DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

(Reports - open-file series, no 341

W. E. Wrather, Director

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 1

Cumberland Gap Section

(Measured on northeast side of gap) along U. S. 58,

Middlesborough Quadrangle, Lee County, Virginia

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

Prepared in Cooperation with the Division of Geology of

the Virginia Department of Conservation and Development

This report is preliminary and has not been edited or reviewed for conformity with U. S. Geological Survey standards and nomenclature.

GEOLOGIC SECTION 1

(Cumberland Gap Section)

Measured on northeast side of gap along U. S. 58, Middlesboro Quadrangle, Lee County, Virginia.

	Thickness (Feet)
GREENBRIER LIMESTONE (236.0 feet, top not exposed)	
32. Limestone, tannish-gray, weathers tan and red, dense to subcrystalline, muddy, conchoidal fracture, fossiliferous	5.0
31. Limestone, medium-gray with tannish tint, medium crystalline, oolitic, fossiliferous, slight fetid odor	2.0
30. Covered interval, is underlain by limestone in upper inaccessible part of quarry	5.5
29. Limestone, medium-gray with brownish-red tint, subcrystalline, fossiliferous, muddy, conchoidal fracture	2.0
28. Limestone, same as Unit 4, weathers medium-gray with tannish-red tint	4.0
27. Limestone, inaccessible in upper part of quarry	5.5
26. Limestone, medium-gray with brownish-red tint, subcrystalline, weathers medium-gray and smooth, locally yellowish, fossiliferous, conchoidal fracture, muddy	4.0
25. Limestone, medium-gray with tannish-tint, weathers to yellowish-brown, fossiliferous, muddy, dense	2.0
24. Limestone, as Unit 26	1.5
23. Limestone, as Unit 29	1.0
22. Limestone, medium-gray with tannish tint, sub- to medium-crystalline, streaks of orange throughout rock, fossiliferous (crinoids and corals), slight fetid odor	6.0

21. Covered interval 9.0

20. Limestone or calcareous mudstone, tan to medium-gray, dense to subcrystalline, scattered black minerals, thin-bedded, fetid odor 4.0

19. Limestone, medium-gray to tan, finely crystalline, oolitic, fossiliferous (crinoids, corals), fetid odor 10.0

18. Limestone, light-gray to tan, finely crystalline, weathers white (chalky), oolitic, fossiliferous, thin- to medium-bedded, slight fetid odor 5.5

17. Limestone, light-gray with tannish tint, sub- to medium-crystalline, oolitic, fossiliferous, scattered brownish-red mineral, slight fetid odor 14.0

16. Limestone, light- to medium-gray, coarsely crystalline at base, medium-crystalline and very oolitic upward, massive in base, medium-bedded upward, sharp contacts at base and top, fossiliferous, slight fetid odor . 25.0

15. Limestone, light tannish-gray, fine- to medium-crystalline, oolitic, fossiliferous, massive, thin-bedded in top, fetid odor 16.5

14. Limestone, light tannish-gray, medium crystalline, very oolitic, fossiliferous, massive, thin-bedded in top, fetid odor 9.5

13. Limestone or calcareous mudstone, tannish-gray, dense with some crystalline oolitic lenses, fossiliferous (crinoids), fetid odor 7.0

12. Limestone, light- to medium-gray with tannish-tint, dense in base, very oolitic above, fetid odor 12.0

11. Limestone breccia, light-gray 0.5

10. Limestone, light- to medium-gray with tannish tint, sub- to finely crystalline, conchoidal fracture, fossiliferous, fetid odor 6.5

9. Limestone, medium-gray with tannish tint, medium-crystalline, very oolitic above base, fossiliferous, slight fetid odor, prominent bedding plane at top . .16.0

8. Limestone, medium-gray with tannish tint, dense with scattered calcite crystals, fossiliferous (crinoids, brachiopods), slight fetid odor 6.5

7. Mudstone, medium-gray with tannish tint, calcareous, dense to subcrystalline, small calcite crystals in matrix, fossiliferous (crinoids) 11.0

Taggard red member (top)

6. Mudstone, yellowish-green and red, calcareous, muddy, shaly, sparingly fossiliferous 6.0

Taggard red member (base)

5. Limestone, light-gray to white, medium crystalline, oolitic, conchoidal fracture, fossiliferous, fetid odor, stylolitic near top 26.5

4. Limestone, light-yellow to buff, finely crystalline, fossiliferous, glauconitic(?), weathers yellowish-brown in upper part, upper bedding plane stylolitic. 10.0

3. Limestone, yellow and white, bluish to grayish-green chert nodules and stringers in lower 9 inches, fossiliferous 2.0

FORT PAYNE CHERT (21.5 feet)

2. Chert and shale, interbedded, the chert is medium-gray with a strong olive-green tint and is in 1 to 6 inch beds; the shale is medium-gray with some green,

fossiliferous, fibby due to the resistant chert beds 21.5

MACCRADY SHALE (not measured)

1. Sandstone and shale, interbedded, medium-gray, green, and yellowish-green . . . . . ____

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

[Reports - Open file series] no. 349.

W. E. Wrather, Director

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 2

(Pineville Section)

(Measured in quarry on northeast side of) Cumberland River Gap through Pine Mountain (along railroad tracks), Cumberland Gap Quadrangle, Bell County, Kentucky

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

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[1955]

GEOLOGIC SECTION 2

(Pineville Section)

Measured in quarry on northeast side of Cumberland River Gap through Pine Mountain along railroad tracks, Cumberland Gap Quadrangle, Bell County, Kentucky

		Thickness (Feet)
	GREENBRIER LIMESTONE (incomplete)	
30.	Limestone, light- to medium-gray, reddish locally in base, very oolitic, very crinoidal, also noted corals and brachiopods, cavernous, massive strong fetid odor	14.0
29.	Limestone, medium-gray with tannish tint, silty, laminated, thin-bedded, conchoidal fracture, fetid odor, weathers ribby .	2.0
28.	Covered interval	5.5
27.	Limestone, greenish-buff, greenish-gray and reddish-brown, laminated, muddy, scattered oolites, locally thin-bedded, weathers ribby	6.0
26.	Limestone, medium-gray with tannish tint, oolitic, crinoidal, fetid odor	13.5
25.	Limestone, buff to tan, sub- to medium-crystalline, very fossiliferous in top, the fossils being arranged in laminae, crinoidal, fetid odor	2.5
24.	Limestone, medium-gray in base, light-gray above, very oolitic in base, finely oolitic and slightly muddy above, fossiliferous, massive, fetid odor	17.5

23. Limestone, medium-gray, sub- to finely crystalline, slightly silty, weathers chalky, conchoidal fracture, massive, fetid odor, distinct upper contact 4.5

22. Limestone, light-gray with tannish tint, subcrystalline with scattered oolites, slightly silty locally, in one bed, fetid odor 2.0

21. Limestone, medium-gray with strong tannish tint, very oolitic with local dense to subcrystalline zones, slightly cherty locally 6.0

20. Limestone, medium- to dark-gray, with greenish and reddish tints locally in base, sub- to finely crystalline, hackly fractures, massive with some shaly partings, resistant, fetid odor . . . 12.0

Taggard red member (top)

19. Limestone, dark-gray with strong reddish and greenish tints locally, subcrystalline, shaly in top, channeled by overlying unit, fetid odor, weathers shaly 5.0

18. Limestone, dark-purple to purplish-red mottled with green, dark-gray in top, very oolitic, muddy, subcrystalline, cherty locally, fetid odor 7.5

