Geologic names of Ordovician rock-stratigraphic units exposed in Kentucky

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Introduction

This report summarizes and indexes the current usage of geologic names of exposed rock-stratigraphic units of Ordovician age in Kentucky. The Ordovician rocks crop out mainly in two separate areas in Kentucky (fig. 1). The larger area of outcrop, covering much of

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Figure 1 near here.

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the middle part of the state, forms the major part of the Blue Grass region of Kentucky. Outcrops of this region are contiguous with outcrops of Ordovician rocks in southwestern Ohio and southeastern Indiana. The smaller area of fairly continuous outcrops of Ordovician rocks lies south of the Blue Grass region along the Cumberland River and its tributaries. These outcrops are contiguous with outcrops of Ordovician rocks in Tennessee. A few isolated exposures of Ordovician rocks lie outside the areas of continuous outcrop.

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Figure 1.--Map of Kentucky showing principal areas of outcrop of Ordovician rocks.

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Fig. 1

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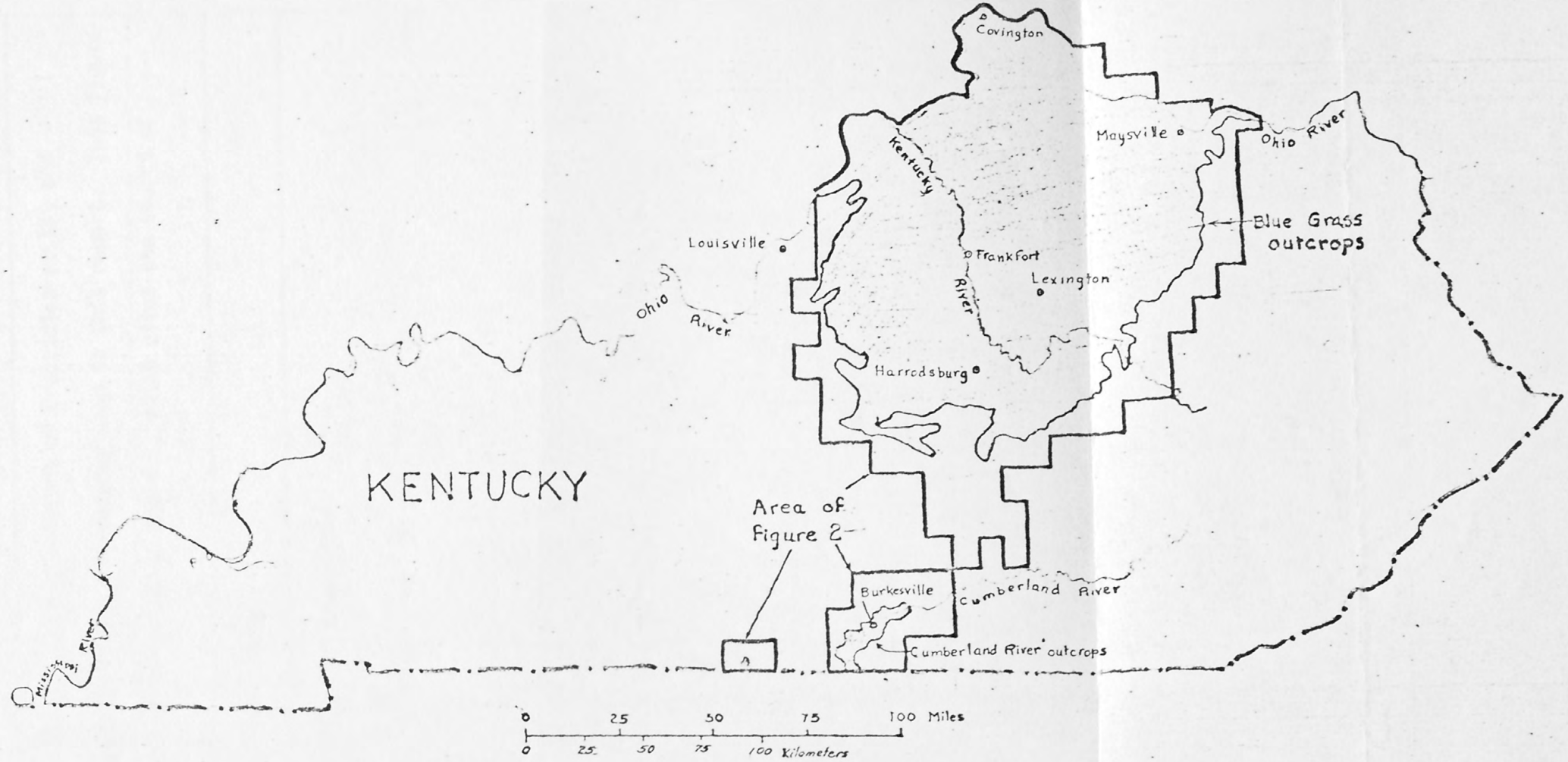

This report is based mainly on stratigraphic columns of geologic quadrangle maps made by the U.S. Geological Survey in cooperation with the Kentucky Geological Survey. Figure 2 shows: (1) the location of

Figure 2 near here.

quadrangle maps containing outcrops of Ordovician rocks, and (2) geographic divisions of Kentucky used in this report. This figure is indexed alphabetically in Table 1, which cites the source of

Table 1 near here.

information for each quadrangle.

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Figure 2.--Map of part of Kentucky showing reference numbers and names of geologic quadrangles containing outcrops of Ordovician rocks and major geographic divisions of part of the state (NC, north-central; NE, northeast; C, central; EC, east-central; SC, south-central).

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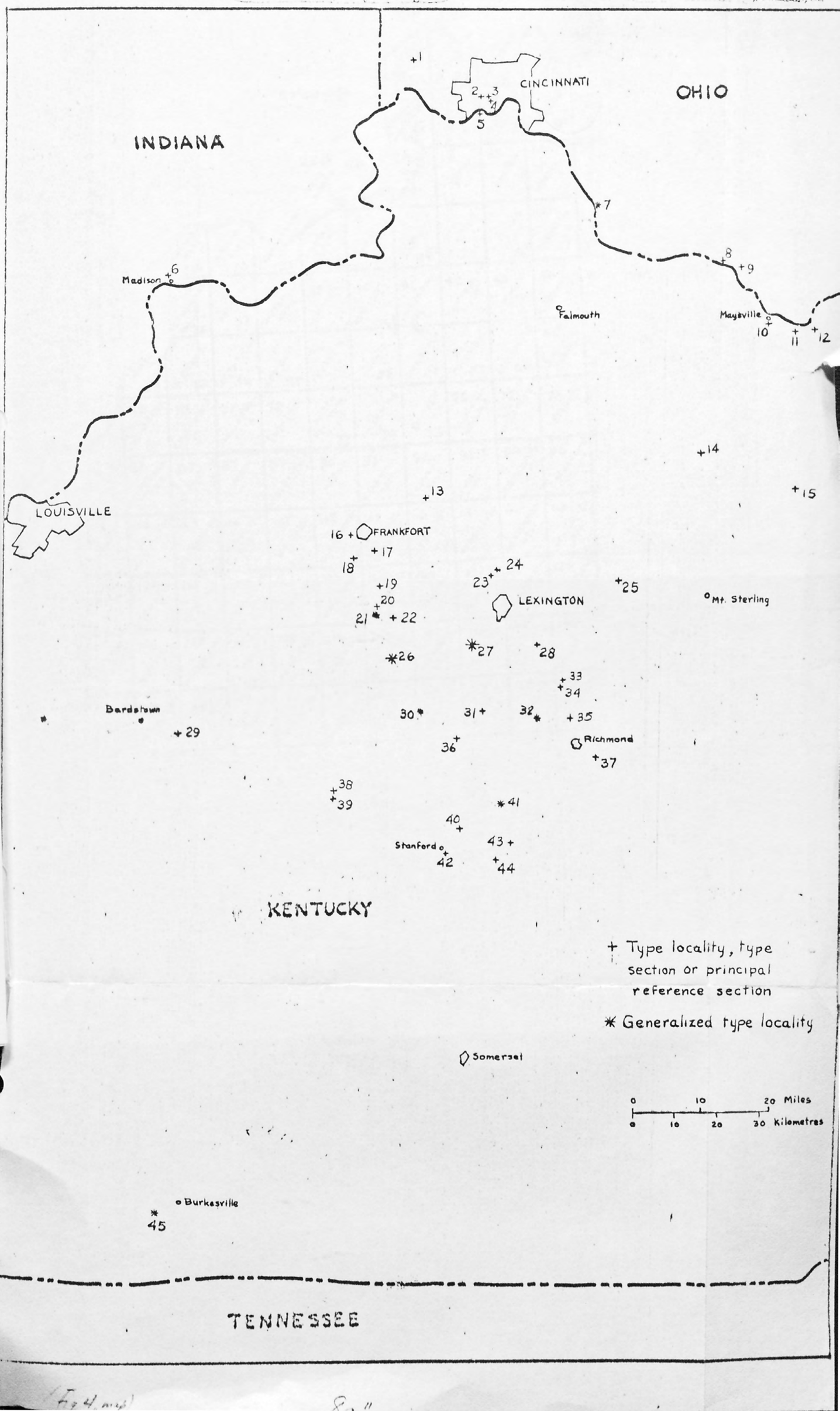
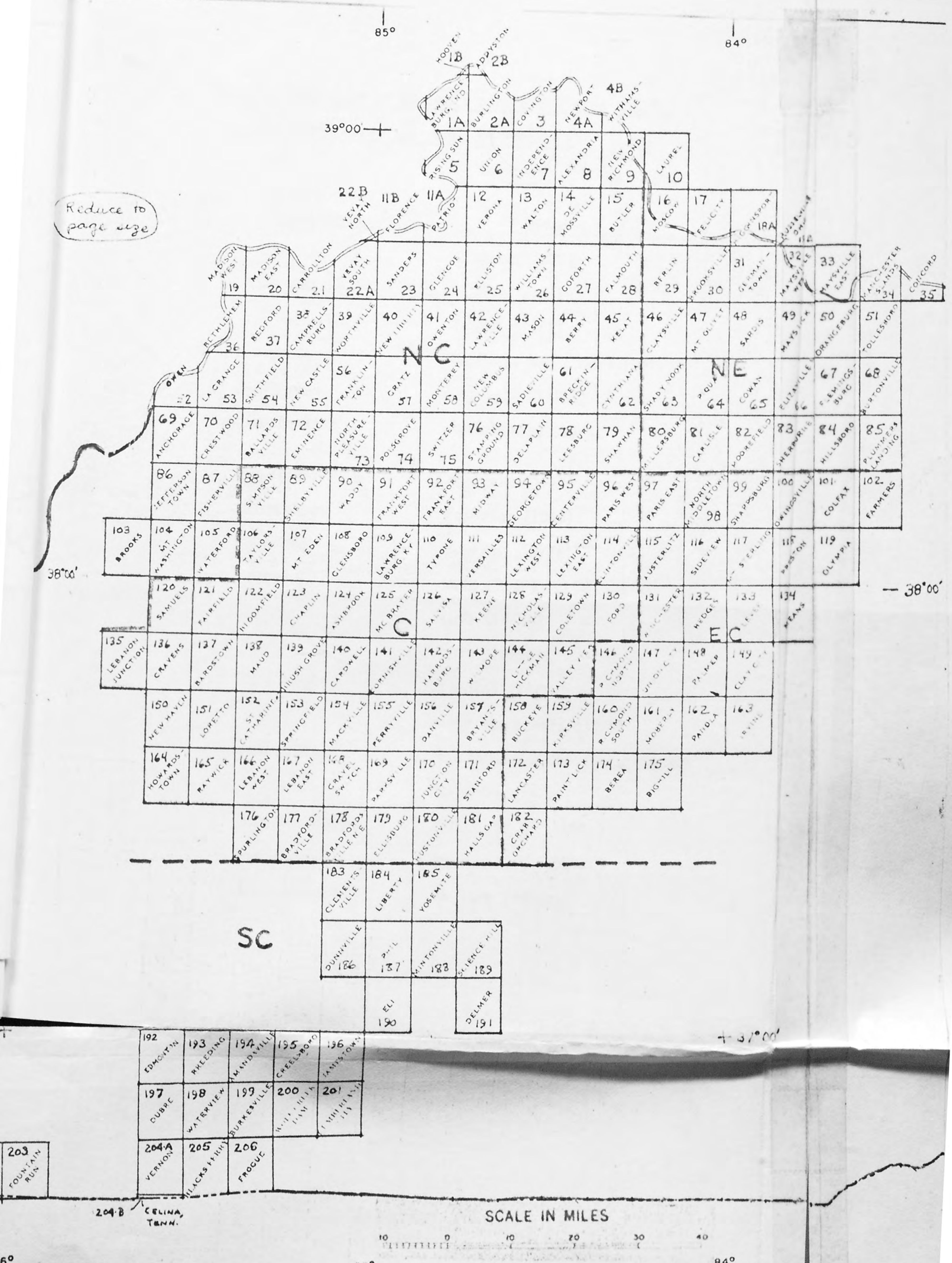

INDIANA
OHIO
CINCINNATI
LOUISVILLE
FRANKFORT
LEXINGTON
Madison
Falmouth
Maysville
Mt. Sterling
Bardstown
Richmond
Somerset
Stanford
Burkesville
KENTUCKY
TENNESSEE
+ Type locality, type section or principal reference section
* Generalized type locality
0 10 20 Miles
0 10 20 30 Kilometres



Reduce to page size
85°
84°
39°00'
38°00'
37°00'
NC
NE
C
EC
SC
1B Hooven
2B Addyston
1A Lawrenceburg, Ind
2A Burlington
3 Covington
4A Newport
4B Withamsville
5 Rising Sun
6 Union
7 Independence
8 Alexandria
9 New Richmond
10 Laurel
11A Patriot
11B Florence
22B Vevay North
12 Verona
13 Walton
14 De Mossville
15 Butler
16 Moscow
17 Felicity
18A Higginsport
19 Madison West
20 Madison East
21 Carrollton
22A Vevay South
23 Sanders
24 Glencoe
25 Elliston
26 Williamstown
27 Goforth
28 Falmouth
29 Berlin
30 Brooksville
31 Germantown
32 Maysville West
33 Maysville East
34 Manchester Islands
35 Concord
36 Bethlehem
37 Bedford
38 Campbellsburg
39 Northville
40 New Liberty
41 Owenton
42 Lawrenceville
43 Mason
44 Berry
45 Kelat
46 Claysville
47 Mt Olivet
48 Sardis
49 Mayslick
50 Orangeburg
51 Tollesboro
52 Owen
53 La Grange
54 Smithfield
55 New Castle
56 Franklinton
57 Gratz
58 Monterey
59 New Columbus
60 Sadieville
61 Breckinridge
62 Cynthiana
63 Shady Nook
64 Piqua
65 Cowan
66 Elizaville
67 Flemingsburg
68 Burtonville
69 Anchorage
70 Crestwood
71 Ballardsville
72 Eminence
73 North Pleasureville
74 Polsgrove
75 Switzer
76 Stamping Ground
77 Delaplain
78 Leesburg
79 Shawhan
80 Millersburg
81 Carlisle
82 Moorefield
83 Sherburne
84 Hillsboro
85 Plummers Landing
86 Jeffersontown
87 Fisherville
88 Simpsonville
89 Shelbyville
90 Waddy
91 Frankfort West
92 Frankfort East
93 Midway
94 Georgetown
95 Centerville
96 Paris West
97 Paris East
98 North Middletown
99 Sharpsburg
100 Owingsville
101 Colfax
102 Farmers
103 Brooks
104 Mt Washington
105 Waterford
106 Taylorsville
107 Mt Eden
108 Glensboro
109 Lawrenceburg Ky
110 Tyrone
111 Versailles
112 Lexington West
113 Lexington East
114 Clintonville
115 Austerlitz
116 Sideview
117 Mt Sterling
118 Preston
119 Olympia
120 Samuels
121 Fairfield
122 Bloomfield
123 Chaplin
124 Ashbrook
125 McBrayer
126 Salvisa
127 Keene
128 Nicholasville
129 Coletown
130 Ford
131 Winchester
132 Hedges
133
134 Means
135 Lebanon Junction
136 Cravens
137 Bardstown
138 Maud
139 Brush Grove
140 Cardwell
141 Cornishville
142 Harrodsburg
143 Wilmore
144 Little Hickman
145 Valley View
146 Richmond North
147 Union City
148 Palmer
149 Clay City
150 New Haven
151 Loretto
152 St Catharine
153 Springfield
154 Mackville
155 Perryville
156 Danville
157 Bryantsville
158 Buckeye
159 Kirksville
160 Richmond South
161 Moberly
162 Panola
163 Irvine
164 Howardstown
165 Raywick
166 Lebanon West
167 Lebanon East
168 Gravel Switch
169 Parksville
170 Junction City
171 Stanford
172 Lancaster
173 Paint Lick
174 Berea
175 Big Hill
176 Spurlington
177 Bradfordsville
178 Bradfordsville NE
179 Ellisburg
180 Hustonville
181 Halls Gap
182 Crab Orchard
183 Clementsville
184 Liberty
185 Yosemite
186 Dunnville
187 Phil
188 Mintonville
189 Science Hill
190 Eli
191 Delmer
192 Edmonton
193 Breeding
194 Amandaville
195 Creelsboro
196 Jamestown
197 Dubre
198 Waterview
199 Burkesville
200
201
203 Fountain Run
204-A Vernon
204-B
Celina, Tenn.
205 Blacks Ferry
206 Frogue
SCALE IN MILES
10 0 10 20 30 40

(Fig 2)

Table 1.--Alphabetical list of geologic quadrangle maps showing outcrops of Ordovician rocks in Kentucky

Index No. (see fig. 2)	Quadrangle 1/	Reference 1/
2B	Addyston*	Gibbons (1972)
8	Alexandria	Gibbons (1971)
194	Amandaville	Taylor (1962)
69	Anchorage	Kepferle and others (1971)
124	Ashbrook	Peterson (1976a)
115	Austerlitz	Outerbridge (1975)
71	Ballardsville	Kepferle (1977)
137	Bardstown	Peterson (1969)
37	Bedford	Swadley (1977a)
174	Berea	Weir (1967)
29	Berlin	Luft (1975a)
44	Berry	Luft (1975b)
36	Bethlehem*	Swadley (1977b)
175	Bighill	Weir and others (1971)
205	Blacks Ferry	Van Horn and Griffitts (1969)
122	Bloomfield	Peterson (1973b)
177	Bradfordsville	Moore, S. L. (1977a)
178	Bradfordsville NE	Moore, S. L. (1977b)
61	Breckinridge	Wallace (1976c)

193	Breeding	Taylor (1964)
103	Brooks	Kepferle (1972)
30	Brooksville	Outerbridge (1971a)
139	Brush Grove	Peterson (1973a)
157	Bryantsville	Wolcott and Cressman (1971)
158	Buckeye	Wolcott (1970)
199	Burkesville	Cattermole (1963a)
2A	Burlington*	Gibbons (1972)
68	Burtonville	Morris (1965)
15	Butler	Luft (1972a)
38	Campbellsburg	Swadley and Gibbons (1976)
140	Cardwell	Peterson (1977b)
81	Carlisle	Blade (1978a)
21	Carrollton*	Swadley (1976)
204-B	Celina*	Lewis (1972)
95	Centerville	Kanizay and Cressman (1967)
123	Chaplin	Peterson (1975c)
149	Clay City	Simmons (1967d)
46	Claysville	Luft (1976b)
183	Clementsville	Taylor and Lewis (1972)
114	Clintonville	MacQuown (1968a)
129	Coletown	Black (1967)
101	Colfax	McDowell (1976)
35	Concord*	Morris (1966)

141	Cornishville	Cressman (1973b)
3	Covington*	Luft (1971b)
65	Cowan	Blade (1978b)
182	Crab Orchard	Gualtieri (1967)
136	Cravens	Peterson (1968)
195	Creelsboro	Thaden and Lewis (1963)
70	Crestwood	Kepferle (1976c)
201	Cumberland City	Lewis and Thaden (1965)
62	Cynthiana	Wallace (1976b)
156	Danville	Cressman (1972a)
77	Delaplain	Wallace (1977c)
191	Delmer	Lewis (1971)
14	De Mossville	Luft (1970)
197	Dubre	Lewis (1967b)
186	Dunnville	Maxwell (1965a)
192	Edmonton	Cattermole (1966)
190	Eli	Thaden and Lewis (1965)
66	Elizaville	McDowell (1971)
179	Ellisburg	Moore, S. L. (1977c)
25	Elliston	Swadley (1972b)
72	Eminence	Luft (1977b)

121	Fairfield	Peterson (1975a)
28	Falmouth	Luft (1972b)
102	Farmers	McDowell (1975)
17	Felicity	Osborne and others (1973)
87	Fisherville	Kepferle (1976b)
67	Flemingsburg	Peck (1969)
11B	Florence*	Swadley (1969c)
130	Ford	Black (1968)
203	Fountain Run	Hamilton (1963)
92	Frankfort East	Pomeroy (1968)
91	Frankfort West	Moore, F. B. (1975a)
56	Franklinton	Gibbons (1976)
206	Frogue	Lewis (1967a)
94	Georgetown	Cressman (1967)
31	Germantown	Outerbridge (1971b)
24	Glencoe	Swadley (1974)
108	Glensboro	Cressman (1976b)
27	Goforth	Luft (1971a)
57	Gratz	Moore, F. B. (1977a)
168	Gravel Switch	Moore, S. L. (1978b)
181	Halls Gap	Weir (1972)
142	Harrodsburg	Allingham (1972)

132	Hedges	Black (1975)
18A	Higginsport	Outerbridge and others (1973)
84	Hillsboro	Mytton and McDowell (1970)
202	Holland	Nelson (1962)
1B	Hooven*	Swadley (1972a)
164	Howardstown	Kepferle (1966)
180	Hustonville	Lewis and Taylor (1971)
7	Independence	Luft (1969)
163	Irvine	Hoge and others (1976)
196	Jamestown	Thaden and Lewis (1962)
86	Jeffersontown	Moore, F. B., and others (1972)
170	Junction City	Harris (1972)
127	Keene	Cressman (1965)
45	Kelat	Luft (1974)
159	Kirksville	Greene (1965)
53	La Grange*	Peterson and others (1971)
172	Lancaster	Weir (1971)
10	Laurel	Kohut and others (1973)
109	Lawrenceburg (Ky.)	Cressman (1972b)
1A	Lawrenceburg (Ind.)*	Swadley (1972a)
42	Lawrenceville	Swadley (1975a)

167	Lebanon East	Moore, S. L. (1978c)
135	Lebanon Junction	Peterson (1967)
166	Lebanon West	Moore, S. L. (1978d)
78	Leesburg	Wallace (1976a)
133	Levee	McDowell (1978)
113	Lexington East	MacQuown and Dobrovolny (1968)
112	Lexington West	Miller (1967)
184	Liberty	Taylor and Lewis (1971b)
144	Little Hickman	Wolcott (1969)
151	Loretto	Peterson (1972a)
154	Mackville	Peterson (1977a)
20	Madison East*	Gibbons (1978)
19	Madison West*	Swadley (1978)
34	Manchester Islands*	Peck and Pierce (1966)
43	Mason	Luft (1976a)
138	Maud	Peterson (1972b)
49	Mays Lick	Gibbons (1968)
33	Maysville East	Weiss and others (1972)
32	Maysville West	Gibbons and Weiss (1972)
125	McBrayer	Cressman (1973a)
134	Means	Weir (1976a)
93	Midway	Pomeroy (1970)
80	Millersburg	Cuppels and Outerbridge (1974)

188	Mintonville	Lewis and Taylor (1974)
161	Moberly	Greene (1968a)
58	Monterey	Moore, F. B. (1977b)
82	Moorefield	Wigley (1978)
16	Moscow	Luft and others (1973)
107	Mount Eden	Cressman (1976a)
47	Mount Olivet	Wallace (1977a)
117	Mount Sterling	Weir (1976b)
104	Mount Washington	Kepferle (1976a)
55	New Castle	Gibbons (1977)
59	New Columbus	Moore, F. B. (1978)
150	New Haven	Peterson (1966)
40	New Liberty	Gibbons and Swadley (1976)
4A	Newport*	Gibbons (1973)
9	New Richmond	Gibbons and others (1975)
128	Nicholasville	MacQuown (1968b)
98	North Middletown	Helfrich (1977)
73	North Pleasureville	Peterson (1976b)
119	Olympia	McDowell and Weir (1977)
50	Orangeburg	Schilling and Peck (1967)
52	Owen*	Peterson and Wigley (1971)
41	Owenton	Swadley (1975b)
100	Owingsville	Weir (1975)

173	Paint Lick	Weir (1969)
148	Palmer	Simmons (1967c)
162	Panola	Greene (1968b)
97	Paris East	Outerbridge (1974b)
96	Paris West	Outerbridge (1974a)
169	Parksville	Moore, S. L. (1978a)
11A	Patriot*	Swadley (1969c)
155	Perryville	Cressman (1974)
187	Phil	Maxwell (1965b)
64	Piqua	Wallace (1977b)
85	Plummers Landing	McDowell and others (1971)
74	Polsgrove	Moore, F. B. (1976)
118	Preston	Weir and McDowell (1976)
165	Raywick	Kepferle (1973)
146	Richmond North	Simmons (1967a)
160	Richmond South	Greene (1966b)
5	Rising Sun*	Swadley (1971)
18B	Russelville*	Outerbridge and others (1973)
60	Sadieville	Moore, F. B., and Wallace (1978)
152	Saint Catharine	Peterson (1975b)
126	Salvisa	Cressman (1968)
120	Samuels	Kepferle (1969)

23	Sanders	Swadley (1973a)
48	Sardis	McDowell (1973)
189	Science Hill	Taylor and Lewis (1973)
63	Shady Nook	Wallace (1975)
99	Sharpsburg	Blade (1977)
79	Shawhan	Cuppels (1973)
89	Shelbyville	Cressman (1975b)
83	Sherburne	Outerbridge (1970)
116	Sideview	Blade (1976)
88	Simpsonville	Peterson (1978)
54	Smithfield	Luft (1977a)
153	Springfield	Peterson (1977c)
176	Spurlington	Moore, S. L. (1974)
76	Stamping Ground	Moore, F. B. (1977c)
171	Stanford	Shawe and Wigley (1974)
75	Switzer	Moore, F. B. (1975b)
106	Taylorsville	Peterson (1977d)
51	Tollesboro	Peck (1967)
110	Tyrone	Cressman (1964)
6	Union	Swadley (1969a)
147	Union City	Simmons (1967b)

145	Valley View	Greene (1966a)
204A	Vernon	Lewis (1972)
12	Verona	Swadley (1969b)
111	Versailles	Black (1964)
22B	Vevay North*	Swadley (1973b)
22A	Vevay South*	Swadley (1973b)
90	Waddy	Cressman (1975a)
13	Walton	Luft (1973a)
105	Waterford	Luft (1977c)
198	Waterview	Cattermole (1963b)
26	Williamstown	Luft (1973b)
143	Wilmore	Cressman and Hrabar (1970)
131	Winchester	Black (1974)
4B	Withamsville*	Gibbons (1973)
200	Wolf Creek Dam	Lewis and Thaden (1962)
39	Worthville	Gibbons (1975)
185	Yosemite	Taylor and Lewis (1971a)

_/ Asterisk (*) after quadrangle name indicates that only Kentucky part of quadrangle mapped geologically.

Figure 3 shows the generalized sequence of named stratigraphic

Figure 3 near here.

subdivisions of the Ordovician section in several regions of Kentucky. The named subdivisions are rock-stratigraphic units characterized by kinds of rock and their proportions. Because of intergrading and intertonguing of rock types many of the formations and members have arbitrary vertical cut offs, and some members are assigned to different formations in different regions. The boundaries, extent, and interrelations of the formal units are discussed briefly in the appropriate entries in the following lexicon. The type localities of the principal Ordovician units mapped in Kentucky are shown in Figure 4.

Figure 4 near here.

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Figure 3.--Nomenclature of exposed rock-stratigraphic units of Ordovician age in Kentucky. No scale. Stratigraphic relations are approximate because effects of intergradation and variations in facies and thickness are not shown.

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SOUTH-CENTRAL KENTUCKY	CENTRAL KENTUCKY	NORTH-CENTRAL KENTUCKY	NORTHEAST KENTUCKY	EAST-CENTRAL KENTUCKY
Cumberland Formation	Drakes Formation: Saluda Dolomite Member (Hitz Bed); Bardstown Member; Rowland Member (Marble Hill Bed)	Bull Fork Formation	Drakes Formation; Preachersville Member; Sunset Member	Drakes Formation; Ashlock Formation: Reba Member, Sunset Member, Terrill Member, Stingy Creek Member, Gilbert Member, Tate Member (Back Bed); Preachersville Member (Otter Creek Coal Bed); Rowland Member
	Grant Lake Limestone: Ashlock Formation (Gilbert Member, Tate Member)	Bellevue Tongue of Grant Lake Limestone	Grant Lake Limestone: Tate Member	
Leipers Limestone	Calloway Creek Limestone	Fairview Formation (Mountain Shale of Ford (1967))		Calloway Creek Limestone
Catheys(?) Formation	Clays Ferry Formation	Kope Formation (Grand Avenue Member of Ford (1967)); Point Pleasant Tongue (Bromley Shale Bed)		Garrard Siltstone; Clays Ferry Formation
(Not exposed)	Lexington Limestone (See Figure 5 for details)	(Not exposed)		
	High Bridge Group: Tyrone Limestone, Oregon Formation, Camp Nelson Limestone			

Figure 4.--Map of central Kentucky and parts of adjoining states showing locations of type localities and type sections or principal reference sections of rock-stratigraphic units cropping out in Kentucky.

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Location Number	Stratigraphic Name
1.	Miamitown Shale of Ford (1967)
2.	Bellevue Tongue
3.	Fairview Formation
4.	Grand Avenue Member of Ford (1967)
5.	Bromley Shale Bed
6.	Hitz Bed; Marble Hill Bed; Saluda Dolomite Member
7.	Point Pleasant Tongue
8.	Kope Formation
9.	Kope Formation
10.	Kope Formation
11.	Grant Lake Limestone
12.	Bull Fork Formation
13.	Stamping Ground Member
14.	Nicholas Bed
15.	Sunset Member
16.	Devils Hollow Member
17.	Lexington Limestone; Macedonia Bed
18.	Tanglewood Limestone Member
19.	Tyrone Limestone
20.	Logana Member
21.	Tyrone Limestone
22.	Curdsville Limestone Member; Grier Limestone Member
23.	Greendale Lentil
24.	Cane Run Bed
25.	Strodes Creek Member
26.	Oregon Formation
27.	Brannon Member
28.	Millersburg Member
29.	Bardstown Member
30.	High Bridge Group
31.	Sulphur Well Member
32.	Tate Member
33.	Clays Ferry Formation
34.	Calloway Creek Limestone, Garrard Siltstone
35.	Otter Creek Coral Bed
36.	Camp Nelson Limestone
37.	Reba Member; Terrill Member
38.	Perryville Member; Faulconer Bed
39.	Perryville Member; Cornishville Bed; Salvisa Bed
40.	Ashlock Formation; Back Bed; Gilbert Member; Stingy Creek Member; Tate Member
41.	Garrard Siltstone
42.	Rowland Member
43.	Drakes Formation
44.	Preachersville Member
45.	Cumberland Formation

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(Explanation fig 4) 8a'

The lexicon, although for the most part a review of the usage in the columns and text of the published maps, summarizes the nomenclature as of 1978. During the course of mapping, the rock relations became better understood. A few named units, such as +Cynthiana Formation, were abandoned and the strata reclassified as part of other units. Such now abandoned or obsolescent names in Kentucky are marked with a cross (+) in this report. Some units described in the columns of the earlier published quadrangles, as on the Dunnville quadrangle, were undifferentiated because formal units had not been established. A few units, such as the Sunset Member, are now recognized to be more extensive than first realized. The identification or reassignment of units subsequent to mapping are indicated in the lexicon by listing the pertinent quadrangle names in brackets.

Subsurface units are not discussed in this report. Their nomenclature is drawn from names of units exposed only in nearby states, from abandoned and obsolescent names of units in the exposed section in Kentucky, and from drillers' terms. Columnar summaries of subsurface names of Ordovician units in Kentucky are given by Schwalb and others (1971a, 1971b) and by Wilson and Sutton (1973, 1976). The subsurface units are described by Freeman (1953) and McGuire and Howell (1963).

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Time-stratigraphic terms are outside the scope of this report. The exposed Ordovician rocks in Kentucky are of Middle and Upper Ordovician age. In this region the U.S. Geological Survey and the Kentucky Geological Survey recognize the Cincinnatian Series as the provincial series equivalent of the Upper Ordovician. It consists in ascending order of the Edenian, Maysvillian, and Richmondian Stages. The Gamachian Stage (Schuchert and Twenhofel, 1910, p. 700; Twenhofel and others, 1954, pl. 1) is not recognized. Studies of conodonts by Bergström and Sweet and of bryozoans by Karklins suggest that the base of the Edenian Stage lies within intertonguing elements of the upper part of the Lexington Limestone and the lower part of the Kope and Clays Ferry Formations (Bergström and Sweet, 1966, p. 288; Sweet and Bergström, 1971, p. 619; Cressman and Karklins, 1970, p. 21).

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Previous nomenclature

Geologic mapping at the scale 1:24,000 (1 inch equals 2,000 feet) in Kentucky showed the need for names for newly discriminated rock units of Ordovician age. This need in part arose from the more detailed mapping permitted by a larger scale, for most previous geologic maps in Kentucky were made at the scale of 1:63,360 (1 inch equals 1 mile) or smaller. In addition, many stratal divisions of the Ordovician used by earlier workers were based on fossils rather than rock character.

Much of the previous nomenclature used in subdivisions of the Upper Ordovician in Kentucky was developed by stratigraphers working in southern Ohio and Indiana. The development of this nomenclature has been reviewed by Gutstadt (1958, p. 518-521), Weiss and Norman (1960), Weiss (1961), and Fox (1962, p. 622-628), who point out the confusion between faunal units and rocks. Later studies in these states, as in Kentucky, have led to the development of a nomenclature based on rock character (Weiss and Sweet, 1964; Brown and Lineback, 1966; Ford, 1967; Gray, 1972).

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Table 2 lists abandoned and little-used stratigraphic names

Table 2 near here.

formerly applied to Ordovician rocks cropping out in Kentucky and citations as to definition and usage of these names. Not listed are a few time-stratigraphic terms--such as Edenian, Maysvillian, and Richmondian, which were used without the adjectival suffix as formation and group names by Jillson (1929) and some other previous workers. These names were rarely applied to rock-stratigraphic units after publication of correlation charts of the Ordovician System in North America by Twenhofel and others (1954).

Some stratigraphic names--such as +Decorah Shale, were drawn from areas far outside Kentucky; application of such names in this state commonly differed from that of the type area. Some names drawn from Kentucky localities--such as +Cynthiana, had various applications by different geologists. The citations for Kentucky usage given in column III are, where possible, selected to describe the common usage that was tabulated by Palmquist and Hall (1961, pl. 1). A few names, however, such as the +Rennix Limestone of Foerste (1901), apparently were used but once.

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Table 2. Abandoned and little-used stratigraphic names formerly applied to exposed rocks of Ordovician age in Kentucky.

Name _/	Original Reference	Kentucky Usage	Recent Discussion	Approximate Stratigraphic Position (as used in Kentucky)
I	II	III	IV	V
Arnheim Formation	Foerste, 1905, p. 150	Foerste, 1912a	Peck, 1966, p. B9-B10	Bull Fork Formation; Ashlock Formation
Bardstown Coral Reef (in Liberty Formation)	Foerste, 1903, p. 352	Browne, 1964, p. 389	Peterson, 1970, p. A38	Drakes Formation
Benson Limestone (in Lexington Limestone)	Foerste, 1913a, p. 365, 371; 1913b, p. 389, 429, 430	Nosow and McFarlan, 1960, p. 39	Cressman, 1964	Lexington Limestone
Bigby Limestone	Hayes and Ulrich, 1903, p. 2	Foerste, 1913b, p. 429, 430		Lexington Limestone
Birdseye Beds	Linney, 1882a, p. 5, 6, 13			High Bridge Group
Blanchester Member (of Waynesville Formation)	Foerste, 1909b, p. 291	McFarlan, 1943, p. 31		Bull Fork Formation; Drakes Formation
Blue Grass Group	Linney, 1882b, p. 14			

Table 2. Abandoned and little-used stratigraphic names formerly applied to exposed rocks of Ordovician age in Kentucky.

