Not measured; estimated thickness of exposure	10

Section C-10 Hagan Hill Road

[Measured along Hagan Hill Road, Kentucky Highway 243, about 1.6 mi. south-southeast of Gravel Switch, Boyle County, Kentucky (Gravel Switch quadrangle); Kentucky coordinates: E. 2,207,200, N. 446,200, south zone. Measured by G. W. Weir, May 1964]

	Thickness (feet)

Boyle Limestone (incomplete; Devonian):

14. Limestone and dolomitic limestone, light-olive-brown (5Y 5/4), weathers dark yellowish orange (10YR 6/6), very fine grained and fine-grained with common medium and coarse fossil, chiefly crinoidal, fragments. Basal bed, about 1 ft thick, more dolomitic than upper part of unit. Irregular, very light gray to medium-gray chert nodules containing small fossil fragments in layers above basal bed; forms prominent ledge. About 4 ft well exposed locally; not measured.

Drakes Formation (Ordovician):

Rowland Member:

13. Mudstone, dolomitic to very muddy dolomite, light-greenish-gray (5G 7/1) and light-olive-gray (5Y 6/1), weathers grayish yellow (5Y 8/4); in even beds less than 1 in. thick; yields platy fragments a fraction of an inch thick and as much as 8 in. across. Basal 1

	Thickness (feet)
Drakes Formation (Ordovician)--Continued:	
Rowland Member--Continued:	
to 2 in. is plastic mudstone; at top of unit is seam, 2 in. thick, of mudstone, weathered dusky yellow (5Y 6/4). [Part of this member and upper part of the Drakes Formation has been cut out by pre-Devonian erosion]	22.8
Total Rowland Member	22.8
Total Drakes Formation	22.8
Ashlock Formation (incomplete):	
Reba Member:	
12. Limestone, muddy, light-olive-gray (5Y 6/2), weathers yellowish gray (5T 8/1), micro-grained to fine-grained with fine to very coarse fossil fragments; common spots of grayish-green clay mineral (glauconite?) in obscure, uneven thin beds, about 1 in. thick with sparse mudstone partings; globular bryozoans and small pelecypods sparse to common. Poorly exposed in ditch on west side of road. Claystone nodules, irregularly discoidal and tubular, commonly 1-2 in. thick and several inches long, very pale olive, non-calcitic, un-fossiliferous, concentrated near base; claystone nodules in float below are apparently from this	

	Thickness (feet)
Ashlock Formation (incomplete)--Continued:	
Reba Member--Continued:	
unit. [Units 8 through 12 included in Grant Lake Limestone by Moore (1979a)]	1.2
11. Covered. Soil suggests that it is probably muddy, micrograined limestone like that above and below	6.5
10. Limestone, muddy; similar to limestone of unit 12; a single bed; forms rounded ledge. Sparse globular bryozoans are conspicuous; ostracodes and unidentified fossil debris are common . .	0.8
Total Reba Member	8.5
Terrill Member:	
9. Mudstone, dolomitic (?), dusky-yellow (5Y 6/4) and pale-olive (10Y 6/2), weathers same and moderate yellowish brown (10YR 5/4)	3.0
8. Covered. Probably mudstone as in overlying unit	4.5
Total Terrill Member	7.5
Grant Lake Member:	
7. Limestone (80 percent) and mudstone (20 percent), poorly exposed. Limestone, weathered medium gray to medium light gray (N5-6) with grayish-orange (10YR 7/4), muddy streaks; poorly sorted; micrograined to coarse grained with abundant	

	Thickness (feet)
Ashlock Formation (incomplete)--Continued:	
Grant Lake Member--Continued:	
medium to very coarse fossil fragments and streaks and patches of calcitic mudstone; in obscure, rough perhaps nodular beds mostly about 1/2 to 1 in. thick. Abundant brachiopods include large and small platystrophids; abundant small cylindrical bryozoans; on weathered surfaces fossils stand out in relief. Mudstone, poorly exposed, weathered yellowish gray (5Y 7/2) to grayish yellow (5Y 8/4); plastic. Unif forms slope strewn with thin slabs of fossiliferous limestone. Top is top of poor outcrop	12.5
6. Mostly covered. A few poor exposures and float suggest unit is probably limestone and mudstone similar to unit below	11.7
5. Limestone (50 percent) and mudstone (50 percent), poorly exposed. Limestone, light-olive-gray (5Y 6/1); micrograined to very fine grained; nodular beds made up of lenticles, 1 to 2 in. thick and 8 to 12 in. long; abundant fossils, chiefly brachiopods include large platystrophids. Mudstone, weathered dusky yellow (5Y 6/4), plastic	3.3
Total Grant Lake Member	27.5