17. Limestone, dark-gray with strong purplish-red tint, coarsely crystalline and very oolitic locally in lower one-half, sub- to finely crystalline above, muddy, slightly silty, slightly cherty 4.5

Taggard red member (base)

16. Limestone, medium- to dark-gray with tannish tint, sub- to finely crystalline with scattered oolites, very oolitic locally, slightly silty, fossiliferous, thin- to medium-bedded, fetid odor 6.5

15. Limestone, medium- to dark-gray, very oolitic, slightly silty, stylolitic, fossiliferous, medium-bedded, distinct upper contact. 14.0

14. Limestone, medium-gray with tannish tint, dense to sub-crystalline, thin seams of black (asphaltic?) material 3.0

13. Limestone, medium-gray with tannish tint, dense to sub-crystalline, thin- and wavy-bedded, shaly, greenish-buff partings, slight fetid odor 7.5

12. Limestone, medium-gray with strong tannish tint, dense to sub-crystalline, very oolitic in middle, thin-bedded, fetid odor . 6.5

11. Limestone, medium-and light-gray, sub- to finely crystalline, silty locally, medium- to thick-bedded, cross-bedded (?), fetid odor, channeled in top 3.0

10. Limestone, light- to medium-gray with tannish tint locally, sub- to finely crystalline, silty, stylolitic in top, thick-bedded, fetid odor, slightly channeled in top, nonresistant . 4.6

Hillsdale member

9. Limestone, medium-gray with strong tannish tint, subcrystalline, becomes oolitic upward, scattered bluish black chert nodules in base, stylolitic, medium- and thin-bedded, cross-bedded, fetid odor, channeled in top 5.0

8. Limestone, dark-gray, scattered dark-gray, black and bluish-gray nodules of chert, stylolitic in top, slightly channeled 3.5

7. Limestone, dark-gray with slight tannish tint, sub- to medium-crystalline, very large dark-gray and black chert nodules arranged in beds, fossiliferous, distinct upper contact, fetid odor 13.0

6. Limestone, dark-gray with strong tannish and buff tints, sub- to medium-crystalline, silty locally, small nodules of dark-blue to black chert which weathers light-blue and white, black (asphaltic?) seams, thin- to medium-bedded, cross-bedded(?) . . 20.0

5. Limestone, dark-gray, weathers internally to greenish-buff, buff, and light-gray, sub- to finely crystalline, scattered black and green (glauconite?) minerals, muddy, silty, abundant light-brown, black and dark-blue chert nodules, fossiliferous, thick-bedded to massive, some chert nodules have replaced corals 11.0

4. Limestone, dark-gray with strong tannish tint, silty locally, light-grayish-buff, dark-gray and white small chert nodules some of which are arranged in beds, fossiliferous (brachiopods, Composita), very strong fetid odor 6.0

3. Limestone, light-gray becoming dark-gray upward, dense to sub-crystalline, muddy, silty, contains chert nodules, fossiliferous, fetid odor 3.5

MACCRADY SHALE

2. Covered interval, actually the Greenbrier-Maccrady contact lies within this interval 9.0

1. Shale, red . . . . . ___

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UNITED STATES GEOLOGICAL SURVEY

[Reports - Open file series, no. 349.]

W. E. Wrather, Director

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 6

(Hagans Section)

(Measured 0.7 mile N20°W of Hagans, Virginia railroad station) along old mountain road, Jonesville Quadrangle, Lee County, Virginia

by

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GEOLOGIC SECTION 6

(Hagans Section)

Measured 0.7 mile N20°W of Hagans, Virginia railroad station along old mountain road, Jonesville Quadrangle, Lee County, Virginia.

		Thickness (feet)
GREENBRIER LIMESTONE (incomplete)		
15.	Limestone, medium- to dark-gray with strong tannish tint, dense to subcrystalline, weathers spheroidally, slightly muddy, thin-bedded	3.0
14.	Limestone, dark-gray with tannish tint, oolitic, thin-bedded	6.0
13.	Limestone, dark-gray with tannish tint, oolitic except at base where rock is silty and muddy, medium-bedded, massive upward	9.5
12.	Limestone, dark-gray with tannish tint, dense, locally subcrystalline, fossiliferous, weathers rubbly in lower 6.0 feet, thin-bedded, fetid odor	10.0
11.	Limestone, medium- to dark-gray with tannish tint, dense, locally subcrystalline, two oolitic zones in upper one-half, weathers rubbly and ribby, muddy and silty in base, thin-bedded	10.0
10.	Limestone, medium-gray with tannish tint, dark-gray upward, dense to subcrystalline, finely oolitic upward, fossiliferous, massive, slight fetid odor, cavernous in base	6.0

9. Limestone, dark-gray, medium-gray upward, dense, scattered oolites, fossiliferous, very thin-bedded and flaggy, slight fetid odor, cavernous, nonresistant 10.5

8. Limestone, light-gray to grayish-white, dark-gray in top, very oolitic, ~~xxxxxxxxxx~~ the oolites are arranged in beds, dense in top cross-bedded, fossiliferous, slight fetid odor, massive 9.5

TAGGARD RED MEMBER? (TOP)

7. Limestone, light-gray with greenish tint, buff with greenish tint at top, scattered green and black minerals, weathers spheroidally, nonresistant 5.0

TAGGARD RED MEMBER? (BASE)

6. Limestone, medium- to dark-gray with tannish tint, dense to subcrystalline in base, very oolitic above, numerous greenish, silty and muddy zones, glauconitic(?), scattered black minerals, fossiliferous, medium-bedded to massive, very slight fetid odor, weathers ribby 20.5

5. Limestone, light-gray with tannish tint, dark-gray in base, finely oolitic, locally very oolitic and clastic from 20.0 to 35.0 feet above base, fossiliferous, massive, fetid odor, cavernous 42.0

4. Limestone, buff with slight greenish-tint, sub- to finely crystalline, silty, massive, weathers rounded 4.0

3. Limestone, medium- to dark-gray with strong tannish tint, finely oolitic, very fossiliferous in one bed, resistant, scattered green minerals 0.5

2. Limestone, buff, locally mottled gray, sub- to finely crystalline, very silty, scattered minute black minerals, medium-bedded, weathers buff and spheroidally, slight fetid odor 5.5

MACCRADY SHALE (not measured)

1. Covered interval, probably underlain by purplish-red, silty micaceous mudstone as indicated by float and poor exposures . . ___

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Geologic Section 10

(Big Stone Gap Section)

(Measured through quarry and) along Southern R. R. in gap of Powell River through Little Stone Mountain, (0.75 miles north of Big Stone Gap, Virginia, upper 85 feet measured along L. & N. R.R. on SW. side of same gap, Big Stone Gap Quadrangle) Wise County, Virginia.

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GEOLOGIC SECTION 10

(Big Stone Gap Section)

Measured through quarry and along Southern R.R. in gap of Powell River through Little Stone Mountain, 0.75 miles north of Big Stone Gap, Virginia, upper 85 feet measured along L. & N. R.R. on SW. side of same gap, Big Stone Gap Quadrangle, Wise County, Virginia.

POTTSVILLE FORMATION (Not measured)

98 ~~96~~. Conglomerate and sandstone, white, ~~reddish~~ resistant . . . . . .