Name [1]	Original Reference	Kentucky Usage	Recent Discussion	Approximate Stratigraphic Position (as used in Kentucky)
I	II	III	IV	V
Arnheim Formation	Foerste, 1905, p. 150	Foerste, 1912a	Peck, 1966, p. B9-B10	Bull Fork Formation; Ashlock Formation
Bardstown Coral Reef (in Liberty Formation)	Foerste, 1903, p. 352	Browne, 1964, p. 389	Peterson, 1970, p. A38	Drakes Formation
Benson Limestone (in Lexington Limestone)	Foerste, 1913a, p. 365, 371; 1913b, p. 389, 429, 430	Nosow and McFarlan, 1960, p. 39	Cressman, 1964	Lexington Limestone
Bigby Limestone	Hayes and Ulrich, 1903, p. 2	Foerste, 1913b, p. 429, 430		Lexington Limestone
Birdseye Beds	Linney, 1882a, p. 5, 6, 13			High Bridge Group
Blanchester Member (of Waynesville Formation)	Foerste, 1909b, p. 291	McFarlan, 1943, p. 31		Bull Fork Formation; Drakes Formation
Blue Grass Group	Linney, 1882b, p. 14			Lexington Limestone

Burkesville Limestone (in Cumberland Sandstone)	Jillson, 1951			Cumberland Formation
Clarksville Member (of Waynesville Formation)	Foerste, 1909b, p. 292	McFarlan, 1943, p. 31		Bull Fork Formation
Corryville Shale Member (of McMillan Formation)	Nickles, 1902, p. 83	McFarlan, 1943, p. 26	Peck, 1966, p. B8, B9	Grant Lake Limestone, Ashlock Formation
Covington Group	Bassler, 1906, p. 9			Kope and Fairview Formations, Grant Lake Limestone and part of Bull Fork Formation
Cynthiana Formation	Foerste, 1906, p. 10, 13.	McFarlan and White, 1948, p. 1641-1643; Lattman, 1954.	Black and others, 1965, p. C2-C7.	Lexington Limestone, Clays Ferry Formation
Decorah Shale	Calvin, 1906, p. 60, 84.	Bassler, 1915, pl. 2		Tyrone Limestone
Economy Member (of Latonia Shale)	Bassler, 1906, p. 9	McFarlan, 1943, p. 23	Weiss and others, 1965, p. 27-28.	Kope Formation
Elkhorn Formation	Cumings, 1908, p. 678	Palmquist and Hall, 1960, sheet 3.	Utgaard and Perry, 1964, p. 17; Peck, 1966, p. B11-B12.	Bull Fork Formation; Drakes Formation

Fairmount Member (of Fairview Formation)	Nickles, 1902, p. 78	Nosow and McFarlan, 1960, p. 44	Ford, 1967, p. 928-931	Fairview Formation; Calloway Creek Limestone
Fisherville Coral Reef (in Waynesville Formation)	Foerste, 1909b, p. 291	Browne, 1964, p. 389	Kepferle, 1976	Drakes Formation
Flanagan Chert	Campbell, 1898, p. 2	Miller, 1913, p. 323-326		Lexington Limestone
Fort Ancient Member (of Waynesville Formation)	Foerste, 1909b, p. 292-293	McFarlan, 1943, p. 29		Bull Fork Formation
Fowler Limestone	Foerste, 1901, p. 434			Cumberland Formation
Fulton Shale	Foerste, 1905, p. 150	McFarlan and Freeman, 1935	Weiss and others, 1965, p. 27	Kope Formation; Clays Ferry Formation
Gratz Shale	Ulrich, 1911, p. 416-418, 569	McFarlan and White, 1948, p. 1643		Lexington Limestone
Haggard Limestone (in Cumberland Sandstone)	Jillson, 1953			Cumberland Formation

Hermitage Limestone (in Lexington Limestone)	Hayes and Ulrich, 1903, p. 1	McFarlan, 1943, p. 14, 17	McFarlan and White, 1948, p. 1634	Lexington Limestone
Hudson River Group	Mather, 1840, p. 212, 256-258	Linney, 1882a, p. 5-11	Wilmarth, 1938, p. 990	Post-Lexington limestone formations
Jessamine Limestone (in Lexington Limestone)	Miller, 1919, p. 25	Nosow and McFarlan, 1960, p. 39	Cressman, 1964	Lexington Limestone
Latonia Shale	Fenneman, 1916, p. 63-65	Palmquist and Hall, 1961, pl. 1	Weiss and others, 1965, p. 26; Luft, 1971b	Kope Formation
Laughery Formation	Foerste, 1912b, p. 22			Bull Fork Formation
Leray Limestone Member (of Lowville Limestone)	Ruedemann and Kemp, 1910, p. 72	Bassler, 1915, pl. 2		Tyrone Limestone
Liberty Formation	Nickles, 1903, p. 207	Conkin, 1952, p. 126	Fox, 1962, p. 626	Bull Fork Formation; Drakes Formation
Lorraine Group	Emmons, 1842, p. 119-123	Nickles, 1905, p. 29		Maysvillian Stage

Lowville Limestone	Clarke and Schuchert, 1899, p. 874-878	Bassler, 1915, pl. 2		Oregon Formation, Tyrone Limestone
McMicken Member (of Latonia Shale)	Bassler, 1906, p. 10	McFarlan, 1943, p. 24	Weiss and others, 1965, p. 27-28	Kope Formation
McMillan Formation	Bassler, 1906, p. 10	Nosow and McFarlan, 1960, p. 44	Peck, 1966, p. B8-B9	Grant Lake Limestone; Ashlock Formation
Million Shale	Nickles, 1905, p. 25-26	McFarlan, 1954	Weir and Greene, 1965, p. B3, B7	Clays Ferry Formation
Mount Auburn Member (of McMillan Formation)	Nickles, 1902, p. 85	Nosow and McFarlan 1960, p. 45	Peck, 1966, p. B8-B9	Grant Lake Limestone; Ashlock Formation
Mount Hope Shale Member (of Fairview Formation)	Nickles, 1902, p. 76	McFarlan, 1943, p. 25	Peck, 1966, p. B5, B7	Fairview Formation, Garrard Siltstone
Oregonia Member (of Arnheim Formation)	Foerste, 1910, p. 18	Nosow and McFarlan, 1960, p. 46-47	Peck, 1966, p. B9-B10	Bull Fork Formation; Ashlock Formation
Paint Lick Limestone	Foerste, 1906, p. 212	Nosow and McFarlan, 1960, p. 43	Weir and others, 1965 p. D6	Garrard Siltstone

Paris Formation (in Lexington Limestone)	Nickles, 1905, p. 15	Foerste, 1914, p. 110		Lexington Limestone
Rennix Limestone	Foerste, 1901, p. 435			Cumberland Formation
River Quarry Beds	Orton, 1873, p. 370-378	Nickles, 1902, p. 56-58	Weiss and others, 1965, p. 18-19	Point Pleasant Tongue of Clays Ferry Formation
Rogers Gap Member (of Cynthiana Formation)	Foerste, 1912b, p. 23, 44	McFarlan and Freeman, 1935	Weiss and others, 1965, p. 19-20	Clays Ferry Formation Kope Formation
Southgate Member (of Latonia Shale)	Bassler, 1906, p. 9	McFarlan, 1943, p. 23-24	Weiss and others, 1965, p. 27-28	Kope Formation
Tanners Creek Formation	Fox, 1962, p. 626-628	Hatfield, 1968, pl. 1	Brown and Lineback, 1966, p. 1020	Bull Fork Formation
Upper Birdseye Beds	Linney, 1882a, p. 6			Lexington Limestone
Utica Formation	Emmons, 1842, p. 116-118	Foerste, 1906, p. 10	Weiss and others, 1965, p. 26	Kope Formation; Clays Ferry Formation
Versailles Formation	Foerste, 1905, p. 150			Bull Fork Formation
Waynesville Formation	Nickles, 1903, p. 205-207	McFarlan, 1943, p. 29, 31	Peck, 1966, p. B10-B12	Bull Fork Formation; Drakes Formation

Whitewater Formation	Nickles, 1903, p. 208-209	Conkin, 1952	Peck, 1966, p. B2-B3; Brown and Lineback, 1966, p. 1022	Bull Fork Formation; Drakes Formation
Wilmore Limestone (in Lexington Limestone)	Nickles, 1905, p. 15	Miller, 1919, p. 25		Lexington Limestone
Winchester Limestone	Campbell, 1898, p. 2	Nickles, 1905, p. 15	Weir and Greene, 1965, p. B2-B3; Black, 1974	Clays Ferry Formation, Lexington Limestone
Woodburn Limestone	Miller, 1913, p. 326-328	McFarlan and White, 1948, p. 1636-1637	Black and others, 1965, p. C2	Lexington Limestone

1/ Surnames generally follow usage of Palmquist and Hall, 1961. Rank designation for some units varied according to author.

The interested reader will find the most complete description of the older stratigraphic units in McFarlan's (1943, p. 12-33) review of the Ordovician of Kentucky. The older nomenclature of the classic Cincinnatian section is summarized by Caster and others (1961). Column V of Table 2 gives a rough idea of present-day formations containing strata formerly designated by the abandoned or obsolescent names. More detailed relations are shown on most GQ maps, which contain a column comparing the nomenclature used by earlier workers with that used on the map. Column IV of the table cites, where possible, works that note the history of the term and the reasons for abandoning it. Many old stratigraphic names, however, are still in use; they are listed in the following lexicon.

643—16—82993p-1 GPO

Lexicon of rock-stratigraphic names

Ashlock Formation

Original reference: Weir and others (1965, p. D9-D16, D23-D27).

Type section: Outcrops near Dix River and along U.S. Highway 27, chiefly in the Lancaster quadrangle, east-central Kentucky (loc. 40, fig. 4).

Source of name: Ashlock Cemetery, Lancaster quadrangle, Ky.

Lithologic character: Alternating units of limestone and calcitic to dolomitic shale, which locally intertongue and intergrade. Mostly light gray, olive gray, and greenish gray; weathers light gray and yellowish gray. In even to uneven and nodular beds, commonly a few inches thick.

Subdivisions: In southern east-central Kentucky the Ashlock Formation consists of, in ascending order, the Tate, Gilbert, Stingy Creek, Terrill, and Reba Members. In northern east-central Kentucky it consists of the Tate, Grant Lake, Terrill, Sunset, and Reba Members. In southern central Kentucky the Ashlock consists only of the Tate and Gilbert Members.

Distribution and thickness: The Ashlock Formation crops out around the southern and eastern borders of the Blue Grass region of Kentucky. It ranges from about 60 to 150 feet in thickness.

U. S. GOVERNMENT PRINTING OFFICE : 1959 O - 511171
867-100

Stratigraphic relations: For most of its extent the Ashlock Formation conformably overlies the Calloway Creek Limestone and is conformably overlain by the Drakes Formation, In a few localities in the southeastern part of central Kentucky, as in the Stanford quadrangle, it is unconformably overlain by rocks of Devonian age. In the southwestern part of central Kentucky, as in the Maud quadrangle, the Ashlock intertongues and intergrades with the Grant Lake Limestone. In northern east-central Kentucky it intergrades with the Grant Lake Limestone and the lower part of the Bull Fork Formation, and is separated from these formations by a vertical cutoff at the latitude of the north edge of the Mount Sterling quadrangle. In south-central Kentucky the Ashlock grades into the Cumberland Formation and is separated from the Cumberland by a cutoff at the latitude of the south edge of the Yosemite quadrangle.

Previous nomenclature: The Ashlock Formation includes strata that generally were assigned by earlier workers to the +McMillan and +Arnheim Formations_/.

_/ Cross (+) denotes stratigraphic name abandoned or obsolescent in Kentucky.

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807-100

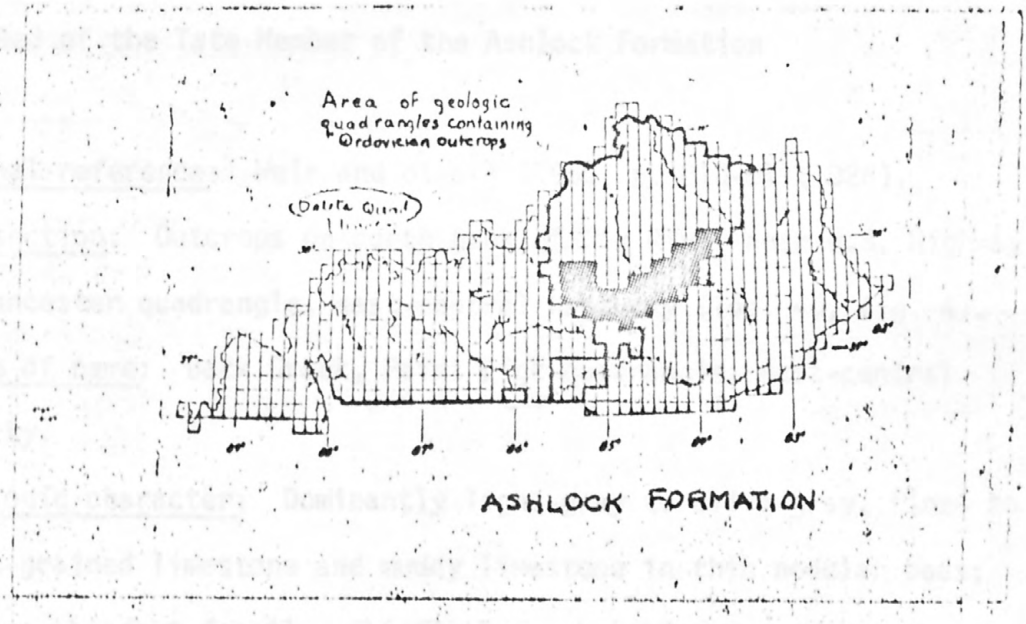
Quadrangles containing outcrops:

Unnumbered figure near here.

Bardstown, Berea, Bradfordsville, Bradfordsville NE, Brush Grove, Bryantsville, Buckeye, Crab Orchard, Ellisburg, Gravel Switch, Halls Gap, Hedges, Hustonville, Junction City, Kirksville, Lancaster, Lebanon East, Lebanon West, Levee, Loretto, Maud, Moberly, Mount Sterling, Paint Lick, Palmer, Panola, Parksville, Preston, Raywick, Richmond North, Richmond South, St. Catharine, Springfield, Stanford, Union City, Valley View, Winchester, Yosemite.

Note: Unit assigned to Ashlock Formation in New Haven quadrangle is now assigned to Grant Lake Limestone. Unit assigned to Ashlock Formation in Clementsville quadrangle is now assigned to Rowland Member of Drakes Formation.

643—16—82993p-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
Ashlock Formation

Back Bed of the Tate Member of the Ashlock Formation

Original reference: Weir and others (1965, p. D10-D11, D26).

Type section: Outcrops on north bank of Dix River near U.S. Highway 27, Lancaster quadrangle, east-central Kentucky (loc. 40, fig. 4).

Source of name: Back Creek, Paint Lick quadrangle, east-central Kentucky.

Lithologic character: Dominantly light-gray to olive-gray, fine- to medium-grained limestone and muddy limestone in thin nodular beds; contains abundant fossils, chiefly large brachiopods and bryozoans. Forms minor but conspicuous ledge.

Distribution, thickness and stratigraphic relations: The Back Bed is persistent as a unit about 3 to 10 feet thick lying about 5 to 15 feet above the base of the Tate Member of the Ashlock Formation throughout most of east-central Kentucky. In the Sharpsburg quadrangle, east-central Kentucky, the underlying part of the Tate intertongues and intergrades with muddy limestone so that it and the Back Bed merge with the Grant Lake Limestone. In the Stanford quadrangle, southeastern central Kentucky, the underlying part of the Tate grades to fine-grained limestone and it and the Back Bed merge with the subjacent Calloway Creek Limestone.

Previous nomenclature: Probably included with Tate Member of the +McMillan Formation.

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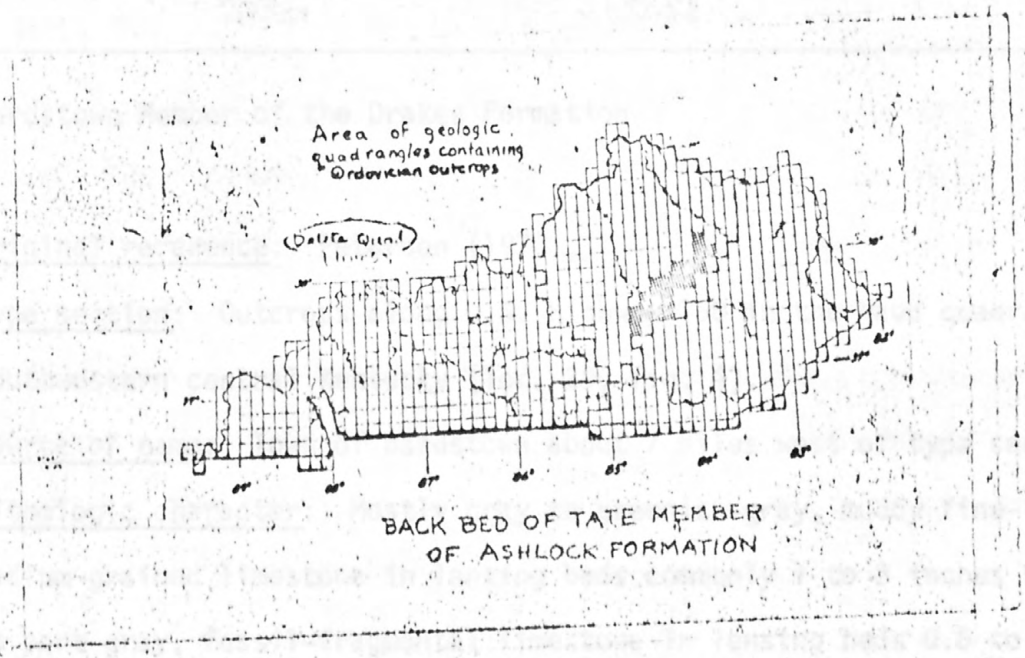
Quadrangles containing outcrops:

Unnumbered figure near here.

Berea, Buckeye, Halls Gap, Hedges, Kirksville, Lancaster, Levee, Mount Sterling, Paint Lick, Palmer, Preston, Richmond North, Richmond South, Sharpsburg, Stanford, Union City, Valley View, Winchester.

U. S. GOVERNMENT PRINTING OFFICE : 1959 O - 511171
867-100


Area of geologic quadrangles containing Ordovician outcrops
BACK BED OF TATE MEMBER OF ASHLOCK FORMATION

Bardstown Member of the Drakes Formation

Original reference: Peterson (1970).

Type section: Outcrops along U.S. Highway 150 in the Maud quadrangle, southwestern central Kentucky (loc. 29, fig. 4).

Source of name: Town of Bardstown about 7 miles west of type section.

Lithologic character: Mostly gray to greenish-gray, muddy fine- to medium-grained limestone in lensing beds commonly 1 to 8 inches thick; in part gray, fossil-fragmental limestone in lensing beds 0.5 to 3 inches thick; minor gray calcitic shale. Whole and broken fossils are principally brachiopods, bryozoans, pelecypods, horn and colonial corals.

Distribution and thickness: The Bardstown Member of the Drakes Formation crops out around the western border of the Blue Grass region in an arcuate band from the Ohio River in western north-central Kentucky to southern central Kentucky. The member ranges in thickness from a few feet to as much as 60 feet; commonly it is about 25 to 35 feet thick.

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867-100

Stratigraphic relations: The member conformably overlies the Rowland Member of the Drakes Formation. The basal contact is generally sharp; where the lithologies of the members intergrade or are interbedded the contact is placed at the base of rock with abundant fossils. The Bardstown is overlain by the Saluda Dolomite Member of the Drakes Formation. The contact is characterized by a generally abrupt gradation upward of limestone into dolomite. In the southern part of central Kentucky the Bardstown is commonly truncated or cut out entirely by a pre-Devonian unconformity. The member apparently thins and grades into the lower part of the Preachersville Member of the Drakes Formation of southeastern central Kentucky. In north-central Kentucky it merges with the Bull Fork Formation in the Bedford quadrangle.

Previous nomenclature: The unit now called the Bardstown Member was recognized as an unnamed member of the Drakes Formation in the Cravens, Lebanon Junction, and New Haven geologic quadrangles. Most earlier workers referred this unit to the +Liberty Formation.

Quadrangles containing outcrops:

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U. S. GOVERNMENT PRINTING OFFICE : 1959 O - 511171
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Anchorage, Ballardsville, Bardstown, Bedford, Bethlehem, Campbellsburg, [Cravens]1/, Crestwood, Eminence, Fairfield, Fisherville, Gravel Switch, [Howardstown], Jeffersontown, La Grange, Lebanon East, [Lebanon Junction], Lebanon West, Loretto, Madison East, Madison West, Maud, Mount Washington, New Castle, [New Haven], Owen, Parksville, Raywick, Saint Catharine, Samuels, Shelbyville, Simpsonville, Smithfield, Springfield, Waddy, Waterford.

1/ Brackets denote quadrangles in which the stratigraphic unit is described but not named.

643—16—82903-1 GPO

Bellevue Tongue of the Grant Lake Limestone

Chief references: Nickles (1902, p. 82) originally defined the term on the basis of characteristic bryozoans. Hyde (1959) extended the unit into Kentucky on the basis of its lithology. Ford (1967, p. 932-934) redefined the term as a rock-stratigraphic unit of formation rank in Ohio. Swadley (1969a) considered the unit to be of member rank in Kentucky.

Type section: Ford (1967, p. 932) designated exposures in the cliff at the intersection of Rice and Gage Streets, Cincinnati, Ohio, as the type section of the rock-stratigraphic unit (loc. 2, fig. 4).

Source of name: Nickles (1902, p. 82) named the unit for Bellevue House, a former landmark, on Clifton Avenue, Cincinnati.

Lithologic character: Limestone, commonly medium-gray, composed of fine to coarse fossil fragments in muddy, fine- to medium-grained matrix. Characterized by nodular, lensing thin beds separated by irregular partings of gray calcitic shale. Fossils mainly whole and broken brachiopods, including large forms of Platystrophia and Rafinesquina, and bryozoans. Outcrops weather to rubble. Generally poorly exposed, forms moderate to steep slopes.

Distribution and thickness: The Bellevue crops out on hilltops in the northern part of north-central Kentucky. It ranges from a few feet to about 25 feet in thickness.

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867-109

Stratigraphic relations: The Bellevue Tongue of the Grant Lake Limestone generally overlies the Fairview Formation and is overlain by the Bull Fork Formation. In northern north-central Kentucky it overlies locally the Miamitown Shale of Ford (1967). Contacts are generally sharp though poorly exposed. Locally the unit intertongues and intergrades through several feet; the contacts are drawn so as to exclude most even-bedded limestone and to include most nodular-bedded fossiliferous limestone. The Bellevue is, as suggested by Ford (1967, p. 934), a northwesterly thin tongue of the Grant Lake Limestone, which is commonly many tens of feet thick east and southwest of the area of outcrop of the Bellevue.

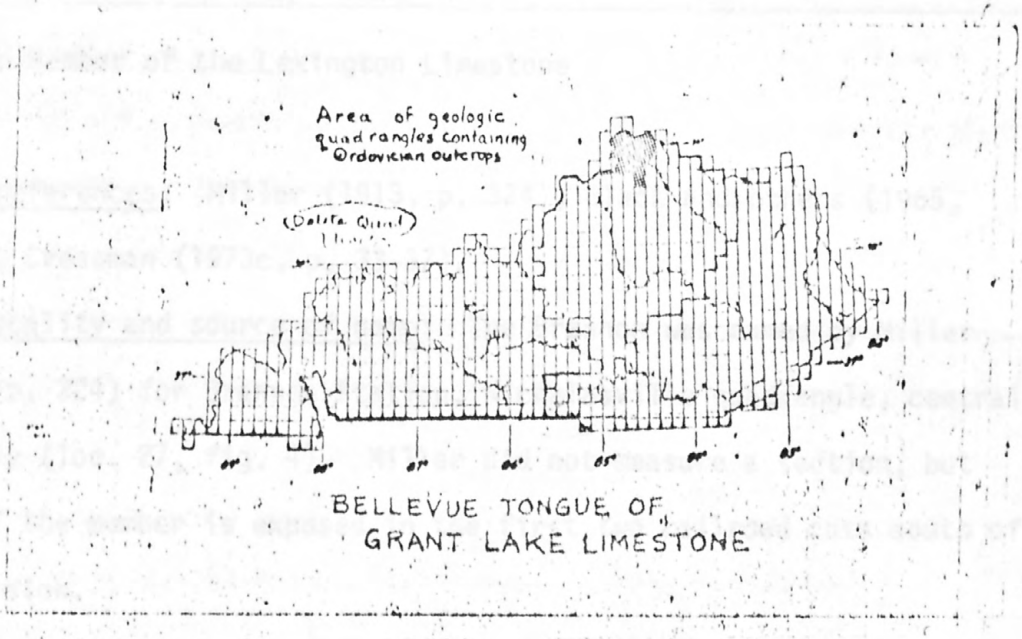
Previous nomenclature: Prior to Ford's redefinition of the Bellevue in rock-stratigraphic terms, the Bellevue was generally considered as a member of the +McMillan Formation (Caster and others, 1961).

Quadrangles containing outcrops:

Unnumbered figure near here.

Alexandria, Burlington, Covington, Florence, Hooven, Independence, Lawrenceburg (Ind.), Newport, Patriot, Rising Sun, Union, Verona, Walton, Williamstown.

643—16—82993—1 GPO


Area of geologic quadrangles containing Ordovician outcrops
(Delete Quad Limits)
BELLEVUE TONGUE OF GRANT LAKE LIMESTONE

Brannon Member of the Lexington Limestone

Chief references: Miller (1913, p. 324), Black and others (1965, p. 21), Cressman (1973c, p. 33-37).

Type locality and source of name: The Brannon was named by Miller (1913, p. 324) for Brannon Station, Nicholasville quadrangle, central Kentucky (loc. 27, fig. 4). Miller did not measure a section, but part of the member is exposed in the first two railroad cuts south of the station.

Lithologic character: Interbedded limestone and shale in about equal amounts. Limestone is mostly unfossiliferous, medium to light gray, micrograined, in thin, smooth-surfaced, tabular beds; it weathers to porous and punky chert on uplands. Shale is calcitic, dark to medium gray, and in thin sets of laminae. The uppermost beds are commonly contorted into ball-and-pillow structure.

Distribution and thickness: The Brannon Member of the Lexington Limestone is a northwest-trending lens about 15 to 25 miles wide and more than 50 miles long in the northeastern part of central Kentucky. The member attains its greatest thickness of about 30 feet in the Versailles and Ford quadrangles.

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887-100

Stratigraphic relations: The Brannon Member generally is both underlain and overlain conformably by the Tanglewood Limestone Member of the Lexington Limestone. In its southwestern outcrop area it locally overlies the Cornishville Bed of the Perryville Limestone Member of the Lexington; in a few areas the Brannon rests conformably on the Grier Limestone Member of the Lexington. The basal contact is planar and sharp to gradational through a few inches. In its southwestern outcrop area the Brannon is overlain with probable disconformity by the Sulphur Well Member of the Lexington. Northeastward thinning of the Brannon results from intertonguing and intergrading with calcarenite of the Tanglewood Limestone Member; southwestward thinning probably reflects a disconformity at the top.

Previous nomenclature: Beds now included in the Brannon Member made up the lower part of the +Flanagan Chert of Campbell (1898). Since Miller (1913) recognized and named the Brannon, the only changes in nomenclature of the unit were in rank, though some investigators applied the name to laterally equivalent rocks of different facies on the basis of fossil correlations.

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Quadrangles containing outcrop:

Unnumbered figure near here.

Ashbrook, Bryantsville, Buckeye, Clintonville, Coletown, Cornishville, Danville, Ford, Frankfort East, Frankfort West, Georgetown, Glensboro, Harrodsburg, Hedges, Junction City, Keene, Lawrenceburg (Ky.), Lexington East, Lexington West, Little Hickman, McBrayer, Midway, Nicholasville, Parksville, Perryville, Richmond North, Salvisa, Stanford, Tyrone, Valley View, Versailles, Winchester.

U. S. GOVERNMENT PRINTING OFFICE : 1959 O - 511171
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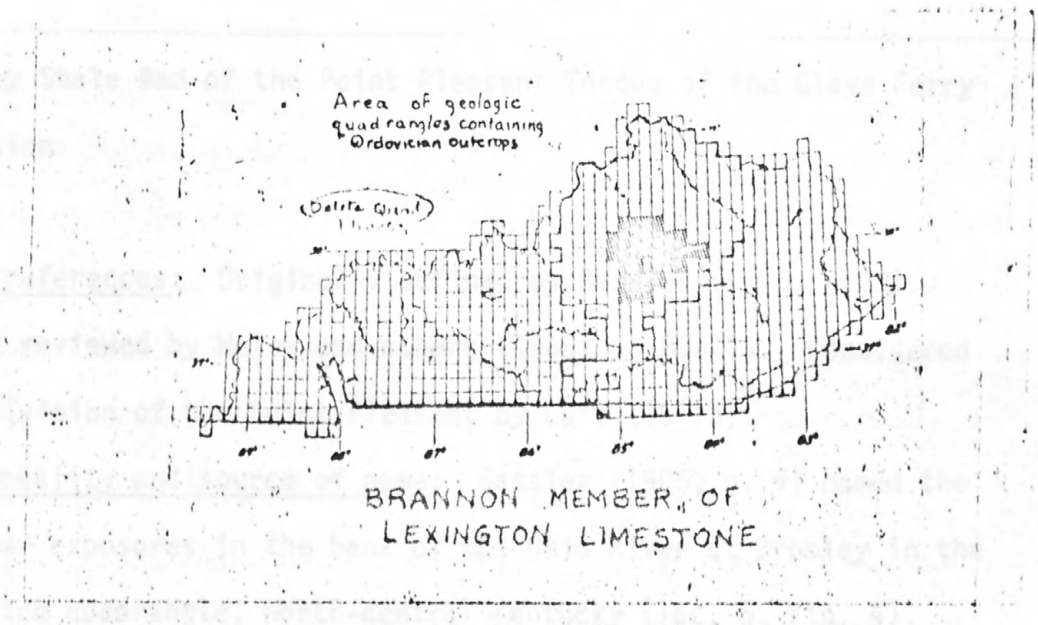
Area of geologic quadrangles containing Ordovician outcrops
Delta Quad
BRANNON MEMBER OF
LEXINGTON LIMESTONE

Bromley Shale Bed of the Point Pleasant Tongue of the Clays Ferry Formation

Chief references: Originally defined by Bassler (1906, p. 9). Status reviewed by Weiss and others (1965, p. 20-21). Considered a subdivision of the Point Pleasant by Luft (1971b).

Type locality and source of name: Bassler (1906, p. 9) named the unit for exposures in the bank of the Ohio River at Bromley in the Covington quadrangle, north-central Kentucky (loc. 5, fig. 4). Because of damming of the Ohio River the type locality is now underwater.

Lithologic character: Dominantly gray, slightly calcitic shale in sets, 2 to 16 inches thick, of laminae; contains few fossils. About 30 percent or less of the unit is limestone--mostly gray, medium- to fine-grained, bioclastic limestone in thin to medium, tabular to irregular beds.

Distribution, thickness and stratigraphic relations: The Bromley Shale Bed of the Point Pleasant Tongue of the Clays Ferry Formation crops out in Kentucky only along Banklick Creek about 2 miles south of Covington. The Bromley is known to reach a thickness of more than 80 feet in the subsurface near the Ohio River but the unit thins abruptly southward by intertonguing with the Point Pleasant. At its southernmost point of recognition, about 5 miles southwest of the type locality, it is only about 11 feet thick.

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887-100

Previous nomenclature: The Bromley was considered a member of the +Cynthiana Formation by most earlier workers. Luft (1971b) considered the Bromley to be a subdivision of member rank of the Point Pleasant Formation. As the Point Pleasant is now classed by Swadley and others (1975) as a unit of member rank - a tongue of the Clays Ferry Formation, the Bromley is here classed as a unit of bed rank.

Quadrangles containing outcrops:

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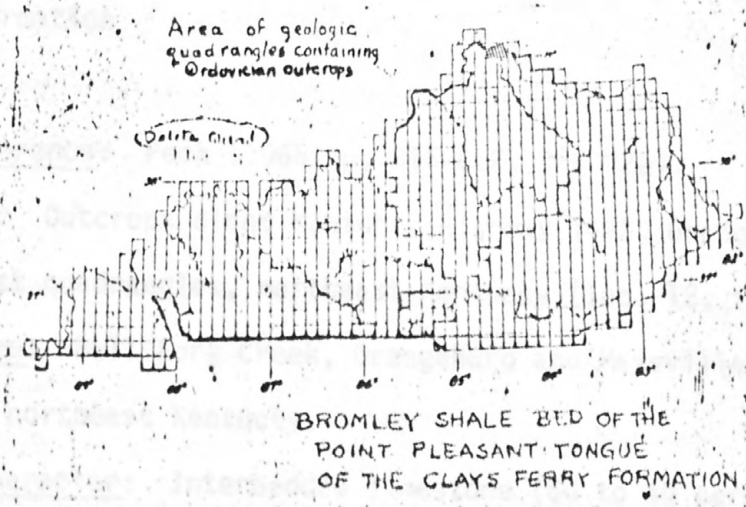
Covington, Newport,

U. S. GOVERNMENT PRINTING OFFICE : 1959 O - 511171
887-100


Area of geologic quadrangles containing Ordovician outcrops
(Delete Ohio)
BROMLEY SHALE BED OF THE POINT PLEASANT TONGUE OF THE CLAYS FERRY FORMATION

Bull Fork Formation

Original reference: Peck (1966, p. B16-B22, B26-B29).

Type section: Outcrops along Kentucky Highway 1443, Orangeburg and Maysville East quadrangles, northeast Kentucky (loc. 12, fig. 4).

Source of name: Bull Fork Creek, Orangeburg and Maysville East quadrangles, northeast Kentucky.

Lithologic character: Interbedded limestone (60 to 40 percent, decreasing irregularly upward) and shale. Limestone is light gray, medium gray, greenish gray and bluish gray, weathers light gray and yellowish gray; mostly fine to medium grained but ranges from muddy and micrograined to coarse grained, poor to fair sorted; commonly composed of fossil fragments, contains streaks of yellowish-gray mudstone. Limestone is mostly in fairly even but rough-surfaced beds a few inches thick, in part in nodular continuous thin beds and near top in scattered nodular lenses, only a few inches long and a fraction of an inch thick. Shale is greenish gray, calcitic grading to dolomitic near top, locally grades to siltstone; crudely to well laminated, intercalated with limestone as partings and as even sets, a few inches thick, which become more numerous and thicker upward. Fossils common to abundant, mostly in limestone, chiefly brachiopods and bryozoans.

Subdivision: Sunset Member at base in a small area in southern part of northeast Kentucky. Unnamed bed containing abundant horn corals described and mapped locally in northern part of northeast Kentucky.

U. S. GOVERNMENT PRINTING OFFICE : 1959 O - 511171
667-100

Distribution and thickness: The Bull Fork crops out widely around the northeastern, northern and northwestern margins of the Blue Grass region. The formation reaches its greatest thickness of about 200 feet near the Ohio River and thins irregularly southward in part by intertonguing and intergrading. It is less than 10 feet thick where terminated by cutoff in the Mount Sterling quadrangle, east-central Kentucky, and in the Ballardsville quadrangle, north-central Kentucky.

Stratigraphic relations: The Bull Fork Formation overlies the Grant Lake Limestone and is overlain by the Drakes Formation. The basal contact is placed so as to separate nodular-bedded muddy limestone of the Grant Lake from the more planar-bedded, alternating limestone and shale of the Bull Fork. The lithology of the Bull Fork is transitional with the dolomitic shale and minor interbedded dolomite and dolomitic limestone of the Drakes. The upper contact which is locally irregular, is placed at the top of the highest persistent fossiliferous limestone. On the east side of the Blue Grass region the Bull Fork thins southward from the Ohio River to near pinch out in northern east-central Kentucky and grades into the upper part of the Ashlock Formation in the Mount Sterling quadrangle. The Bull Fork also thins southward on the west side of the Blue Grass region; the upper part of the formation is separated from the Bardstown Member of the Drakes Formation by cutoff in the Bedford quadrangle; the lower part grades into the Grant Lake Limestone in southwestern north-central Kentucky.

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Previous nomenclature: Strata now mapped as Bull Fork Formation were formerly assigned to several different units including the +Arnheim, +Waynesville, and +Liberty Formations,

Quadrangles containing outcrops:

Unnumbered figure near here.

Alexandria, Ballardsville, Bedford, Bethlehem, Burlington, [Burtonville], Campbellsburg, Carrollton, Colfax, [Concord], Covington, Elizaville, Eminence, Flemingsburg, Florence, Franklinton, Glencoe, Hillsboro, Hooven, Independence, La Grange, Lawrenceburg (Ind.), Madison East, Madison West, Manchester Islands, Mays Lick, Maysville East, Maysville West, Mount Sterling, New Castle, Newport, Olympia, Orangeburg, Owen, Owingsville, Patriot, Plummers Landing, Preston, Rising Sun, Sanders, Sharpsburg, Sherburne, Smithfield, Tollesboro, Union, Verona, Vevay South, Walton, Williamstown, Worthville.