	Thickness (feet)
Ashlock Formation (incomplete)--Continued:	
Gilbert Member:	
4. Limestone (70 percent) and mudstone (30 percent). Limestone, chiefly light-olive-gray (5Y 6/1) to medium-greenish-gray (5GY 5/1), weathering light gray (N7); micrograined with sparse to abundant fine to coarse fossil fragments. In crenulated to fairly even beds 1 to 4 in. thick with conspicuous even bed, 8 in. thick, at top of unit; large platystrophid brachiopods common. Mudstone, weathered light yellowish gray (5Y 8/3) and moderate yellowish brown (10YR 5/4); poorly exposed	2.9
3. Limestone (90 percent) and mudstone (10 percent). Limestone, similar to limestone above. Mostly in fairly even to markedly crenulated beds, 2 to 4 in. thick; but with several conspicuous thicker beds, as much as 1 foot thick, separated by seams and partings of mudstone and laminated limestone. Fossils mostly small fragments; locally abundant are ostracodes, abraded low-spired gastropods, cylindrical bryozoans, and brachiopods, including large and small platystrophids. Mudstone, calcitic, weathers moderate	

	Thickness (feet)
Ashlock Formation (incomplete)--Continued:	
Gilbert Member--Continued:	
yellowish brown (10YR 5/3); contains partings of limestone and sparse to common small brachiopods; in seams mostly less than 1 in. thick; forms conspicuous small recesses. Unit as a whole is resistant, forms ledges	
2. Limestone (70 percent) and mudstone (30 percent). Limestone, very pale yellowish brown to pale-yellowish-brown (10YR 7-6/2), weathers yellowish gray (5Y 6/2); micrograined with sparse muddy patches and sparse fine to coarse brachiopod fragments; in irregularly lensing beds, 1 to 3 in. thick, and in lenticles, 1 to 4 in. thick and several inches to about 1 foot long; common stylolites with dark-brown clay linings. Mudstone, greenish-gray (5GY 6/1) but mostly weathered moderate yellowish brown (10YR 5/4) with sparse dark yellowish orange (10Y 6/6); calcitic, more or less plastic; irregularly laminated. Unit forms conspicuous recess . . .	0.8
Total Gilbert Member	13.7
Tate Member (incomplete):	
1. Limestone, muddy, medium-gray (N5) to light-greenish-gray (5GY 6/1), weathers light	

	Thickness (feet)
Ashlock Formation (incomplete)--Continued:	
Tate Member (incomplete)--Continued:	
olive gray (5Y 6/1); chiefly muddy micrograined limestone but ranging from a very calcitic mudstone to slightly muddy, fine-grained limestone; contains scattered grains and patches of grayish-green clay mineral (Glauconite?). In laminae to thin beds, 1/16 - 1 in. thick, in sets commonly about 1 ft thick; outcrop yields of platy fragments. Unit contains a few seams, 1 to 4 in. thick, of mudstone, greenish-gray (5G 6/1); crudely laminated; shaly weathering. Sparse bryozoans and sparse small brachiopods in upper 5 ft; common gray streaks and spots, probably trace fossils. Base of section is base of exposure in stream west of road	14.0
Measured Tate Member (incomplete)	14.0
Measured Ashlock Formation (incomplete)	71.2

Section C-11 Forkland East

[Measured up roadcut and hillslope about 1.8 miles east of Forkland School on Kentucky Highway 37, Boyle County, Ky. (Parksville quadrangle); Kentucky coordinates: E. 2,231,200; N. 445,400, south zone. Measured by G. W. Weir, June, 1964]

	Thickness (feet)
Boyle Limestone (incomplete; Devonian):	
7. Limestone, and dolomitic limestone, pale-yellowish-brown (10YR 6/2) and medium-light-gray (N6), mostly weathered grayish orange (10YR 7/4) or dark yellowish orange (10YR 6/6); very fine grained to fine-grained with sparse scattered medium and coarse grains, coarse crystals of iron-stained white calcite in sparse vugs. Bedding mostly obscure but at base some thin crossbeds dip southerly; crude, rough beds 1-5 in. thick at top. Fossils generally sparse; top few feet yield horn corals. Top is top of outcrop; not measured; thickness of exposure estimated	14
Drakes Formation (incomplete; Ordovician):	
Saluda Dolomite Member:	
6. Mudstone, dolomitic, light-olive-gray (5Y 5-7/1) mottled with light greenish gray (5GY 7/1), or uniformly yellowish-greenish-gray (10Y 7/2); bedding obscure, mostly in sets, 2-3 ft thick, of even beds,	