BLUESTONE FORMATION [illegible] (670.5 feet)

97 ~~95~~. Covered interval 5.0

96 ~~94~~. Sandstone, grayish-green and buff, very fine-grained, micaceous, thin-~~bedded~~ and wavy-bedded 5.5

95 ~~93~~. Shale, brownish-black becoming greenish upward, contains coaly zone from 1.5 to 2.0 feet above base, greenish-gray, fine-grained sandstone in base and at top 7.0

94 ~~92~~. Sandstone, buff and greenish-buff becoming greenish-gray in top, very fine-grained, micaceous, cross-bedded, contains some gray to greenish-gray shale partings 13.0

93 ~~91~~. Shale, green changing upward to greenish-gray, silty and sandy, micaceous, contains several thin beds of greenish-gray and gray sandstone and siltstone 5.5

92 ~~90~~. Sandstone, siltstone, and mudstone, greenish-buff, gray and maroon-red, the sandstones are fine-grained, dirty and silty, entire unit micaceous 11.5

91 ~~89~~. Sandstone, grayish-green, very fine-grained, micaceous, lense of greenish-gray shale in middle 3.0

90. Covered interval 11.5

89. Sandstone, greenish-buff, very-fine-grained, micaceous, contains greenish-buff sandy and silty shale in base 3.0

88. Sandstone, buff becoming grayish-green and greenish-buff upward, fine-grained, massive, cross-bedded, top beds more resistant than lower 20.5

87. Covered interval 585.0

PRINCETON SANDSTONE (54.5 feet)

86. Sandstone, light buff, medium subangular grains, gritty, quartzitic, massive, becoming medium-bedded upward, cross-bedded, resistant (forms hogback) 48.0

85. Conglomerate, white and buff, rounded pebbles of quartz up to 1 inch in diameter in a matrix of medium-to coarse-grained rounded sandstone, extremely conglomeratic in lower 2 feet, only slightly above 6.5

[illegible] FORMATION (421.5 feet)

[illegible]stone member (Avis limestone of Reger) (75.5 feet)

84. Covered interval 27.0

83. Shale with thin beds of calcareous sandstone, shale is medium-gray and calcareous, sandstone is buff or yellowish-brown and calcareous, a bluish-gray fossiliferous bed of limestone is present near top, a small trilobite was collected. 17.5

82. Limestone, dark-gray, weathers light-gray, thin-bedded, shaly and impure, spalls off on weathered surfaces, contains abundant Composita 3.0

81. 79. Shale, light-gray, silty, very calcareous, weathers reddish-brown along bedding planes 11.5

80. 78. Limestone, rubbly, interbedded with calcareous shale, abundant brachiopods 2.0

79. 77. Sandstone, yellowish-brown to reddish-brown, fine-grained, dirty, laminated, not cross-bedded, resistant 8.5

78. 76. Conglomerate or breccia composed of subangular and subrounded limestone pebbles in a sandstone matrix, solution pits in upper 0.5 foot, the matrix is very calcareous and in places grades into limestone 6.0

Middle red member (219.5 feet)

77. 75. Covered interval 6.5

76. 74. Shale and sandstone, grayish-brown, to light-gray, the sandstone is fine-grained and dirty 3.0

75. 73. Shale, greenish-gray, micaceous, weathers brown locally . . . 3.5

74. 72. Sandstone, greenish-gray to brownish-gray, fine-grained, dirty, medium-bedded, breaks into angular blocks due to well developed system of cross fractures, contains Archimedes 32.5

73. 71. Covered interval, with 7.0 feet of limestone and sandstone poorly exposed from 23 to 30 feet above base, the sandstone is very calcareous, sandy, silty and is exposed in the base of these poor exposures; the limestone is buff to grayish-green and dark gray, sandy, silty, muddy, has shale partings between beds, is slightly fossiliferous and is thin-bedded; these exposures are present in the hillside above the railroad. 102.0

72. Sandstone, buff and yellowish-brown, fine- to medium-grained highly cross-bedded, resistant (forms first hogback north of tunnel) 36.0

71. Covered interval 36.0

STONY GAP SANDSTONE MEMBER (middle Maxton sand of driller) (126.5 feet

70. Sandstone, buff- to yellowish-brown, fine- to medium-grained, highly cross-bedded, base at NW. end of Callahan tunnel . . . 50.5

69. Sandstone, white, fine-grained, shaly, changes upward to very shaly sandstone and sandy shale 12.5

68. Sandstone, greenish-gray, light gray and buff, medium-grained, medium- and thin-bedded 5.5

67. Sandstone, green, shaly, slabby, thin-bedded 3.0

66. Sandstone, greenish-gray, light-gray and buff, medium-grained, medium- and thin-bedded, cross-bedded, forms major portion of Callahan tunnel 46.5

65. Sandstone, white, medium-gray, calcareous, very quartzose, massive, cross-bedded, base of unit at SE. portal of Callahan tunnel 8.5

BLUEFIELD FORMATION (412.5 feet)

64. Shale, greenish-gray, silty, micaceous, bedding planes ripple-marked, a grayish-black sandy limestone which weathers olive-drab is present from 11.5 to 12.5 feet above base, strong break at top of unit 17.5

63. Shale, gray to dark-gray with green and purple tints, some sandy layers laminated 17.5

62. Interbedded shale and limestone, medium-gray, the limestone is thin-bedded, shaly, and weathers yellow 12.5

61. Mudstone, black, silty, medium-bedded with 4 inch bed of nodular limestone at 3 feet above base 6.0

60. Shale and mudstone, grayish-green, rubbly in top 12.0

59. Sandstone, light greenish-gray, fine- and medium-grained, weathers brownish and to various hues such as red and orange, shaly, slabby, ripple-marked, contains black macerated plant remains 27.0

58. Covered interval 18.0

57. Limestone, medium gray, fine- to medium-crystalline, fossiliferous in base (Spirifer, and other brachiopods), medium-bedded . . 4.0

56. Covered interval 4.0

55. Limestone, grayish-black, very impure, abundant Spirifer in top, medium-bedded 7.0

54. Shale, gray and yellow interbedded, poorly exposed in upper one-third 24.0

53. Limestone, dark-gray, shale partings, medium-crystalline, sandy, fossiliferous, thin-bedded 15.5

52. Shale, bluish-gray 4.5

51. Limestone as unit 53 . . . . . 19.5

50. Covered interval 57.0

49. Shale, dark gray, weathers olive-drab, green and yellowish-brown, thin sandstone beds locally 43.0

48. Limestone and shale interbedded, the limestone is dark-gray and very fossiliferous, (Archimedes, Spirifer, Dictyoclostus, crinoids, and bryozoa), the shale is yellowish-buff 39.0

47. Limestone, medium-gray with brownish tint, massive becoming medium- to thin-bedded upward, medium-crystalline, fetid odor, fossiliferous in base and top 9.5

46. Limestone, medium-gray, medium-crystalline, fossiliferous, nodular, thin-bedded 8.0

45. Shale, light-green, micaceous, calcareous 3.5

44. Limestone, medium-gray, oolitic, fossiliferous, medium-bedded . 2.5

43. Shale, light-green, micaceous, calcareous 4.0

42. Limestone, medium-gray, medium-crystalline, slightly fossiliferous, silty, scattered oolites, medium-bedded, slight fetid odor. 14.0

41. Shale, black, carbonaceous, calcareous, poorly exposed 43.0

GREENBRIER LIMESTONE (468.5 feet)

40. Limestone, light-gray becoming dark-gray upward, a few thin beds of black chert, fossiliferous, (Spirifer), thin-bedded and shaly with shale partings, strong fetid odor 21.0

39. Covered interval 31.0

38. Limestone, dark-gray, very fossiliferous, very crinoidal in top, numerous brachiopods in fossiliferous zone 6 feet above base, coarsely crystalline, medium-bedded 15.0