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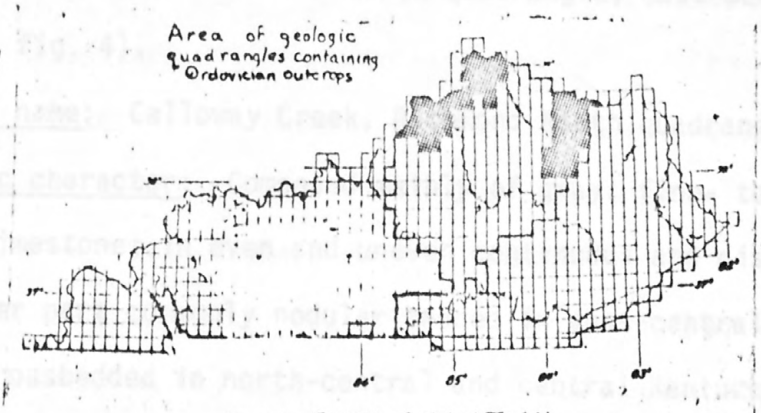

BULL FORK FORMATION

Calloway Creek Limestone

Original reference: Weir and others (1965, p. D6-D9, D20-21).

Type section: Roadcuts along Interstate Highway 75, Ford quadrangle, central Kentucky and Richmond North quadrangle, east-central Kentucky (loc. 34, fig. 4).

Source of name: Calloway Creek, Richmond North quadrangle.

Lithologic character: Composed mainly of gray, fine- to medium-grained limestone; in even and uneven continuous and discontinuous thin beds; upper part commonly nodular bedded in east-central Kentucky, locally crossbedded in north-central and central Kentucky. Gray and greenish-gray calcitic siltstone and shale interstratified with limestone as partings and thin sets of irregular to even laminae; shale generally dominant near base of formation. Fossils common to abundant, chiefly brachiopods and bryozoans.

Distribution and thickness: The Calloway Creek Limestone extends around the western, southern and eastern sides of the Blue Grass region of Kentucky. It ranges from about 60 to 150 feet in thickness.

643—16—82993e-1 GPO

Stratigraphic relations: The Calloway Creek Limestone is separated by cutoff from the intergrading and intertonguing Fairview Formation in the eastern part of north-central Kentucky, as in the Carrollton quadrangle, and in the northern part of east-central Kentucky, as in the Sharpsburg quadrangle. The Calloway Creek Limestone conformably overlies the Garrard Siltstone in east-central and the southeastern part of central Kentucky. In most of central Kentucky and the southern part of north-central Kentucky it conformably overlies the Clays Ferry Formation. Near its northern cutoff in north-central Kentucky, as in the Carrollton quadrangle, the Calloway Creek overlies the Kope Formation or, as in the Owenton quadrangle, a unit of intertongued Kope and Clays Ferry. The Calloway Creek is conformably overlain by the Ashlock Formation in east-central and the southern part of central Kentucky. In north-central and most of central Kentucky it is overlain by the Grant Lake Limestone. In southwestern central Kentucky it intergrades with the lower part of the Grant Lake Limestone and is separated from the lower Grant Lake by a cutoff at the latitude of the north edge of the Lebanon West quadrangle.

Previous nomenclature: The bulk of the Calloway Creek was assigned to the +Fairmount Member of the Fairview Formation. Locally the upper part of the formation was assigned to the Bellevue Member of the +McMillan Formation of Bassler (1906) and the basal part to the +Mount Hope Member of the Fairview Formation.

643—16—82993b-1 GPO

Quadrangle containing outcrops:

Unnumbered figure near here.

Ballardsville, Bedford, Berea, Bethlehem, Bloomfield, Bradfordsville NE, Brush Grove, Bryantsville, Buckeye, Campbellsburg, Cardwell, Carrollton, Chaplin, Ellisburg, Eminence, Fairfield, Ford, Frankfort West, Franklinton, Glensboro, Gratz, Gravel Switch, Halls Gap, Hedges, Hustonville, Junction City, Kirksville, Lancaster, Lebanon East, Lebanon West, Levee, Little Hickman, Loretto, Mackville, Madison East, Madison West, Maud, Mount Eden, Mount Sterling, New Castle, New Liberty, North Middletown, North Pleasureville, Owenton, Paint Lick, Palmer, Parksville, Polsgrove, Richmond North, Richmond South, Saint Catharine, Sharpsburg, Shelbyville, Sideview, Simpsonville, Smithfield, Springfield, Stanford, Switzer, Taylorsville, Union City, Valley View, Waddy, Waterford, Winchester, Worthville.

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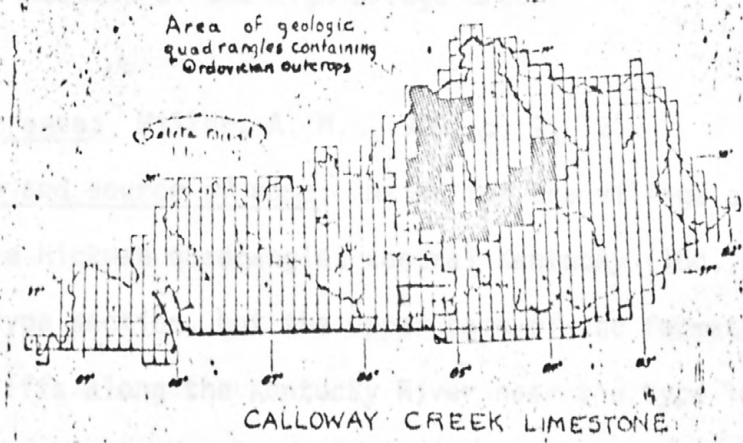
Area of geologic
quadrangles containing
Ordovician outcrops
(Salem area)
CALLOWAY CREEK LIMESTONE

Camp Nelson Limestone of the High Bridge Group

Original reference: Miller, A. M, (1905, p. 9, 12).

Type locality and source of name: Named for the village of Camp Nelson, Little Hickman quadrangle, central Kentucky (loc. 36, fig. 4). There is no type section, but the upper part of the formation is well exposed in cliffs along the Kentucky River near the type locality.

Lithologic character: Mostly medium- to light-gray cryptograined limestone containing interlaced dolomite-filled burrows; contains sets of burrow-free cryptograined limestone and cryptograined limestone with dolomite laminae. A widespread unit of calcitic dolomitic shale, 10 to 20 feet thick, is present in the uppermost 30 feet. Poorly preserved brachiopods and mollusks are present in much of the formation.

Distribution and thickness: The Camp Nelson Limestone of the High Bridge Group crops out along the Kentucky River and the lower parts of its tributaries in central Kentucky. The thickest exposures are near Camp Nelson where about 320 feet crop out above the Kentucky River. Subsurface data indicate that the total thickness of the Camp Nelson in central Kentucky ranges from about 400 to 500 feet.

Stratigraphic relations: The base of the Camp Nelson Limestone is not exposed. The Camp Nelson Limestone in the subsurface overlies the Wells Creek Dolomite of drillers; the contact, placed at the top of the highest dolomite, is gradational and intertonguing. The contact with the overlying Oregon Formation, placed at the base of the lowest dolomite bed of the Oregon, is conformable.

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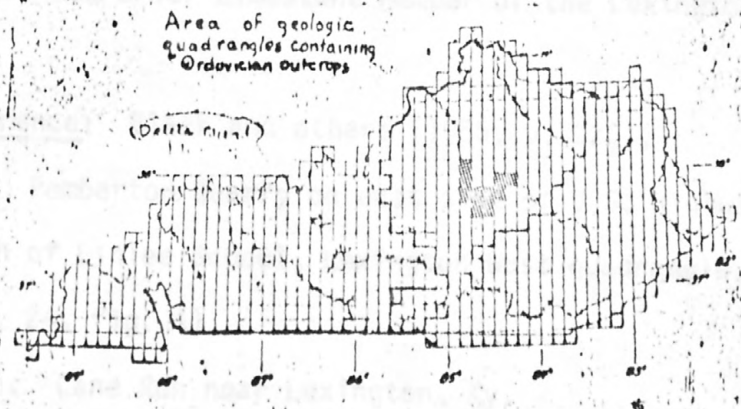
Previous nomenclature: Although early nomenclature was imprecise, the Camp Nelson was apparently first considered to be a member of the High Bridge Formation. Hamilton (1948, p. 40-41) raised the Camp Nelson to formational rank.

Quadrangles containing outcrops:

Unnumbered figure near here.

Bryantsville, Buckeye, Coletown, Ford, Harrodsburg, Little Hickman, Salvisa, Tyrone, Valley View, Wilmore.

643—16—82993e-1 GPO



CAMP NELSON LIMESTONE
OF THE HIGH BRIDGE GROUP

Cane Run Bed of the Grier Limestone Member of the Lexington Limestone

Original reference: Black and others (1965, p. C20).

Type section: Pemberton Quarry on east side of U.S. Highway 25, 0.9 mile north of Linlee School, Lexington West quadrangle, central Kentucky (loc. 24, fig. 4).

Source of name: Cane Run near Lexington, Ky.

Lithologic character: Convoluted and contorted medium- to light-gray muddy micrograined limestone. Generally contains abundant irregular chert nodules. Commonly occurs as a single bed.

Distribution and thickness: The Cane Run Bed of the Grier Limestone Member of the Lexington Limestone extends in a band up to 5 miles wide from the Georgetown quadrangle south to the Nicholasville quadrangle, central Kentucky (Cressman, 1973c, fig. 15). The unit is generally 4 or 5 feet thick.

Stratigraphic relations: Occurs at the top of the Grier Limestone Member and is overlain by the Tanglewood Limestone Member. Both contacts are sharp, planar, and conformable. The bed grades northward, eastward, and westward into nodular fossiliferous limestone typical of the main body of the Grier Limestone Member.

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Quadrangles containing outcrops:

Unnumbered figure near here.

Centerville, Coletown, Ford, Georgetown, Lexington East, Lexington West, Nicholasville.

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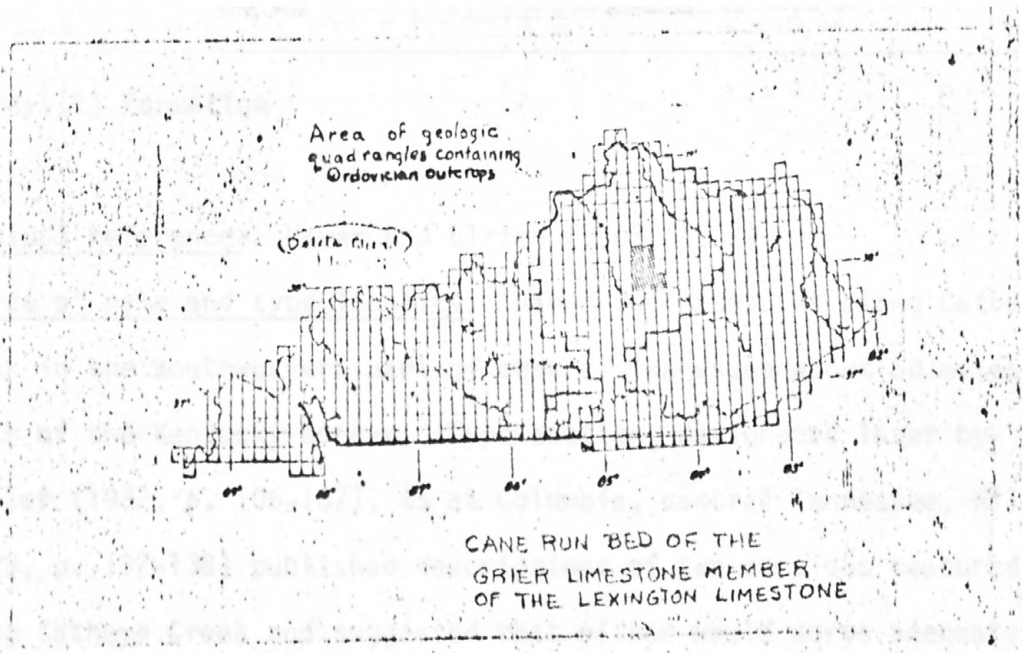

CANE RUN BED OF THE
GRIER LIMESTONE MEMBER
OF THE LEXINGTON LIMESTONE

Catheys(?) Formation

Original reference: Hayes and Ulrich (1903, p. 2).

Source of name and type locality: Named for exposures along Catheys Creek in the southwestern part of central Tennessee about 50 miles south of the Kentucky border. Type section, designated later by Bassler (1932, p. 106-107), is at Columbia, central Tennessee. Wilson (1949, p. 137-138) published descriptions of two sections measured along Catheys Creek and suggested that either would serve adequately as a type section.

Stratigraphy: About 80 feet of poorly exposed strata below the Leipers Limestone along the Cumberland River in the Blacks Ferry quadrangle, south-central Kentucky were assigned with a query to the Catheys Limestone as used by Jillson (1951b). The formation consists of gray, fine- to medium-grained limestone and dolomitic limestone, in part silty. Mostly in even beds 2 to 24 inches thick, in part laminated, locally crossbedded, and in part in nodular beds; interstratified with thin sets of shale. In part fossiliferous, chiefly abraded brachiopods and bryozoans. Upper contact placed at top of transitional zone in which the even-bedded limestone and dolomite grades upward to irregularly and nodular-bedded, muddy, medium- to coarse-grained limestone of the Leipers Limestone.

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The Catheys Formation in Tennessee is a faunally defined unit ranging from 0 to more than 250 feet in thickness (Wilson, 1949, p. 136-157). The basal contact with the underlying Bigby-Cannon Limestone of Wilson (1949) and the upper contact with the overlying Leipers Limestone are inferred unconformities. Lithologically the Catheys Formation in Tennessee is like the overlying Leipers Limestone. It consists mostly of fossiliferous, fine-grained and medium- to coarse-grained limestone, in part muddy, dark blue, weathering pale blue to pale yellow, in continuous wavy to nodular-surfaced beds 3 to 24 inches thick separated by partings and thin seams of gray shale. Because the formation underlying the Leipers Limestone in Kentucky may differ from a typical Catheys defined by rock character the name Catheys is queried in Kentucky.

Quadrangles containing outcrops:

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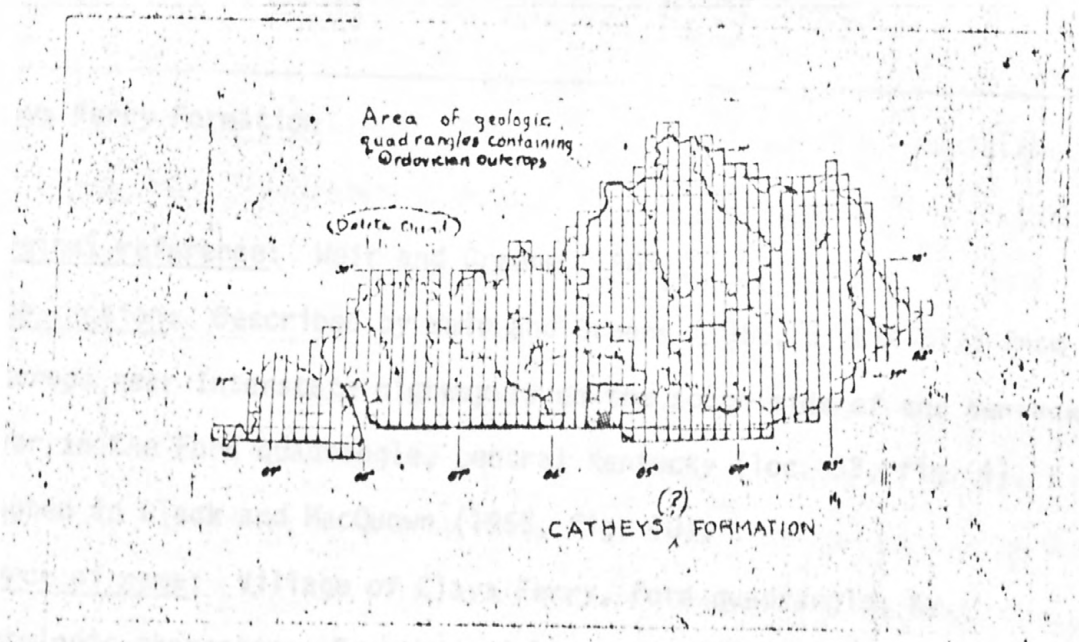
Blacks Ferry.

643—16—82993p-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
(Dolrte Chert)
CATHEYS (?) FORMATION

Clays Ferry Formation

Original reference: Weir and Greene (1965).

Type section: Described by Weir and Greene (1965, p. B14-B17) from outcrops near Interstate Highway 75 on the south side of the Kentucky River in the Ford quadrangle, central Kentucky (loc. 33, fig. 4). Graphed in Black and MacQuown (1965, fig. 10).

Source of name: Village of Clays Ferry, Ford quadrangle, Ky.

Lithologic character: Composed of limestone (30 to 60 percent), shale (30 to 60 percent) and siltstone (5 to 15 percent). Limestone is micrograined, fine to medium grained, and less commonly coarse grained, gray, weathering light gray; mostly in thin sets of thin beds. Shale is calcitic, grading to limestone and siltstone; in thin sets of obscure to distinct laminae. Limestone and shale, more or less evenly intercalated. Siltstone is calcitic, greenish gray, mostly in thin, even to lenticular beds near top of unit. Megafossils, abundant only in limestone, are chiefly brachiopods but also including bryozoans, graptolites, crinoids and trilobites.

Subdivisions: Point Pleasant Tongue in north-central and northeast Kentucky. Unnamed tongues intercalated with Lexington Limestone and Kope Formation common throughout area of outcrop. Includes several unnamed members; most conspicuous are: (1) a unit of coarse clastic limestone in a small area in the Sherburne and adjoining quadrangles in southern northeast Kentucky and northern east-central Kentucky, and (2) a unit referred to as "beds at Elk Riffle", that consists of medium to coarse-grained limestone, micrograined muddy limestone and minor shale in the southwestern part of the Lawrenceville quadrangle, north-central Kentucky.

e43—16—82993e-1 GPO

Distribution and thickness: The Clays Ferry Formation extends around the west, south, and east sides of the Blue Grass region of Kentucky. It ranges from a feather edge to about 300 feet in thickness.

Stratigraphic relations: Over much of its extent the Clays Ferry both overlies and intertongues with the Lexington Limestone. In east-central and the southern part of central Kentucky it is generally conformably overlain by the Garrard Siltstone. In the western part of central Kentucky and most of north-central Kentucky it is conformably overlain by the Calloway Creek Limestone. Locally as in the Owenton quadrangle, north-central Kentucky, where the Clays Ferry intertongues and intergrades with the Kope, the overlying unit is the Fairview Formation. The Clays Ferry complexly intertongues and intergrades with the Kope Formation in north-central, northeast and northern east-central Kentucky; locally it is overlain by a tongue of Kope as in the Hedges quadrangle, east-central Kentucky. The Clays Ferry is not recognized in south-central Kentucky; it may be equivalent to the unit tentatively assigned to the Catheys(?) Formation cropping out near the Cumberland River in the western part of the Blacks Ferry quadrangle.

e43-15-82003-1 GPO

Previous nomenclature: Strata now mapped as Clays Ferry Formation were previously assigned by most workers to the +Cynthiana and +Million Formations.

Quadrangles containing outcrops:

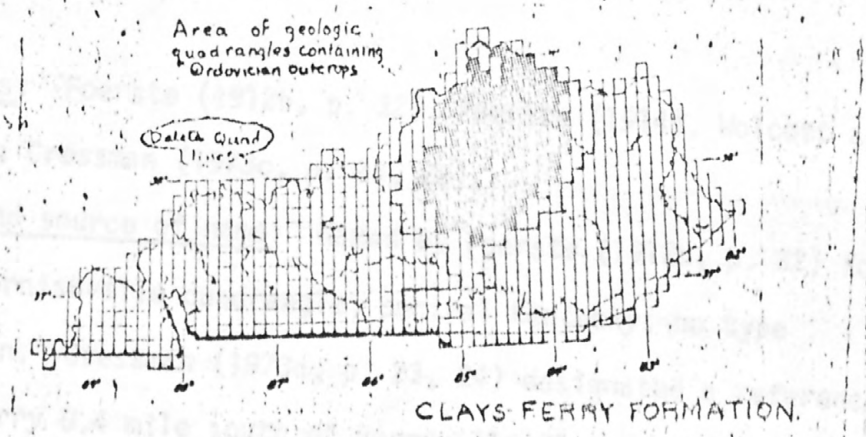
Unnumbered figure near here.

Alexandria, Ashbrook, Austerlitz, Berlin, Berry, Bloomfield, Breckinridge, Brooksville, Brush Grove, Bryantsville, Buckeye, Butler, Campbellsburg, Cardwell, Carlisle, Centerville, Chaplin, Claysville, Clintonville, Coletown, Cornishville, Covington, Cowan, Cynthiana, Danville, Delaplain, De Mossville, Elizaville, Elliston, Fairfield, Falmouth, Felicity, Florence, Ford, Frankfort East, Frankfort West, Franklinton, Georgetown, Germantown, Glencoe, Glensboro, Goforth, Gratz, Gravel Switch, Harrodsburg, Hedges, Higginsport, Hustonville, Junction City, Kelat, Kirksville, Lancaster, Laurel, Lawrenceburg (Ky.), Lawrenceville, Lebanon East, Leesburg, Levee, Lexington East, Little Hickman, Mackville, Mason, Maud, Maysville West, McBrayer, Midway, Millersburg, Monterey, Moorefield, Moscow, Mount Eden, Mount Olivet, Mount Sterling, New Castle, New Columbus, New Liberty, Newport, New Richmond, Nicholasville, North Middletown, North Pleasureville, Owenton, Owingsville, Paint Lick, Paris East, Paris West, Parksville, Patriot, Perryville, Piqua, Polsgrove, Richmond North, Richmond South, Rising Sun, Sadieville, Salvisa, Sanders, Sardis, Shady Nook,

643—16—82993-1 GPO

Sharpsburg, Shawhan, Shelbyville, Sherburne, Sideview, Simpsonville, Springfield, Stamping Ground, Stanford, Switzer, Taylorsville, Tyrone, Union City, Valley View, Verona Versailles, Vevay South, Waddy, Waterford, Williamstown, Wilmore, Winchester, Withamsville, Worthville.

643—16—82993e-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
Dalton Quad Lines
CLAYS FERRY FORMATION.

Cornishville Bed of the Perryville Limestone Member of the Lexington Limestone

Chief references: Foerste (1912b, p. 32), Foerste (1914), Wolcott and Cressman (1971); Cressman (1973c, p. 23, 28).

Type locality and source of name: Named by Foerste (1912b, p. 32) for Cornishville, Cornishville quadrangle, central Kentucky; no type section was given. Cressman (1973c, p. 23, 24) designated a reference section in a quarry 0.4 mile south of Perryville, Perryville quadrangle, central Kentucky (loc. 39, fig. 4).

Lithologic character: Nodular-bedded, micrograined to fine grained limestone containing abundant brachiopods and bryozoans. In places it contains crossbedded medium- to coarse-grained limestone. Stromatoporoids are locally common.

Distribution and thickness: The Cornishville Bed of the Perryville Limestone Member of the Lexington Limestone is confined to the southwestern part of central Kentucky. It ranges in thickness from 2 to nearly 10 feet.

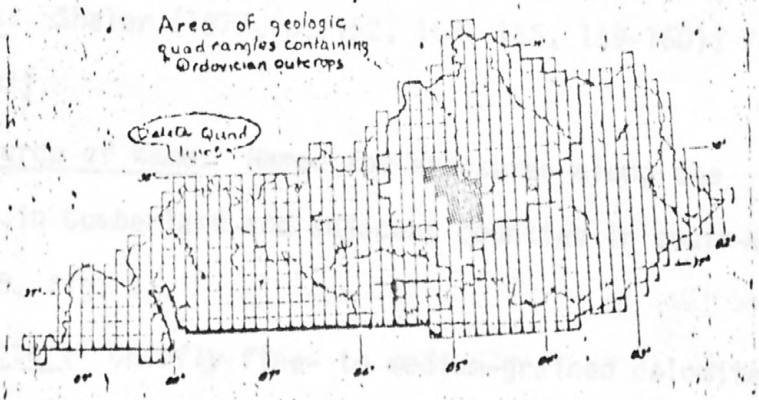
Stratigraphic relations: The Cornishville rests conformably on the Salvisa Bed of the Perryville; the contact is commonly gradational through about 1 foot. The unit is overlain conformably by interbedded micrograined limestone and shale of the Brannon Member of the Lexington Limestone throughout most of its area of outcrop, but locally it is overlain disconformably by bryozoan limestone of the Sulphur Well Member of the Lexington. The Cornishville Bed closely resembles the Grier Limestone Member of the Lexington and is actually a tongue of that member, but because the Cornishville is so thin, it is more conveniently considered as part of the Perryville Limestone Member. Thus the Cornishville is coextensive with the Salvisa Bed of the Perryville, and beyond the pinchout edge of the Salvisa, beds equivalent temporally and lithologically with the Cornishville are included in the Grier.

Previous nomenclature: The Cornishville was originally termed the Cornishville Limestone by Foerste (1912b, p. 32) and was considered to overly the Perryville, but two years later Foerste (1914) included the Cornishville together with the Salvisa and Faulconer in a revised Perryville. The only changes since then have been in rank.

Quadrangles containing outcrops:

Unnumbered figure near here.

Ashbrook, Bryantsville, Cardwell, Chaplin, Cornishville, Danville, Harrodsburg, [Junction City], [McBrayer], Parksville, Perryville, Stanford, [Wilmore].



CORNISHVILLE BED OF THE
PERRYVILLE LIMESTONE MEMBER
OF THE LEXINGTON LIMESTONE

Cumberland Formation

Chief references: Shaler (1877, p. 152, 153, 155, 159-160); Foerste (1901, p. 434-437).

Type area and source of name: Named for exposures along the Cumberland River in Cumberland and adjacent counties in south-central Kentucky (loc. 45, fig. 4).

Lithologic character: Chiefly fine- to medium-grained dolomite, locally calcitic especially near base, mostly greenish-gray, weathers grayish yellow; in part muddy grading to shale and siltstone, locally sandy, glauconitic, cherty; in sets, a few inches to a few feet thick, of obscure even laminae or rarely cross laminae. Contains a few beds, probably lensing, of fine-grained muddy limestone, mostly in lower part of formation, sparsely fossiliferous, chiefly brachiopods.

Distribution and thickness: The Cumberland Formation crops out in the southern part of south-central Kentucky. It ranges from a pre-Devonian erosional edge to about 130 feet in thickness.

Stratigraphic relations: The Cumberland Formation conformably overlies the Leipers Limestone and is unconformably overlain by sediments of Devonian or Silurian age. The Cumberland, as used by Shaler (1877), was a broadly conceived unit that included not only the dolomitic strata at the top of the Ordovician in the Cumberland River drainage but also similar rock cropping out around the Blue Grass region of Kentucky. Thus probably the Drakes Formation and much of the Ashlock Formation were included in the Cumberland that he described as cropping out near the Kentucky River. In east-central and central Kentucky the Drakes and Ashlock are divisible into members based on contrasting units of limestone and dolomite, but these formations become more dolomitic, and less easily divisible southward. In the northern part of south-central Kentucky they grade into lithology characteristic of the Cumberland Formation and are separated from the Cumberland by a cutoff at the latitude of the north edge of the Dunnville quadrangle. The +Haggard Limestone of Jillson (1953) and the +Fowler Limestone of Foerste (1901), probably synonymous with the +Burkesville Limestone of Jillson (1951a), are thin, discontinuous units of fossiliferous, muddy dolomitic limestone in the Cumberland Formation cropping out in the Burkesville and Waterview quadrangles.

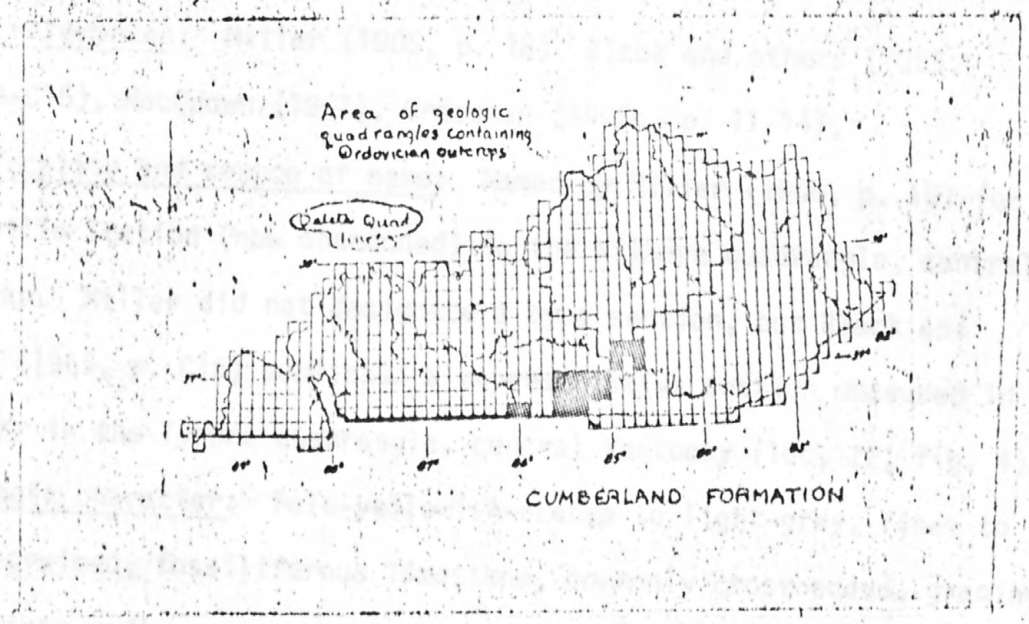
Previous nomenclature: The Cumberland was originally designated a sandstone because most grains are of fine sand size, but Cumberland Dolomite and Cumberland Formation (Nelson, 1962) have been the more common terms. Most earlier workers equated the Cumberland with the Saluda and a few workers preferred the latter name. Strata included in the Cumberland Formation in Kentucky are in adjoining outcrops in Tennessee equated by Wilson (1949, p. 219-223) with the Sequatchie Formation of east-central Tennessee. The term Sequatchie has been applied in a few reports to the Cumberland strata in Kentucky.

Quadrangles containing outcrops:

Unnumbered figure near here.

Amandaville, Blacks Ferry, Breeding, Burkesville, Celina, Creelsboro, Cumberland City, Delmer, Dubre, [Dunnville], Edmonton, Eli, Fountain Run, Frogue, Holland, Jamestown, Mintonville, [Phil], Science Hill, Vernon, Waterview, Wolf Creek Dam.

643—16—82993b-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
Dakota Quad Illinois
CUMBERLAND FORMATION

Curdsville Limestone Member of the Lexington Limestone

Chief references: Miller (1905, p. 18), Black and others (1965, p. C14-C15), MacQuown (1967), Cressman (1973c, p. 11-14).

Type locality and source of name: Named by Miller (1905, p. 18) for Curdsville Station (now abandoned) in the Wilmore quadrangle, central Kentucky. Miller did not designate a type section, but Black and others (1965, p. C15) published a representative section measured in a quarry in the Tyrone quadrangle, central Kentucky (loc. 22, fig. 4).

Lithologic character: Pale-yellowish-orange to light-gray, fine- to coarse-grained, fossiliferous limestone, commonly crossbedded, grading upward into medium-gray, nodular-bedded, fossiliferous limestone. In many localities, contains a thin unit of interbedded micrograined limestone and shale near the middle of the member. The basal 10 feet contains some fine quartz sand, and chert nodules and silicified fossils are common. Locally contains one or more thin bentonite beds.

Distribution and thickness: The Curdsville Limestone Member of the Lexington Limestone crops out in the valleys of the Kentucky River and its tributaries in central Kentucky. Cores and drill-hole logs show that the member extends at least as far north as the Ohio River. The Curdsville thins from about 40 feet in the Harrodsburg quadrangle to about 20 feet in the Frankfort West quadrangle.

Stratigraphic relations: The Curdsville Limestone Member rests disconformably on the Tyrone Limestone. In most of its outcrop area it is overlain conformably by interbedded micrograined limestone and shale of the Logana Member of the Lexington, but in southern central Kentucky where the Logana is missing the Curdsville is overlain by nodular-bedded fossiliferous limestone of the Grier Member of the Lexington.

Previous nomenclature: The Curdsville has consistently been used in the sense in which it was originally defined, though some authors considered it as of formational rank.

Quadrangles containing outcrops:

Unnumbered figure near here.

Bryantsville, Buckeye, Coletown, Danville, Ford, Frankfort East, Frankfort West, Harrodsburg, Keene, Lawrenceburg (Ky.), Little Hickman, Nicholasville, Polsgrove, Richmond North, Salvisa, Stanford, Switzer, Tyrone, Valley View, Waddy, Wilmore.

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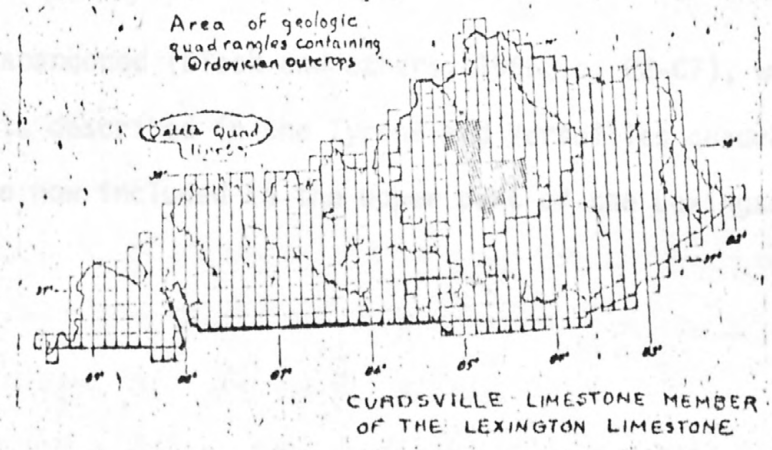

CURDSVILLE LIMESTONE MEMBER
OF THE LEXINGTON LIMESTONE

+Cynthiana Formation

This name, now abandoned (Black and others, 1965, p. C2-C7), was applied to strata described in the Tyrone and Versailles quadrangles. These strata are now included in the upper part of the Lexington Limestone.

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Devils Hollow Member of the Lexington Limestone

Original reference: McFarlan and White (1948, p. 1640).

Type locality: Devils Hollow road a few miles west of Frankfort, Frankfort West quadrangle, central Kentucky (loc. 16, fig. 4). The member is poorly exposed at the type locality, but Black and others (1965, p. C11, C22) have described representative sections of the member from excellent exposures in the vicinity.

Lithologic character: At its type locality the Devils Hollow Member consists of 15 feet of porous, coarsely crystalline, light-gray limestone containing a mass of gastropod shells overlain by 10 feet of cryptograined limestone. These two limestone types intertongue, and the member may consist entirely of either type or of both. The cryptograined limestone itself is of two types; one is light greenish-gray to light-gray limestone that has a conchoidal fracture and is commonly laminated; the other is brownish-gray limestone in bioturbated beds and commonly containing laminar stromatoporoids and ostracodes.

Distribution and thickness: The Devils Hollow Member of the Lexington Limestone crops out in a belt from 5 to 10 miles wide that extends southeast from the Frankfort West quadrangle to the Coletown quadrangle, central Kentucky. The member ranges from 0 to about 30 feet in thickness.

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Stratigraphic relations: The Devils Hollow is generally both underlain and overlain by the Tanglewood Limestone Member of the Lexington Limestone, but in parts of the area it is overlain by the Millersburg Member of the Lexington. The Devils Hollow grades northward, southward, and eastward into the Tanglewood; southeastward it grades into or pinches out within a tongue of the Clays Ferry Formation.

Previous nomenclature: For many years prior to 1948, the Devils Hollow had been miscorrelated with the Salvisa and Faulconer Beds of the Perryville Limestone Member of the Lexington. McFarlan and White (1948) correctly determined the relations between the two units. The Devils Hollow was generally considered a member of the +Cynthiana Formation until Black and others (1965) placed the Devils Hollow Member in a redefined Lexington Limestone.

Quadrangles containing outcrops:

Unnumbered figure near here.

Coletown, Frankfort East, Frankfort West, Keene, Lexington West, Midway, Nicholasville, Polsgrove, Switzer, Tyrone, Versailles.