	Thickness (feet)
Drakes Formation (incomplete; Ordovician)--Continued:	
Saluda Dolomite Member--Continued:	
2-4 in. thick, and thin laminae. Resistant; forms cliff and steep slope	42
5. Mudstone, dolomitic (95 percent) and muddy dolomite (5 percent). Dolomitic mudstone, light-greenish-gray (5GY 7/1); differs from underlying mudstone in bedding and weathering; in beds 1/2 - 2 ft thick with shaly-weathering, crudely laminated mudstone in lower 6 in. and in seams. Muddy dolomite, light-greenish-gray (5GY 7/1) mottled with streaks (trave fossils) of medium light gray (N6); in resistant bed about 1/2 in. thick at base of unit	3.5
Total Saluda Dolomite Member	45.5
Bardstown and Rowland Members, undivided (incomplete):	
4. Mudstone, dolomitic (90 percent) and limestone (10 percent). Dolomitic mudstone, light-greenish-gray (5YR 7/1) mottled with minute streaks and spots of medium-gray (N5) calcitic fossil (?) fragments; more calcitic at base; bedding obscure; sparse coarse fragments of bryozoans and brachiopods mostly near base. Limestone, similar to limestone below, in very thin beds and lenticles in basal 1 ft of unit.	

	Thickness (feet)
Drakes Formation (incomplete; Ordovician)--Continued:	
Bardstown and Rowland Members, undivided (incomplete)--Continued:	
Less resistant than underlying and overlying units; forms slope	3.5
3. Mudstone, calcitic (70 percent) and limestone (30 percent). Mudstone, light-greenish-gray (5GY 7/1) to light-olive-gray (5Y 6/1); contains partings and irregular lenticles, commonly about an inch thick and 3-6 in. long and grades laterally and vertically into impure limestone. Bedding obscure; in part in irregular curving laminae 1/16 - 1/4 in. thick; mostly breaks into chunks about 1/8 - 1/4 in. thick and less than 1 in. across. Fossils generally sparse but colonial corals, bryozoans and brachiopods locally common in calcitic layers. Limestone, medium-gray (N5) mottled with light greenish gray (5GY 7/1), very fine grained to coarse-grained with flakes and lumps of light-greenish-gray, muddy micrograined limestone; sparse pockets, about 1 in. across, of coarse white crystals of calcite; in resistant, slightly irregular and lensing beds, mostly 1 to 4 in. thick, abraded cylindrical and fan-shaped bryozoans and brachiopods common, horn corals sparse . . .	7.7

	Thickness (feet)
Drakes Formation (incomplete; Ordovician)--Continued:	
Bardstown and Rowland Members, undivided (incomplete)--Continued:	
2. Covered, stream bank and highway fill. Contact between Rowland Member and Bardstown Member is within this interval	12.5
1. Mudstone, calcitic; intergrading with muddy micrograined limestone, light-greenish-gray (5GY 7/1). Mostly in thin, even beds and sets of obscure laminae; mudcracks on some bedding surfaces. Base is level of North Rolling Fork .	1.6
Measured Bardstown and Rowland members (incomplete)	25.3
Measured Drakes Formation (incomplete)	25.3

Section C-12 The Narrows North

[Measured along Kentucky Highway 337 and over cliff on the south side of North Rolling Fork opposite bridge about 1,000 ft east of mouth of Wheeler Branch, about 1 mi. northeast of Bradfordsville, Marion County, Ky. (Lebanon East quadrangle); Kentucky coordinates: #. 2,179,400, N. 427,000, south zone. Measured by G. W. Weir, May 1964]

	Thickness (feet)
Drakes Formation (incomplete; Ordovician)	
Bardstown Member (?incomplete):	
9. Limestone (60 percent) and mudstone (40 percent); poorly exposed. Limestone, medium-light-gray (N6) to light-gray (N7), weathers light brownish gray (5YR 6/1) to yellowish gray (5Y 7/2) mottled with grayish yellow (5Y 8/4); muddy, micrograined to very coarse grained, chiefly very fine grained with abundant coarse fossil fragments. Mostly in uneven thin beds 1 to 2 in. thick. Fossils abundant, chiefly bryozoans and brachiopods, also gastropods and horn corals. Large masses, commonly more than 1 ft across, of colonial corals near base of unit and about 12 ft above base. Mudstone, light-grayish-yellow-green (5GY 8/2) mottled with grayish-green trace fossils; calcitic, glauconitic. Unit forms moderate slope to top of hill near	

	Thickness (feet)
Drakes Formation (incomplete; Ordovician)--Continued:	
Bardstown Member (?incomplete)--Continued:	
power line. Thickness approximate	40
8. Limestone, medium-gray (N5), weathers grayish orange pink (5YR 7/2) to yellowish gray (5Y 7/2), averages medium-grained but ranges from muddy, fine-grained to coarse-grained. In uneven beds, mostly 3 to 4 in. thick. Fossils, in part silicified, abraded, common to abundant, chiefly small brachiopods; fragments of bryozoans, horn corals, and gastropods. Forms ledge at top of roadcut; top of good local exposure	1.5
Total measured Bardstown Member (?incomplete; approximate)	41.5
Rowland Member:	
7. Limestone (85 percent) and shale (15 percent). Limestone, weathered yellowish gray (5Y 6-7/2) with streaks of grayish yellow (5Y 8/4); micro-grained to very fine grained with scattered fine, medium and coarse grains including fine greenish-black specks (glauconite ?); in several even ledge-forming sets, 1-4 in. thick, internally laminated. Shale, weathered dusky yellow (5Y 6/4), in seam, about 3 in. thick about 4 in.	