37. Limestone, dark-gray, oolitic and massive in lower one-half, some shale partings in upper one-half, fossiliferous, fetid odor 16.0

36. Covered interval 3.0

35. Limestone, dark-gray, thin-bedded with shaly partings, contains ellipsoidal limestone concretions arranged with long axes parallel to bedding in shale, weathers yellowish-brown 3.5

34. Limestone, medium-gray, medium and coarsely crystalline, very fossiliferous, scattered oolites in lower one-half, oolitic upward, medium-bedded, slight fetid odor 5.5

33. Covered interval . . . . . ; 12.0

32. Limestone, medium-gray, oolitic, strong fetid odor 3.0

31. Covered interval 2.5

30. Limestone, light and medium-gray, very oolitic and fossiliferous, massive, strong fetid odor 7.0

29. Covered interval 12.0

28. Limestone, medium- to dark-gray, very fossiliferous, soft yellowish-brown irregularly shaped masses present which weather out on surface of rock, alternating silty and very oolitic limestone beds, medium-bedded, fetid odor, locally, R.R. switch at base of unit 21.5

27. Limestone, greenish-gray, medium-crystalline, fossiliferous, scattered oolites, thin- to medium-bedded, fetid odor 12.0

26. Covered interval 20.0

25. Limestone, grayish-brown, silty locally, scattered oolites but very oolitic locally 10.0

24. Covered interval 8.0

23. Limestone, greenish-gray, weathers slight yellowish, very fossiliferous, medium-crystalline, thick-bedded, underlies NE. corner quarry 10.0

22. Limestone, dark gray to grayish-black, very fossiliferous, medium-crystalline, slightly silty, thin-bedded, strong fetid odor 30.0

21. Limestone, dark-gray becoming lighter gray upward, finely crystalline, scattered fossils and oolites, thick-bedded 20.0

20. Limestone, light-gray, sub-lithographic, weathers light-gray to yellow, slightly dolomitic, scattered oolites 3.0

19. Limestone, light-gray, laminated locally, scattered oolites, dense, slightly silty 3.0

18. Limestone, weathers yellow, lenticular, scattered oolites, silty, muddy, dolomitic 3.0

17. Limestone, light-gray, laminated locally, very oolitic 11.0

16. Limestone, light-gray, sub-lithographic, weathers yellow, lenticular, dolomitic 3.5

15. Limestone, light-gray, oolitic, stylolitic 13.5

14. Limestone, light-gray, dense with scattered crystals of calcite, scattered oolites, slightly silty, distinct bedding plane at top . . 3.5

13. Limestone, light- to medium-gray, medium-crystalline with some laminated beds of dense muddy limestone, oolitic, thick-bedded 28.0

12. Mudstone, calcareous or muddy limestone, greenish-gray, with faint reddish tint, dense, silty, conchoidal fracture 3.0

11. Limestone, medium-gray, fine- to medium-crystalline, slightly fossiliferous, beds of greenish-gray dense calcareous mudstone or muddy limestone at bottom and top, scattered oolites in lower half and very oolitic above 18.0

10. Limestone, medium-gray, fine- to medium-crystalline, very oolitic . 20.5

9. Limestone and calcareous mudstone, light- to medium-gray, conchoidal fracture, the mudstone is dense, the limestone is fine- to medium-crystalline and thick-bedded 17.0

Taggard red member (top)

8. Mudstone, mottled red green and dark-gray, calcareous, some laminae vissible, scattered oolites in lower one-half, dolomitic 10.5

7. Limestone, medium-gray with reddish tint, very finely oolitic, slightly fossiliferous, films of limonite coat joints, noted one limonitized brachiopod, dolomitic in middle 32.5

Taggard red member (base)

6. Mudstone, calcareous grading upward to yellowish-weathering limestone, medium-gray, conchoidal fracture, FeS_2 concretions which weather to limonite near top, the top of this unit is the prominent bedding plane which delimits the south side of the quarry 9.0

5. Limestone, medium-gray, dense- to subcrystalline, slightly fossiliferous, conchoidal fracture 2.0

4. Covered interval 1.5

~~Hillsdale member (top)~~

3. Limestone

Hillsdale member (top)

3. Limestone, medium-gray with tannish tint, very cherty, the chert being light-gray and in the form of stringers and ~~shingles~~ and nodules, dense with scattered calcite crystals 25.5

Hillsdale member (base) (~~top~~)

2. Limestone, buff, sandy, silty, conchoidal fracture, medium-bedded, slightly dolomitic in base 7.5

MACCRADY SHALE (not measured)

1. Shale, maroon-red and green upward . . . . . .___

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

[Reports - Open file series] no. 349

W. E. Wrather, Director

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 11

(Pine Mountain-Whitesburg Section)

(Measured 3 miles) south of Whitesburg, Ky., on northwest slope of Pine Mountain along U. S. 119, Whitesburg Quadrangle Letcher County, Kentucky.

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

Prepared in Cooperation with the Division of Geology of the Virginia Department of Cons rvation and Deveolpment

This report is preliminary and has not been edited or reviewed for conformity with U. S. Geological Survey standards and nomenclature.

[1955]

GEOLOGIC SECTION 11

(Pine Mountain-Whitesburg Section)

Measured 3 miles south of Whitesburg, Ky., on northwest slope of Pine Mountain along U. S. 119, Whitesburg Quadrangle, Letcher County, Kentucky.

	Thickness (Feet)
POTTSVILLE FORMATION (not measured)	
80. Conglomerate, extremely pebbly, overlain by thick cross-bedded ledge of sandstone and conglomeratic sandstone	____
~~BLUESTONE FORMATION (312.5 feet)~~	
BLUESTONE FORMATION (312.5 feet)	
79. Covered interval	20.0
78. Sandstone, medium-gray with greenish tint, oxidized to reddish and yellowish-brown, fine angular grains, locally very fine-grained, scattered black minerals, thin- to medium-bedded, flaggy, cross-bedded, micaceous	4.5
77. Shale, alternating yellow with greenish tint and red, micaceous, macerated black plant fragments, local yellowish-green sandy siltstones and silty sandstones	30.0
76. Shale, red, grayish-green in middle and top, micaceous	20.0
75. Sandstone, as Unit 78	24.0
74. Covered interval	4.0
73. Sandstone, white to buff, fine- to medium-grained, conglomeratic zone from 6 to 8.5 feet above base, thick-bedded to massive, weathers to rounded surfaces,	

could easily be mistaken for a sandstone ledge in the Pottsville formation, thin-bedded, micaceous, and less resistant in upper 4 or 5 feet, exposed. . near house on northeast side of highway 36.0

72. Shale, medium-gray with yellow and yellowish-brown tints, sandy in base, slightly micaceous on bedding planes, the corner of the house mentioned under Unit 73 is built into this Unit 35.0

71. Sandstone and shale, very thin-bedded ribs of yellowish-green sandstone with thin partings of yellowish-green shale 8.0

70. Covered interval 22.0

69. Shale, yellow with some greenish-gray, buff, and greenish-yellow, silty in lower one-half, sandy above, thin beds of mottled red-green very fine-grained sandstone in upper one-half 80.0

68. Covered interval 22.0

67. Sandstone, medium-gray to buff and yellowish-brown, fine subangular grains, quartzitic, laminated, thin-bedded becoming massive upward, cross-bedded, . 4.0

66. Covered interval 3.0

PRINCETON SANDSTONE (8.0 feet)