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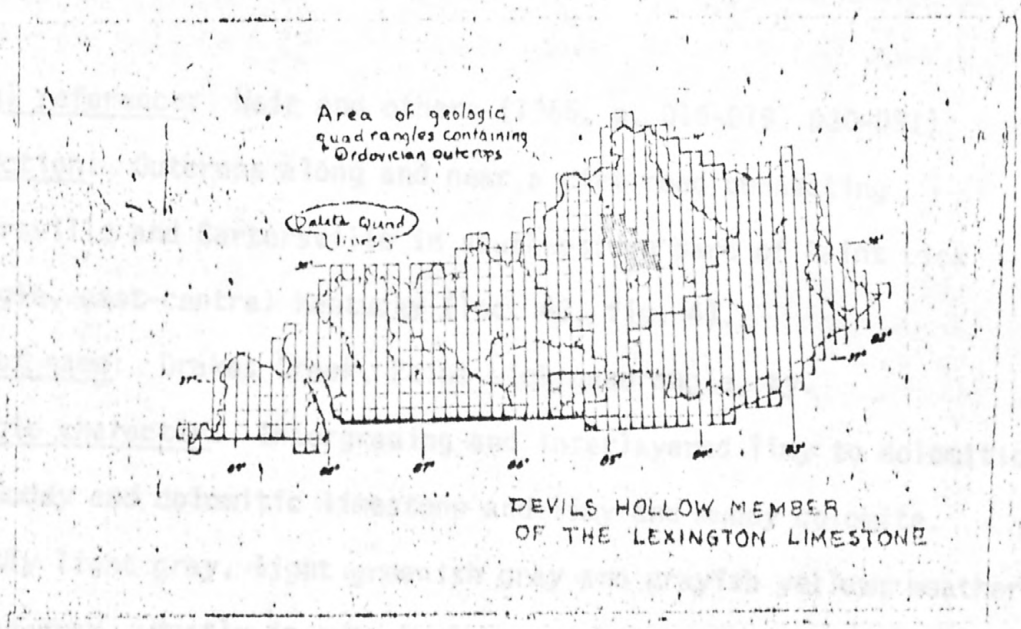

Area of geologic quadrangles containing Ordovician outcrops
Paleta Quad (Lincoln)
DEVILS HOLLOW MEMBER
OF THE LEXINGTON LIMESTONE

Drakes Formation

Original reference: Weir and others (1965, p. D16-D19, D30-D31).

Type section: Outcrops along and near a dirt road connecting Preachersville and Cartersville in southwestern part of Paint Lick quadrangle, east-central Kentucky (loc. 43, fig. 4).

Source of name: Drakes Creek, Paint Lick quadrangle, Ky.

Lithologic character: Intergrading and interlayered limy to dolomitic shale, muddy and dolomitic limestone and limy and muddy dolomite. Dominantly light gray, light greenish gray and grayish yellow; weathers yellowish gray. Mostly in even laminae and thin beds.

Subdivisions: In east-central Kentucky the Drakes Formation is divided into the Rowland and Preachersville Members. In northeast Kentucky it is represented only by the Preachersville Member. In most of central and north-central Kentucky it consists of the Rowland, Bardstown and Saluda Dolomite Members.

Distribution and thickness: The outcrop belt of the Drakes Formation lies near the outer margin of the Blue Grass region of Kentucky. The formation ranges in thickness from about 20 feet in northeast Kentucky to about 150 feet in east-central Kentucky.

e43—16—82993p-1 GPO

Stratigraphic relations: In most of Kentucky the Drakes Formation overlies the Bull Fork Formation. In southwestern central Kentucky it overlies the Grant Lake Limestone. In southeastern central Kentucky and most of east-central Kentucky it conformably overlies the Ashlock Formation. The Drakes is generally overlain with seeming conformity by the Brassfield Dolomite of Silurian age, but paleontological studies reveal a hiatus between the formations (Rexroad and others, 1965; Rexroad, 1967). In north-central, southwestern central, and southwestern east-central Kentucky an unconformity is apparent. The top of the Drakes is uneven with some truncation of beds; more rarely clasts derived from the Drakes are incorporated in the Brassfield. In southern central Kentucky the Drakes is irregularly truncated and locally entirely cut out. It is overlain with a conspicuous though small angular discordance by the Boyle Dolomite (Middle Devonian) or the New Albany Shale (Middle and Upper Devonian).

The Drakes Formation grades into the upper part of the Cumberland Formation in south-central Kentucky. The formations are separated by a cutoff at the latitude of the north edge of the Dunnville quadrangle. In northwestern north-central Kentucky the lower part of the Drakes grades into the Bull Fork Formation. Equivalents of the Drakes in southeast Indiana include the Saluda Formation and the upper part of the Dillsboro Formation of Brown and Lineback (1966).

Previous nomenclature: The Drakes Formation includes strata that were assigned by most earlier workers in Kentucky to the +Waynesville, +Liberty, and Saluda or +Whitewater and +Elkhorn Formations.

643—16—82993p-1 GPO

Quadrangles containing outcrops:

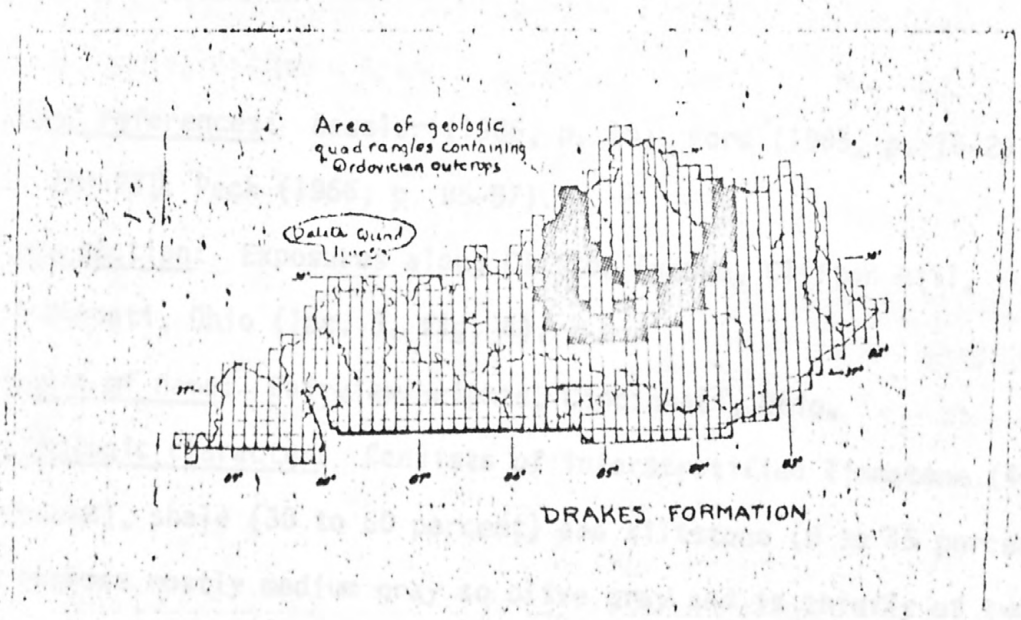
Unnumbered figure near here.

Anchorage, Ballardsville, Bardstown, Bedford, Berea, Bethlehem, Bighill, Bloomfield, Bradfordsville, Bradfordsville NE, Brooks, Bryantsville, [Burtonville], Campbellsburg, Carrollton, Clay City, [Clementsville], Coletown(?)/, Colfax, [Concord], Crab Orchard,

/ Queried quadrangles have isolated grabens that contain strata tentatively identified as Drakes Formation but that may be dolomitized older formations.

Cravens, Crestwood, Danville(?), Ellisburg, Eminence, Fairfield, Farmers, Fisherville, Flemingsburg, Gravel Switch, Halls Gap, Hedges, Hillsboro, [Howardstown], Hustonville, Irvine, Jeffersontown, La Grange, Lancaster, Lawrenceburg, Ky.(?), Lebanon East, Lebanon Junction, Lebanon West, Levee, Liberty, Loretto, Madison East, Madison West, Manchester Islands, Maud, Maysville East, Means, Moberly, Mount Sterling, Mount Washington, New Castle, New Haven, Nicholasville(?), Olympia, Orangeburg, Owen, Owingsville, Paint Lick, Palmer, Panola, Parksville, Plummers Landing, Preston, Raywick, Richmond North, Richmond South, Saint Catharine, Salvisa(?), Samuels, Shelbyville, Sherburne, Simpsonville, Smithfield, Springfield, Spurlington, Stanford, Taylorsville, Tollesboro, Union City, Waddy, Waterford, Winchester, Yosemite.

643—16—82993e-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
Paleta Quad Illinois
DRAKES FORMATION

Fairview Formation

Chief references: Bassler (1906, p. 10); Ford (1965, p. 16-29; 1967, p. 928-931); Peck (1966, p. B5-B7).

Type section: Exposures along Clifton Avenue, Clifton Hill, Cincinnati, Ohio (loc. 3, fig. 4).

Source of name: Fairview Heights, Cincinnati, Ohio.

Lithologic character: Consists of interstratified limestone (40 to 70 percent), shale (30 to 60 percent) and siltstone (0 to 15 percent). Limestone mostly medium gray to olive gray and is chiefly of two types: (1) fine to coarse grained, fossil fragmental, containing irregular streaks of limy siltstone; and (2) micrograined to fine grained, in part clayey to silty, containing sparse fossil fragments. Limestone is mostly in persistent, slightly uneven to even, thin and medium beds. Shale is greenish gray, calcitic, in sets generally a few inches to about 1 foot thick, of obscure to distinct, even laminae. Siltstone is light gray, weathers grayish orange, calcitic, locally grades to limestone, in even thin beds. Fossils sparse to abundant, mostly in fine- to coarse-grained limestone, chiefly bryozoans and brachiopods.

Distribution and thickness: The Fairview Formation crops out in northeast Kentucky and the northern part of north-central Kentucky. It ranges from about 40 to more than 130 feet in thickness; generally it is about 80 to 120 feet thick.

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Stratigraphic relations: The Fairview Formation is separated from the intergrading Calloway Creek Limestone by cutoff in the central part of north-central Kentucky, as in the Owenton quadrangle, and in the northern part of northeast Kentucky, as in the Sharpsburg quadrangle. The Fairview generally overlies the Kope Formation. Near the southern limit of the Fairview it overlies a unit of intertongued Clays Ferry Formation and Kope Formation or in northeast Kentucky the thin northern extension of the Garrard Siltstone. The Fairview is conformably overlain by the Grant Lake Limestone.

Previous nomenclature: The name Fairview was given by Bassler (1906, p. 10) to a unit made up of the faunally defined +Fairmount and +Mount Hope units. Most earlier workers in north-central Kentucky assigned the name Fairview to approximately the same section of rock now included in the redefined lithostratigraphic unit. In northeast Kentucky, however, rocks now mapped as Fairview Formation were commonly assigned by earlier workers to only the +Fairmount.

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Quadrangles containing outcrops:

Unnumbered figure near here.

Addyston, Alexandria, Berlin, Berry, Brooksville, Burlington, Butler, Campbellsburg, Carlisle, Carrollton, Claysville, Covington, Cowan, De Mossville, Elizaville, Elliston, Falmouth, Felicity, Florence, Germantown, Glencoe, Goforth, Higginsport, Hillsboro, Hooven, Independence, Kelat, Laurel, Lawrenceburg (Ind.), Lawrenceville, Manchester Islands, Mason, Mays Lick, Maysville East, Maysville West, Moorefield, Moscow, Mount Olivet, New Liberty, Newport, New Richmond, Orangeburg, Owenton, Owingsville, Patriot, Piqua, Rising Sun, Sanders, Sardis, Sharpsburg, Sherburne, Tollesboro, Union, Verona, Vevay North, Vevay South, Walton, Williamstown, Withamsville, Worthville.

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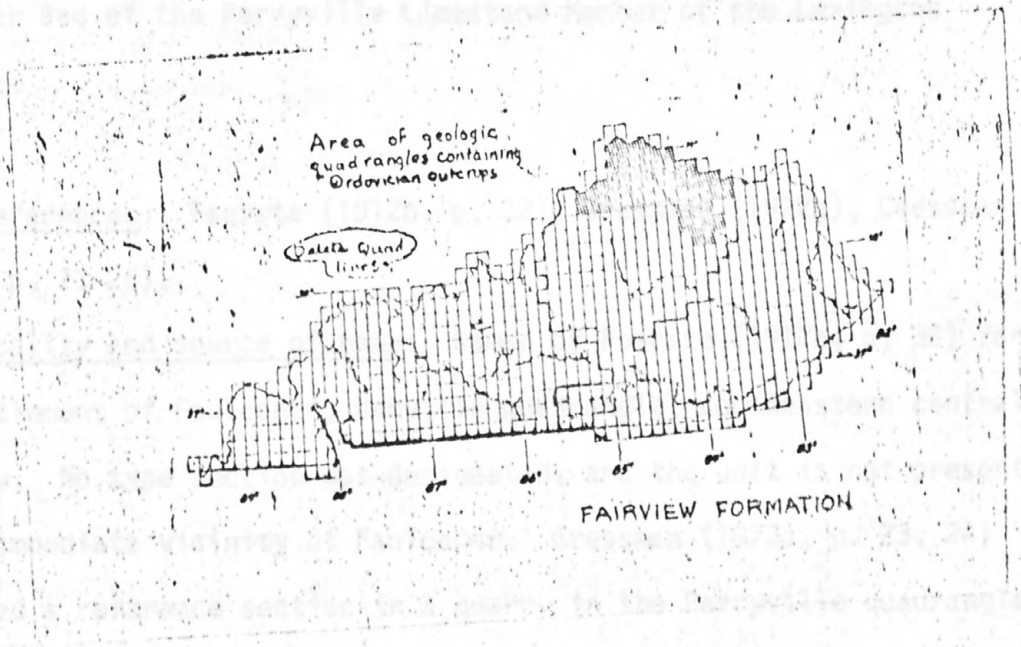
Area of geologic quadrangles containing Ordovician outcrops
Paleta Quad (Lines)
FAIRVIEW FORMATION

Faulconer Bed of the Perryville Limestone Member of the Lexington Limestone

Chief references: Foerste (1912b, p. 32), Cressman (1972a), Cressman (1973c, p. 23-25).

Type locality and source of name: Named by Foerste (1912b, p. 32) for the settlement of Faulconer, Danville quadrangle, southeastern central Kentucky. No type section was designated, and the unit is not present in the immediate vicinity of Faulconer. Cressman (1973c, p. 23, 24) described a reference section in a quarry in the Perryville quadrangle, southeastern central Kentucky (loc. 38, fig. 4).

Lithologic character: Mostly brownish-gray fossiliferous cryptograined and micrograined limestone in rough-surfaced beds, commonly about 0.5 foot thick. Some beds have a nodular internal structure. Mollusks are the most conspicuous fossils, though brachiopods are present in some beds. Tabulate corals are common in the upper part, and laminar stromatoporoids are common throughout. Large ostracodes are abundant. Many beds have a fetid odor when freshly broken, and thin black shale partings separate some beds. Interbeds of fine-grained limestone are present locally.

Distribution and thickness: Exposures of the Faulconer Bed of the Perryville Limestone Member of the Lexington Limestone are confined to central Kentucky. It thins to the northeast from a maximum thickness of about 45 feet in its southeasternmost exposures in the Perryville quadrangle to a feather edge in the Cornishville quadrangle.

Stratigraphic relations: The Faulconer Bed rests conformably on the Tanglewood Limestone Member of the Lexington Limestone and is overlain conformably by the Salvisa Bed of the Perryville. The Faulconer Bed thins northeastward as a result of intertonguing with the underlying Tanglewood Limestone Member.

Quadrangles containing outcrops:

Unnumbered figure near here.

Ashbrook, Chaplin, Cornishville, Danville, Perryville.

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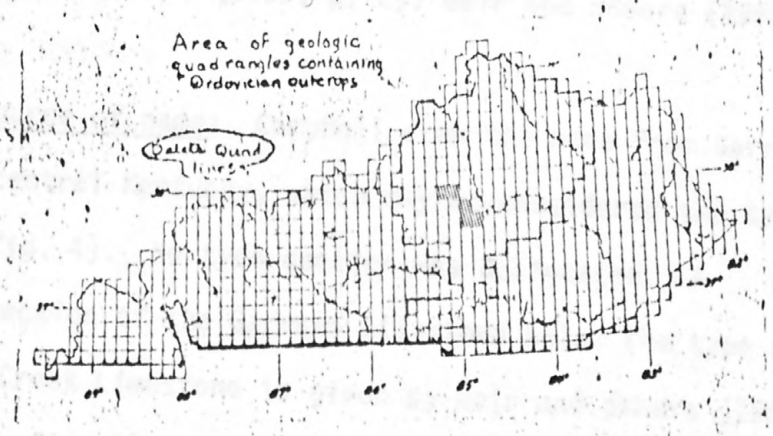

FAULCONER BED OF THE
PERRYVILLE LIMESTONE MEMBER
OF THE LEXINGTON LIMESTONE

Garrard Siltstone

Chief references: Campbell (1898, p. 2); Weir and others (1965, p. D6).

Type area and source of name: Campbell drew the name from Garrard County in east-central Kentucky, which may be considered the type area (loc. 41, fig. 4). No type section was designated. A representative section of the Garrard Siltstone below the type section of the Calloway Creek Limestone is given by Weir and others (1965, p. D22) (loc. 34, fig. 4).

Lithologic character: The Garrard is dominantly greenish-gray to light-gray, limy siltstone, weathers yellowish brown, in part laminated, in part in even thin and medium beds, locally contorted with conspicuous ball-and-pillow structures. Contains minor amounts of greenish-gray, irregularly laminated shale as discontinuous partings and seams. Locally contains irregular lenses of light-gray, fine- to coarse-grained limestone, in part muddy. Fossils sparse except for brachiopods in some lenses of limestone.

Distribution and thickness: The Garrard extends throughout east-central Kentucky and into the eastern part of central Kentucky. It ranges from a feather edge to about 100 feet in thickness.

Stratigraphic relations: The Garrard Siltstone conformably overlies the Clays Ferry Formation except locally, as in the Hedges quadrangle, where it overlies the Kope Formation. The Garrard is generally overlain by the Calloway Creek Limestone; in northern east-central Kentucky it is overlain by the Fairview Formation. The Garrard intertongues with both the overlying and underlying formations. It is not recognized as a separate unit north or west of the Gravel Switch quadrangle in central Kentucky or north of the Owingsville quadrangle in east-central Kentucky. The Garrard apparently feathers out in the subsurface of south-central Kentucky into the lower part of the Leipers Limestone or into the upper part of the Catheys(?) Formation.

Previous nomenclature: The Garrard was originally designated a sandstone; most of the grains are in the silt size of Wentworth (1922). Some geologists, as Foerste (1906), applied the name +Paint Lick to the lower part of the Garrard. Some geologists, as Palmquist and Hall (1961) excluded from the Garrard Siltstone those beds they equated with the +Mount Hope Member of the Fairview Formation of the Cincinnati, Ohio section.

643—16—82993e-1 GPO

Quadrangles containing outcrops:

Unnumbered figure near here.

Bryantsville, Buckeye, Coletown, Ford, Gravel Switch, Halls Gap, Hedges, Hustonville, Junction City, Kirksville, Lancaster, Levee, Lexington East, Little Hickman, Mount Sterling, Nicholasville, North Middletown, Owingsville, Paint Lick, Parksville, Perryville, Richmond North, Richmond South, Sharpsburg, Sideview, Stanford, Union City, Valley View, Winchester.

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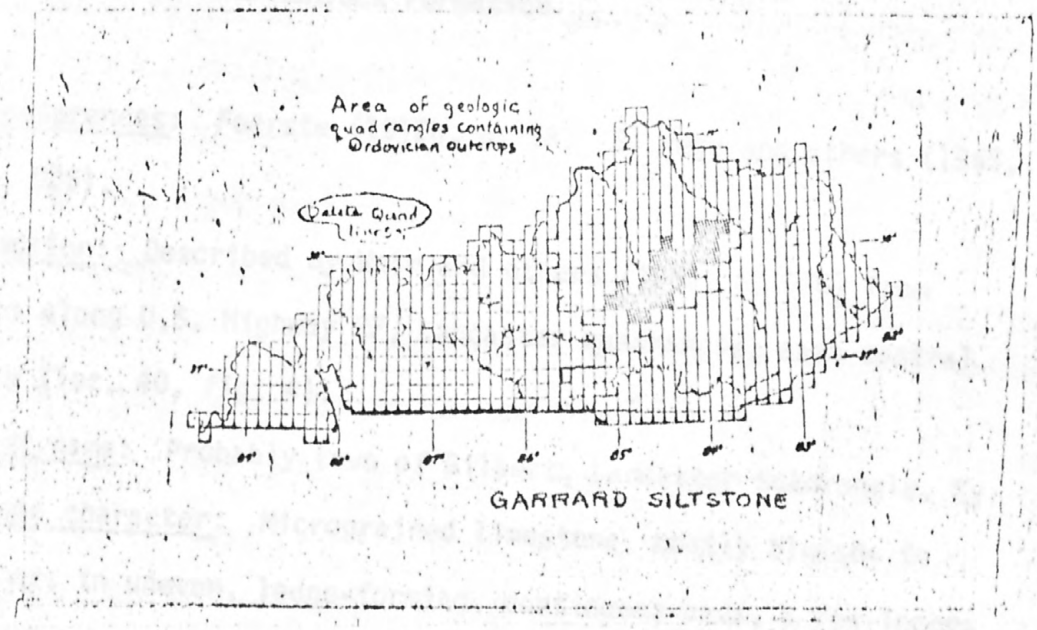

Area of geologic quadrangles containing Ordovician outcrops
Paleata Quad
GARRARD SILTSTONE

Gilbert Member of the Ashlock Formation

Chief references: Foerste (1912b, p. 18, 23) Weir and others (1965, p. D12, D25).

Type section: Described by Weir and others (1965, p, D25) from outcrops along U,S, Highway 27, Lancaster quadrangle, east-central Kentucky (loc. 40, fig. 4).

Source of name: Probably town of Gilbert, Lancaster quadrangle, Ky.

Lithologic character: Micrograined limestone, mostly bluish- to olive-gray; in uneven, ledge-forming, continuous beds, a few inches thick, separated by seams and partings of dark-gray, calcitic silty shale. Fossils, sparse to common, chiefly brachiopods, bryozoans, and gastropods.

Distribution and thickness: The Gilbert Member of the Ashlock Formation crops out around the southern margin of the Blue Grass region of Kentucky from southwestern east-central Kentucky to southwestern central Kentucky. The member ranges in thickness from a few feet to about 20 feet. In the southeastern central Kentucky, as in the Stanford quadrangle, the Gilbert is locally cut out by pre-Devonian erosion.

Stratigraphic relations: The Gilbert Member overlies the Tate Member of the Ashlock Formation. In east-central Kentucky it is overlain by the Stingy Creek Member of the Ashlock; in central Kentucky it is overlain by the upper part of the Grant Lake Limestone.

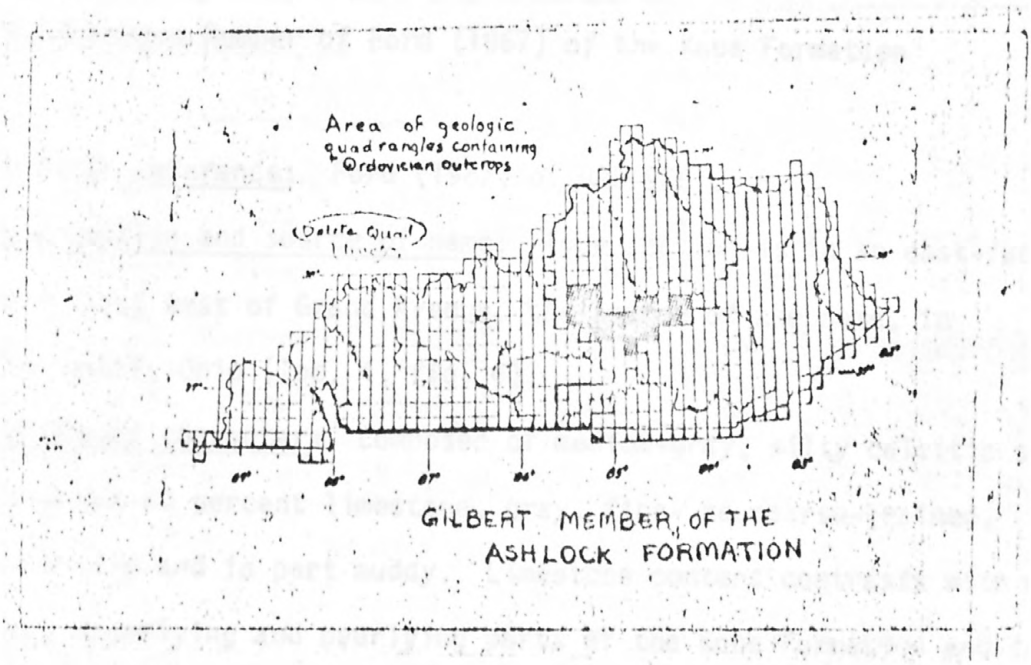
The Gilbert becomes slightly coarser grained and muddier northeastward from its type locality and is separated from similar rock in the Grant Lake Member of the Ashlock Formation by a cutoff at the south edge of the Richmond North quadrangle. The Gilbert persists westward from its type locality as far as the Bardstown quadrangle, southwestern central Kentucky where it merges with the Grant Lake Limestone in the Bardstown quadrangle, southwestern central Kentucky. Southward the Gilbert becomes dolomitic and is separated from similar dolomitic limestone in the Cumberland Formation by a cutoff at the latitude of the south edge of the Yosemite quadrangle.

Previous nomenclature: The Gilbert Member was assigned by Foerste (1912b, p. 23) and other earlier workers to the +McMillan Formation and correlated with the +Corryville Member of the +McMillan of the Cincinnati, Ohio section.

Quadrangle containing outcrops:

Unnumbered figure near here.

Bardstown, Berea, Bradfordsville, Bradfordsville NE, Brush Grove, Bryantsville, Buckeye, [Crab Orchard], Ellisburg, Gravel Switch, Halls Gap, Hustonville, Junction City, Lancaster, Lebanon East, Lebanon West, Loretto, Maud, Moberly, Paint Lick, Parksville, Raywick, Richmond South, Saint Catharine, Springfield, Stanford, Yosemite. 643—16—82903-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
GILBERT MEMBER OF THE ASHLOCK FORMATION

Grand Avenue Member of Ford (1967) of the Kope Formation

Original reference: Ford (1967, p. 925-926).

Type section and source of name: Type section is in an east-facing cliff just west of Grand Avenue, the source of the name, in Cincinnati, Ohio (loc. 4, fig. 4).

Lithologic character: Composed of medium-gray, silty calcitic shale and about 40 percent limestone, gray, fine- to coarse-grained, bioclastic and in part muddy. Limestone content contrasts with more shaly underlying and overlying parts of the Kope Formation and is more similar to that in the laterally equivalent Clays Ferry Formation and in the younger Fairview Formation.

Distribution and thickness: The Grand Avenue has been tentatively recognized in most of the northern part of north-central Kentucky. It commonly is about 10 feet thick.

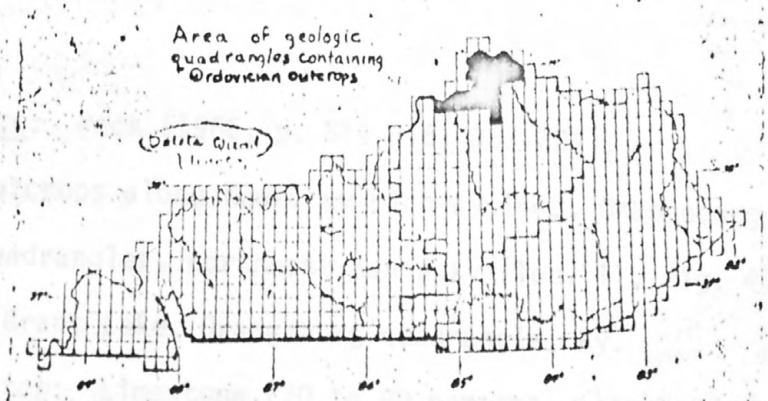
Stratigraphic relations: The Grand Avenue Member of Ford (1967) is a minor but distinctive unit in the upper part of the Kope Formation. Ford (1967, p. 925) suggests drawing the contacts so as to exclude sets of shale more than 2.5 feet thick. The Grand Avenue becomes unrecognizable a few tens of miles south of its type area where the Kope intertongues with the Clays Ferry Formation.

Previous nomenclature: Strata of the Grand Avenue were previously included in the +Latonia Formation in the area near Cincinnati, Ohio (Caster and others, 1961).

Quadrangles containing outcrops:

Unnumbered figure near here.

Addyston, Alexandria, Burlington, [Carrollton], Covington, [Elliston], [Florence], [Glencoe], Independence, [Lawrenceburg (Ind.)], Mason, Newport, New Richmond, [Patriot], [Rising Sun], [Sanders], [Union], [Verona], [Vevay North], [Vevay South], Walton, Williamstown, Withamsville.



GRAND AVENUE MEMBER OF FORD (1967) OF THE KOPE FORMATION

Grant Lake Limestone

Original reference: Peck (1966, p. B14-B16; B23-B24).

Type section: Outcrops along Kentucky Highway 1449, Orangeburg and Maysfield East quadrangles, northeast Kentucky (loc. 11, fig. 4).

Source of name: Grant Lake, Orangeburg quadrangle, Ky.

Lithologic character: Limestone (70 to 90 percent) interbedded and intermixed with shale. Limestone is mainly medium to light gray, micrograined to medium grained, muddy, poor sorted; in irregular continuous to lensing, nodular thin beds, contains abundant whole and fragmented fossils, chiefly large platystrophid brachiopods and bryozoans. Locally in northeast Kentucky some limestone is medium to coarse grained, fair sorted, in ledge-forming, thin to thick beds and planar sets of low-angle crossbeds. Shale is gray, calcitic and in part silty, obscurely and irregularly laminated, intermixed with nodular-bedded limestone and interbedded as partings and thin seams.

Subdivisions: Bellevue Tongue in north-central Kentucky, Tate Member in northeast Kentucky; divided into informal upper and lower members in part of northeast Kentucky and the northern part of east-central Kentucky and in the southwestern part of central Kentucky. Unnamed member at top of formation consisting mostly of coarse-grained limestone described and mapped locally in northern northeast Kentucky.

643—16—82993p-1 GPO

Distribution and thickness: The Grant Lake crops out on the north, east, and west sides of the Blue Grass region of Kentucky. It is classified as a formation except in part of east-central Kentucky where it thins and is assigned as a member to the Ashlock Formation (Simmons, 1967a). The Grant Lake ranges from about 15 to 160 feet in thickness.

Stratigraphic relations: The Grant Lake Limestone overlies the Fairview Formation in northeast Kentucky and adjacent parts of north-central and east-central Kentucky. In most of north-central and central Kentucky it overlies the Calloway Creek Limestone. In northern east-central Kentucky the Grant Lake Limestone below the Tate Member is separated by cutoff from similar rock in the upper part of the Calloway Creek Limestone in the southeastern part of the Sharpsburg quadrangle. In most of east-central Kentucky the Grant Lake is classed as a member of the Ashlock Formation and overlies the Tate Member of the Ashlock.

In northeast Kentucky and the northeastern part of north-central Kentucky the Grant Lake Limestone is overlain by the Bull Fork Formation. In the southwestern part of north-central Kentucky and in central Kentucky the Grant Lake Limestone is overlain by the Drakes Formation. In east-central Kentucky the Grant Lake Member of the Ashlock Formation is overlain by the Terrill Member of the Ashlock.

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In east-central Kentucky the Grant Lake Limestone Member of the Ashlock Formation grades laterally into the upper part of the Tate Member and the Gilbert and Stingy Creek Members of the Ashlock Formation. The Grant Lake is separated from these intergrading units by a cutoff as at the south edge of the Richmond North quadrangle.

The Grant Lake Limestone of the southern part of central Kentucky intertongues and intergrades complexly with the whole of the Ashlock Formation and with the upper part of the Calloway Creek Limestone. The upper part of the Grant Lake apparently thins and pinches out in the subsurface of southernmost central Kentucky; on the southeast it is separated from the equivalent Stingy Creek Member of the Ashlock Formation. The middle part of the Grant Lake is separated from the Gilbert and Tate Members of the Ashlock by a cutoff in the Bardstown and Maud quadrangles. The lower part of the Grant Lake is separated from the upper part of the Calloway Creek by a cutoff at the latitude of the north edge of the Lebanon West quadrangle.

Previous nomenclature: The strata included in the Grant Lake Limestone were generally previously assigned to the +McMillan and +Arnheim Formations.

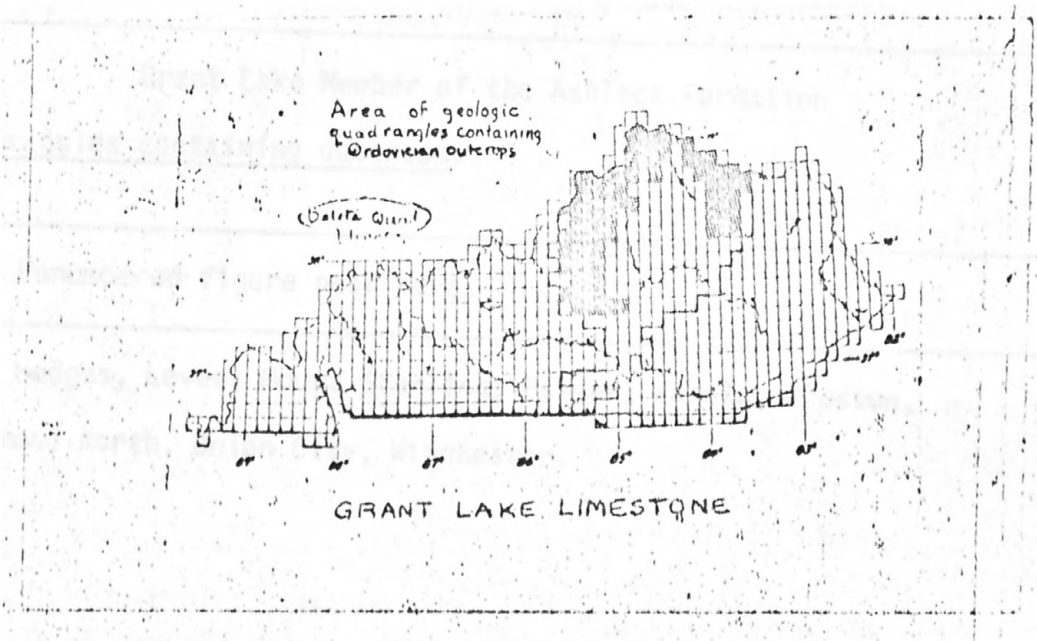
Grant Lake Limestone

Quadrangles containing outcrops:

Unnumbered figure near here.

Addyston, Alexandria, Ballardsville, Bardstown, Bedford, Bethlehem, Bloomfield, Brooksville, Brush Grove, Burlington, Campbellsburg, Carrollton, Chaplin, Colfax, Covington, Cowan, Crestwood, Elizaville, Eminence, Fairfield, Felicity, Fisherville, Flemingsburg, Florence, Franklinton, Germantown, Glencoe, Gratz, Gravel Switch, Higginsport, Hillsboro, Hooven, Independence, Jeffersontown, La Grange, Laurel, Lawrenceburg (Ind.), Lebanon East, Lebanon West, Loretto, Madison East, Madison West, Manchester Islands, Maud, Mays Lick, Maysville East, Maysville West, Monterey, Moorefield, Moscow, Mount Eden, Mount Washington, New Castle, [New Haven], New Liberty, Newport, North Pleasureville, Orangeburg, Owen, Owingsville, Parksville, Patriot, Raywick, Rising Sun, Saint Catharine, Samuels, Sanders, Sardis, Sharpsburg, Shelbyville, Sherburne, Simpsonville, Smithfield, Springfield, Taylorsville, Tollesboro, Union, Verona, Vevay South, Waddy, Walton, Waterford, Williamstown, Worthville.

643—16—82993p-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
GRANT LAKE LIMESTONE

Grant Lake Member of the Ashlock Formation

Quadrangles containing outcrops:

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Hedges, Levee, Mount Sterling, Palmer, Panola, Preston, Richmond North, Union City, Winchester.