	Thickness (feet)
Drakes Formation (incomplete; Ordovician)--Continued:	
Rowland Member--Continued:	
above base. Contains a few medium and coarse fossil fragments. Resistant, forms minor ledges	1.5
6. Limestone, muddy (95 percent) and mudstone (5 percent). Limestone, light-greenish-gray (5GY 7/1) to greenish-gray (5G 6/1), weathers grayish yellow (5Y 8/4); slightly to very muddy, micrograined to very fine grained; sparse to common grayish-green glauconite (?); in even beds mostly 1 to 5 in. thick. Mudstone, similar to very muddy limestone; contains common glauconite (?). Apparently unfossiliferous . .	36
5. Limestone, muddy (90 percent) and mudstone (10 percent); similar to unit 6. Top of unit marked by recess formed by set of mudstone, 0.8 ft thick	13
4. Limestone, muddy (70 percent) and mudstone (30 percent). At base are two prominent sets, each about 1 ft thick, with obscure beds, 3 to 4 in. thick; upper part of unit mostly in fairly even, distinct beds about 1 in. thick, interstratified with mudstone seams about 1 in. thick. Upper half of unit forms minor	

	Thickness (feet)
Drakes Formation (incomplete; Ordovician)--Continued:	
Rowland Member--Continued:	
recess	4.2
Total Rowland Member	54.7
Measured Drakes Formation (incomplete, approximate).	96.2
Ashlock (?) Formation (incomplete);	
Reba(?) Member:	
3. Shale containing nodules of calcitic claystone. Shale, medium-dark-gray (N4), calcitic; very thinly laminated outcrop yields small, very thin, platy fragments; contains sparse globular bryozoans. Nodules of calcitic claystone are greenish gray (5GY 6/1), irregular, commonly 1/2 to 1-1/2 in. thick and several inches long; makes up about 25 percent of rock. Unit forms niche in face of roadcut. [Units 1 through 3 included in Grant Lake Limestone by Moore (1979b].	0.7
2B. Limestone (85 percent) and calcitic mudstone (15 percent); micrograined to very fine grained and muddy to non-muddy, in part intergrading and in part sharply segregated with irregular contacts; contains sparse to common irregular coatings and grains of green glauconite (?);	

	Thickness (feet)
Ashlock (?) Formation (incomplete)--Continued:	
Reba(?) Member--Continued:	
beds, in part obscure, are commonly 1 to 6 in. across, of calcitic claystone in upper part of unit. Globular bryozoans, 1/4 to 1-1/4 in. across, are common; pelecypods, brachiopods, and gastropods are sparse.	1.6
2A. Limestone (85 percent) and calcitic mudstone (15 percent); intermixed and closely interbedded. Limestone, light-greenish-gray (5GY 7/1) mottled with medium-gray (N5) fossil fragments; very fine grained containing very fine to very coarse fossil fragments; in thin, obscure, discontinuous beds about 1 in. thick. Mudstone, light-greenish-gray, gradational with and intermixed with limestone. Small brachiopods and small cylindrical bryozoans abundant; gastropods and ostracodes sparse . . .	1.6
1B. Limestone, muddy, light-greenish-gray (5GY 7/1); micrograined and more or less muddy. In two main sets each about 1-1/2 ft thick comprised of obscure laminae and very thin beds; contact between sets wavy, probably contorted; at top of unit is a conspicuous thin set, about 0.2 to 0.5 ft thick, having distinct laminae and overlying a persistent thin seam of grayish-green shale. Unfossiliferous	

	Thickness (feet)
Ashlock (?) Formation (incomplete)--Continued:	
Reba(?) Member--Continued:	
except for sparse, medium-gray, tubiform trace fossils, 1/4 to 1-1/2 in. long, in top set . . .	3.1
Total Reba (?) Member	7
Terrill(?) Member (incomplete):	
1A. Mudstone, very calcitic, light-greenish-gray (5GY 7/1); contains micrograined and very fine grained calcite; grains and small patches of grayish-green glauconite (?) common; bedding obscure, in part in crude beds, 1/16 to 1 in. thick; crops out in gully about 300 ft east of south end of bridge	1.5
Measured Terrill(?) Member	1.5
Measured Ashlock (?) Formation	8.5

Section C-13 Wheeler Branch

[Measured on hill northeast of large barn, 2,000 ft north of bridge over Rolling Fork, about 1 mile northeast of Bradforsville, Marion County, Ky. (Lebanon East quadrangle); Kentucky coordinates: E. 2,179,300; N. 429,000, south zone. Measured by G. W. Weir, May 1964]