65. Sandstone, yellowish-brown and brown, fine angular to grains, very friable, cellular due to the leaching out of marine fossils and limey pebbles, impressions of crinoids, brachiopods, bryozoa, and ammonites were observed in these cavities, it is thought that this Unit is the feather edge of the Princeton sandstone and that the fossils came from reworked limestone member of the Hinton formation (Avis limestone of Reger) 8.0

HINTON FORMATION (358.0 feet)

Middle red member (137.5 feet)

64. Shale, brownish-yellow to yellowish-green, sandy, some silty beds, several green sandstone beds in base, 3 red shaly siltstone units in base, middle, and top 25.0

63. Sandstone, buff to yellowish-brown, very fine to fine subangular grains, micaceous, in three beds. 4.5

62. Shale, yellowish-green mottled with red, sandy in base, very fissile in top, thin bed of buff fine-grained micaceous sandstone in base 4.5

61. Sandstone, as Unit 63, in one bed 2.0

60. Shale, light-brown becoming red upward, locally is yellowish-green, silty in top 13.0

59. Mudstone, predominantly red, some yellowish-green, with interbeds of sandstone and shale 36.5

58. Mudstone, red, silty, some macerated black plant fragments, breaks into angular chunks 7.0

57. Sandstone, yellowish-green, very fine-grained, silty, thin-bedded, 1 foot bed of mottled dark-gray and green shale in base 4.5

56. Shale, buff to yellowish-brown in base becoming red above, yellowish-green mottled with red and yellowish-brown in upper one-half 14.5

55. Covered interval, probably underlain by dark-gray shale 20.0

54. Shale, yellowish-brown, silty, sandy, thin buff bed of fine-grained silty sandstone in base and another about 4 feet above base 6.0

Stony Gap sandstone member (middle Maxton sand of driller) (220.5 feet)

53. Sandstone, buff to yellowish-brown, dirty, fine to medium subangular grains, laminated and slabby with macerated carbonaceous plant fragments in lower portion; medium-bedded, cross-bedded, with some thin-bedded intervals in upper part; weathers blocky and is more resistant than Unit 52 . . . . .44.5

52. Sandstone, buff to medium-gray with greenish tint, fine subangular grains, somewhat laminated, the laminae being coated with macerated carbonaceous plant fragments and muscovite, thin-bedded with occasional medium beds, flaggy locally, wavy-bedded, ripple-marked 40.0

51. Shale and siltstone, red, becoming medium-gray upward and consists of black shale in top 1.5 feet, micaceous, breaks in angular chunks 7.0

50. Sandstone, medium-gray with slight greenish tint, laminated, fine-grained, quartzose, micaceous, medium-bedded, even-bedded 1.5

49. Sandstone, light-buff to light-gray, very fine-grained, scattered black minerals, calcareous, 1 to 2 inches of dark-gray shale in top 0.5

48. Siltstone and mudstone, gray with greenish tint, red in top, sandy, shaly, contains numerous small rounded medium-gray limestone pebbles which are mottled greenish and purplish, calcareous locally, friable . 2.0

47. Sandstone, light-gray with slight greenish tint, very fine-grained, contains dark-brown mineral which resembles sphalerite, parting in middle, calcareous, resistant 3.0

46. Shale, alternating dark-gray with greenish tint and dark-gray with reddish tint in lower one-half, red in upper one-half, silty, contains greenish-gray fine-grained silty sandstone at 4.5 feet above base 10.0

Note: Units 41-46 thin to about one-sixth of the total thicknesses given here within one-half mile up hill along the highway (to the southwest).

45. Sandstone, medium-gray mottled with white, fine-to medium-grained, dirty, scattered green, black, and red minerals throughout, cross-bedded, very distinct planar upper and lower bedding planes, resistant 2.5

44. Shale, black with some light-gray, locally red, calcareous locally, a zone of scattered reddish-black calcite pebbles is present 5 feet below top, scattered thin beds of sandstone, weathers ribby 36.5

43. Sandstone, buff to light-gray, fine subangular grains, massive with some thin beds, cross-bedded, scattered black minerals throughout, more resistant than overlying and underlying units, weathers mottled black to yellowish-brown, sometimes with a greenish tint 49.5

42. Sandstone, consists of buff to tan, fine- to medium-grained sandstone in lower 6.0 feet; upper 10.0 feet consists of interbedded sandstone, sandy shale, and shaly sandstone, the shale is dark-gray with a greenish tint, the sandstone ranges from buff to light-gray, wavy-bedded, thin-bedded, cross-bedded, nonresistant, channeled deeply in top 16.0

41. Sandstone, buff to light-gray, very fine- to fine-grained, scattered black minerals throughout, massive in base, thin-bedded above, cross-bedded, channeled in top with shale pockets in the troughs, lenticular 7.5

BLUEFIELD FORMATION (191.5 feet)

40. Shale and fine-grained silty sandstone, dark-gray with a greenish tint 1.0

39. Conglomerate, yellowish-brown, mud matrix, sandstone pebbles 0.5

38. Shale, variegated, micaceous, silty . . . 14.0

37. Covered interval, 15 to 20 feet of olive-drab sandy and silty shale is poorly exposed in base of unit 176.0

GREENBRIER LIMESTONE (221.5 feet - base not exposed)

36. Limestone, black, subcrystalline, sandy, silty, shaly, thin-bedded, shaly partings, fetid odor, ribby, weathers yellowish, this is the highest stratigraphic unit exposed in the quarry 13.0

35. Limestone, black, very shaly, silty, poorly-exposed. . 1.5

34. Limestone, medium- to dark-gray, very oolitic, medium-bedded becoming thin-bedded and shaly upward, soft yellowish-brown earthy nodular masses on weathered surfaces, slight fetid odor 5.5

33. Limestone, medium-gray, subcrystalline with scattered calcite crystals, very shaly becoming thin-bedded upward, slightly wavy-bedded, fossiliferous (crinoids) 3.0

32. Limestone conglomerate, mottled black and yellow, rounded limestone pebbles up to 0.5 inches in diameter, Spirifer 2.0

31. Shale, black with greenish tint, calcareous, very fissile, weathers greenish 1.5

30. Limestone, medium gray, laminated due to concentrations of fragmentary fossils in selective beds, highly oolitic, very fossiliferous (crinoids, Archimedes, brachiopods, bryozoa), scattered black (asphaltic?) seams, fetid odor, weathers rounded and massive . . 13.5

29. Limestone, greenish-gray, contains nodular masses of limestone, granular siliceous material, and some black chert in lower part, very fossiliferous (Pentremites, brachiopods, crinoids, corals), thin-bedded and shaly, fetid odor 20.0

28. Limestone, black, subcrystalline, contains black chert which replaces the limestone irregularly and sometimes replaces selective laminae, medium-bedded becoming thin-bedded upward, fetid odor 5.5

27. Sandstone, light-gray, very finely conglomeratic, the pebbles are of calcite and limestone and vary up to 0.5 inch in diameter, the pebbly zones make up certain laminae of a general cross-bedded pattern, the matrix consists of fine subangular quartz grains which are cemented by calcareous cement 5.0

26. Limestone, mottled pink and green, coarsely crystalline, shaly, rubbly, fossiliferous, fossiliferous (Pentremites, bryozoa), limestone conglomerate in upper 0.5 foot 2.0

25. Limestone, dark-gray, silty, clayey, finely crystalline, medium-bedded, weathers yellow, channeled by overlying unit 2.5

24. Limestone, dark-gray to grayish-black, very shaly, fossiliferous, weathers out in pencil-like fragments, slight fetid odor 3.5