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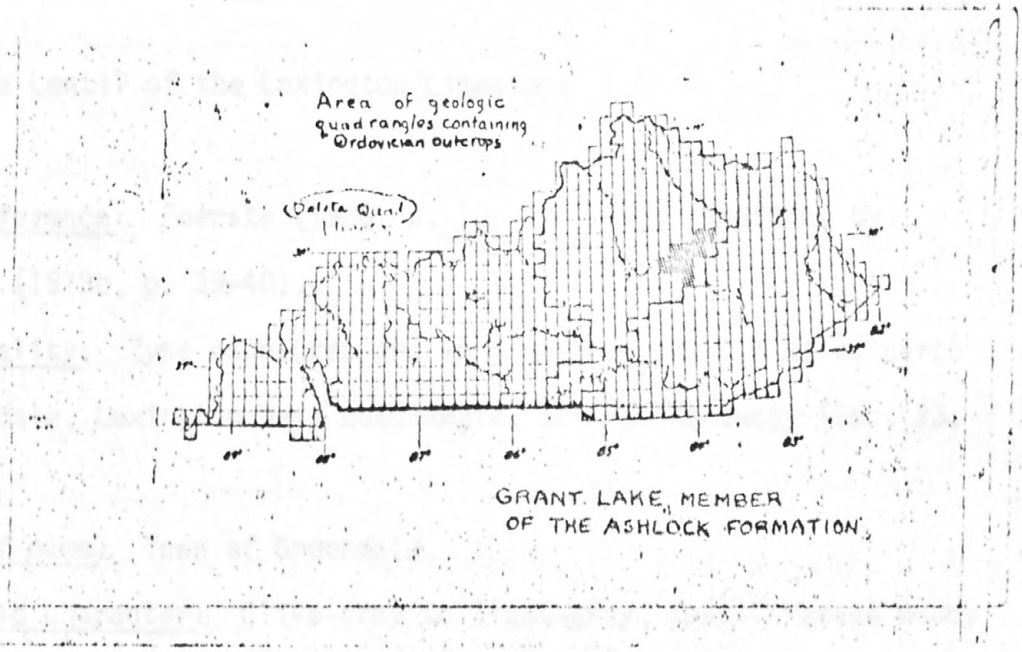

Area of geologic quadrangles containing Ordovician outcrops
GRANT LAKE MEMBER OF THE ASHLOCK FORMATION

Greendale Lentil of the Lexington Limestone

Chief reference: Foerste (1906, p. 10, 19, 211); redefined by Cressman (1973c, p. 39-40).

Type locality: Type exposures are in a railway cut 1.8 miles north of Greendale, Lexington West quadrangle, central Kentucky (loc. 23, fig. 4).

Source of name: Town of Greendale.

Lithologic character: Olive-gray to light-gray, fossiliferous muddy micrograined limestone in sets 0.2 to 1.5 feet thick consisting of nodules and thin nodular beds separated by shale in irregular partings and thin seams. These sets alternate with irregular thin to medium beds of light-gray, coarse-grained fossiliferous calcarenite. Shale makes up about 25 percent of the unit.

Distribution and thickness: Crops out in an area of about 4 by 5 miles in the Georgetown and Lexington West quadrangles, central Kentucky. The unit is mostly 10 to 15 feet thick. The Greendale Lentil is shown on the geologic maps of the Lexington West and Georgetown quadrangles; as "fossiliferous limestone and shale."

Stratigraphic relations: The Greendale Lentil of the Lexington Limestone grades in all directions into very fine to very coarse grained fossil-fragmental limestone of the Tanglewood Limestone Member of the Lexington Limestone.

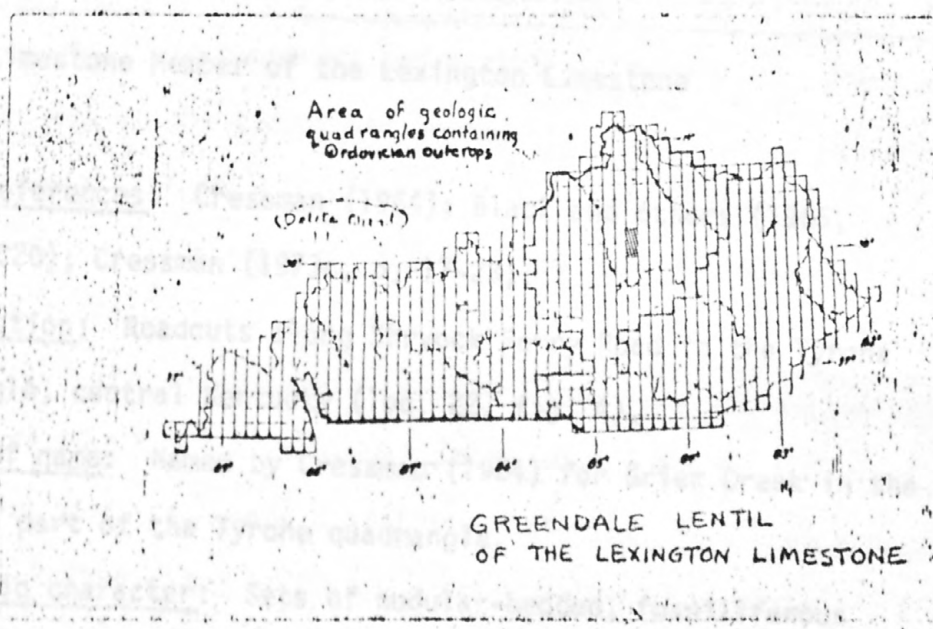
Previous nomenclature: The name Greendale was applied by Foerste (1906, p. 10, 19, 211) to beds now included in the Millersburg Member of the Lexington Limestone; presumably, the unit at Greendale was miscorrelated with the somewhat similar beds of the Millersburg. McFarlan and White (1948, p. 1641) noted that the name was applied widely but with little precision. Black and others (1965, p. C24) abandoned the name Greendale, but Cressman (1973c, p. 39-40) reinstated the name for the unit of the type area because no other suitable name is available in the area in which the lentil occurs.

Quadrangles containing outcrops:

Unnumbered figure near here.

[Georgetown], [Lexington West].

Note: Unit labeled "Greendale Limestone Member of Foerste (1906) as used by Miller (1925)" in the Tyrone quadrangle is now assigned to the Millersburg Member of the Lexington Limestone.


Area of geologic quadrangles containing Ordovician outcrops
(Delete Cliff)
GREENDALE LENTIL
OF THE LEXINGTON LIMESTONE

Grier Limestone Member of the Lexington Limestone

Chief references: Cressman (1964); Black and others (1965, p. C17-C20); Cressman (1973c, p. 17-23).

Type section: Roadcuts along Shryock Ferry Road in the Tyrone quadrangle, central Kentucky (loc. 22, fig. 4).

Source of name: Named by Cressman (1964) for Grier Creek in the southern part of the Tyrone quadrangle.

Lithologic character: Sets of nodular-bedded, fossiliferous micrograined to poorly sorted fine- to medium-grained limestone with minor shale partings, alternating with irregular interbeds of poorly sorted, fine- to coarse-grained, fossil-fragmental limestone. The colors are mostly medium and light gray to light brownish gray. Brachiopods and bryozoans are the most conspicuous fossils.

Distribution and thickness: The Grier Limestone Member of the Lexington Limestone crops out in valleys throughout much of the central part of the Blue Grass region of Kentucky. Exposed in the Ohio River valley in the Moscow quadrangle. Thickness ranges somewhat erratically from 110 feet in the Falmouth quadrangle, northeastern north-central Kentucky, to 180 feet in the subsurface in the Sideview quadrangle, northwestern east-central Kentucky.

643—16—82993—1 GPO

Subdivisions: The Macedonia Bed near the middle of the Grier and the Cane Run Bed at the top of the member are conspicuous local units. A fine- to medium-grained bioclastic limestone in the upper part of the member west and north of Frankfort has been differentiated in measured sections (Cressman, 1973c, p. 19) but has not been mapped or named. In the Georgetown and Lexington West quadrangles two units as much as 5 feet thick composed of cryptograined and micrograined limestone containing many silicified gastropods have been mapped as key beds in the upper part of the Grier Member; one of these beds, designated informally the Loxoplocus bed, is useful in correlations of sections near Lexington (Cressman, 1973c, pl. 2).

643—16—82903p-1 GPO

Stratigraphic relations: Rests conformably on the Logana Member of the Lexington Limestone throughout most of its area of outcrop, but in the southern part of central Kentucky it rests conformably on the Curdsville Limestone Member of the Lexington. The contact with the Logana is sharp to gradational through a foot or less; the contact with the Curdsville is gradational through as much as 15 feet. In most of its area the Grier is overlain conformably by the Tanglewood Limestone Member of the Lexington but in parts of the Versailles, Lexington East, Georgetown, and Midway quadrangles, it is overlain conformably by micrograined limestone of the Brannon Member of the Lexington. In northeast Kentucky the Grier is locally overlain by interbedded limestone and shale of the Clays Ferry Formation. The upper contact is sharp to gradational through a few feet. The lower part of the Grier grades northward into the Logana Member and the upper part complexly intertongues with the lower part of the Tanglewood Limestone Member.

Previous nomenclature: The Grier Limestone Member includes rocks that prior to 1964 were assigned to the +Jessamine and +Benson Members of the Lexington Limestone (+Jessamine and +Benson Formations of the Lexington Group by some authors).

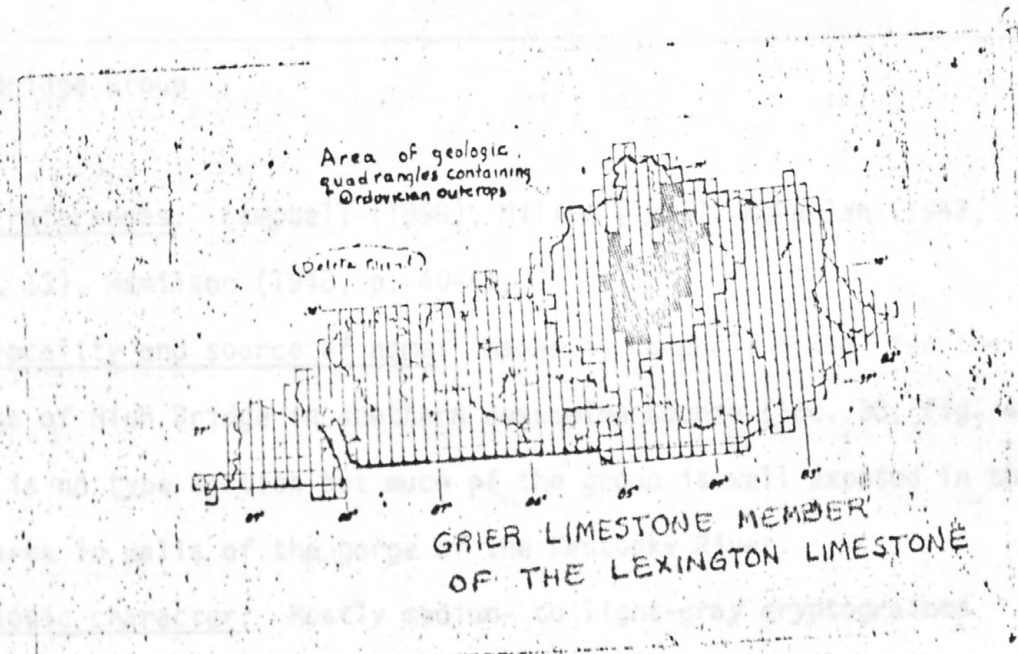
c43—16—82993c-1 GPO

Quadrangles containing outcrops:

Unnumbered figure near here.

Austerlitz, Berry, Bryantsville, Buckeye, Butler, Carlisle, Centerville, Claysville, Clintonville, Coletown, Cornishville, Cowan, Cynthiana, Danville, Falmouth, Ford, Frankfort East, Frankfort West, Georgetown, Glensboro, Gratz, Harrodsburg, Junction City, Keene, Kelat, Kirksville, Lawrenceburg (Ky.), Leesburg, Lexington East, Lexington West, Little Hickman, McBrayer, Midway, Millersburg, Moscow, Mount Olivet, Nicholasville, Paris East, Paris West, Perryville, Piqua, Polsgrove, Richmond North, Salvisa, Shady Nook, Shawhan, Stanford, Switzer, Tyrone, Valley View, Versailles, Wilmore, Winchester.

643-16-82933-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
(Delete outcrop)
GRIER LIMESTONE MEMBER
OF THE LEXINGTON LIMESTONE

High Bridge Group

Chief references: Campbell (1898), Miller (1905), McFarlan (1943, p. 12, 13), Hamilton (1948, p. 40-41).

Type locality and source of name: Named by Campbell (1898) for the village of High Bridge in southern Jessamine County (loc. 30, fig. 4). There is no type section but much of the group is well exposed in the type area in walls of the gorge of the Kentucky River.

Lithologic character: Mostly medium- to light-gray cryptograined limestone, much of which contain interlaced burrow-fills of dolomite. Yellowish-gray, finely crystalline dolomite and thin units of calcitic shale are interbedded with limestone in parts of the group.

Subdivisions: The High Bridge Group, at the surface, consists of the Camp Nelson Limestone at the base, the Oregon Formation, and the Tyrone Limestone at the top.

Distribution and thickness: The High Bridge Group crops out along the Kentucky River and the lower parts of its tributaries in central Kentucky. The thickest surface exposures are in the Little Hickman quadrangle where about 440 is exposed above the level of the Kentucky River. Subsurface data indicate that the interval from the top of the High Bridge Group to the top of the Knox Group of Cambrian and Ordovician age is slightly more than 600 feet in the type area (Wolcott and others, 1972, fig. 3).

643—16—82993p-1 GPO

Stratigraphic relations: The High Bridge Group is overlain disconformably by the Curdsville Limestone Member of the Lexington Limestone. The base of the group was originally placed at the base of surface exposures along the Kentucky River, but subsurface workers have placed the base either at the top of the Wells Creek Dolomite of drillers or at the top of the Knox Group. The contact with the Wells Creek is gradational and intertonguing; the contact with the Knox is an unconformity with an average local relief of about 50 feet (Wolcott and others, 1972, p. B31).

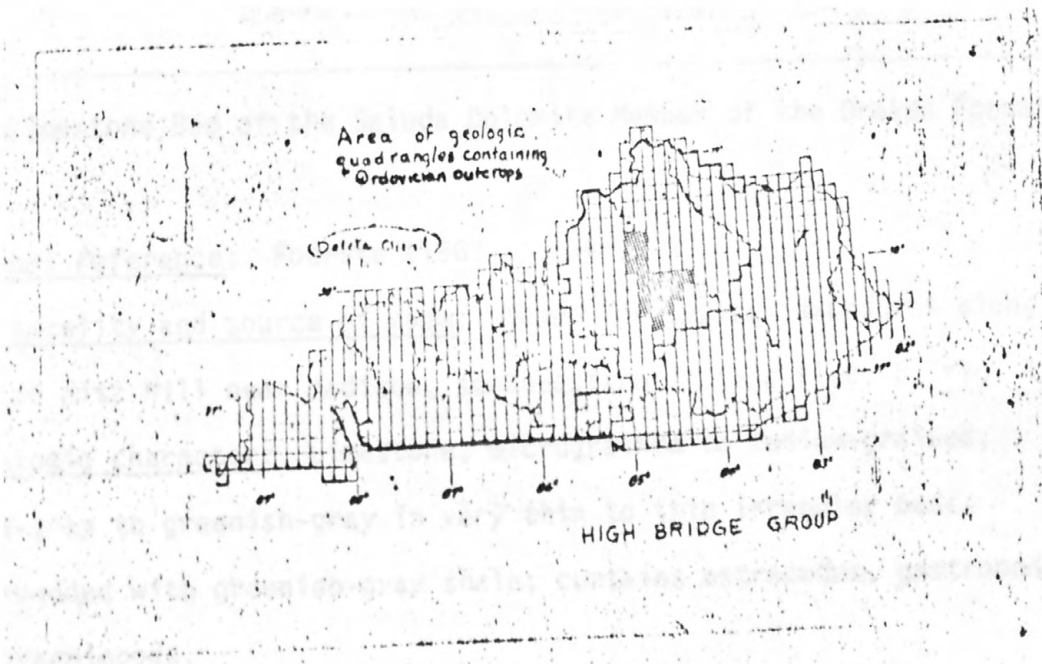
Previous nomenclature: The group was originally named the Highbridge Limestone (Campbell, 1898). Miller (1905) subdivided the unit into Camp Nelson, Oregon and Tyrone, but apparently retained the formational rank. McFarlan (1943, p. 12-13) revised the spelling to High Bridge to conform with the spelling of the name of the village, and Hamilton (1948, p. 40-41) raised the unit to group rank.

Quadrangles containing outcrops:

Unnumbered figure near here.

Bryantsville, Buckeye, Coletown, Danville, Ford, Frankfort East, Frankfort West, Harrodsburg, Keene, Lawrenceburg (Ky.), Little Hickman, Nicholasville, Polsgrove, Salvisa, Stanford, Switzer, Tyrone, Valley View, Wilmore.

e43—16—82993e-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
(Dolets Quad)
HIGH BRIDGE GROUP

Hitz Limestone Bed of the Saluda Dolomite Member of the Drakes Formation

Original reference: Foerste (1903, p. 347).

Type locality and source of name: Named for typical exposures along brow of Hitz Hill near Madison, southeastern Indiana (loc. 6, fig. 4).

Lithologic character: Limestone, micrograined to medium-grained, olive-gray to greenish-gray in very thin to thin irregular beds; interbedded with greenish-gray shale; contains ostracodes, gastropods and brachiopods.

Stratigraphic relations and thickness: The Hitz Limestone Bed crops out discontinuously at top of Saluda Dolomite Member of the Drakes Formation in north-central Kentucky. The Hitz is unconformably overlain by the Brassfield Dolomite (Silurian). Locally the Hitz has been cut out by the pre-Brassfield unconformity and fragments of the Hitz have been incorporated in the Brassfield (Gauri and others, 1965, p. 1883). Ranges from 0 to about 20 feet in thickness.

Previous nomenclature: The Hitz has generally been considered a member of the Saluda (Butts, 1915) or the Whitewater Formation (Conkin, 1952, 1958; Hatfield, 1968). Kepferle (1976b) reduced rank to a bed of the Saluda Dolomite Member of the Drakes Formation. Hitz is listed by Shaver and others (1970, p. 47) among abandoned and little-used stratigraphic names in Indiana.

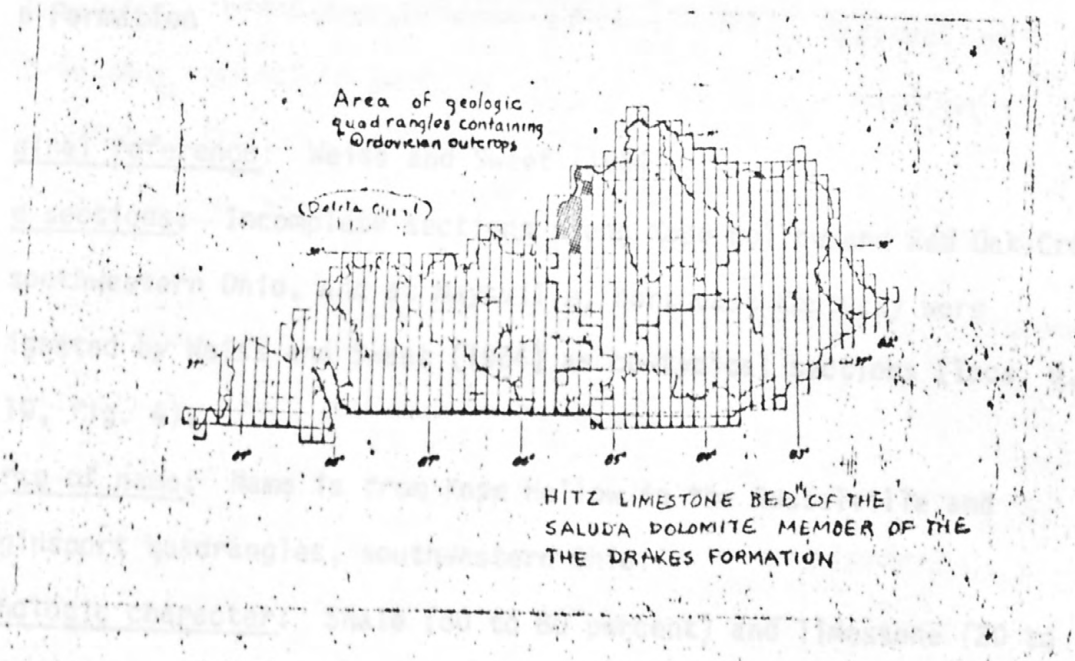
643—16—82903p-1 GPO

Quadrangles containing outcrops:

Unnumbered figure near here.

[Anchorage], [Bedford], Crestwood, Fisherville, Jeffersontown, [La Grange], Madison West, [Owen], Waterford.

643—16—82903p-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
(Delta cut off)
HITZ LIMESTONE BED OF THE SALUDA DOLOMITE MEMBER OF THE THE DRAKES FORMATION

Kope Formation

Original reference: Weiss and Sweet (1964).

Type sections: Incomplete sections along Kope Hollow and Red Oak Creek in southwestern Ohio, and at Maysville, northeast Kentucky were designated by Weiss and Sweet (1964) as co-typical sections (locs. 8, 9, 10, fig. 4).

Source of name: Name is from Kope Hollow in the Russelville and Higginsport quadrangles, southwestern Ohio.

Lithologic character: Shale (60 to 80 percent) and limestone (20 to 40 percent) and minor siltstone. Shale is gray and greenish gray, calcitic, in part very silty; in sets commonly a few inches to about 10 feet thick; locally fossiliferous. Limestone is mostly medium gray, weathering light gray and yellowish gray and is of several types, in approximate order of abundance: (1) fine- to coarse-grained, fossiliferous limestone in irregular to even beds, commonly 2 to 12 inches thick, in part lensing, in part crossbedded; (2) fine-grained, silty limestone, sparsely fossiliferous, laminated and in part crosslaminated, commonly in sets several inches thick; (3) fine- to medium-grained muddy limestone, locally very fossiliferous, in irregular to even beds, commonly less than 6 inches thick. Siltstone is medium gray, calcitic, unfossiliferous, mostly in even thin beds, commonly lensing. Formation as a whole characterized by sets, commonly 3 to 10 feet thick, consisting mostly of shale alternating with sets of similar thickness containing interstratified limestone and shale in nearly equal amounts. Fossils generally common to abundant; most conspicuous are whole and broken brachiopods, bryozoans, crinoid columnals, and fragmented trilobites and graptolites.

Subdivisions: Grand Avenue Member of Ford (1967). Informal units include many unnamed tongues, as in the Lawrenceville quadrangle, north-central Kentucky.

Distribution and thickness: The Kope is a thick formation that crops out poorly over a wide extent in north-central and northeast Kentucky and the northern part of east-central Kentucky. It ranges from a feather edge to about 270 feet in thickness.

Stratigraphic relations: In most of its extent the Kope Formation overlies the Point Pleasant Tongue of the Clays Ferry Formation; elsewhere it overlies the undivided Clays Ferry Formation except locally in northeast Kentucky where it rests directly on the Lexington Limestone. The Kope complexly intertongues and intergrades with the Clays Ferry Formation and in many quadrangles the two formations are mapped as a combined unit. The Kope is overlain generally by the Fairview Formation; in northeastern east-central Kentucky it is overlain by the Garrard Siltstone. The formation feathers out southward in southeastern north-central Kentucky, in northern central Kentucky and northern east-central Kentucky.

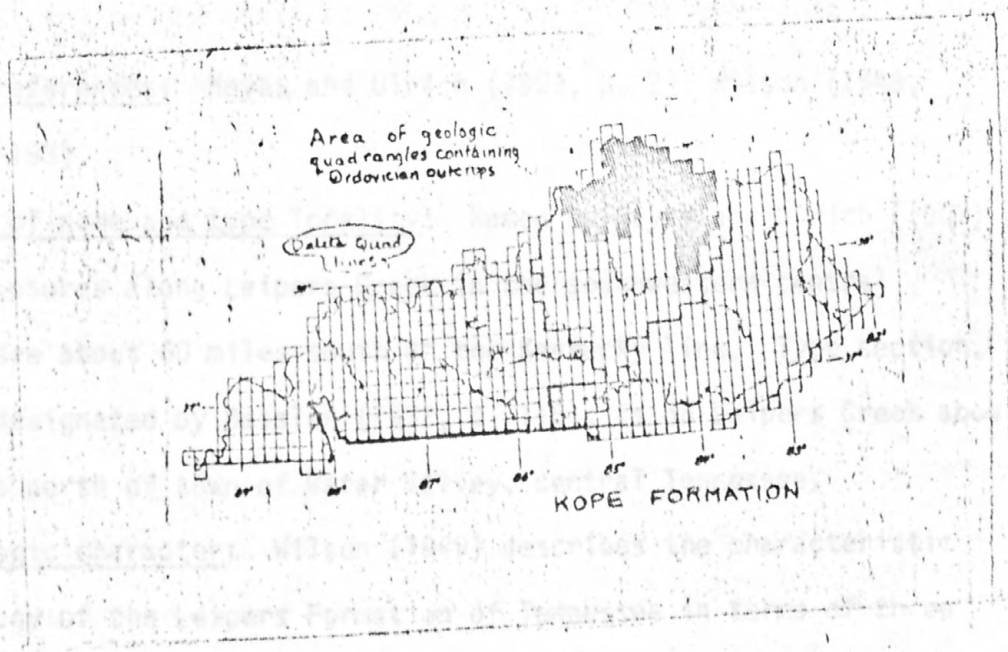
Previous nomenclature: Strata now mapped as Kope Formation were previously assigned by most workers to the +Latonia Shale or to the +Eden Shale and +Mount Hope Shale.

Quadrangles containing outcrops:

Unnumbered figure near here.

Addyston, Alexandria, Bedford, Berlin, Berry, Brooksville, Burlington, Butler, Campbellsburg, Carlisle, Carrollton, Claysville, Covington, Cowan, De Mossville, Elizaville, Elliston, Falmouth, Felicity, Florence, Franklinton, Germantown, Glencoe, Goforth, Gratz, Hedges, Higginsport, Hillsboro, Hooven, Independence, Kelat, Laurel, Lawrenceburg (Ind.), Lawrenceville, Levee, Madison East, Mason, Mays Lick, Maysville East, Maysville West, Millersburg, Monterey, Moorefield, Moscow, Mount Olivet, Mount Sterling, New Castle, New Columbus, New Liberty, Newport, New Richmond, North Middletown, North Pleasureville, Orangeburg, Owenton, Owingsville, Patriot, Piqua, Polsgrove, Rising Sun, Russellville, Sadieville, Sanders, Sardis, Shady Nook, Sharpsburg, Sherburne, Sideview, Stamping Ground, Union, Verona, Vevay North, Vevay South, Walton, Williamstown, Withamsville, Worthville.

c43—16—82993n-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
Dalton Quad
KOPE FORMATION

Leipers Limestone

Chief references: Hayes and Ulrich (1903, p. 2); Wilson (1949, p. 179-193).

Source of name and type locality: Named by Hayes and Ulrich (1903) for exposures along Leipers Creek in the southwestern central Tennessee about 60 miles south of the Kentucky line. Type section, later designated by Bassler (1932, p. 116), is on Leipers Creek about 2 miles north of town of Water Valley, central Tennessee.

Lithologic character: Wilson (1949) describes the characteristic lithology of the Leipers Formation of Tennessee in terms of three facies: (1) argillaceous - dominantly bluish-gray, muddy limestone in partly obscure thin, nodular beds intercalated with partings and thin beds of gray, laminated, calcitic shale; fossils abundant and varied; (2) granular dark-blue, coarse-grained, in part phosphatic, in thick beds, in part cross-bedded, in places interbedded with lenses of gray, laminated calcitic shale; abraded fossils abundant; (3) pale-colored - dark-blue, weathering pale blue and pale yellow; fine-grained limestone, in part argillaceous, fossils common, not present in northern Tennessee.

In Kentucky the Leipers is mostly made up of the argillaceous facies of Wilson (1949); the granular facies is also present. The formation is mostly bluish gray and gray, medium- to coarse-grained limestone, commonly muddy, in irregular, commonly nodular, thin to thick beds, in part crossbedded, intercalated with partings, thin beds, and lenses of bluish- to olive-gray, calcitic shale; fossils abundant, chiefly brachiopods and bryozoans.

c43—16—82993e-1 GPO

Distribution and thickness: Outcrops of the Leipers Limestone in Kentucky are restricted to be the valleys of the Cumberland River and its tributaries near the southern border of the state. Generally only a few tens of feet are exposed. In the Blacks Ferry quadrangle, the only Kentucky quadrangle where the base of the formation has been mapped, the Leipers ranges in thickness from 120 to 180 feet. The Leipers Limestone is widely distributed in central Tennessee and ranges in thickness from 0 to about 250 feet (Wilson, 1949, fig. 54).

Stratigraphic relations: In Tennessee the contact between the Leipers Limestone and the underlying Catheys Formation is determined on the basis of a change in the fossil fauna and is an inferred unconformity (Wilson, 1949, p. 190). In Kentucky the contact is determined on the basis of a change in the rock character, and thus Leipers as used in Kentucky may include more or less strata than the faunally defined Leipers of Tennessee. In the Blacks Ferry quadrangle the contact was mapped at the top of a transitional zone in which irregularly bedded, muddy, medium- to coarse-grained limestone of the Leipers grades below to even-bedded limestone and dolomite tentatively assigned to the Catheys(?) Formation as used by Jillson (1951b, p. 54).

The Leipers is gradationally overlain by the Cumberland Formation in Kentucky. Beds equivalent to the Cumberland are termed Sequatchie Formation in Tennessee where the contact between the formations is an inferred unconformity in central and eastern parts of the state (Wilson, 1949, p. 223). The Leipers grades in the subsurface northward from the Cumberland River exposures into the Calloway Creek Limestone of central and east-central Kentucky.

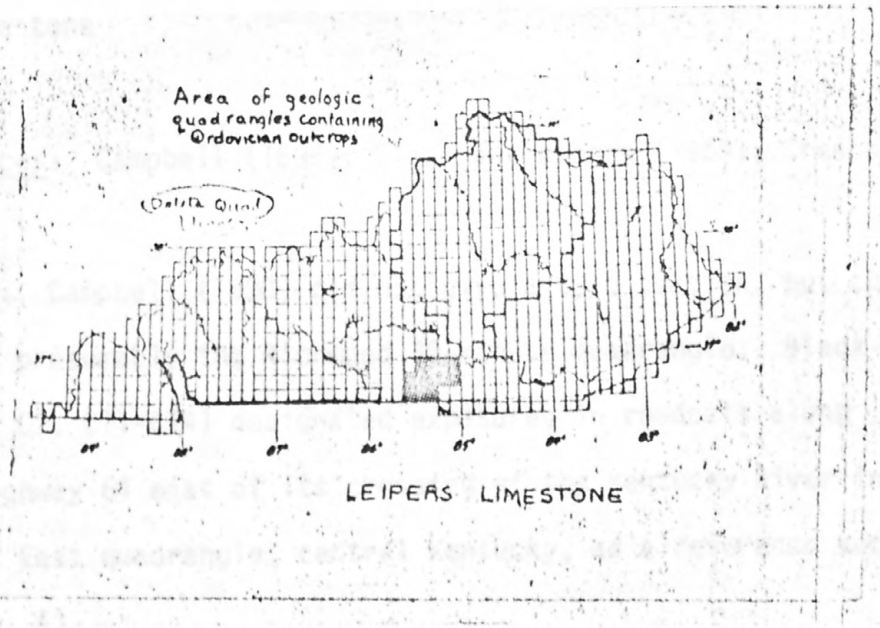
e43—16—82993e-1 GPO

Previous nomenclature: The Leipers Limestone has generally been recognized in Kentucky since the formation was mapped along the Cumberland River drainage in adjoining north-central Kentucky by Bassler (1932). It was equated by McFarlan (1943, p. 352) with the Fairview Formation.

Quadrangles containing outcrops:

Unnumbered figure near here.

Amandaville, Blacks Ferry, Breeding, Burkesville, Celina, Creelsboro, Cumberland City, Dubre, Frogue, Jamestown, Vernon, Waterview, Wolf Creek Dam.


Area of geologic
quadrangles containing
Ordovician outcrops
LEIPERS LIMESTONE

Lexington Limestone

Chief references: Campbell (1898); Black and others (1965); Cressman (1973c).

Type locality: Campbell (1898) did not give a type section, but the type area was presumably the Richmond 30-minute quadrangle. Black and others (1965, C7, C11-C14) designated exposures in roadcuts along Interstate Highway 64 east of its crossing of the Kentucky River in the Frankfort East quadrangle, central Kentucky, as a reference section (loc. 17, fig. 4).

Source of name: Named for the City of Lexington.

Lithologic character: A heterogenous sequence of mostly bioclastic and fossiliferous limestone with minor amounts of cryptograined limestone and interbedded micrograined limestone and shale.

Subdivisions: The Lexington Limestone has been subdivided into the following members: the Curdsville Limestone Member, the Logana Member, the Grier Limestone Member, the Perryville Limestone Member, the Brannon Member, the Sulphur Well Member, the Tanglewood Limestone Member, the Devils Hollow Member, the Greendale Lentil, the Stamping Ground Member, the Strodes Creek Member, and the Millersburg Member. Figure 5 shows the general relations of the subdivisions of the Lexington.

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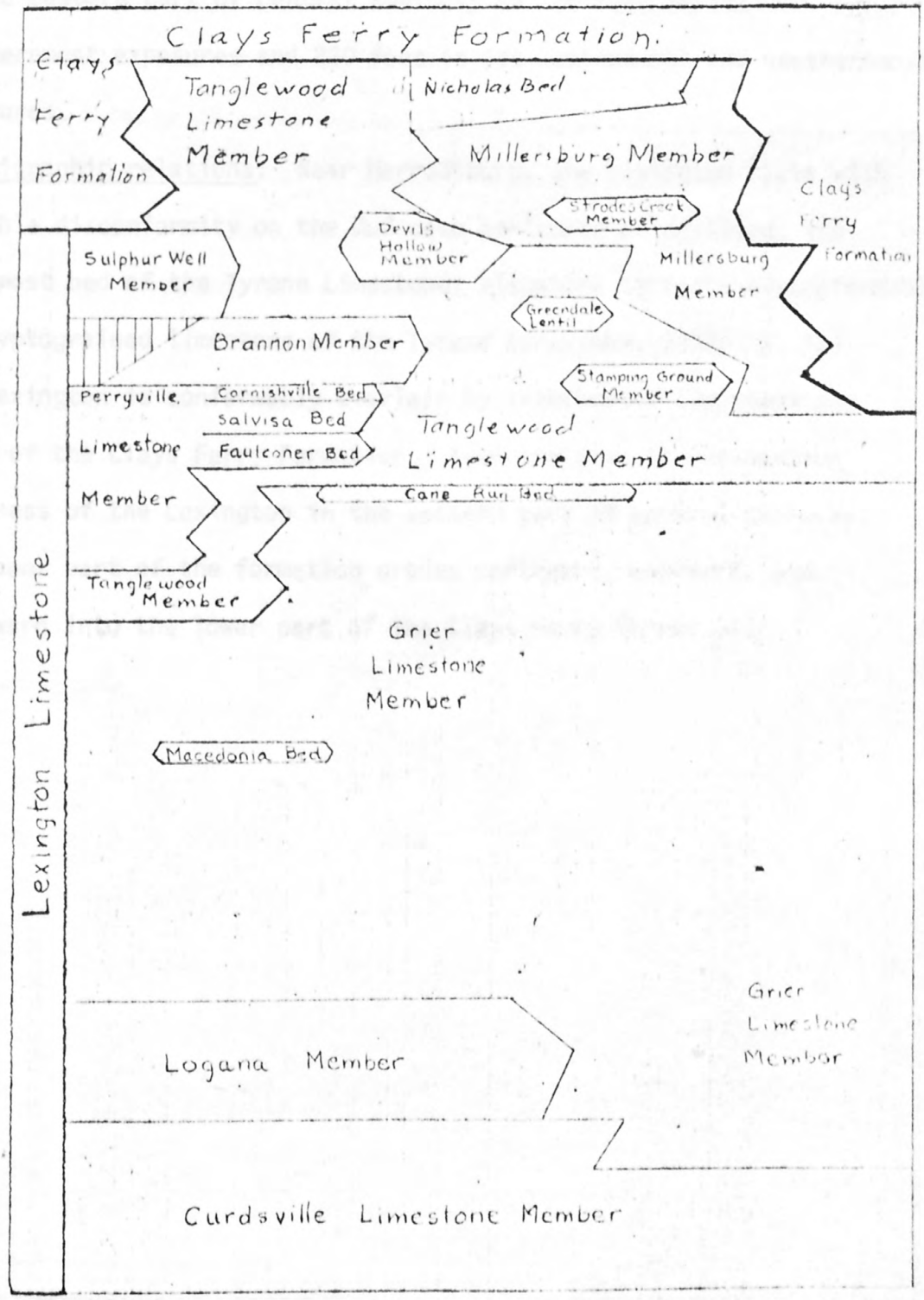
c43—16—82993a-1 GPO

Figure 5.--Generalized stratigraphic relations of members and beds of the Lexington Limestone. No scale.


Clays Ferry Formation
Clays Ferry Formation
Tanglewood Limestone Member
Nicholas Bed
Millersburg Member
Clays Ferry Formation
Strodes Creek Member
Devils Hollow Member
Millersburg Member
Sulphur Well Member
Greendale Lentil
Brannon Member
Stamping Ground Member
Perryville Limestone Member
Cornishville Bed
Salvisa Bed
Faulconer Bed
Tanglewood Limestone Member
Cane Run Bed
Tanglewood Member
Grier Limestone Member
Macedonia Bed
Lexington Limestone
Logana Member
Grier Limestone Member
Curdsville Limestone Member

123a

Distribution and thickness: The Lexington Limestone crops out widely in the Blue Grass region of Kentucky. It thins from about 340 feet in the eastern part of central Kentucky to 180 feet in its northernmost exposures and 220 feet in its westernmost and southernmost exposures.