	Thickness (feet)
Boyle Limestone (Devonian):	
7. Limestone, dolomitic, light- to medium-yellowish-gray (5Y 7-8/2-4); fine grained; in irregular beds 3 to 6 in. thick; common clusters, 1/2 to 3 in. across, of coarse crystals of pinkish-gray calcite; sparse horn corals and crinoid columnals; forms ledge that merges with unit below	3
Total Boyle Limestone	3
Drakes Formation (incomplete; Ordovician):	
Saluda Dolomite Member:	
6. Dolomite, muddy, yellowish-gray (5Y 7/2) to moderate-yellow (5Y 7/6), weathers yellowish gray (5Y 7/2); muddy, micrograined to very fine grained; obscurely laminated in sets 1/2 to 3 in. thick; sparse mudcracks, 1/2 to 3 in. across; faint brownish-gray trace fossils; forms ledges, mostly 1 to 3 ft thick	20
5. Dolomite, muddy to dolomitic mudstone, similar to unit 6 but muddier; bedding obscure; contains	

	Thickness (feet)
Drakes Formation (incomplete; Ordovician)--Continued:	
Saluda Dolomite Member--Continued:	
sparse coarsely recrystallized bryozoans (?); forms steep slope with rounded ledge at top	5
4. Covered. Probably dolomitic mudstone similar to mudstone in unit 5	3
Total Saluda Dolomite Member	28
Bardstown Member:	
3. Limestone (60 percent) and mudstone (40 percent). Limestone, medium-light-gray (N6) and light-olive-gray (5Y 7/3) muddy patches, weathers same and light gray (N7), chiefly micrograined with abundant medium and coarse grains and fossil fragments, also micrograined to fine-grained with abundant fossil fragments, and less commonly fine- to coarse-grained averaging medium-grained with common to abundant fossil fragments; all types with more or less scattered patches and fossil fillings of argillaceous material. In obscure uneven beds about 1 in. thick. Mudstone, poorly exposed; weathered grayish-yellow and yellowish gray. Bryozoans abundant; brachiopods, gastropods, horn corals common; large colonial coral heads absent	15

	Thickness (feet)
Drakes Formation (incomplete; Ordovician)--Continued:	
Bardstown Member--Continued:	
2. Limestone (60 percent) and mudstone (40 percent); similar to unit 3; in part poorly exposed. Fossils abundant, chiefly cylindrical bryozoans, small brachiopods, and gastropods; sparse horn corals; colonial corals common except in basal 1 foot; at top of unit is a conspicuous layer, about 2 ft thick, containing abundant corals as much as 2 ft in diameter	17
Total Bardstown Member	32
Rowland Member (incomplete):	
1. Limestone, micrograined, medium-gray (N5), weathers light olive gray (5Y 6/1) to yellowish gray (5Y 7/2) and grayish yellow (5Y 8/5), micrograined to fine-grained, contains sparse green glauconite (?); laminated and in thin to moderately thick beds, 1/2 to 8 in. thick; yields platy fragments. Mostly unfossiliferous, bryozoans sparse, ostracodes common; top 3 ft contains trace fossils. Poorly exposed; thickness estimated	30
Total exposed Rowland Member (estimated)	30
Total exposed Drakes Formation (estimated) . . .	90

Section C-14 Fredericktown

[Measured along U.S. Highway 150, about 7 miles east of Barstown, Nelson County, Ky. (Maud quadrangle); Kentucky coordinates: E. 2,114,500, N. 521,600, south zone. Measured by W. L. Peterson and R. C. Kepferle, 1964; nomenclature modified by G. W. Weir, 1978. Upper part of this section (Drakes Formation) was published by Peterson (1970)]

	Thickness (feet)
Ashlock(?) Formation, upper part:	
Reba(?) Member:	
L. Limestone, medium-light-gray to greenish-gray, dominantly fine-grained with lenses of argillaceous limestone; abundant brachiopods and bryozoans. [Units J through L included in Grant Lake Limestone by Peterson (1972)]	5.6
Total Reba(?) Member	5.6
Terrill(?) Member:	
K. Shale, calcitic, interbedded with limestone. Medium-gray to olive-gray argillaceous. Fossils sparse except bryozoans in upper 1 ft	6.2
Total Terrill(?) Member.	6.2
Total upper part of Ashlock(?) Formation	11.8
Grant Lake Limestone:	
J. Limestone, argillaceous, fine- to coarse-grained with abundant silicified brachiopods	2.1
I. Limestone, very pale orange to yellowish-gray, medium- to coarse-grained; in low-angle crossbeds;	