23. Limestone, grayish-black, medium-crystalline, nodules and stringers of black and smoky chert in lower 10.0 feet, fossiliferous, thick-bedded, weathers greenish-gray and black . 16.0

22. Limestone, medium-gray with a brownish tint, weathers greenish, thin laminated beds, green shaly limestone partings, fossiliferous (brachiopods, corals, crinoids), the gray rock weathers slightly reddish, slight fetid odor 4.5

21. Limestone, dark-gray to grayish-black, dense to subcrystalline, thin-bedded, brittle, weathers mottled red and green, breaks hackly, fossiliferous, slight fetid odor 5.0

20. Limestone, dark-gray, oolitic, ~~slight fet~~ cross-bedded, massive, slight fetid odor, lower bedding plane is undulating 2.0

19. Limestone, interlaminated oolitic limestone and yellowish-green dense silty and muddy limestone, channeled in top 3.0

18. Limestone, medium- to dark-gray, oolitic, fossiliferous, stylolitic, very massive, cavernous near top 1.0

17. Limestone, medium-gray, dense and subcrystalline, stylolitic, fossiliferous, medium-bedded, upper foot is bleached to cream color, is siliceous, and contains geodes of chalcedony 3.0

16. Limestone, light gray, dense with scattered crystals of calcite, very stylolitic, fractures splintery, thin- to medium-bedded, siliceous and white in top, probably the result of stylolitization 3.5

15. Limestone, as Unit 18 . . . . . 6.0

14. Limestone, as Unit 16 . . . . . 3.0

13. Limestone, as Unit 18 . . . . . 1.5

12. Limestone, as Unit 16, lenticular 2.0

11. Limestone, [illegible] as Unit 16 . . . . . 4.0

10. Limestone, as Unit 18 . . . . . 11.0

9. Limestone, medium-gray, finely crystalline, silty, laminated, conchoidal fracture, muddy, weathers mottled green and yellow and thus is a very distinctive bed 2.0

8. Limestone, medium-gray, [illegible] oolitic, stylolitic, hackly fracture, extremely massive, slight fetid odor, ...13.0

7. Limestone, greenish-gray and dark gray, interlaminated principally dark-gray in upper one-half, finely crystalline, shaly in the greenish-gray bands, thin-bedded below, medium-bedded above, slightly fossiliferous, fetid odor 10.5

6. Limestone, dark-gray, oolitic,, slightly fossiliferous, thick-bedded, slight fetid odor 9.5

5. Limestone, dark- and medium-gray, dense with some scattered calcite crystals and local finely crystalline zones, fossiliferous, thick-bedded, strong fetid odor 10.5

4. Limestone, medium- and dark-gray, fine and medium crystalline, slightly fossiliferous (brachiopods, fenestellid bryozoa, corals), thick-bedded to massive, slignt fetid odor 13.0

3. Limestone, medium-gray, slightly oolitic, highly oolitic upward, stylolitic, conchoidal fracture, massive, slight fetid odor 7.5

2. Limestone, light-gray, oolitic and medium- to coarse-crystalline, fossiliferous, thick-bedded, slight fetid odor 2.0

1. Limestone, light-gray, highly oolitic, crinoidal, stylolitic, massive, strong fetid odor ~~9.0~~ this is the lowest bed exposed in the quarry 9.0

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[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 12

(East Stone Gap Section)

(Measured 2.5 miles) southeast of East Stone Gap, Virginia, in partial gap in Powell Mountain (cut by south fork of Powell River. The Greenbrier limestone was measured on the southwest side of gap along road to top of mountain; the remainder of the section was measured on the northeast side of the gap along old logging road. Wise (quadrangle), Wise County, Virginia.

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(East Stone Gap Section)

Measured 2.5 miles southeast of East Stone Gap Virginia in partial gap in Powell Mountain cut by south fork of Powell River. The Greenbrier limestone was measured on the southwest side of gap along road to top of mountain; the remainder of the section was measured on the northeast side of the gap along old logging road. Wise Quadrangle, Wise County, Virginia.

	Thickness (Feet)
POTTSVILLE FORMATION (not measured)	
103. Sandstone, conglomeratic, thick-bedded, cross-bedded.	____
BLUESTONE FORMATION (664.5 feet)	
102. Covered interval	313.0
101. Sandstone, green and greenish-buff with dark yellowish-brown tints, very fine subangular to angular grains, slightly silty, dirty, scattered black minerals, very thin-bedded, slabby, cross-bedded, contains macerated plant remains, resistant	9.0
100. Shale, olive drab, green and maroon red with yellowish-green and greenish-buff friable sandstone at top and bottom	64.0
99. Covered interval	22.0
98. Sandstone, buff with greenish and brownish tints, very fine subangular to subround grains, scattered black minerals, medium-bedded in lower one-half, thin-bedded above, cross-bedded, poorly exposed	6.0

97. Covered interval 26.0

96. Shale, chiefly olive-drab but also green, gray, and brown, some sandy laminae, micaceous, very fissile 74.0

95. Shale, olive drab, silty, black macerated plant fragments, poorly exposed 56.0

94. Covered interval but probably underlain by olive-drab shale . . 22.0

93. Covered interval 57.0

92. Covered interval 15.5

PRINCETON SANDSTONE (64.0 feet)

91. Sandstone, buff, locally brown and pink, medium subround grains, scattered quartz pebbles, scattered black minerals, thin-bedded, massive in top, cross-bedded, moderately resistant 11.0

90. Covered interval 15.5

89. Sandstone, white, weathers buff, reddish-brown, and brown, scattered rounded quartz pebbles, course subround grains, very massive, cross-bedded, porous, very resistant (prominent cliff former) 37.5

Hinton Formation (670.5 feet)

88. Covered interval, some red and green shale exposed 162.0

87. Shale and mudstone, poorly exposed, maroon-red, contains some thin beds of red fine-grained sandstone 46.0

86. Sandstone, buff with greenish-brown tint becoming brown upward, grayish-purple in top, very fine-grained 20.0

85. Sandstone, greenish-buff, very fine-grained, shaly, silty, platy, thin-bedded, cross-bedded, nonresistant 7.0

84. Shale, maroon-red 36.0

83. Covered interval 18.0

82. Shale, light-green, silty 20.0

81. Shale, red, poorly exposed 8.0

80. Shale, light-green, red in top 75.0

79. Sandstone, green, micaceous, red shale partings in upper one-half, medium bedded in lower one-half, thin and wavy bedded above, resistant, calcareous in middle 9.0

78. Shale, green, poorly exposed.. . . . . 20.0

77. Covered interval, red shale poorly exposed in lower 20 feet . 117.0

Stony Gap sandstone member (middle Maxton sand) of the driller (132.5 feet)

76. Sandstone, buff and light buff with pink, green, and yellowish-brown tints, very fine to fine subangular grains, locally rounded, black macerated plant remains, thin-bedded, cross-bedded, resistant 4.0

75. Covered interval, probably underlain by slabby sandstone . . . 14.5

74. Sandstone, as unit 76, forms hogback 18.0

73. Sandstone, light buff and yellowish-brown, fine subangular grains, locally subround, scattered black minerals, friable, thick-bedded to massive, cross-bedded 16.5

72. Sandstone, buff and light-gray, very fine to fine subangular grains, thick-bedded becoming thin-bedded upward, channeled at 13.0 feet above base 30.0