Stratigraphic relations: Near Harrodsburg, the Lexington rests with probable disconformity on the mud cave bentonite of drillers, the uppermost bed of the Tyrone Limestone; elsewhere it rests disconformably on cryptograined limestone of the Tyrone (Cressman, 1973c, p. 12). The Lexington is conformably overlain by interbedded limestone and shale of the Clays Ferry Formation. From the area of the maximum thickness of the Lexington in the eastern part of central Kentucky, the upper part of the formation grades northward, eastward, and southward into the lower part of the Clays Ferry Formation.

643—16—82993e-1 GPO

Previous nomenclature: Campbell (1898) originally defined the Lexington Limestone as lying between the High Bridge Group below and the +Flanagan Chert above. The lower part of Campbell's +Flanagan Chert is the Brannon Member of the Lexington of present usage. Largely because of erroneous correlations, subsequent workers placed the top of the Lexington at various positions. In eastern central and north-central Kentucky part of the Lexington were included in the +Cynthiana Formation of Foerste (1906, p. 10, 13, 14, 211-212). Black and others (1965) abandoned the name +Cynthiana and redefined the Lexington to include both Campbell's Lexington and similar overlying rocks that had been included in the +Cynthiana Formation. The Lexington was raised to group rank by Hamilton (1948) and reduced to formational rank by Cressman (1964). See Black and others (1965, p. C2-C7) for a fuller treatment of the development of the nomenclature.

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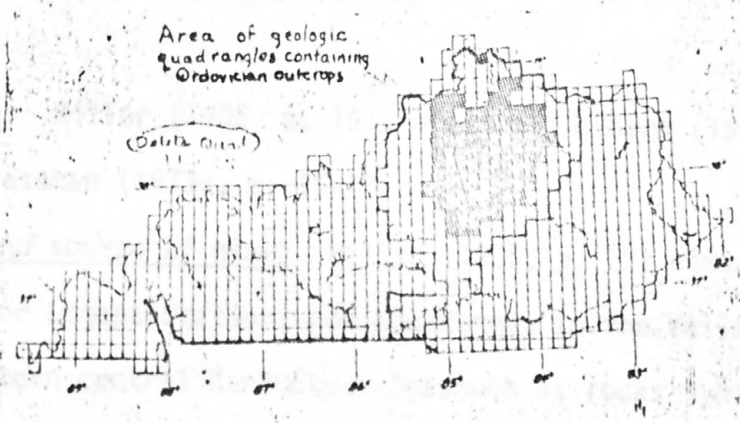
Quadrangles containing outcrops:

Unnumbered figure near here.

Ashbrook, Austerlitz, Berry, Breckinridge, Bryantsville, Buckeye, Butler, Cardwell, Carlisle, Centerville, Chaplin, Claysville, Clintonville, Coletown, Cornishville, Covington, Cowan, Cynthiana, Danville, Delaplain, Falmouth, Ford, Frankfort East, Frankfort West, Franklinton, Georgetown, Glencoe, Glensboro, Goforth, Gratz, Harrodsburg, Hedges, Junction City, Keene, Kelat, Kirksville, Lawrenceburg (Ky.), Lawrenceville, Leesburg, Lexington East, Lexington West, Little Hickman, Mason, McBrayer, Midway, Millersburg, Monterey, Moorefield, Moscow, Mount Olivet, New Columbus, New Liberty, Nicholasville, North Middletown, North Pleasureville, Paris East, Paris West, Parksville, Perryville, Piqua, Polsgrove, Richmond North, Sadieville, Salvisa, Sanders, Sardis, Shady Nook, Sharpsburg, Shawhan, Sherburne, Sideview, Stamping Ground, Stanford, Switzer, Tyrone, Union City, Valley View, Versailles, Vevay South, Waddy, Wilmore, Winchester, Worthville.



LEXINGTON LIMESTONE

Logana Member of the Lexington Limestone

Chief reference: Miller (1905, p. 19), Black and others (1965, p. C15-C17), Cressman (1973c, p. 15-17).

Type locality and source of name: Miller (1905, p. 19) named the Logana Member for Logana Station, now abandoned, in the Valley View quadrangle, eastern central Kentucky. Inasmuch as rocks typical of the Logana as described by Miller (1905) and as used by subsequent workers are not present in the type locality, Black and others (1965, p. C16) designated roadcut exposures along the entrance road to the Kentucky Utilities Plant on the east side of the Kentucky River in the Tyrone quadrangle, central Kentucky, as a reference section (loc. 20, fig. 4).

Lithologic character: In most of its outcrop area the Logana consists of a lower unit of interbedded micrograined limestone and shale, a middle unit of brachiopod coquina, and an upper unit of interbedded micrograined limestone and shale. The coquina is not present everywhere, and the interbedded micrograined limestone and shale is the characteristic rock type. The micrograined limestone is brownish gray to blue gray and weathers out as smooth-surfaced slabs having a yellowish-gray rind; most beds are unfossiliferous, but a few contain abundant pelecypods that locally are silicified. The brachiopod coquina is mostly a tightly packed mass of valves of Dalmanella sulcata Cooper.

Distribution and thickness: The Logana Member of the Lexington Limestone thickens northward from a feather edge in the Harrodsburg quadrangle to nearly 40 in the Frankfort East quadrangle. North of Frankfort the member is generally below drainage. An isolated exposure of the brachiopod coquina is present in the center of the Jeptha Knob cryptoexplosion structure in the Waddy quadrangle where it consists of silicified brachiopods in a dolomite matrix.

Stratigraphic relations: The Logana lies conformably on the Curdsville Limestone Member of the Lexington. The contact is generally sharp though in some areas it may be gradational through as much as a foot. The contact with nodular-bedded fossiliferous limestone of the overlying Grier Limestone Member of the Lexington is conformable and placed at the top of the uppermost unit of interbedded micrograined limestone and shale. The Logana grades southeastward into nodular-bedded fossiliferous limestone of the basal Grier Limestone Member and is not present in southern central Kentucky.

Previous nomenclature: Miller (1913, p. 321) substituted the Tennessee name Hermitage for the unit he had previously named Logana. Huffman (1945, p. 159) reintroduced the name Logana. Some earlier workers considered the Logana to be of formational rank within a Lexington Group. The present usage of Logana, which differs from the original definition of Miller (1905, p. 19) mainly in defining the upper contact lithologically rather than faunally, was introduced by Black and others (1965, p. C15-C17).

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Quadrangles containing outcrops:

Unnumbered figure near here.

Claysville, Frankfort East, Frankfort West, Harrodsburg, Keene, Lawrenceburg (Ky.), Little Hickman, Nicholasville, Polsgrove, Salvisa, Shady Nook, Switzer, Tyrone, Waddy, Wilmore.

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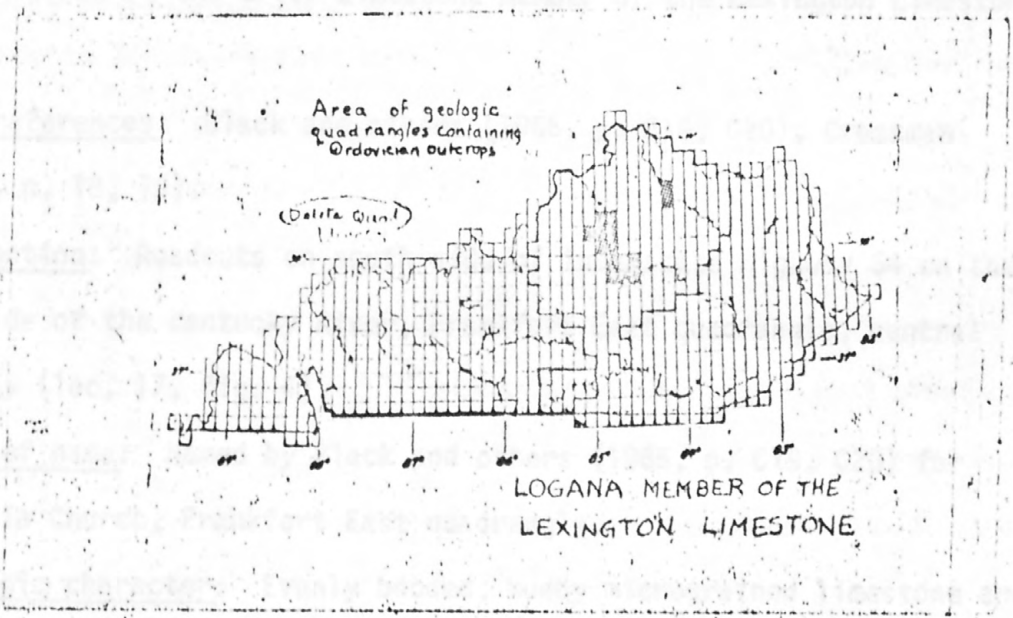
Area of geologic quadrangles containing Ordovician outcrops
LOGANA MEMBER OF THE LEXINGTON LIMESTONE

Macedonia Bed of the Grier Limestone Member of the Lexington Limestone

Chief references: Black and others (1965, p. C19, C20); Cressman (1973c, p. 18, 19).

Type section: Roadcuts on south side of Interstate Highway 64 on the east side of the Kentucky River, Frankfort East quadrangle, central Kentucky (loc. 17, fig. 4).

Source of name: Named by Black and others (1965, p. C19, C20) for Macedonia Church, Frankfort East quadrangle.

Lithologic character: Evenly bedded, muddy micrograined limestone and shale; shale makes up 10 to 40 percent of the unit. In the type area the Macedonia includes a middle unit of brachiopod coquina consisting of valves of a heterorthinid brachiopod (Neuman, 1967). Elsewhere the coquina is not present, and the Macedonia consists entirely of micrograined limestone and shale.

Distribution and thickness: The Macedonia Bed of the Grier Limestone Member of the Lexington Limestone extends southward along the Kentucky River in a belt about 15 miles wide to near Harrodsburg where it grades into nodular fossiliferous limestone indistinguishable from the rest of the Grier Limestone Member. The unit ranges from 0 to about 15 feet in thickness.

Stratigraphic relations: At its type section the base of the Macedonia Bed is 60 feet above the base of the Grier Limestone Member. Both the upper and lower contacts are conformable and sharp to gradational through a foot or so. The Macedonia grades eastward, southward, and probably westward into nodular fossiliferous limestone and shale characteristic of the main body of the Grier Limestone Member. The Macedonia Bed disappears northward beneath drainage, but it is probably the tongue of the shale and interbedded limestone that according to Bergström and Sweet (1966, p. 277) occupies most of the "Lexington interval" in southwestern Ohio.

Quadrangles containing outcrops:

Unnumbered figure near here.

Frankfort East, Frankfort West, Harrodsburg, Keene, Lawrenceburg (Ky.), McBrayer, Midway, Salvisa, Switzer, Wilmore.

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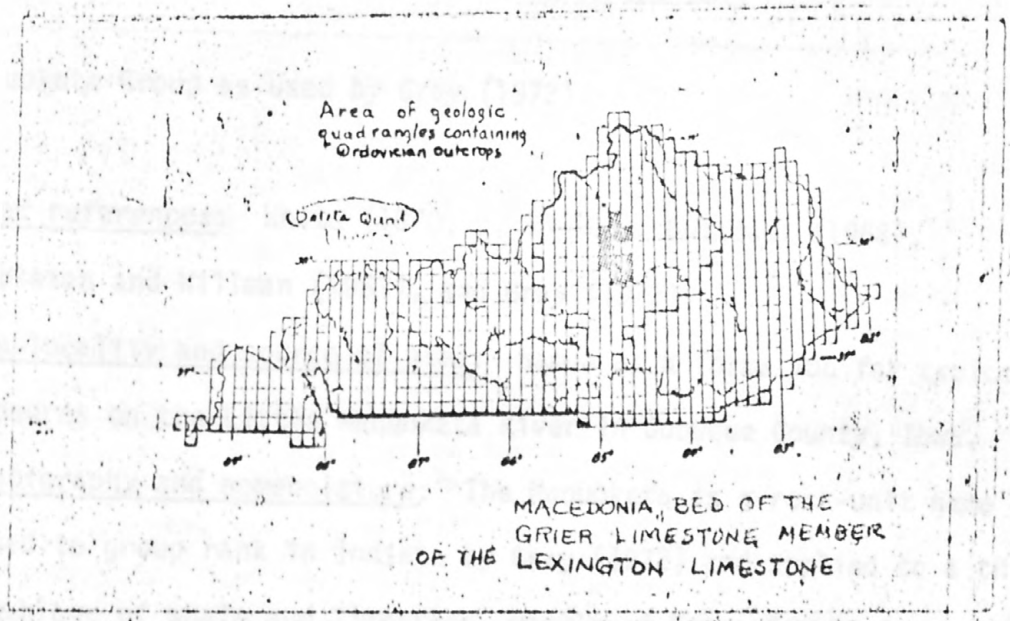

MACEDONIA, BED OF THE GRIER LIMESTONE MEMBER OF THE LEXINGTON LIMESTONE

Maquoketa Group as used by Gray (1972)

Chief references: White (1870, p. 18-182), Gutstadt (1958), Templeton and Willman (1963), and Gray (1972).

Type locality and source of name: Named as a formation for typical exposures on the Little Maquoketa River in Dubuque County, Iowa.

Stratigraphy and nomenclature: The Maquoketa is a rock-unit name raised to group rank in Indiana by Gray (1972) and applied to a thick assemblage of shale and limestone, mostly of Upper Ordovician age, that overlies the Lexington Limestone and is overlain by Silurian or younger rocks. In the outcrop area near the Ohio River, in southwestern Indiana the Maquoketa Group as used by Gray (1972) comprises the Kope, Dillsboro and Whitewater Formations. In the adjacent outcrops in Kentucky the equivalent section is divided into the Kope Formation, Calloway Creek and Grant Lake Limestone, and Bull Fork and Drakes Formations. By analogy with the Indiana usage, the Maquoketa in Kentucky would include all the formations above the Lexington Limestone shown in figure 3. The term Maquoketa is used approximately in this way for a subsurface unit in western Kentucky (Schwalb and others, 1971a, b) but has not been recommended for formal application to the exposed section in Kentucky.

Marble Hill Bed of the Rowland Member of the Drakes Formation

Chief references: Owen (1859, p. 28-29) named the unit. Swadley and Gibbons (1976) assigned the unit as a bed to the Rowland Member of the Drakes Formation.

Type locality and source of name: Owen apparently based his original description on exposures in Deans quarry on Marble Hill in Indiana near Madison (loc. 6, fig. 4). Named for Marble Hill.

Lithologic character: Mostly light-gray, poorly sorted, fine- to coarse-grained, bioclastic limestone in irregular to even beds as much as 3 feet thick, in part thinly crossbedded in sets 1 to 3 feet thick. Whole and broken fossils abundant, chiefly gastropods, brachiopods, and bryozoans, and smaller amounts of pelecypods, crinoids, cephalopods, and corals.

Distribution and thickness: The Marble Hill Bed of the Rowland Member of the Drakes Formation ranges from 0 to about 30 feet in thickness in the area of outcrop near the Ohio River in the central part of north-central Kentucky.

Stratigraphic relations: The Marble Hill is a conspicuous, thin irregular body within the Rowland Member in Kentucky. The unit named by Owen (1859) is included within the Dillsboro Formation of Brown and Lineback (1966) in Indiana.

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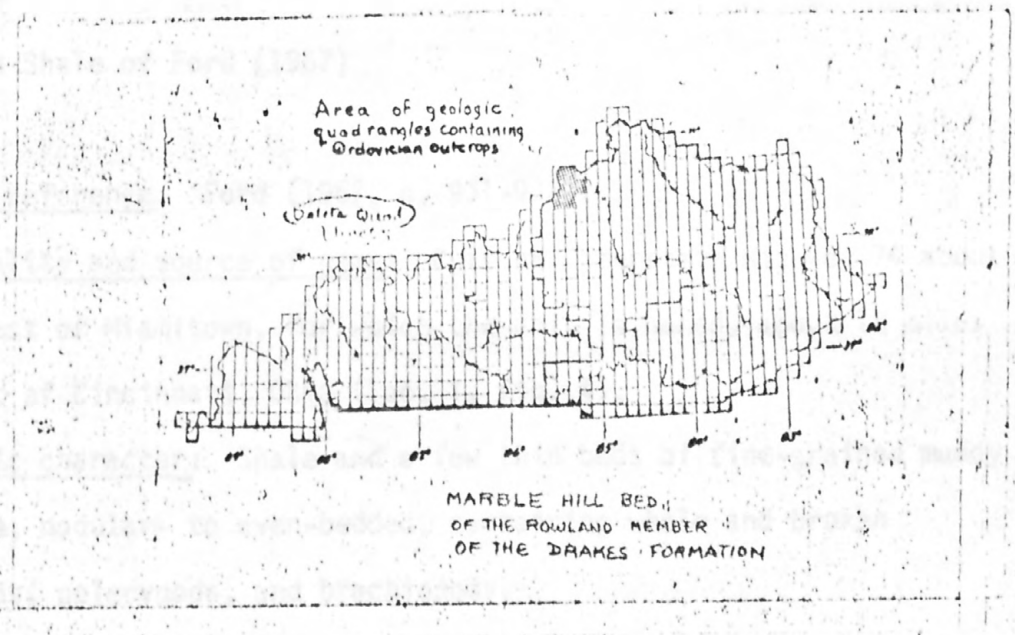
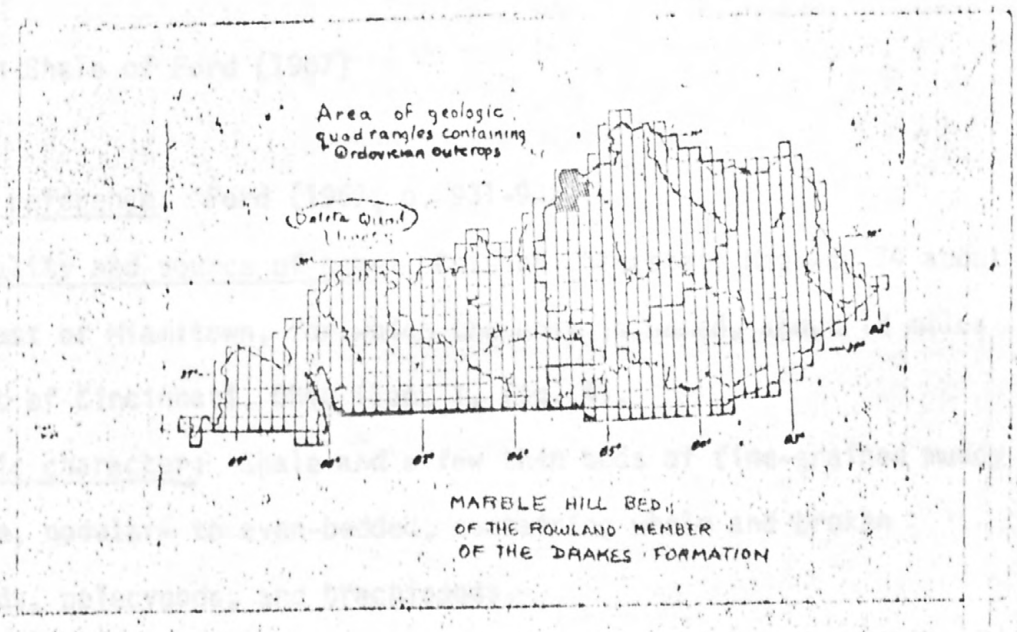
Previous nomenclature: The Marble Hill probably was generally assigned to the +Waynesville Formation by earlier workers in Kentucky. Marble Hill Bed is listed by Shaver and others (1970, p. 47) among abandoned and litte-used stratigraphic names in Indiana.

Quadrangles containing outcrops:

Unnumbered figure near here.

Bedford, Bethlehem, Campbellsburg, [La Grange], Madison East, Madison West, Smithfield.


Area of geologic quadrangles containing Ordovician outcrops
Ontario
MARBLE HILL BED
OF THE ROWLAND MEMBER
OF THE DRAKES FORMATION


Area of geologic quadrangles containing Ordovician outcrops
MARBLE HILL BED
OF THE ROWLAND MEMBER
OF THE DRAKES FORMATION

Miamitown Shale of Ford (1967)

Original reference: Ford (1967, p. 931-932).

Type locality and source of name: Cuts on Interstate Highway 74 about 1 mile west of Miamitown, for which the unit is named, about 12 miles northwest of Cincinnati, Ohio (loc. 1, fig. 4).

Lithologic character: Shale and a few thin beds of fine-grained muddy limestone, nodular- to even-bedded, containing whole and broken gastropods, pelecypods, and brachiopods.

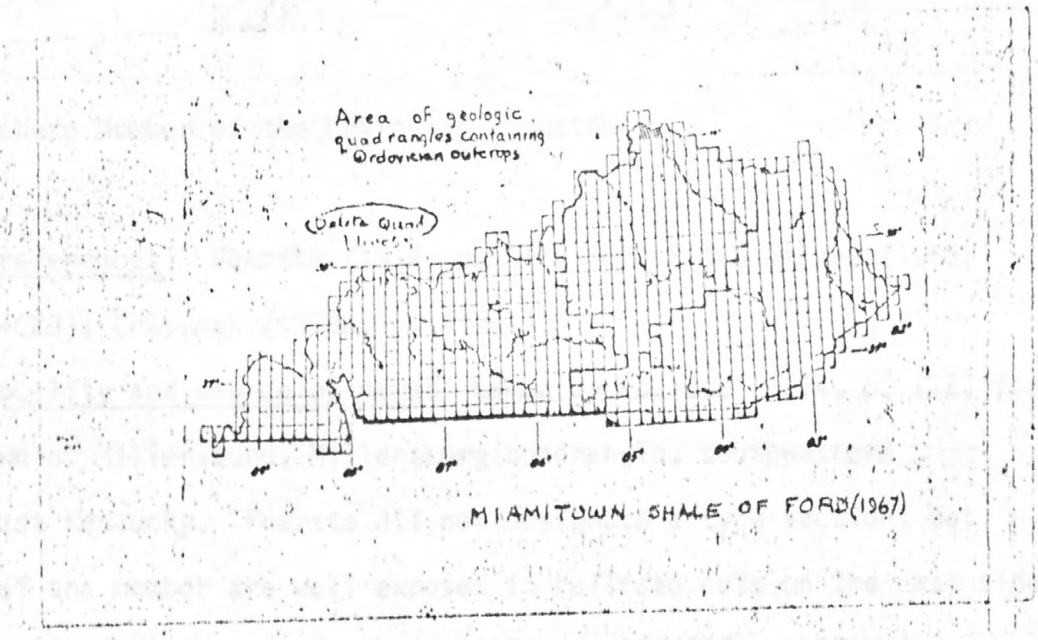
Distribution and stratigraphic relations: The Miamitown Shale of Ford (1967) was described as an informal unit, 0 to 10 feet thick, at the top of the Fairview Formation cropping out near Francisville, northern north-central Kentucky in the Burlington and Addyston quadrangles. The unit is overlain by the Bellevue Tongue of the Grant Lake Limestone. It overlies the Fairview Formation near the Ohio River but tongues out into the Fairview a few miles to the south.

Previous nomenclature: According to Ford (1967, fig. 2) rocks assigned to the Miamitown were previously included in the Fairview and +McMillan Formations by Caster and others (1961).

Quadrangles containing outcrops:

Unnumbered figure near here.

Addyston, Burlington, Covington.


Area of geologic quadrangles containing Ordovician outcrops
MIAMITOWN SHALE OF FORD(1967)

Millersburg Member of the Lexington Limestone

Chief references: Foerste (1914, p. 112), Black and others (1965, p. C24-C26); Cressman (1973c, p. 41-44).

Type locality and source of name: Named by Foerste (1914, p, 112) for the town of Millersburg, Millersburg quadrangle, southwestern northeast Kentucky. Foerste did not designate a type section, but parts of the member are well exposed in railroad cuts on the east side of Millersburg. Black and others (1965, p. C25-C26) published a reference section measured in a roadcut in the Athens-Boonesboro road near Lexington in the Coletown quadrangle (loc. 28, fig. 4).

Lithologic character: Characteristically consists of limestone nodules, several inches in diameter, aligned along bedding and set in a matrix of calcitic shale. In most exposures nodular limestone sets several feet thick alternate with irregular limestone beds several inches thick and with sets of irregular beds 1 or 2 feet thick. The nodules are mostly medium-gray to yellowish-gray, fossiliferous micrograined limestone whereas the irregular beds are poorly sorted very fine to medium-grained limestone. Bryozoans, brachiopods, mollusks, and trilobite fragments are common; stromatoporoids and tabulate corals are present in several zones.

Distribution and thickness: The Millersburg Member of the Lexington Limestone crops out widely in the southeastern part of north-central Kentucky, the southern part of northeast Kentucky, the western part of east-central Kentucky and the northeastern part of central Kentucky. It reaches a maximum exposed thickness of about 90 feet in the Hedges quadrangle, east-central Kentucky from where it thins largely by facies changes to the southwest, west, and northwest to an irregular pinchout in north-central and central Kentucky (Cressman, 1973c,fig. 35).

Stratigraphic relations: The Millersburg Member intertongues with the Tanglewood Limestone Member of the Lexington Limestone and with the Clays Ferry Formation; throughout much of its area the Millersburg consists of two distinct tongues. Millersburg tongues generally overlie Tanglewood and are overlain by Tanglewood or the Clays Ferry Formation.

Previous nomenclature: The Millersburg was originally considered part of the +Cynthiana Formation, but Black and others (1965, p. C24) adopted it as a member of the Lexington Limestone. In the western part of its area of exposure the Millersburg includes beds that were previously termed Greendale.

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Quadrangles containing outcrops:

Unnumbered figure near here.

Austerlitz, Breckinridge, Carlisle, Centerville, Clintonville, Coletown, Cowan, Cynthiana, Delaplain, Ford, Frankfort East, Frankfort West, Georgetown, Gratz, Hedges, Leesburg, Lexington East, Lexington West, Midway, Millersburg, Monterey, North Middletown, Paris East, Paris West, Piqua, Polsgrove, Salvisa, Shady Nook, Shawhan, Sideview, Stamping Ground, Switzer, [Tyrone], Waddy, Winchester.

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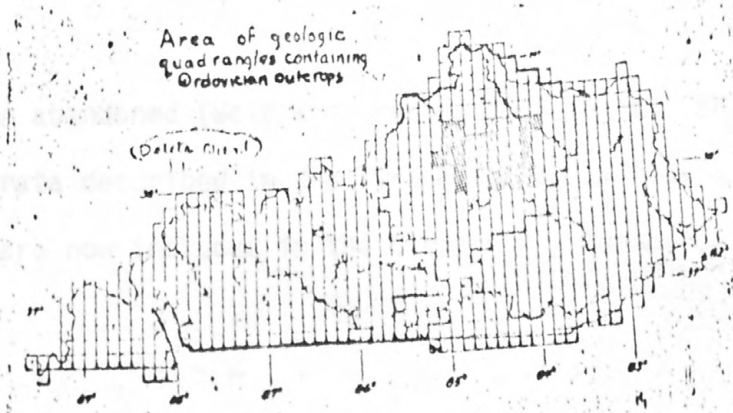

MILLERSBURG MEMBER OF THE
LEXINGTON LIMESTONE

+Million Shale of Nickles (1905)

This name, now abandoned (Weir and Greene, 1965, p. B3, B7), was applied to strata described in the Tyrone and Versailles quadrangles. These strata are now included in the Clays Ferry Formation.

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Nicholas Bed of the Tanglewood Limestone Member of the Lexington Limestone

Chief references: Foerste (1909a, p. 209-210; 1909b, p. 294), Black and others (1965, p. C26-C27), Cressman (1973c, p. 31).

Type locality and source of name: Named by Foerste (1909a) for Nicholas County where the unit is conspicuous. Foerste did not designate a type section, but Black and others (1965, p. C27) describe a reference section in Nicholas County from exposures about 1.5 miles southwest of Pleasant Valley in the Moorefield quadrangle, northeast Kentucky (loc. 14, fig. 4).

Lithologic character: Composed mainly of slightly phosphatic, fine- to coarse-grained, fossil-fragmental limestone in thin wavy to tabular beds; in part crossbedded.

Distribution and thickness: Exposures of the Nicholas Bed extend westward to about the longitude of Georgetown and southward to near the Kentucky River in the Coletown, Ford, and Winchester quadrangles. Its extent northward and northwestward from the type locality are uncertain because of problems in correlation. The Nicholas Bed is 44 feet thick at its type locality; it reaches a maximum of about 90 feet in the Millersburg quadrangle, but it is less than 30 feet thick throughout most of its area of exposure. The Nicholas Bed was not identified as such in many quadrangles in which it occurs because continuity with the type section had not been established at the time of mapping.

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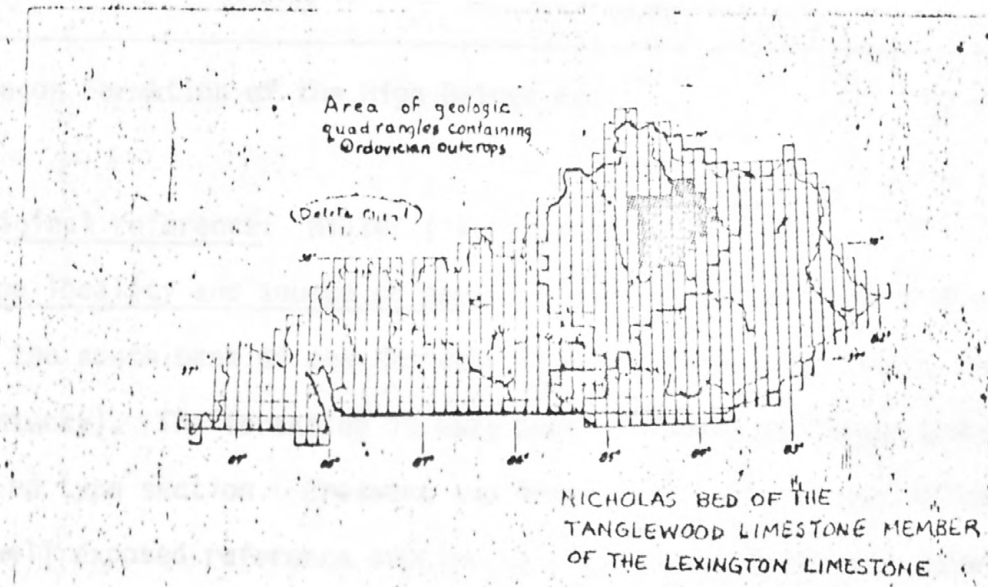
Stratigraphic relations: The Nicholas Bed of the Tanglewood Limestone Member generally overlies the Millersburg Member of the Lexington Limestone, but locally it rests with apparent conformity on the Strodes Creek Member of the Lexington. The contact with the overlying Clays Ferry Formation is sharp, planar, and conformable. The Nicholas Bed tongues out both northward and southward from its type locality into the Clays Ferry Formation. Locally it grades into nodular fossiliferous limestone and shale of the Millersburg Member of the Lexington. In the north-central part of central Kentucky the Nicholas merges with other tongues of Tanglewood, and eastward from its type locality it dips below the land surface.

Previous nomenclature: Previous to the abandonment of the name +Cynthiana, the Nicholas was considered a member of that formation; the name was applied by some workers to the upper part of the +Cynthiana in other areas, particularly along the Ohio River where the lithologic character of the interval differs considerably from that in the type area. Black and others (1965, p. C26-C27) placed the unit in the redefined Lexington Limestone as a member and confined the name to calcarenites continuous with those of the reference section. Cressman (1973c, p. 31) reduced the rank of the unit to that of bed and placed it in the Tanglewood Limestone Member of the Lexington.

Quadrangles containing outcrops:

Unnumbered figure near here.

[Austerlitz], [Breckinridge], [Carlisle], [Centerville], [Claysville], [Clintonville], Coletown, [Cowan], [Cynthiana], [Delaplain], [Ford], [Georgetown], [Leesburg], [Lexington East], [Lexington West], [Millersburg], Moorefield, [Mount Olivet], [New Columbus], [Nicholasville], [North Middletown], [Paris East], [Paris West], [Piqua], [Sadieville], [Shady Nook], [Sharpsburg], [Shawhan], Sherburne, [Sideview], [Winchester],


Area of geologic quadrangles containing Ordovician outcrops
(Delete area)
NICHOLAS BED OF THE TANGLEWOOD LIMESTONE MEMBER OF THE LEXINGTON LIMESTONE

Oregon Formation of the High Bridge Group

Original reference: Miller (1905, p. 13).

Type locality and source of name: Named for the village of Oregon on the south bank of the Kentucky River (Salvisa quadrangle, central Kentucky). The formation is only partly exposed at Oregon and there is no type section. Cressman and Noger (1976, pl. 1, sec. C) describe a well exposed reference section in the Salvisa quadrangle about 4 miles northeast of Oregon (loc. 26, fig. 4).

Lithologic character: Yellowish-gray, laminated fine-grained dolomite in beds 1 to 3 feet thick. In much of the area, the dolomite contains interbeds of cryptograined limestone.

Distribution and thickness: The Oregon Formation of the High Bridge Group crops out along the Kentucky River and the lower parts of its tributaries in central Kentucky. The Oregon ranges in thickness from about 6 feet in the Bryantsville quadrangle to about 65 feet in the Ford quadrangle.

Stratigraphic relations: The Oregon intertongues with cryptograined limestone of the lower part of the Tyrone Limestone, and the thickness changes of the Oregon result largely from this intertonguing. The contact of Oregon with the underlying Camp Nelson Limestone is sharp and conformable. The upper and lower contacts of the Oregon are placed at the top of the highest and base of the lowest dolomite bed.

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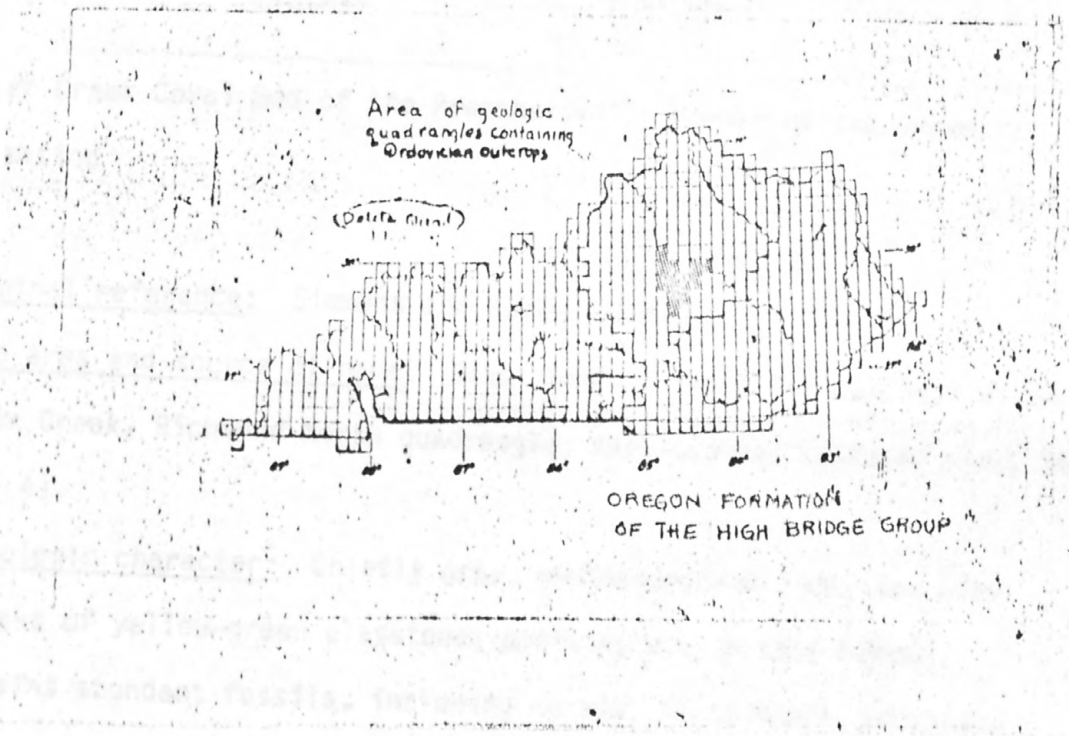
Previous nomenclature: Although the early nomenclature was imprecise the Oregon was apparently considered a member of the High Bridge Formation until Hamilton (1948, p. 40-41) raised High Bridge to group and the Oregon to formational rank. The Oregon has been termed Limestone, Dolomite, and Formation. Inasmuch as the unit contains interbedded dolomite and limestone in most of the area, Formation is the most appropriate designation.