	Thickness (feet)
Grant Lake Limestone--Continued:	
minor interbeds of shale; contains abundant fragments of brachiopods	3.6
H. Limestone (90 percent) and shale. Limestone, medium-light-gray to light-gray; composed of fossil fragments in fine-grained matrix; fossils chiefly brachiopods (including large platystrophid) and bryozoans. Shale, dark-greenish-gray to greenish-gray; fossiliferous as limestone. Unit characterized by irregular, thin lumpy beds . .	9.5
G. Limestone (90 percent) and shale; similar to overlying unit, except limestone beds are thinner	7.2
F. Shale, silty, calcitic, greenish-gray; forms conspicuous layer	0.3
E. Limestone (50 percent) and shale; similar to unit G above except for higher percentage of shale .	12.0
Total Grant Lake Limestone	34.7
Ashlock Formation, lower part:	
Gilbert Member:	
D. Limestone and minor interbedded shale. Limestone, olive-gray, fine- to medium-grained; in wavy beds 1 in. to 1 ft thick separated by partings of shale. Stromatoporids common near top of unit; other fossils sparse	11.0

	Thickness (feet)
Ashlock Formation, lower part--Continued:	
Gilbert Member--Continued:	
C. Limestone composed of abundant fossil fragments in fine- to medium-grained matrix, in low-angle crossbeds; brachiopods and bryozoans dominant. .	2.1
Total Gilbert Member	13.1
Tate Member:	
B. Limestone, argillaceous (90 percent) and shale. Argillaceous limestone, dark-greenish-gray to medium-gray, fine-grained and medium-grained; sparsely fossiliferous. Shale, dark-greenish-gray; unfossiliferous. Beds wavy but more even and thicker than in units E, G, and H above. . .	37.5
Total Tate Member, ...	37.5
Total Ashlock Formation, lower part	50.6
Calloway Creek(?) Limestone (incomplete);	
A. Limestone, fine- to medium-grained, contains abundant silicified brachiopods. [Unit included with Grant Lake Limestone by Peterson (1972)] .	2+

Section C-15 Lebanon Quarry

[Measured in and near the Lebanon Stone Co. quarry, about 500 ft north of Kentucky Highway 52, about 4 miles west-northwest of Lebanon, Marion Co., Ky. (Lebanon West quadrangle); Kentucky coordinates E. 2,121,500, N. 461,500, south zone. Measured by W. L. Peterson and R. C. Kepferle, June 1964]

	Thickness (feet)
Ashlock(?) Formation, upper part (incomplete):	
Reba(?) Member (incomplete);	
O. Limestone; contains abundant bryozoans and brachiopods; weathered to rubble. Covered above. [Units M through O included in Grant Lake Limestone by Moore (1979c)]	2
Measured Reba(?) Member	2
Terrill(?) Member:	
N. Dolomite, weathered yellowish gray, fine-grained, laminated; weathered to rubble	5
M. Limestone, light-olive-gray (5Y 6/1) with patches of pale grayish green, microcrystalline with patches medium-grained; smooth conchoidal fracture; contains scattered gastropods and brachiopods; forms smooth, rounded ledge	1
Total Terrill(?) Member	6
Measured upper part of Ashlock Formation (incomplete)	8
Grant Lake Limestone:	
L. Covered	4.5

	Thickness (feet)

Grant Lake Limestone--Continued:

K. Limestone and shale; exposed in inaccessible quarry wall. Limestone, medium-dark-gray (N4), weathers light olive gray (5Y 5/2); in apparently fairly regular beds as much as 3 in. thick; contains abundant cylindrical and flattened bryozoans and brachiopods, including large platystrophids. Shale is in beds as much as 1 in. thick. Unit weathers to fossil-rich rubble 22

Total Grant Lake Limestone 26.5

Ashlock Formation, lower part (incomplete);

Gilbert Member:

J. Limestone (80 percent) and shale. Limestone, medium-gray (N5) to medium-light-gray (N6) fine-grained with medium to coarse crystals and fossil fragments; subconchoidal fracture; in slightly irregular to irregular beds, 3 to 9 in. thick. Shale, medium-gray (N5), calcareous, silty; contains medium to coarse fragments of fossils; in beds 2 to 3 in. thick 6

I. Limestone (60 percent) and shale. Limestone, similar to unit J; in beds 1 in. thick in lower 2.3 ft of unit, 2 to 4 in. thick in upper part of unit, bedding planes slightly irregular; contains scattered bryozoans, brachiopods and

	Thickness (feet)
Ashlock Formation, lower part (incomplete)--Continued:	
Gilbert Member--Continued:	
ostracodes. Shale, similar to unit J; in beds generally 1 to 3 in. thick; at top of unit is a conspicuous bed of shale, 7 in. thick	4.5
H. Limestone, similar to unit J; in two beds: at base 0.7 ft thick, at top 0.9 ft thick, separated by layer of shale 0.2 ft thick	1.8
G. Limestone (75 percent) and shale. Limestone, similar to unit J; breaks with smooth subconchoidal fracture; in slightly wavy beds 2 to 5 in. thick; some beds contain gastropods and brachiopods. Shale, similar to unit J; mostly in beds 1/2 to 2 in. thick; at base in bed 3 in. thick; at top in bed 6 in. thick.	4.6
F. Limestone (90 percent) and shale. Limestone, similar to unit J; in beds 3 to 12 in. thick. Shale, similar to unit J; in beds 1/2 to 3 in. thick	2.7
E. Limestone (90 percent) and shale. Limestone, medium-gray (N5) to medium-light-gray (N6) weathers same and light gray (N7), mottled in part; fine-grained with patches and irregular layers of medium grains; in slightly irregular beds 4 to 10 in. thick; contains scattered vugs, as much as 5 in.	