71. Sandstone, light-buff, stained yellowish brown, very fine-grained, quartzitic locally, black plant fragments in top, scattered black minerals, platy, shaly sandstone partings with black films on bedding locally, chiefly thick-bedded, cross-bedded, channeled in top 13.5

70. Covered interval, but probably underlain by buff flaggy thin wavy-bedded sandstone 18.0

69. Sandstone, grayish-buff stained yellowish-brown internally, fine subangular to subrounded grains, scattered black minerals, quartzose, thick-bedded, thin-bedded in top, cross-bedded . . 18.0

BLUEFIELD FORMATION (518.5 feet)

68. Covered interval 302.0

67. Limestone, dark gray, very oolitic and clastic, medium-bedded . 2.0

66. Covered interval 6.0

65. Limestone, dark gray, dense and thin- to medium-bedded in lower 5.0 feet; remainder is medium gray, very oolitic and massive; entire unit is resistant and forms a hogback, fetid odor, cross-bedded, this is the "Little Lime" 18.0

64. Covered interval 85.0

63. Shale, olive-drab, fossiliferous 55.0

62. Sandstone, grayish-black, weathers light gray, shaly partings, contains small nodules of black chert near top, aligned parallel to bedding, fossiliferous (corals, Archimedes, brachiopods) . . 7.5

61. Limestone, greenish-gray, very silty and shaly, fossiliferous . 8.0

60. Covered interval 3.0

59. Limestone, greenish-gray, weathers olive drab, extremely silty, shaly, fossiliferous (large Archimedes) 4.5

58. Limestone, medium gray, very oolitic and clastic, coursely crystalline, very crinoidal, thick-bedded becoming shaly and thin-bedded upward 3.5

57. Shale, red, mottled locally greenish-yellow, very calcareous, fossiliferous (brachiopods, trilobites, very large Archimedes). 10.0

56. Shale, weathers bluish gray and greenish yellow, forms a yellow soil, very calcareous. 4.5

55. Limestone, "coquina-like" for it consists of a mass of fossil fragments, shaly 1.5

54. Shale, dark gray, weathers yellow, very calcareous, fossiliferous 8.0

GREENBRIER LIMESTONE (401.0)

53. Limestone, dark-green with brownish tint, dense to finely crystalline, ribby, fossiliferous (brachiopods and crinoids) fetid odor 2.0

52. Limestone, light-gray with tannish tint, coarsely crystalline, sparsely oolitic, fossiliferous, fetid odor 3.0

51. Limestone, as unit 53, exposed out in stream bed. 2.0

50. Limestone, as unit 53 . . . . . 6.0

49. Limestone, dark-gray with slight tannish tint, dense to finely crystalline and oolitic, scattered calcite crystals, fossiliferous, thin-bedded, fetid odor 2.0

48. Shale, medium gray with greenish-yellow tint, slightly gritty, calcareous, impressions of fossil plant stalks, this is top bed in small quarry 2.5

47. Limestone, dark gray with tannish tint, fine-to medium-crystalline, shaly, platy, wavy-bedded, oolitic in top, fossiliferous (chiefly crinoids), fetid odor 2.0

46. Limestone, light-to medium-tannish-gray, dense, locally sub- to medium-crystalline, solution pits, scattered calcite crystals, thick-bedded and massive, fossiliferous, fetid odor, oolitic locally, weathers mottled red locally, upper 20 feet of this unit exposed in small quarry 34.0

45. Limestone, dark-gray to black, dense to subcrystalline, finely crystalline in top, fossiliferous (crinoids, cephalopods, corals, brachiopods), thin-bedded, fetid odor, resistant . . 7.5

44. Limestone, dark-gray with tannish tint, sub- to medium-crystalline, fossiliferous (brachiopods, corals, crinoids), thin-bedded, fetid odor 3.5

43. Limestone, dark-gray with tannish tint, dense to medium-crystalline, slightly oolitic in top, scattered brown calcite crystals, fossiliferous, fetid odor 7.5

42. Limestone, medium-gray with bluish tint, medium-crystalline, weathers tannish-yellow, oolitic, fossiliferous, fetid odor . 2.0

41. Limestone, medium-gray with tannish tint, medium-crystalline with scattered brown calcite crystals, fossiliferous, stylolitic, medium-bedded, slight fetid odor, weathers yellow in top 8.0

40. Covered interval 3.5

39. Limestone, dark-gray to black with tannish tint, sub- to finely-crystalline, fossiliferous (crinoids) weathers ribby, slight fetid odor 2.5

38. Limestone, dark-gray to black, dense to subcrystalline, fossiliferous, slight fetid odor 7.0

37. Limestone, medium-gray with brownish tint, medium-crystalline, scattered brown calcite grains, shaly, slabby, weathers knobby, fossiliferous (brachiopods, crinoids, bryozoa), fetid odor 13.5

36. Limestone, dark-gray with tannish and brownish tints, fine- to coarsely crystalline, dense locally, fossiliferous (corals, brachiopods, crinoids), weathers ribby, medium-bedded 8.5

35. Limestone, black, shaly, weathers ribby, thin-bedded, slight fetid odor 17.5

34. Limestone, medium- to dark-gray with bluish-tint, medium-crystalline, nodules and stringers of black chert near base, oolitic, fossiliferous, fetid odor, ribby 7.0

33. Limestone, light- to medium-gray with yellowish-green tint, medium- to coarsely crystalline, weathers rounded, fossiliferous, slight fetid odor 8.0

32. Limestone or calcareous mudstone, light- to medium-gray with greenish tint, shaly, lenticular 1.0

31. Limestone, medium- to dark-gray with tannish tint, medium-crystalline, massive, fossiliferous (brachiopods, crinoids, corals, bryozoa), slight fetid odor 7.5

30. Limestone, medium-gray with tannish tint, dense, scattered calcite crystals, fossiliferous, from 11 to 14 feet above base is mottled red and light tan, fetid odor 17.5

29. Limestone, medium-gray with tannish tint, dense to finely crystalline, crinoidal, ribby, oolitic locally, thin-bedded, fetid odor 9.5

28. Mudstone, calcareous, light-yellow to greenish-yellow, dense, gritty, laminated, weathers spheroidally, non-resistant. 1.5

27. Limestone, light-gray to tannish-white, medium-crystalline, oolitic, fossiliferous, solution pitted, fetid odor 11.5

26. Covered interval 8.0

25. Mudstone, medium-gray with tannish tint, calcareous, dense, with scattered calcite crystals, fossiliferous (crinoids, brachiopods), weathers yellowish, fetid odor 2.5

24. Limestone, medium-gray with bluish-green tint locally, medium-crystalline, very fossiliferous (crinoids, brachiopods), medium-bedded becoming massive upward 5.5

23. Mudstone, medium tannish-gray, calcareous, dense, scattered FeS_2 in base, sparingly fossiliferous (crinoids), slight fetid odor 15.0

22. Limestone or calcareous mudstone, tannish-gray, dense, medium-crystalline locally, sparingly fossiliferous, conchoidal fractures, fetid odor, ribby 27.0

21. Limestone, tannish-gray and red, dense, scattered calcite crystals, laminated, weathers knobby 6.5

20. Limestone, green and light-gray, dense to finely crystalline, corals replaced by crystalline calcite, slight fetid odor . . 1.0

19. Limestone, medium-grayish-tan, dense with scattered light-brown calcite crystals, fossiliferous, fetid odor, poorly exposed 2.5

18. Covered interval 4.0

Taggard red member (top)