Quadrangles containing outcrops:

Unnumbered figure near here.

Bryantsville, Buckeye, Coletown, Ford, Harrodsburg, Keene, Little Hickman, Salvisa, Stanford, Tyrone, Valley View, Wilmore.


Area of geologic
quadrangles containing
Ordovician outcrops
(Delete Ohio)
OREGON FORMATION
OF THE HIGH BRIDGE GROUP

Otter Creek Coral Bed of the Preachersville Member of the Drakes Formation

Original reference: Simmons and Oliver (1967).

Type area and source of name: Described and named for outcrops along Otter Creek, Richmond North quadrangle, east-central Kentucky (loc. 35, fig. 4).

Lithologic character: Chiefly gray, medium-grained limestone with streaks of yellow-green claystone; pyritic; mostly thin bedded, Contains abundant fossils, including corals, brachiopods, bryozoans, gastropods, and pelecypods.

Distribution and thickness: The Otter Creek Coral Bed of the Preachersville Member of the Drakes Formation is distributed sporadically in the Richmond North, Union City, and Palmer quadrangles, east-central Kentucky. The bed ranges from 0 to 8 feet in thickness.

Stratigraphic relations: Where present the Otter Creek forms the basal unit of Preachersville Member; near its pinchout the bed intertongues with fine-grained calcitic dolomite of the basal Preachersville. The bed grades below into muddy dolomite of underlying Rowland Member of the Drakes Formation.

Previous nomenclature: The Otter Creek Coral Bed was probably included in the +Liberty Formation of earlier workers.

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Quadrangles containing outcrops:

Unnumbered figure near here.

Palmer, Richmond North, Union City.

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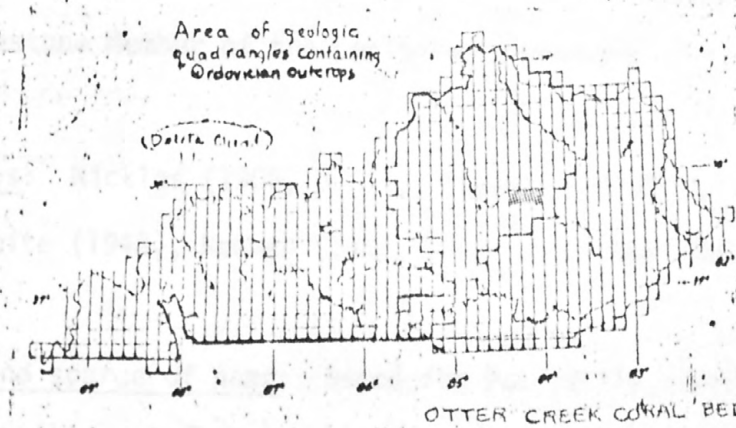

OTTER CREEK CORAL BED.
OF THE PREACHERSVILLE MEMBER
OF THE DRAKES FORMATION

Perryville Limestone Member of the Lexington Limestone

Chief references: Nickles (1905, p. 15), Foerste (1912b, p. 32; 1914), McFarlan and White (1948), Neuman (1967, p. 5), Cressman (1973c, p. 23-30).

Type locality and source of name: Named for Perryville, Perryville quadrangle, southern central Kentucky, Nickles (1905) did not designate a type section or a type locality. Cressman (1973c, p. 24) gave a composite reference section described from quarries near Perryville (locs. 38, 39, fig. 4).

Lithologic character: Composed mostly of very light gray cryptograined limestone and brownish-gray cryptograined and micrograined limestone; includes some nodular-bedded fossiliferous limestone at top. The cryptograined limestone is generally in even beds; ostracodes and tubiform burrows filled with sparry calcite are common; contains some algal laminations and sparse mudcracks. The brownish-gray limestone is irregularly to nodularly bedded; mollusks are the most conspicuous fossils, and tabulate corals and stromatoporoids are common. The fossiliferous nodular limestone at the top closely resembles rock of the Grier Limestone Member of the Lexington Limestone.

Subdivisions: Three subdivisions, the Faulconer Bed at the base, the Salvisa Bed, and the Cornishville Bed at the top, make up the Perryville. The Salvisa and Cornishville Beds are coextensive with the Perryville, whereas the Faulconer Bed is absent northeast of Harrodsburg.

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Distribution and thickness: The Perryville Limestone Member of the Lexington Limestone crops out only in central Kentucky. It thins to the northeast from a maximum of nearly 60 feet in its southernmost exposures in the Perryville quadrangle to a feather edge in the Harrodsburg quadrangle.

Stratigraphic relations: The Perryville rests conformably on the Tanglewood Limestone Member of the Lexington Limestone and is overlain conformably throughout most of its outcrop area by the Brannon Member of the Lexington. Locally it is overlain, probably disconformably, by the Sulphur Well Member of the Lexington. The northeastward thinning of the Perryville results mostly from intertonguing of the lower part with the Tanglewood Limestone Member.

Previous nomenclature: The name Perryville was originally applied by Nickles (1905, p. 15) to strata now included in the Faulconer and Salvisa Beds. Foerste (1914) was the first to include the Cornishville, together with the Salvisa and the Faulconer, in the expanded Perryville. The only changes since then have been in rank.

Quadrangles containing outcrops:

Unnumbered figure near here.

Ashbrook, Bryantsville, Cardwell, Chaplin, Cornishville, Danville, Harrodsburg, Junction City, McBrayer, Parksville, Perryville, Stanford, Wilmore.

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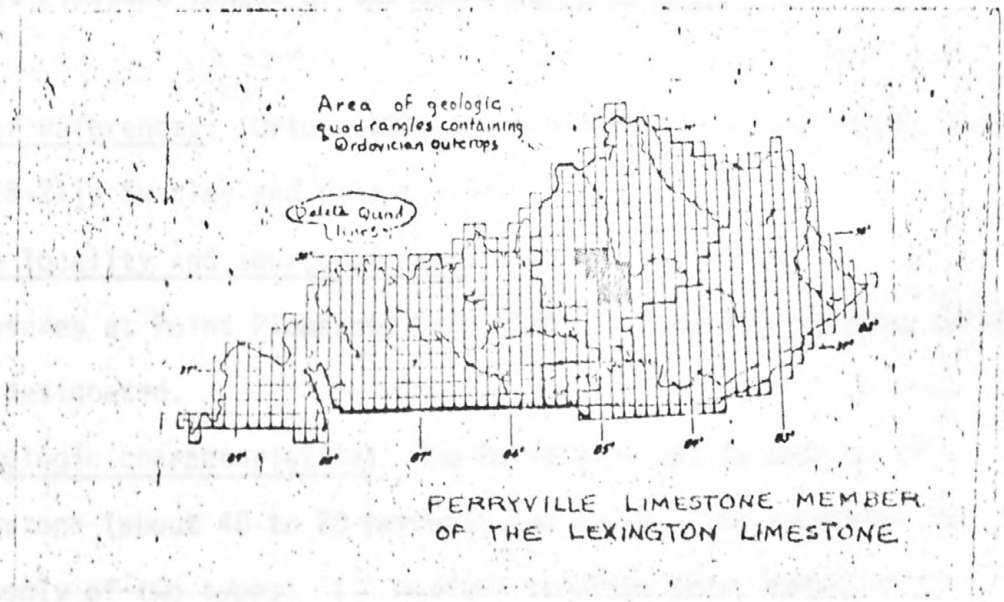
(No page 156)


Area of geologic quadrangles containing Ordovician outcrops
Pulaski Quad Limits
PERRYVILLE LIMESTONE MEMBER OF THE LEXINGTON LIMESTONE

Point Pleasant Tongue of the Clays Ferry Formation

Chief references: Orton, 1873 (p. 370-378); Weiss and others (1965, p. 18-21); Swadley and others, 1975.

Type locality and source of name: The unit was named for typical exposures at Point Pleasant, Ohio (loc. 7, fig. 4). No type section was designated.

Lithologic characteristics: The Point Pleasant is made up of limestone (about 40 to 70 percent) and shale. The limestone is commonly of two types: (1) medium- to olive-gray, composed of medium- to coarse-grained fossil fragments in a sparry calcite matrix, in even to irregular thin to thick beds; (2) minor but conspicuous, medium-gray, muddy fine-grained limestone in thin even beds. Shale is mostly medium gray, commonly calcitic, locally very silty, laminated in thin to thick sets; fissility poor to good. Megafossils, found mostly in limestone, consist principally of brachiopods and bryozoans but include crinoids, gastropods, cephalopods, and trilobites.

Subdivision: In the northern part of north-central Kentucky the Point Pleasant includes the poorly exposed Bromley Shale Bed.

Distribution and thickness: The Point Pleasant Tongue of the Clays Ferry Formation has been recognized in the northern parts of north-central and northeast Kentucky. The unit generally ranges in thickness from about 100 to 130 feet.

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Stratigraphic relations: Swadley and others (1975) showed that the Point Pleasant is a stratiform body, lithologically similar to the Clays Ferry, and geometrically related as a tongue to the main mass of the Clays Ferry, as in the Lawrenceville quadrangle, north-central Kentucky.

The Point Pleasant is overlain by the Kope Formation and underlain by the Lexington Limestone. The upper contact is sharp to gradational through as much as 20 feet and is placed in gradational sequences so as to exclude thick sets of shale from the Point Pleasant. The lower contact is exposed in only a few places in north-central Kentucky, as in the Butler quadrangle; the contact is distinct in outcrop and in the subsurface. Locally in the southern part of north-central Kentucky the Tanglewood Limestone Member of the Lexington Limestone intertongues with the Point Pleasant.

Previous nomenclature: The Point Pleasant unit, named by Orton (1873), has a complicated history of use, summarized by Weiss and others (1965, p. 18-21), who redescribed the unit as the Point Pleasant Member of the +Cynthiana Formation. The Point Pleasant was given formation rank in Kentucky by Swadley (1969a), but it is now considered a tongue of the Clays Ferry Formation (Swadley and others, 1975).

Quadrangles containing outcrops:

Unnumbered figure near here.

Alexandria, Berlin, Berry, Brooksville, Butler, Claysville, Covington, De Mossville, Elliston, Falmouth, Felicity, Florence, Germantown, Glencoe, Goforth, Higginsport, Kelat, Laurel, Lawrenceville, Mason, Maysville West, Moscow, New Liberty, Newport, New Richmond, Patriot, Rising Sun, Sanders, Verona, Vevay South, Williamstown, Withamsville.

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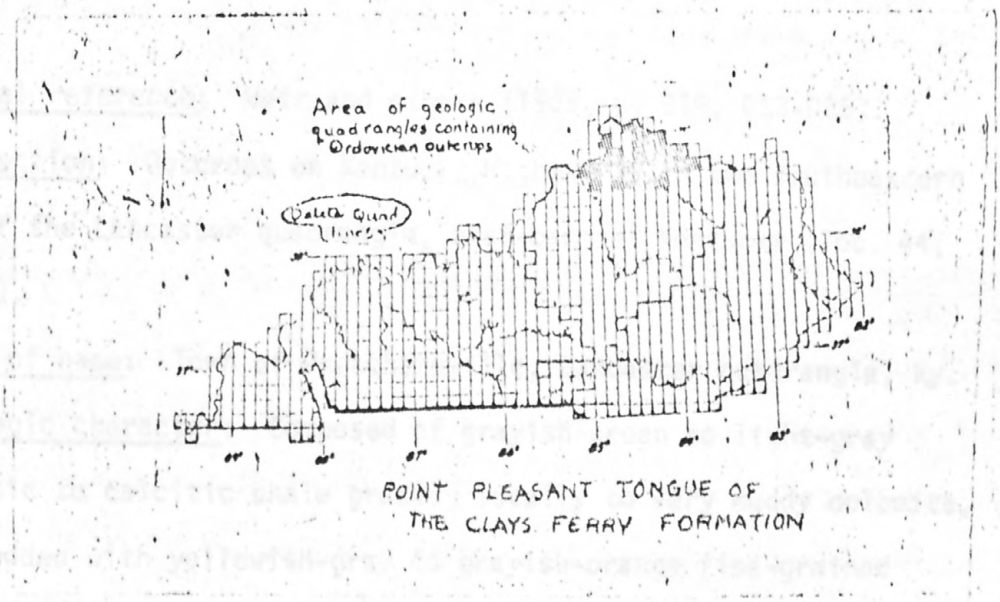
Area of geologic quadrangles containing Ordovician outcrops
Point Pleasant Tongue of the Clays Ferry Formation

Preachersville Member of the Drakes Formation

Original reference: Weir and others (1965, p. D18, D33-D35).

Type section: Outcrops on Kentucky Highway 39 in the southeastern part of the Lancaster quadrangle, east-central Kentucky (loc. 44, fig. 4).

Source of name: Town of Preachersville, Lancaster quadrangle, Ky.

Lithologic character: Composed of grayish-green to light-gray dolomitic to calcitic shale grading locally to very muddy dolomite, interbedded with yellowish-gray to grayish-orange fine-grained dolomite or dolomitic limestone. The shale is obscurely laminated to very thin bedded and lacks megafossils. The fine-grained dolomite or dolomitic limestone is mostly in uneven beds a few inches to about a foot thick and is generally unfossiliferous but locally contains sparse to abundant generally poorly preserved bryozoans, brachiopods, colonial corals and stromatoporoids. The beds of fine-grained dolomite and dolomitic limestone are mostly in the lower part of the member; they distinguish the Preachersville from the otherwise similar Rowland Member of the Drakes Formation.

Subdivision: The Otter Creek Coral Bed occurs at the base of the member in a small area in the western part of east-central Kentucky.

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Distribution and thickness: The Preachersville Member of the Drakes Formation crops out around the east side of the Blue Grass region of Kentucky. It ranges in thickness from about 20 feet near the Ohio River to about 100 feet in east-central Kentucky; locally in the southeastern part of central Kentucky, as in the Halls Gap quadrangle, it has been completely removed by pre-Devonian erosion.

Stratigraphic relations: In east-central Kentucky and the southeastern part of central Kentucky the Preachersville Member conformably overlies the Rowland Member of the Drakes Formation. The contact is generally marked by a conspicuous, ledge-forming set of fine-grained dolomite or dolomitic limestone, though in places, as in the Panola quadrangle, the members intergrade so that their division is indistinct. In northeast Kentucky and adjacent southwestern Ohio the Preachersville Member constitutes the whole of the Drakes Formation and rests on the Bull Fork Formation. The Preachersville generally appears conformably overlain by the Brassfield Dolomite (Silurian), but paleontologic studies reveal a hiatus between the Drakes and Brassfield (Rexroad and others, 1965); in places in the southwestern part of east-central Kentucky, as in Berea quadrangle, beds in the Preachersville are truncated by the Brassfield. In the southeastern part of central Kentucky the Preachersville is generally unconformably overlain by rocks of Devonian age.

The Preachersville probably grades in the subsurface into the Saluda Dolomite Member of the Drakes Formation in the southwestern part of central Kentucky; it is separated from the Saluda by a cutoff at the longitude of the east side of the Parksville quadrangle. It passes into the Cumberland Formation in south-central Kentucky and is separated from the Cumberland by a cutoff at the latitude of the north edge of the Dunnville quadrangle.

Previous nomenclature: Strata of the Preachersville were previously assigned to the +Liberty and +Whitewater Formations or to the +Elkhorn Formation.

Quadrangles containing outcrops:

Unnumbered figure near here.

Berea, Bighill, Bryantsville, [Burtonville], Clay City, [Coletown(?)]_/, Colfax, [Concord], Crab Orchard, Danville(?), Farmers,

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_/ Queried quadrangles have isolated grabens that contain strata similar to Preachersville Member of the Drakes Formation but that may be dolomitized older formations.

Flemingsburg, Halls Gap, Hedges, Hillsboro, Hustonville, Irvine, Lancaster, [Lawrenceburg, Ky.(?)], Levee, Liberty, Manchester Islands, Maysville East (Ohio), [Means], [Moberly], Mount Sterling, New Castle, [Nicholasville(?)], Olympia, Orangeburg, Owingsville, Paint Lick, Palmer, [Panola], Plummers Landing, Preston, Richmond North, [Richmond South], [Salvisa(?)], Sherburne, Stanford, Tollesboro, Union City, Winchester, Yosemite.

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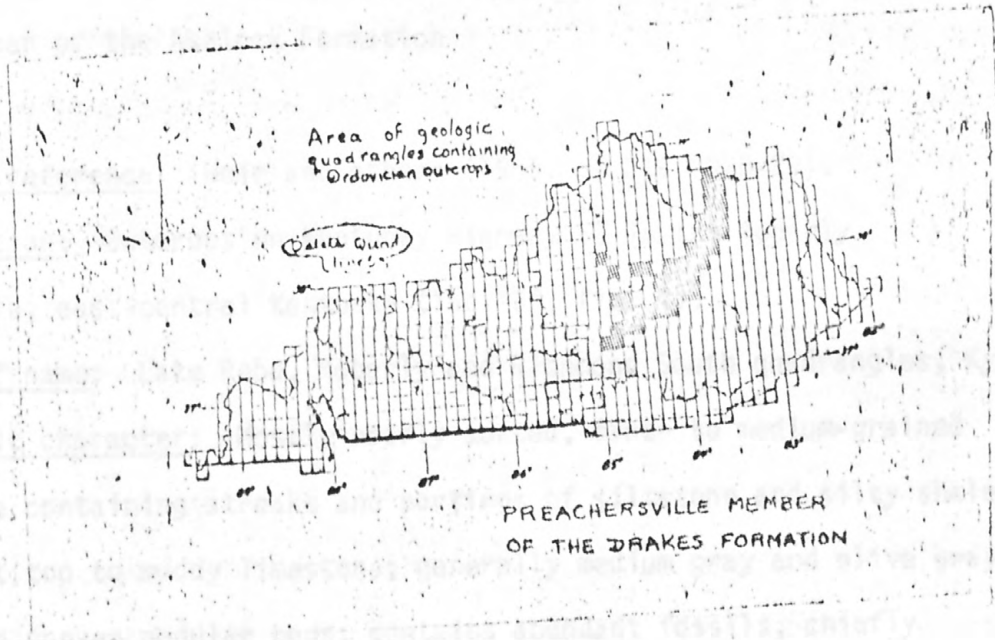

Area of geologic quadrangles containing Ordovician outcrops
PREACHERSVILLE MEMBER
OF THE DRAKES FORMATION

Reba Member of the Ashlock Formation

Original reference: Weir and others (1965, p. D13, D28-29).

Type section: Outcrops on Kentucky Highway 52 in the Moberly quadrangle, east-central Kentucky (loc. 37, fig. 4).

Source of name: Lake Reba, Moberly and Richmond South quadrangles, Ky.

Lithologic character: Mostly poorly sorted, fine- to medium-grained limestone containing streaks and partings of siltstone and silty shale; grades at top to muddy limestone; generally medium gray and olive gray; mostly in uneven nodular beds; contains abundant fossils, chiefly brachiopods and bryozoans.

Distribution and thickness: The Reba outcrop extends from northeastern east-central Kentucky into southeastern central Kentucky. Locally in central Kentucky, as in the Hustonville quadrangle, it is cut out by pre-Devonian erosion. The member ranges in thickness from about 1 foot to 25 feet.

643—16—82993-1 GPO

Stratigraphic relations: The Reba Member of the Ashlock Formation is conformably overlain by the Rowland Member of the Drakes Formation. The Reba overlies the Sunset Member of the Ashlock except in southwestern central Kentucky where it rests on the Terrill Member of the Ashlock. The Reba passes into the lithologically similar Grant Lake Limestone of northwestern central Kentucky; it is separated from the Grant Lake by a cutoff placed at the latitude of Bardstown. The Reba grades southward from central Kentucky to dolomitic limestone and is separated from similar rock in the Cumberland Formation of south-central Kentucky by a cutoff at the latitude of the north edge of the Dunnville quadrangle. Northeast of its type section the Reba is separated from similar beds of the Bull Fork Formation by a cutoff in the Mount Sterling quadrangle, east-central Kentucky.

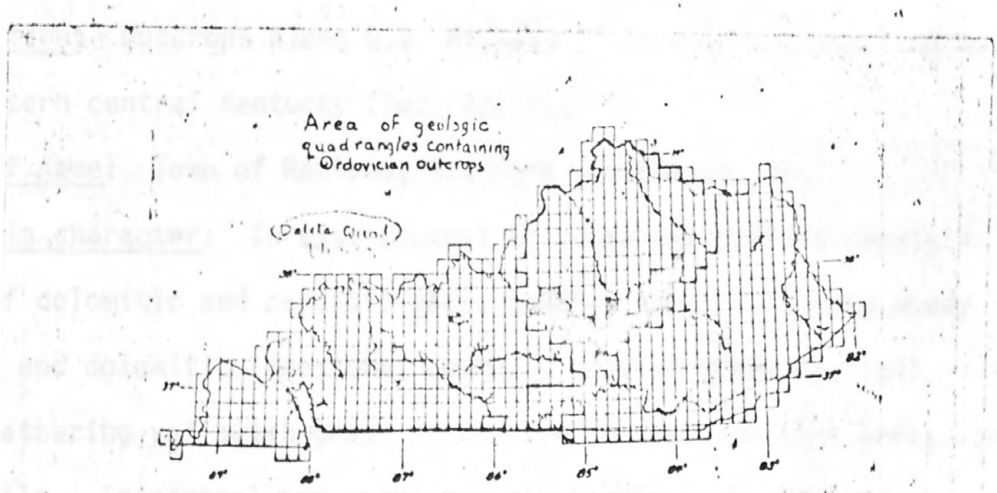
Previous nomenclature: Beds now included in the Reba Member of the Ashlock Formation were generally equated with the upper part, or +Oregonia Member, of the +Arnheim Formation.

Quadrangles containing outcrops:

Unnumbered figure near here.

[Bardstown], Berea, [Bradfordsville], [Bradfordsville NE], Bryantsville, [Crab Orchard], [Ellisburg], [Gravel Switch], Halls Gap, Hedges, Hustonville, Lancaster, [Lebanon East], [Lebanon West], Levee, [Loretto], [Maud], Moberly, Mount Sterling, [New Haven], Paint Lick, Palmer, Panola, [Parksville], Richmond North, Richmond South, [Saint Catharine], [Springfield], Stanford, Union City, Winchester, Yosemite.

e43—16—82903e-1 GPO



REBA MEMBER OF THE
ASHLOCK FORMATION

Rowland Member of the Drakes Formation

Original reference: Weir and others (1965, p. D17, D32-D33).

Type section: Outcrops along U.S. Highway 27 in Stanford quadrangle, southeastern central Kentucky (loc. 42, fig. 4).

Source of name: Town of Rowland, Stanford quadrangle, Ky.

Lithologic character: In east-central Kentucky the Rowland consists mainly of dolomitic and calcitic shale grading locally to very muddy dolomite and dolomitic limestone; commonly grayish green to light gray, weathering yellowish gray; in obscure laminae and thin beds; lacks megafossils. In central and north-central Kentucky the Rowland consists mainly of micrograined to fine-grained muddy limestone, in part dolomitic; commonly olive gray, weathering yellowish gray to yellowish orange; in laminae and even and uneven, thin to medium beds intercalated with partings and thin to thick sets of calcitic shale, mostly olive gray but in part dark gray and carbonaceous; fossils, sparse to locally abundant, are mostly brachiopods, bryozoans, ostracodes and gastropods. Ripple marks and mud cracks occur sporadically throughout the member.

Subdivision: Locally in north-central Kentucky includes the Marble Hill Bed, thin sets of fossiliferous, coarse-grained limestone.

643—16—82993-1 GPO

Distribution and thickness: The Rowland crops out around the Blue Grass region of Kentucky from the Ohio River in north-central Kentucky to the northeastern part of east-central Kentucky. The member ranges from a feather edge to about 65 feet in thickness; it is locally cut out by pre-Devonian erosion in the southern part of central Kentucky.

Stratigraphic relations: In north-central and central Kentucky the Rowland Member of the Drakes Formation is overlain by the Bardstown Member of the Drakes Formation. Generally in north-central Kentucky the Rowland overlies the Bull Fork Formation; in most of central Kentucky it overlies the Grant Lake Limestone. In east-central Kentucky and the southeastern part of central Kentucky it overlies the Ashlock Formation and is overlain by the Preachersville Member of the Drakes Formation. The Rowland passes into the upper part of the Dillsboro Formation of Brown and Lineback (1966) in southeastern Indiana. Locally in north-central Kentucky, as in the Bedford quadrangle, the Saluda feathers out into the Bull Fork Formation.

The Rowland thins northeasterly from its type section and pinches out between the Ashlock Formation and the Preachersville Member of the Drakes Formation in the Preston quadrangle, northeastern east-central Kentucky.

Previous nomenclature: Strata of the Rowland Member were most commonly assigned by earlier workers in Kentucky to the +Waynesville Formation.

643—16—82993p-1 GPO

Quadrangles containing outcrops:

Unnumbered figure near here.

Anchorage, Ballardsville, Bardstown, Bedford, Berea, Bethlehem, Bighill, Bloomfield, Bradfordsville, Bradfordsville NE, Bryantsville, Campbellsburg, [Clementsville], [Coletown(?)]1/, Crab Orchard, Cravens,

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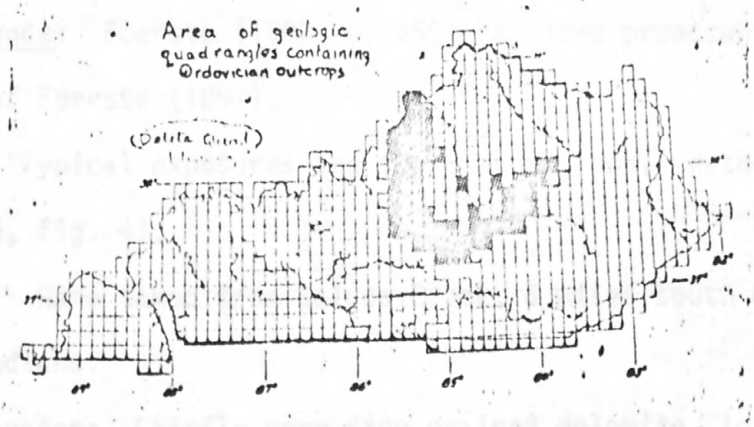
1/ Queried quadrangles have isolated grabens that contain strata similar to Rowland Member of the Drakes Formation but that may be dolomitized older formations.

Crestwood, Ellisburg, Eminence, Fairfield, Fisherville, Gravel Switch, Halls Gap, Hedges, [Howardstown], Hustonville, Jeffersontown, La Grange, Lancaster, Lebanon East, Lebanon West, Levee, Liberty, Loretto, Madison East, Madison West, Maud, [Moberly], Mount Sterling, Mount Washington, New Castle, New Haven, Owen, Paint Lick, Palmer, [Panola], Parksville, [Preston], Raywick, Richmond North, [Richmond South], Saint Catharine, [Salvisa(?)], Samuels, Shelbyville, Simpsonville, Smithfield, Springfield, Spurlington, Stanford, Taylorsville, Union City, Waddy, Waterford, Winchester, Yosemite.

e43—16—82993p-1 GPO



ROWLAND MEMBER OF THE
DRAKES FORMATION

Saluda Dolomite Member of the Drakes Formation

Original reference: Foerste (1902, p. 369) replaced preoccupied name +Madison Beds of Foerste (1897).

Type locality: Typical exposures are those at Madison, southeastern Indiana (loc. 6, fig. 4).

Source of name: Name taken from Saluda Creek, 6 miles south of Hanover, southeastern Indiana.

Lithologic character: Chiefly very fine grained dolomite, in places calcitic; muddy, especially in lower part; green clay mineral locally conspicuous; mostly greenish gray, weathering yellowish gray to dark yellowish orange; obscurely laminated and thin bedded in even sets a few feet thick; sparse mud cracks and ripple marks. Contains several thin layers of olive- to dark-gray calcitic shale including a persistent layer in the lower part of the Saluda in western north-central and western central Kentucky (Hatfield, 1968, p. 7). Locally contains beds of medium-gray micrograined to fine-grained limestone, in part dolomitic. Shale with local exceptions and dolomite contain only a few poorly preserved fossils, but some limestone beds contains ostracodes, and fragmented brachiopods and bryozoans and, more rarely, colonial and horn corals.

Subdivision: Locally in north-central Kentucky includes the Hitz Bed at top of member.

643—16—82993e-1 GPO

Distribution and thickness: In Kentucky the Saluda Dolomite Member of the Drakes Formation crops out on the west and south sides of the Blue Grass region and ranges in thickness from a pre-Devonian erosional edge in southern central Kentucky to about 70 feet in northwestern north-central Kentucky.

Stratigraphic relations: The Saluda conformably overlies Bardstown Member of Drakes Formation except in northwestern north-central Kentucky where it overlies the Bull Fork Formation. The lithology of the Saluda is generally transitional through several feet with the underlying unit. The Saluda is generally overlain by the Brassfield Dolomite of Silurian age. Studies of conodonts show that the contact is an unconformity (Rexroad, 1967, p. 15-16) but evidence of post-Ordovician erosion is generally inconspicuous. Rarely, as in the Owen quadrangle, western north-central Kentucky, fragments of Saluda are incorporated in the Brassfield (Gauri and others, 1969, p. 1883). In southern central Kentucky it is locally overlain unconformably by the Boyle Dolomite or New Albany Shale of Devonian age. The Saluda apparently grades in the subsurface eastward into Preachersville Member of the Drakes Formation in east-central Kentucky; it is separated from the Preachersville by a cutoff at the longitude of the east side of the Parksville quadrangle. The Saluda grades southward into upper part of Cumberland Formation in south-central Kentucky; it is separated from the Cumberland by a cutoff at the latitude of the north edge of the Dunnville quadrangle. In Indiana, the Saluda thins from about 60 feet near the Ohio River to a pinchout about 45 miles north of the River (Brown and Lineback, 1966, p. 1020; Hatfield, 1968, pl. 1).

e43—16—82993o-1 GPO

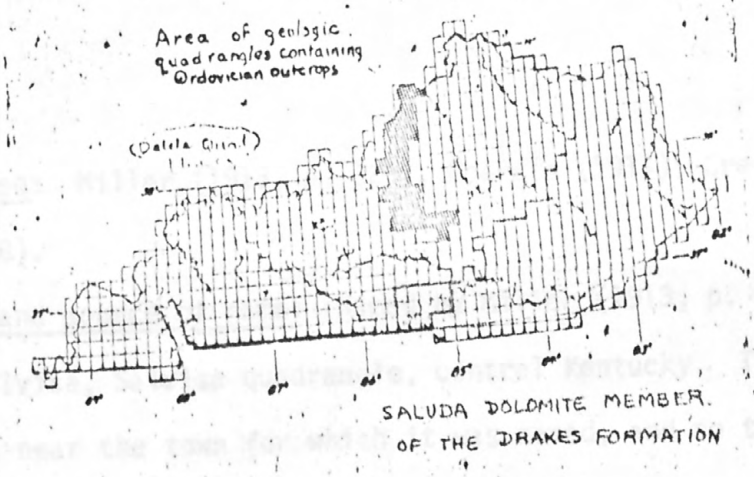
Previous nomenclature: Most earlier workers classed the Saluda as a formation within the +Richmond Group. It was designated the Saluda Dolomite Member of the Drakes Formation in north-central Kentucky by Peterson (1966). In its type area in Indiana it is presently classed as the Saluda Member of the Whitewater Formation (Gray, 1972, p. 19).

643—16—82903p-1 GPO

Quadrangles containing outcrops:

Unnumbered figure near here.

Anchorage, Ballardsville, Bardstown, Bedford, Bethlehem, Bradfordsville NE, Brooks, Carrollton, Cravens, Crestwood, Fairfield, Fisherville, Gravel Switch, Howardstown, Jeffersontown, La Grange, Lebanon East, Lebanon Junction, Lebanon West, Loretto, Madison East, Madison West, Maud, Mount Washington, New Haven, Owen, Parksville, Raywick, Saint Catharine, Samuels, Smithfield, Waterford.



SALUDA DOLOMITE MEMBER
OF THE DRAKES FORMATION

Salvisa Bed of the Perryville Limestone Member of the Lexington Limestone

Chief references: Miller (1913, p. 329), Foerste (1914); Cressman (1973c,p. 23-28).

Type locality and source of name: Named by Miller (1913, p. 329) for the town of Salvisa, Salvisa quadrangle, central Kentucky. The unit is not exposed near the town for which it was named, and no type section was designated. Cressman (1973c,p. 23, 24) measured a reference section in a quarry 0.4 mile south of Perryville, Perryville quadrangle, central Kentucky (loc. 39, fig. 4).

Lithologic character: Composed of light-gray to light-olive-gray cryptograined limestone interbedded with brownish-gray cryptograined to micrograined limestone. The light-gray cryptograined limestone weathers nearly white; some beds are laminated and some contain small vertical tubes of clear calcite; the fracture is subconchoidal. Mudcracks are present locally. Both types of limestone are sparingly fossiliferous; ostracodes are the most common fossil. The beds are smooth-surfaced and even and range from several inches to more than a foot thick. Black chert nodules occur locally.

Distribution and thickness: The Salvisa Bed of the Perryville Limestone Member of the Lexington Limestone crops out only in central Kentucky. Throughout most of its area of outcrop the unit is 10 to 15 feet thick; it thins northeastward from near Perryville to a feather edge in the Salvisa quadrangle.

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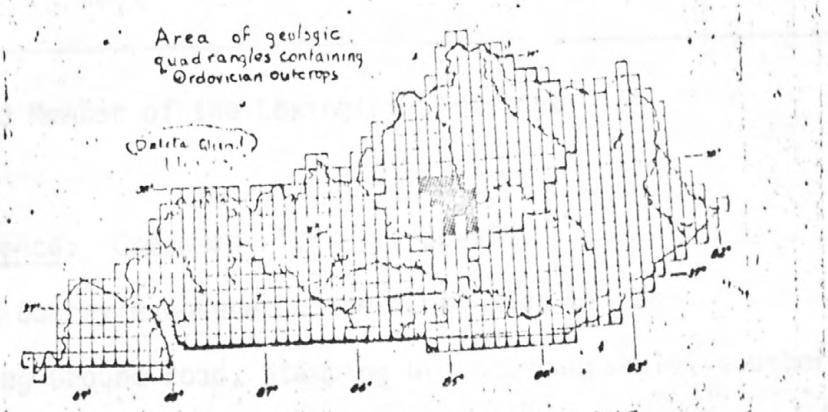
Stratigraphic relations: The Salvisa rests conformably on the Faulconer Bed of the Perryville in the southwestern part of its area of outcrop and on the Tanglewood Limestone Member of the Lexington Limestone in the northeastern part of its outcrop area. It is everywhere overlain conformably by the Cornishville Bed of the Perryville. The Salvisa thins northward by gradation of the lower part with the Tanglewood Limestone Member and the upper part with the Grier Limestone Member of the Lexington.

Previous nomenclature: The Salvisa Bed constituted the entire Perryville as originally named by Nickles (1905, p. 15). It was reduced to a subdivision of an expanded Perryville by Foerste (1912b, p. 32).

Quadrangles containing outcrops:

Unnumbered figure near here.

Ashbrook, Bryantsville, Cardwell, Chaplin, Cornishville, Danville, Harrodsburg, [McBrayer], Parksville, Perryville, [Salvisa], Stanford, [Wilmore].



SALVISA BED OF THE
PERRYVILLE LIMESTONE MEMBER
OF THE LEXINGTON LIMESTONE

Stamping Ground Member of the Lexington Limestone

Original reference: Cressman (1973c, p. 38-39).

Type section: Quarry exposure on the north side of the Switzer-Stamping Ground road, Stamping Ground quadrangle, southern north-central Kentucky (loc. 13, fig. 4).

Source of name: The town of Stamping Ground, Scott County.

Lithologic character: Limestone (70 percent) and shale (30 percent). The limestone is medium gray mottled grayish orange, fossiliferous, and poorly sorted; the shale is olive gray and calcitic. The limestone is in thin nodular to irregular beds; the shale is in irregular partings and thin beds. Rhynconellid brachiopods are particularly abundant. Stromatoporoids are present near the top of the member throughout much of the area.

Distribution and thickness: The Stamping Ground Member of the Lexington Limestone crops out in a band 5 to 8 miles wide that trends north-northwest from the Centerville quadrangle, central Kentucky to the Monterey quadrangle, north-central Kentucky. The member is mostly about 10 feet thick; the maximum thickness is 22 feet.

Stratigraphic relations: The Stamping Ground Member is underlain and overlain conformably by the Tanglewood Limestone Member of the Lexington Limestone, and the unit grades laterally into the Tanglewood.

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Previous nomenclature: The Stamping Ground Member was first recognized in the Georgetown and Centerville quadrangles as an informal unit designated "fossiliferous limestone and shale". Earlier workers did not differentiate the unit and included it in the +Woodburn Limestone Member which was assigned to either the Lexington Limestone or the +Cynthiana Formation.