	Thickness (feet)
Ashlock Formation, lower part (incomplete)--Continued:	
Gilbert Member--Continued:	
long, filled with calcite crystals; contains scattered fragments of brachiopods and gastropods.	
Shale, medium-dark-gray (N4), silty; fissile; contains medium to coarse fragments of fossils; in beds 1/16 to 3 in. thick; conspicuous layer, 3 in. thick, at top of unit. [Quarried layers include units A through E]	2.4
D. Limestone, medium-gray (N5) to medium-light-gray (N6), weathering same to light gray (N7), fine-grained with patches of medium to coarse grains; contains aggregates, as much as 5 in. across, of clear calcite crystals, as much as 1/2 in. across, in part probably filling shells of pelecypods or brachiopods; a single bed; upper contact indefinite	1.8
C. Limestone, medium-gray (N5) to medium-dark-gray (N4), weathers mottled medium dark gray (N4) to light gray (N7), very fine grained to coarse-grained; smooth subconchoidal fracture; abundant brachiopods, gastropods and bryozoans in some layers; in wavy beds 3 to 8 in. thick. Shale, similar to shale in unit # in partings up to 1/2 in. thick	2.1

	Thickness (feet)
Ashlock Formation, lower part (incomplete)--Continued:	
Gilbert Member--Continued:	
B. Limestone (95 percent) and shale. Limestone, medium-gray (N5), weathers medium light gray (N6), fine-grained with scattered medium to coarse fossil fragments; smooth conchoidal fracture; in even beds 4 to 8 in. thick. Thin chert bed showing banding is 3 in. above base of unit. Shale, similar to shale in unit F; in beds 1/8 to 1 in. thick	3.7
A. Limestone, medium-gray (N5), weathers light gray (N7), micrograined to very fine grained with medium to coarse fossil fragments; small aggregates of crystalline calcite; has subconchoidal fracture; in beds 3 to 18 in. thick with very thin shale partings, bedding planes wavy with relief up to 2 in.; sparsely fossiliferous. [Base of unit A is at quarry-floor]	3.4
FF. Covered. Estimated base of limestone of Gilbert Member based on information from quarry operator	1.5
Total Gilbert Member of the Ashlock Formation .	34.5
Tate Member (incomplete):	
FF. Covered. Said to be in part greenish rock by quarry operator	15.5
DD. Limestone, yellowish-gray, weathers almost white,	

	Thickness (feet)
Ashlock Formation, lower part (incomplete)--Continued:	
Tate Member (incomplete)--Continued:	
medium- to coarse-grained; in laminated beds 4 to 8 in. thick; contains thin stringers of fossiliferous chert. [Units DD through AA described from outcrops in creek north of quarry] .	2
CC. Covered	11
BB. Limestone (50 percent) and shale. Limestone, weathered pale yellowish brown (10YR 6/2) with light-greenish-gray (5GY 8/1) mottling, fine-grained; in laminated beds 1 to 2 in. thick . .	2.1
AA. Shale, clayey, yellowish-gray, calcareous. Base of section, not base of exposure	1
Measured Tate Member (incomplete)	31.6
Measured lower part of Ashlock Formation (incomplete)	66.1

Section C-16 Kidds Store

[Measured along roadcuts on U.S. Highway 127, a few hundred feet north of junction with Kentucky Highway 90, about 9 miles north of Liberty, Casey County, Ky. (Hustonville quadrangle); Kentucky coordinates: E. 2,260,300, N. 295,000, south zone. Measured by G. W. Weir, March 1965]

		Thickness (feet)
Boyle Limestone (incomplete; Devonian):		
M.	Limestone, cherty, medium-light-gray (N6), weathers light olive gray (5Y 7/1); chiefly micrograined and very fine grained, but contains some medium and coarse grains and coarse fossil fragments. Chert, medium-light-gray (N6) to white (N9), in discoidal masses a few inches thick as much as 2 ft. long; makes up about 15 percent of unit. In crude wavy beds 6 to 12 inches thick. Not measured; estimated thickness of exposure.	15
L.	Kiddville layer as used by McFarlan and White (1952): Dolomite, conglomeratic, medium-light-gray (N6) and light-brownish-gray (5YR 6/1), fine- and medium-grained; abundant granules and pebbles of medium-dark-gray (N4) phosphatic (?) material.	1.3

Boyle Limestone (incomplete; Devonian)--Continued:

	Thickness (feet)
K. Dolomite, greenish-gray (5YR 6/1), weathers about same; chiefly very fine grained; stratification obscure. Basal 4 to 6 in., light-brownish-gray (5YR 6/1), weathers brownish gray (5YR 5/1); muddy, very fine grained to fine-grained; contains abundant pebbles of dolomitic mudstone and scattered clusters of calcite crystals; overlain by dark-gray shale about 4 in. thick. Small white brachiopods common above conglomeratic layer, abundant near top.	6.4
Total exposed Boyle Limestone (estimated).	22.7

Ashlock Formation (incomplete; Ordovician):

Terrill Member (incomplete):

J. Mudstone, dolomitic, greenish-gray (5GY 6/1); well-stratified in even beds 1/4 to 1 in. thick; fissile, yields plates a fraction of an inch thick and several inches across. Generally unfossiliferous; sparse branching bryozoans at base of unit. Unit cut out by pre-Devonian unconformity to south; unit attains maximum thickness at north edge of exposure on north side of pre-Devonian fault.	5

Ashlock Formation (incomplete, Ordovician)--Continued:

Terrill Member (incomplete)--Continued:

	Thickness (feet)
I. Mudstone, dolomitic, similar to overlying unit; sparse bryozoans near base.	2
H. Mudstone, calcitic, greenish-gray (5GY 6/1); small cubes of pyrite common. Basal 3 in. and top 12 in., crudely laminated and nonresistant; rest is smooth-surfaced bed like underlying unit. Fossils common, chiefly globular, cap- and disc-shaped bryozoans as much as 1 1/4 in. across, and fine fossil debris. Less resistant than adjacent units; forms recess	2
G. Mudstone, calcitic, greenish-gray (5GY 6/1), weathers grayish orange (10YR 7/4); green glauconite (?) common, sparse pyrite; apparently unfossiliferous. A single bed; conchoidal fracture; forms rounded ledge.	1.4
Total exposed Terrill Member.	10.4

Gilbert Member:

F. Limestone, muddy, medium-gray (N5), weathers same and greenish gray (5GY 6/1); micrograined, variably muddy; in uneven, knobby-surfaced beds, commonly 2 to 4 in. thick; sparse geodes, as much as 3 in. across, of coarse white calcite. Sparse ostracodes and comminuted fossils

Ashlock Formation (incomplete; Ordovician)--Continued:

Gilbert Member--Continued:

	Thickness (feet)
throughout; near top sparse broken and whole brachiopods (including a large platystrophid), crinoid columnals, and sparse lamellar stromatolites (?).	11.1
E. Limestone (90 percent) and mudstone (10 percent). Limestone, similar to limestone in overlying unit. Mudstone, calcitic, brownish-gray (5YR 4/1) to olive-gray (5Y 4/1); laminated, fissile; some interlaminated partings of limestone; in seams 0.1 to 0.3 ft. thick at top and base of set. Fossils mostly in limestone; fine unidentified debris common, sparse small brachiopods and ostracodes	2.2
Total Gilbert Member	13.3

Tate Member (incomplete):

D. Mudstone grading at top to limestone. Mudstone, calcitic, light-greenish-gray (5G 7/1); common to abundant dark-yellowish-green grains, spots, and films (glauconite ?); stratification obscure; breaks along rough curving fractures. Limestone, very muddy, dark-greenish-gray (5GY 4/1); aphanitic and micrograined; obscurely	

Ashlock Formation (incomplete; Ordovician)--Continued:

Tate Member (incomplete)--Continued:

	Thickness (feet)
bedded; hackly fracture; forms top 1/4 of unit. [Units A through D described from west side of roadcut: section offset at top of unit to east side of road].	4.4
C. Mudstone, calcitic and dolomitic, greenish-gray (5G- and 5GY 6/1), weathers light greenish gray (5GY 7/1); more calcitic than underlying units; in even thin sets of laminae. No megafossils.	6.2
B. Mudstone, calcitic and dolomitic, more calcitic than underlying unit, apparently grading upward from dolomitic to calcitic; stratification mostly obscure, in part in thin even beds near base; nonfissile, breaks with a rough conchoidal fracture, spalls to form roughly curving ledge face. No megafossils.	7.1
A. Mudstone, dolomitic, in part calcitic, greenish-gray (5GY 6/1), weathers same and light greenish gray (5GY 7/1) and light olive gray (5Y 6-7/1). Mostly in even sets a few inches to a few feet thick consisting of fairly even beds, 1/8 to 2 in. thick, some with faint	

Ashlock Formation (incomplete; Ordovician)--Continued:

Tate Member (incomplete)--Continued:

	Thickness (feet)
internal lamination; splits roughly to evenly along bedding. Some bedding surfaces marked with yellowish-gray trace fossils; no megafossils. Conspicuous shaly parting at top. [Base is base of local outcrop at road level.]	12.6
Measured Tate Member (incomplete)	30.3
Measured Ashlock Formation (incomplete)	54

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