Quadrangles containing outcrops:

Unnumbered figure near here.

[Centerville], Delaplain, [Georgetown], Leesburg, [Midway], Monterey, New Columbus, Stamping Ground.

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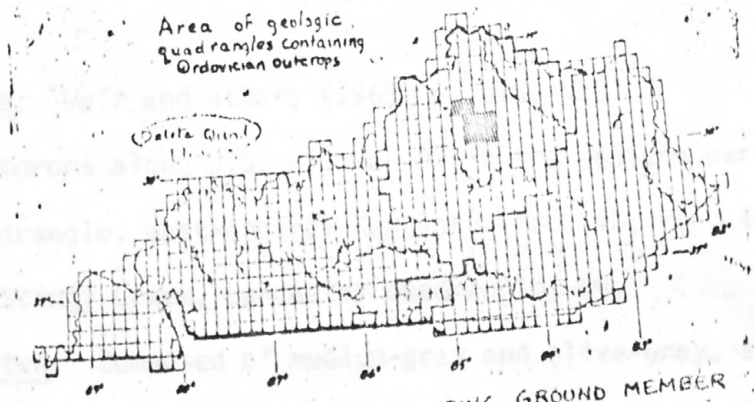


STAMPING GROUND MEMBER OF THE LEXINGTON LIMESTONE

Stingy Creek Member of the Ashlock Formation

Original reference: Weir and others (1965, p. D13, D25).

Type section: Outcrops along U.S. Highway 27 in the western part of the Lancaster quadrangle, east-central Kentucky (loc. 40, fig. 4).

Source of name: Stingy Creek, Lancaster quadrangle, Ky.

Lithologic character: Composed of medium-gray and olive-gray, silty fine-grained limestone intermixed and intergrading with a roughly equal amount of calcitic siltstone in uneven laminae and discontinuous thin nodular beds. Contains abundant fossils, chiefly brachiopods and bryozoans.

Distribution and thickness: The Stingy Creek Member of the Ashlock Formation crops out around the southern part of the Blue Grass region in central and east-central Kentucky. It ranges from a feather edge to about 15 feet in thickness. In the Stanford quadrangle in the southeastern part of central Kentucky it is locally cut out by pre-Devonian erosion.

e43—16—82993e-1 GPO

Stratigraphic relations: The Stingy Creek Member conformably overlies the Gilbert Member of the Ashlock Formation and is conformably overlain by the Terrill Member of the Ashlock Formation.

The Stingy Creek thins southwesterly from its type section and pinches out locally in southeastern central Kentucky, as in the western part of the Hustonville quadrangle. It apparently grades in the subsurface into the Grant Lake Limestone; it is separated from the Grant Lake by a cutoff at the longitude of the west edge of the Junction City quadrangle. In east central Kentucky, near Richmond, it grades into the Grant Lake Member of the Ashlock Formation; the members are separated by a cutoff on the north and east edges of the Richmond South quadrangle. The Stingy Creek probably pinches out within the Ashlock Formation in northernmost south-central Kentucky.

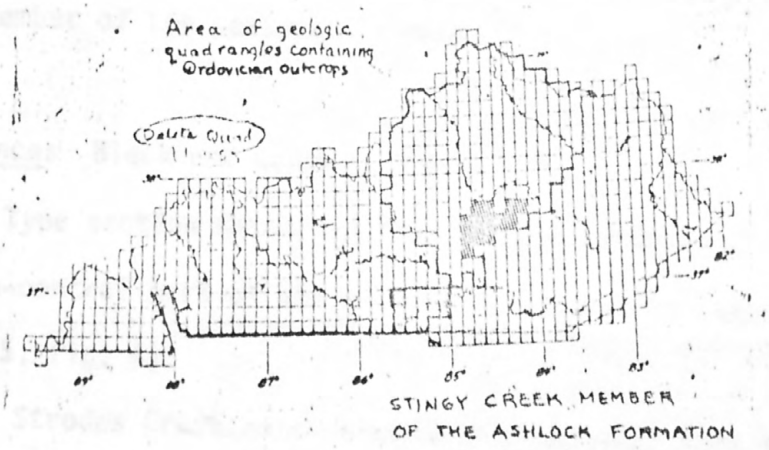
Previous nomenclature: Beds now included in the Stingy Creek Member of the Ashlock Formation were generally equated with the +Mount Auburn Member of the +McMillan Formation.

Quadrangles containing outcrops:

Unnumbered figure near here.

Berea, Bryantsville, Buckeye, [Crab Orchard], Halls Gap, Hustonville, Junction City, Lancaster, Moberly, Paint Lick, Richmond South, Stanford, Yosemite.

643—16—82933e-1 GPO


Area of geologic quadrangles containing Ordovician outcrops
Dakota Quad
STINGY CREEK MEMBER
OF THE ASHLOCK FORMATION

Strodes Creek Member of the Lexington Limestone

Original reference: Black and Cuppels (1973).

Type locality: Type section described from roadcuts along U.S. Highway 227 in the north-central part of the Austerlitz quadrangle, east-central Kentucky (loc. 25, fig. 4).

Source of name: Strodes Creek which crosses highway near type section.

Lithologic character: Chiefly brownish-gray, micrograined to very fine grained limestone containing sparse but conspicuous ostracodes. Outcrop face characterized by bouldery aspect attributed to combination of pinch-and-swell bedding, ball-and-pillow structure, and abundant bulbous stromatoporoids.

Distribution and thickness: The Strodes Creek Member of the Lexington Limestone crops out along on irregular northwesterly trend from the Hedges quadrangle to the Cynthiana quadrangle. The member ranges in thickness from a feather edge to as much as 30 feet.

Stratigraphic relations: The Strodes Creek generally lies within the Millersburg Member in the upper part of the Lexington Limestone. The lower contact is sharp; the upper contact is gradational through several feet of interbedded nodular fossiliferous limestone characteristic of the Millersburg Member. Locally the Strodes Creek is overlain by the Nicholas Bed of the Tanglewood Limestone Member of the Lexington.

Previous nomenclature: The Strodes Creek Member was previously an undifferentiated part of the +Cynthiana Formation.

e43--16--82903e-1 GPO

Quadrangles containing outcrops:

Unnumbered figure near here.

Austerlitz, Carlisle, Cynthiana, Hedges, Millersburg, North Middletown, Paris East, Shady Nook, Shawhan, Sideview, Winchester.

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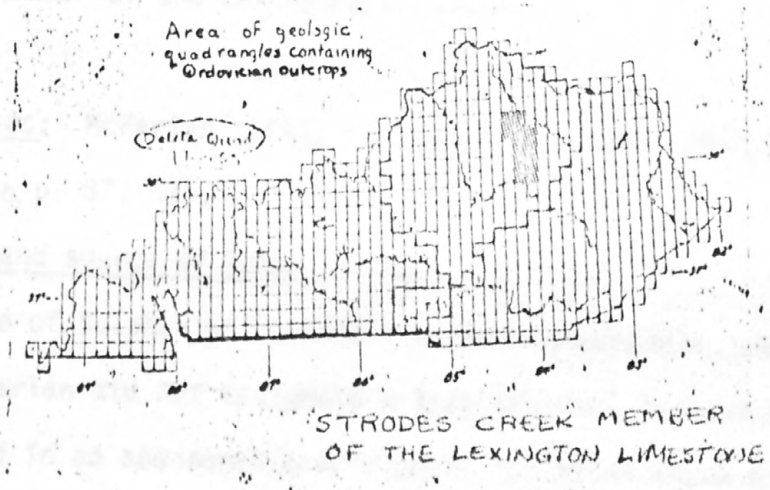
Area of geologic quadrangles containing Ordovician outcrops
Ohio River
STRODES CREEK MEMBER
OF THE LEXINGTON LIMESTONE

Sulphur Well Member of the Lexington Limestone

Chief references: McFarlan (1943, p. 20-22), Cressman (1968); Cressman (1973c, p. 37, 38).

Type locality and source of name: Named by McFarlan (1943, p. 20-22) for the village of Sulphur Well, Little Hickman quadrangle, central Kentucky. McFarlan did not designate a type section, but the member is well exposed in an abandoned quarry north 1.5 miles south of Sulphur Well (loc. 31, fig. 4).

Lithologic character: The Sulphur Well Member is mostly bryozoan limestone in irregular to lenticular beds that are separated by thin shale beds and partings.

Distribution and thickness: The member is present in the southern part of central Kentucky and ranges in thickness from 8 feet in the Danville quadrangle to about 35 feet thick in the Salvisa quadrangle.

Stratigraphic relations: The Sulphur Well Member of the Lexington Limestone at its northern edge grades laterally through a distance of about 0.5 mile into fine- to coarse-grained, fossil-fragmental limestone of the Tanglewood Limestone Member of the Lexington Limestone. The southward thinning of the Sulphur Well probably results from gradation of the upper part laterally into shale of the basal Clays Ferry Formation. In the Perryville quadrangle the member contains a middle unit of interbedded shale that is probably a tongue of the Clays Ferry Formation.

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In the northern part of its outcrop belt the Sulphur Well rests conformably on the Brannon Member of the Lexington, but in the Harrodsburg quadrangle and southward the contact is probably disconformable. In the southern part of its outcrop belt the Sulphur Well generally rests on the Cornishville Bed of the Perryville Limestone Member, but locally it rests on a tongue of the Tanglewood Limestone Member. The Sulphur Well is everywhere overlain conformably by the Clays Ferry Formation; the contact is generally planar and sharp, but in some areas the units intergrade through a few feet.

Previous nomenclature: The Sulphur Well Member was considered part of the now abandoned +Cynthiana Formation. Cressman (1968) referred the member to the Lexington Limestone.

Quadrangles containing outcrops:

Unnumbered figure near here.

Ashbrook, Bryantsville, Buckeye, Cardwell, Chaplin, Cornishville, Danville, Glensboro, Harrodsburg, Junction City, Lawrenceburg (Ky.), Little Hickman, McBrayer, Parksville, Perryville, Salvisa, Stanford, Wilmore.

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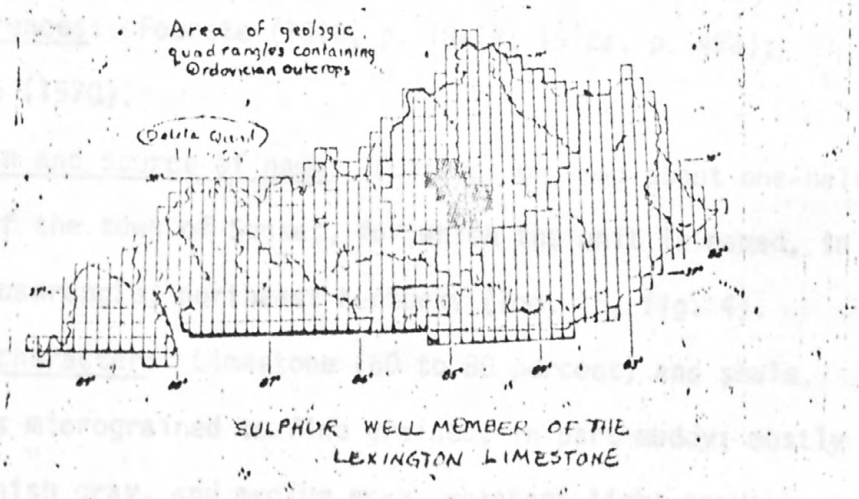

SULPHUR WELL MEMBER OF THE LEXINGTON LIMESTONE

Sunset Member of the Bull Fork Formation or of the Ashlock Formation

Chief references: Foerste (1910, p. 18-19; 1912a, p. 432); Outerbridge (1970).

Type section and source of name: Outcrops on road about one-half mile southwest of the town of Sunset, for which the unit is named, in the Hillsboro quadrangle, northeast Kentucky (loc. 15, fig. 4).

Lithologic character: Limestone (60 to 80 percent) and shale. Limestone is micrograined to fine grained, in part muddy; mostly pale olive, greenish gray, and medium gray, weathers light gray; in even to irregular and nodular beds a few inches to a few feet thick, common fossils are ostracodes and stromatoporoids; brachiopods and gastropods are sparse. Shale is calcitic, locally dolomitic, greenish-gray; in partings and thin seams; generally unfossiliferous.

Distribution and thickness: The Sunset crops out around the east and south sides of the Blue Grass region of Kentucky. It ranges from 0 to about 30 feet in thickness.

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Stratigraphic relations: The Sunset is classed as a member of the Bull Fork Formation in its type area in the Hillsboro quadrangle and in adjoining quadrangles, but in most of east-central Kentucky it is assigned to the Ashlock Formation because it lies between the Reba and Terrill Members of the Ashlock. The Sunset changes character westward across the Preston quadrangle, northern east-central Kentucky. Micrograined limestone making up about the lower one-third of the Sunset thins and merges with the underlying Grant Lake Limestone Member of the Ashlock Formation. Calcitic shale dominant in the middle third of the Sunset grades to dolomitic shale in the western part of the Preston quadrangle where it forms the northernmost recognizable strata of the Terrill Member of the Ashlock Formation. The upper third of the Sunset composed mostly of micrograined, nodular-bedded limestone, retains its lithologic character but thins gradually southward. The Sunset was not named on geologic maps south of the Levee quadrangle, but studies have shown that the Sunset was included as a bed only a few feet thick in the Reba Member of the Ashlock Formation. The Sunset is described, though unnamed, in unit 14a of the type section of the Ashlock Formation, Lancaster quadrangle, and in unit 4a of the type section of the Reba Member, Moberly quadrangle (Weir and others, 1965, p. D24, D29). The Sunset pinches out to the southwest in the Yosemite and Hustonville quadrangles and to the northeast in the Sherburne quadrangle.

Previous nomenclature: Strata now assigned to the Sunset were formerly included by Foerste (1912a) and others in a more broadly conceived, in part faunally defined, Sunset Member (of the +Arnheim Formation), which included not only the rock types characteristic of the Sunset at its type locality but also fossiliferous limestone now assigned to the Bull Fork Formation and calcitic and dolomitic mudstone now assigned to the Terrill Member of the Ashlock Formation.

Quadrangles containing outcrops:

Sunset Member of the Bull Fork Formation

Unnumbered figure near here.

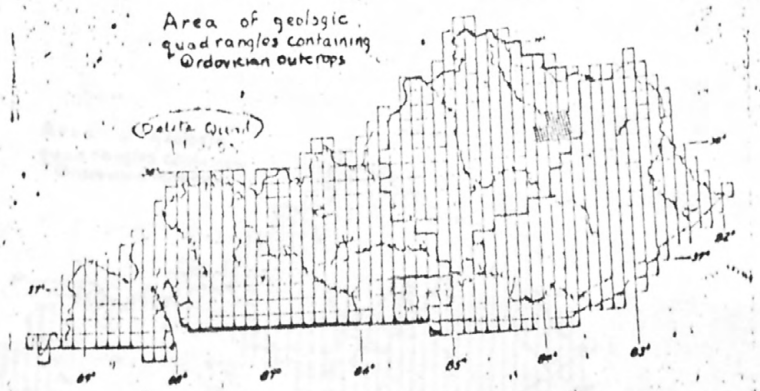
Colfax, Hillsboro, Owingsville, [Preston], Sharpsburg, Sherburne.

Sunset Member of the Ashlock Formation

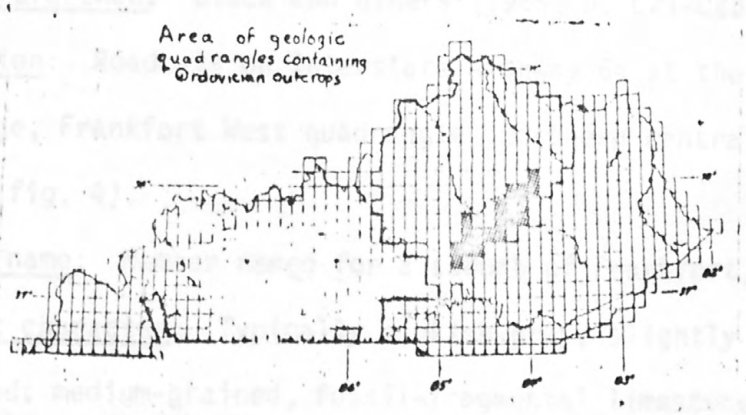
Unnumbered figure near here.

[Berea], [Bryantsville], [Crab Orchard], [Halls Gap], [Hedges], [Hustonville], [Lancaster], Levee, [Moberly], Mount Sterling, [Paint Lick], [Palmer], [Panola], [Richmond North], [Richmond South], [Stanford], [Union City], [Winchester], [Yosemite].

e43—16—82993p-1 GPO



SUNSET MEMBER OF THE BULL FORK FORMATION



SUNSET MEMBER OF THE ASHLOCK FORMATION

Tanglewood Limestone Member of the Lexington Limestone

Original reference: Black and others (1965, p. C21-C23).

Type section: Roadcuts on Interstate Highway 64 at the Lawrenceburg interchange, Frankfort West quadrangle, northern central Kentucky (loc. 18, fig. 4).

Source of name: Member named for a suburb of Frankfort, Ky.

Lithologic character: Typically pinkish-gray, slightly phosphatic well sorted; medium-grained, fossil-fragmental limestone in smooth-surfaced planar to wavy beds mostly 0.2 to 1 foot thick, in part in thin sets of low-angle crossbeds. Whole fossils and large fossil fragments are uncommon, but a few beds contain abundant bryozoan fragments, and silicified brachiopods are locally common near contacts with the Millersburg and Stamping Ground Members.

Subdivisions: The only formally named subdivision of the Tanglewood is the Nicholas Bed (Foerste, 1909b, p. 294), the uppermost tongue of the member in southern northeast Kentucky. The Tanglewood includes a unit, informally designated the Constellaria bed, in parts of the Frankfort West, Frankfort East, and Versailles quadrangles, which is made up of calcitic dolomitic shale containing abundant large bryozoans; the bed is as much as 5 feet thick and underlies the Devils Hollow Member of the Lexington.

643—16—82993p-1 GPO

Distribution and thickness: The Tanglewood Limestone Member of the Lexington Limestone is present throughout much of the Blue Grass region. The Tanglewood ranges between 60 and 100 feet in thickness in a broad band extending eastward from the Frankfort East and Versailles quadrangles; it thins northward, westward, and southward from this central belt but thickens again southward in the Stanford quadrangle. In much of the area the Tanglewood consists of several tongues, and the thicknesses given are aggregate.

Stratigraphic relations: The Tanglewood intertongues complexly with other members of the Lexington Limestone and with the lower part of the Clays Ferry Formation. Except in southern central Kentucky where it underlies the Brannon and Perryville Members of the Lexington, most of the Tanglewood is in tongues in the upper part of the Lexington (Cressman, 1973c, pl. 7).

Previous nomenclature: The tongue of the Tanglewood Limestone Member between the Brannon and Devils Hollow Members was prior to 1963 termed the +Woodburn Bed (Miller, 1913) or Member. The same unit constituted the upper part of the +Flanagan Chert of Campbell (1898). Other parts of the Tanglewood were included in the +Benson Bed (Foerste, 1913a, b), +Paris Formation (Nickles, 1905) or the +Cynthiana Formation (Foerste, 1906), all names now abandoned.

e43—16—82993e-1 GPO

Quadrangles containing outcrops:

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Austerlitz, Berry, Breckinridge, Bryantsville, Buckeye, Carlisle, Centerville, Claysville, Clintonville, Coletown, Cornishville, Cowan, Cynthiana, Danville, Delaplain, Ford, Frankfort East, Frankfort West, Franklinton, Georgetown, Glensboro, Gratz, Harrodsburg, Hedges, Junction City, Keene, Kelat, Lawrenceburg (Ky.), Lawrenceville, Leesburg, Lexington East, Lexington West, Little Hickman, Mason, McBrayer, Midway, Millersburg, Monterey, Moorefield, Mount Olivet, New Columbus, Nicholasville, North Middletown, North Pleasureville, Paris East, Paris West, Perryville, Piqua, Polsgrove, Richmond North, Sadieville, Salvisa, Sardis, Shady Nook, Sharpsburg, Shawhan, Sideview, Stamping Ground, Stanford, Switzer, [Tyrone], Valley View, [Versailles], Waddy, Wilmore, Winchester.

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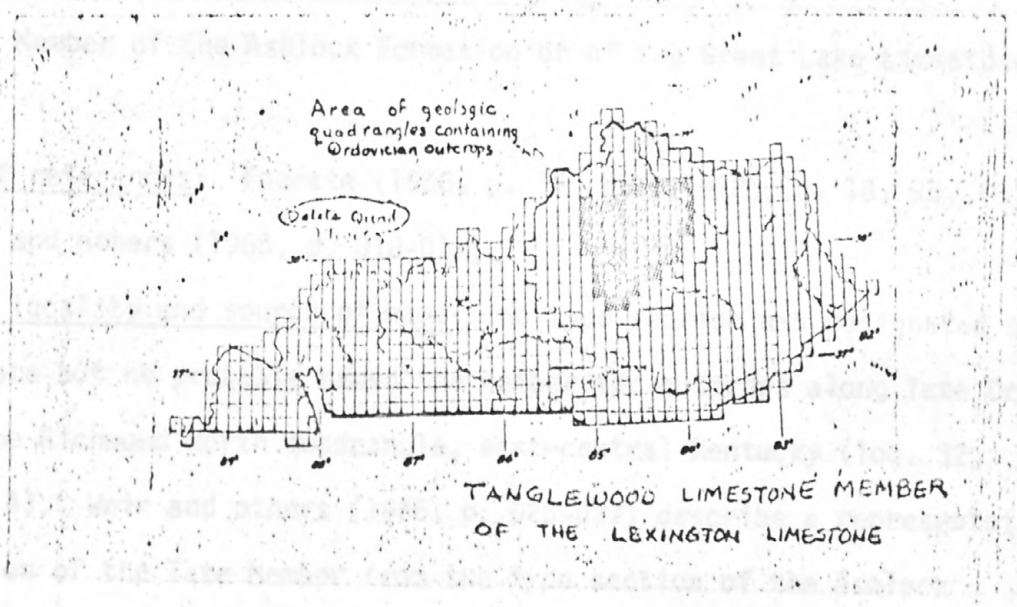
Area of geologic quadrangles containing Ordovician outcrops
Tanglewood Limestone Member of the Lexington Limestone

Tate Member of the Ashlock Formation or of the Grant Lake Limestone

Chief references: Foerste (1906, p. 19, 212; 1912b, p. 18, 23, 48), Weir and others (1965, p. D10-D11).

Type locality and source of name: No type section was designated by Foerste but he probably named the member for outcrops along Tate Creek in the Richmond North quadrangle, east-central Kentucky (loc. 32, fig. 4). Weir and others (1965, p. D25-D27) describe a representative section of the Tate Member from the type section of the Ashlock Formation (loc. 40, fig. 4).

Lithologic character: Dominantly greenish-gray, muddy dolomitic limestone and calcitic dolomite, micrograined to fine-grained, but in southern east-central Kentucky grades mostly to greenish-gray, calcitic to dolomitic shale, and in southwestern central Kentucky contains a few beds of medium- to coarse-grained limestone; whole member commonly weathers yellowish gray; in laminae and thin beds; sparse ripple marks and mud cracks.

Subdivision: Back Bed is present in lower part of member throughout most of east-central Kentucky. It is a persistent set of thin nodular beds of olive-gray, fossiliferous, fine- to medium-grained limestone.

Distribution and thickness: The Tate crops out around the southern and eastern sides of the Blue Grass region of Kentucky. It ranges from a feather edge to about 80 feet in thickness.

e43—16—82993p-1 GPO

Stratigraphic relations: The Tate is the basal member of the Ashlock Formation throughout most of east-central and southern central Kentucky. The upper part of the member grades northeastward from dominantly dolomitic and calcitic mudstone of the Ashlock type section to muddy, fine- to medium-grained limestone and is separated by cutoff from similar rock in the Grant Lake Member of the Ashlock at the south edge of the Richmond North quadrangle. In northern east-central Kentucky, north of the Mount Sterling and Preston quadrangles, the Tate lies within the lower part of the Grant Lake Limestone and has been classified as a member or bed of the Grant Lake. In northeast Kentucky it thins northeasterly and pinches out in the Hillsboro and Sherburne quadrangles. In southwestern central Kentucky the Tate interfingers and grades out into the Grant Lake Limestone in the Maud and Bardstown quadrangles. The Tate merges southward in the subsurface with the Cumberland Formation of south-central Kentucky.

In most of east-central Kentucky and southeastern central Kentucky the Tate rests on the Calloway Creek Limestone; elsewhere it rests on the Grant Lake Limestone. In southern east-central and southern central Kentucky the Tate is overlain by the Gilbert Member of the Ashlock Formation; elsewhere it is overlain by Grant Lake except in the Stanford quadrangle, southeastern central Kentucky, where the Tate is locally unconformably overlain by rocks of Devonian age. Contacts range from sharp to obscure. The lithology of the Tate is transitional through a few inches to as much as 5 feet with the underlying and overlying fossiliferous limestone. The contact is mapped at the top or middle of the zone of transition so that most nodular-bedded, fossiliferous, poorly sorted limestone is excluded from the Tate.

e43—16—82993p-1 GPO

Previous nomenclature: Foerste (1912b, p. 23) assigned the Tate to the +McMillan Formation and correlated the member with the +Bellevue Beds of Nickles (1902) exposed in Cincinnati, Ohio.

e43—16—82903p-1 GPO

Tate Member of the Ashlock Formation

Quadrangles containing outcrops:

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Bardstown, Berea, Bradfordsville, Bradfordsville NE, Brush Grove, Bryantsville, Buckeye, [Crab Orchard], Ellisburg, Gravel Switch, Halls Gap, Hedges, Hustonville, Junction City, Kirksville, Lancaster, Lebanon East, Lebanon West, Levee, Loretto, Maud, Moberly, Mount Sterling, Paint Lick, Palmer, Parksville, Preston, Raywick, Richmond North, Richmond South, Saint Catharine, Springfield, Stanford, Union City, Valley View, Winchester, Yosemite.

Tate Member or Bed of the Grant Lake Limestone

Quadrangles containing outcrops:

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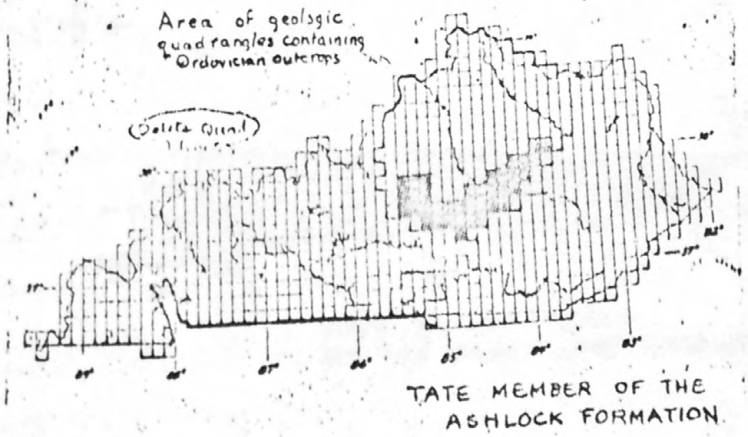
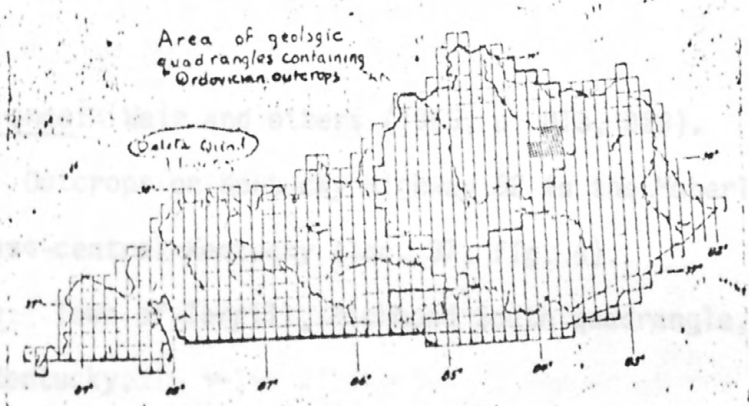
Colfax, Hillsboro, Sharpsburg, Sherburne, Owingsville.



TATE MEMBER OF THE ASHLOCK FORMATION



TATE MEMBER OR BED
OF THE GRANT LAKE LIMESTONE

Terrill Member of the Ashlock Formation

Original reference: Weir and others (1965, p. D13, D29).

Type section: Outcrops on Kentucky Highway 52 in the Moberly quadrangle, east-central Kentucky (loc. 37, fig. 4).

Source of name: Town of Terrill, Richmond South quadrangle, east-central Kentucky.

Lithologic character: Composed mainly of light-greenish gray, calcitic to dolomitic shale, minor greenish-gray muddy dolomite to dolomitic limestone; laminated to very thin bedded. Member weathers yellowish gray; lacks megafossils.

Distribution and thickness: The Terrill Member is a thin but persistent unit in east-central and the southeastern central Kentucky. It ranges from a feather edge to about 20 feet in thickness. Locally in central Kentucky, as in the Stanford quadrangle, it is cut out by pre-Devonian erosion.

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Stratigraphic relations: In east-central Kentucky the Terrill generally overlies the Grant Lake Member of the Ashlock Formation; in southwestern east-central and southeastern central Kentucky it overlies the Stingy Creek Member of the Ashlock. In most of east-central Kentucky the Terrill is overlain by the Sunset Member of the Ashlock. In northeastern east-central Kentucky the Terrill intertongues and intergrades with the middle third of the Sunset Member of the Bull Fork Formation in the western half of the Preston quadrangle.

In most of southern central Kentucky the Terrill overlies the Grant Lake Limestone and is overlain by the Reba Member of the Ashlock Formation. In southwestern central Kentucky in the Maud and Bardstown quadrangles, the Terrill intergrades with the upper part of the Grant Lake Limestone. The Terrill passes southward into the Cumberland Formation of south central Kentucky and is separated from similar beds in the Cumberland by a cutoff at the latitude of the north edge of the Dunnville quadrangle.

Previous nomenclature: Beds now included in the Terrill Member of Ashlock Formation were generally equated with the lower part of the +Arnheim Formation.

e43—16—82993b-1 GPO

Quadrangles containing outcrops:

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[Bardstown], Berea, [Bradfordsville], [Bradfordsville NE], Bryantsville, [Crab Orchard], [Ellisburg], [Gravel Switch], Halls Gap, Hedges, Hustonville, Junction City, Lancaster, [Lebanon East], [Lebanon West], Levee, [Loretto], [Maud], Moberly, Mount Sterling, Paint Lick, Palmer, Panola, [Parksville], Preston, Richmond North, Richmond South, [Saint Catharine], [Springfield], Stanford, Union City, Winchester, Yosemite.

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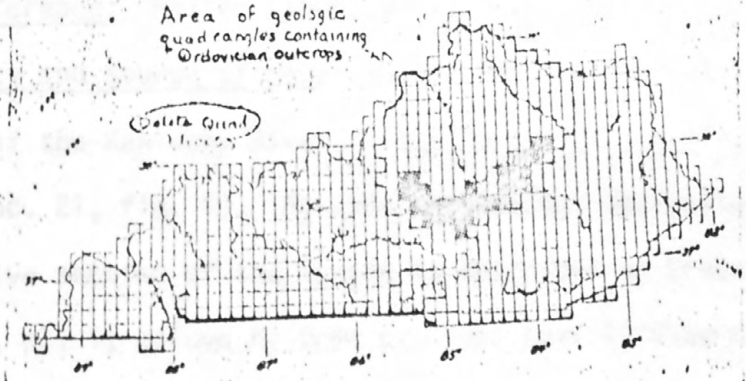

TERRILL MEMBER OF THE
ASHLOCK FORMATION

Tyrone Limestone of the High Bridge Group

Original reference: Miller (1905, p. 9, 14).

Type locality and source of name: Named for the town of Tyrone on the south bank of the Kentucky River in the Tyrone quadrangle, central Kentucky (loc. 21, fig. 4). No type section was designated. A representative section of the Tyrone is described by Cressman and Noger (1976, pl. 1, column A) from outcrops near Clifton about 4 miles north of Tyrone (loc. 19, fig. 4).

Lithologic character: Light-brownish-gray to very light gray cryptograined limestone, yellowish-gray to light-olive-gray laminated cryptograined dolomitic limestone, medium- to light-gray cryptograined limestone containing interlaced dolomite burrow-fills, and brownish-gray pelletal limestone. Mud cracks are common in some beds, and vertical tubes filled with sparry calcite are conspicuous in others. Ostracodes and fragments of the tabulate coral Tetradium are locally abundant; other fossils are uncommon, though orthoconic cephalopods, gastropods, brachiopods, and bryozoans are present locally. The formation contains several thin bentonite beds, the most conspicuous of which are the "Mud cave" bed of drillers, present locally at the top, and the "Pencil cave" bed of drillers, present throughout most of the outcrop area about 15 to 25 feet below the top.

Distribution and thickness: The Tyrone Limestone of the High Bridge Group crops out along the Kentucky River and the lower part of its tributaries in central Kentucky. It ranges in thickness from about 55 feet in the Ford quadrangle to 115 feet in the Bryantsville quadrangle. Most of the thickness changes result from intertonguing with the underlying Oregon Formation.

Stratigraphic relations: The lower part intertongues with dolomite of the Oregon Formation; the basal contact is placed at the top of the highest bed of dolomite. The Tyrone is overlain disconformably by fine- to coarse-grained, fossil-fragmental limestone of the basal Lexington Limestone.

Previous nomenclature: The Tyrone was considered a member of the High Bridge Formation until Hamilton (1948) raised the High Bridge to group and the Tyrone to formational rank.

Quadrangles containing outcrops:

Unnumbered figure near here.

Bryantsville, Buckeye, Coletown, Danville, Ford, Frankfort East, Frankfort West, Harrodsburg, Keene, Lawrenceburg (Ky.), Little Hickman, Nicholasville, Polsgrove, Richmond North, Salvisa, Stanford, Switzer, Tyrone, Valley View, Wilmore, Winchester.

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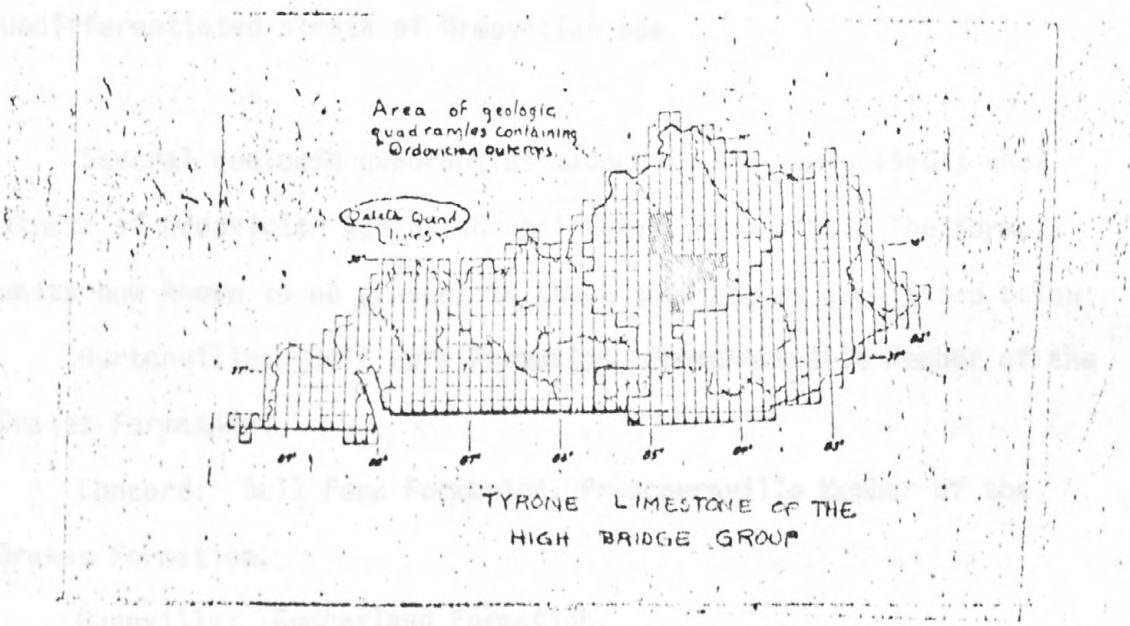

TYRONE LIMESTONE OF THE HIGH BRIDGE GROUP

Undifferentiated strata of Ordovician age

Several geologic quadrangles mapped in the early 1960's show strata of Ordovician age as an undifferentiated unit. The formal units now known to be present in these quadrangles are listed below:

Burtonville: Bull Fork Formation, Preachersville Member of the Drakes Formation.

Concord: Bull Fork Formation, Preachersville Member of the Drakes Formation.

Dunnville: Cumberland Formation.

Phil: Cumberland Formation.

643—16—82993p-1 GPO

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Major references shown by underlined page numbers of manuscript

(Only most common rock-unit surnames as used in Kentucky are listed)

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