17. Limestone, greenish-gray and also reddish-purple, finely crystalline, weathers yellowish-brown, fossililferous 2.5

16. Covered interval 5.0

15. Limestone, medium-gray with tannish tint, fine- to medium-crystalline, dense in top, fossiliferous (bryozoa, brachiopods, crinoids), ~~may have~~ slight fetid odor. 14.0

14. Dolomite or dolomitic mudstone, light- to medium-gray with red and green tints, banded, dense with scattered calcite crystals, slightly fossiliferous, sublithographic locally, conchoidal fractures, massive 7.0

Taggard red member (base)

13. Covered interval probably underlain by green calcareous shale 3.0

12. Limestone, light- to tannish-gray, fine- to medium-crystalline, slightly oolitic, fossiliferous, crinoidal, massive, fetid odor 14.5

11. Limestone, medium- to dark-gray with brownish tint, disseminated black minerals, sparingly fossiliferous, (Spirifer), slight fetid odor 8.5

10. Limestone, light-gray with tannish tint, medium-crystalline, very oolitic, stylolitic, crinoidal, contains solution pits, medium-bedded 11.0

9. Limestone, light-grayish-tan, sublithographic and dense, scattered calcite crystals, contains bryozoa, conchoidal fractures, stylolitic 1.0

8. Limestone, light- to medium-gray with brown tint, finely crystalline, crinoidal, stylolitic 21.5

7. Limestone, light-gray mottled with brown, weathers yellow . . 1.5

6. Limestone, medium- to dark-grayish-brown, finely crystalline, shaly in base 3.5

4. Limestone, medium-gray to grayish-brown, dense in base, medium-crystalline above, scattered black minerals, medium-bedded 6.5

3. Limestone, light-gray to white, medium-crystalline and clastic, oolitic, very fossiliferous, very crinoidal in certain beds, medium-bedded, cross-bedded 13.5

Hillsdale member

2. Limestone, light-tannish-gray, dense to subcrystalline, scattered green mineral (glauconite?), contains nodules of blue, dark-gray, and black chert aligned parallel to the bedding, crinoidal, medium bedded 16.5

MACCRADY SHALE (not measures)

1. Sandstone and shale, grayish-yellow, reddish-purple and greenish-yellow . . . . . ——

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W. E. Wrather, Director

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 17

(Pine Mountain-Osborn Gap)

(Measured on northwest slope of Pine Mountain along old logging road through gap and 0.25 miles northeast of old logging road) Pound Quadrangle, Pike County, Kentucky.

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

Prepared in Cooperation with the Division of Geology of the Virginia Department of Conservation and Development

This report is preliminary and has not been edited or reviewed for conformity with U. S. Geological Survey standards and nomenclature.

[1955]

GEOLOGIC SECTION 17

(Pine Mountain-Osborne Gap)

Measured on northwest slope of Pine Mountain along old logging road through gap and 0.25 miles northeast of old logging road, Pound Quadrangle, Pike County, Kentucky.

POTTSVILLE FORMATION (not measured) Thickness (feet)

35. Conglomerate, white . . . . . .

BLUESTONE FORMATION (484.2 feet)

34. Covered interval, float indicates olive-drab and greenish-buff shale and some red shale, very fine-grained sandstone and shale 90.0

33. Sandstone, buff to medium-brown, fine subangular to angular grains, thick-bedded to massive in lower 17 feet, upper 14 feet consists of buff, brown, and greenish-brown, very fine to fine subangular grained, thin-bedded, slightly cross-bedded, slightly calcareous sandstone 31.0

32. Covered interval 51.0

31. Sandstone, greenish-gray in base, medium-brown to buff and greenish-gray above, very fine-grained, thick-bedded, wavy-bedded, cross-bedded, becoming thin- to medium-bedded upward, macerated black plant fragments, micaceous 12.0

30. Covered interval 15.0

29. Sandstone, buff, greenish-buff and greenish-gray, very fine-grained , slightly micaceous, thin-bedded, wavy-bedded, cross-bedded, black macerated plant fragments, resistant 10.0

28. Covered interval 10.0

27. Sandstone, as unit 29, forms a resistant escarpment directly above the coal seam (Unit 25) 25.0

26. Shale, ("roof slate"), dark-gray, micaceous, impressions of plant fossils 1.0

25. Coal 1.2

24. Shale, greenish-buff to yellowish-brown, silty, sandy 5.0

23. Covered interval 159.0

22. Shale, gray with slight greenish tint and grayish-buff, scattered maccerated black plant fragments, poorly exposed . . 38.0

21. Covered interval 36.0

HINTON FORMATION (300.5 feet)

Limestone member (Avis limestone of Reger) (18.0 feet)

20. Shale, grayish-buff, yellowish-green and greenish-gray, numerous black maccerated plant fragments, includes a thin sandstone bed, fossiliferous, noted a 5 foot bed of shaly, fossiliferous limestone in this interval ¼ mile to the north 18.0

Middle red member (242.0 feet)

19. Shale, olive-drab, greenish-buff, green with maroon-red zone in base, greenish-buff sandstone beds in upper one-half 6.0

18. Shale, olive-drab, greenish-buff and green, sandy, changes laterally to predominately sandstone interbedded with shale . . 12.0

17. Shale, variagated but predominately maroon-red, slightly silty, micaceous 49.0

16. Sandstone, medium-gray with greenish tint, green and greenish-buff, very fine-grained, micaceous, shaly, wavy-bedded 3.5

15. Shale, predominately maroon-red with some dark-and light-green zones at base and top, macerated black plant fragments on bedding planes in sandy zones, micaceous locally 48.0

14. Shale, dark-gray with greenish-tint, locally olive-drab, some sandstone 8.5

13. Shale, maroon-red, reddish-brown, yellowish-green, silty in middle 15.0

12. Shale, buff and greenish-buff, very sandy, micaceous 8.0

11. Sandstone, greenish-buff to buff, very fine-grained, very micaceous, slabby, wavy-bedded, cross-bedded 5.0

10. Covered interval 5.5

9. Sandstone, buff and slightly greenish-buff, very fine-grained, wavy-bedded, micaceous, macerated black plant fragments on bedding planes or surfaces 3.0

8. Covered interval 14.0

7. Sandstone, greenish-buff and buff, fine-grained, subangular to angular grains, thin-bedded at base, flaggy at top, cross-bedded, poorly exposed 2.0

6. Covered interval 4.5

5. Sandstone, white, weathers to buff and light brown, fine subangular to angular grains, micaceous, quartzose, thin-bedded becoming medium-bedded upward, cross-bedded 5.0

4. Covered interval 18.0

3. Sandstone, white, fine subangular to angular grains, quartzose, medium-bedded, cross-bedded . . ; 5.0

2. Covered interval 30.0

Stony Gap Sandstone member (Middle Maxton Sand of the drillers) (40.5 feet)

1. Sandstone, white, ~~but~~ weathers to buff, brown, pink, and greenish-buff internally, fine subrounded to subangular grains, quartzose, micaceous in top, cross-bedded, porous, very resistant forming a steep escarpment on the northwestern slope of Pine Mountain, base not exposed 40.5

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

[Reports - Open file series] no. 349

W. E. Wrather, Director

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 20

(Miller Yard Section)

(Measured) along Clinchfield R ilroad (from southwesternmost switch of the railroad yard) to the base of the Pottsville formation (taking advantage of the excellent exposure in the Turnaround Y) Coeburn Quadrangle, Scott County, Virginia.

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

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[1955]

GEOLOGIC SECTION 20

(Miller Yard Section)

Measured along Clinchfield Railroad from southwesternmost switch of the railroad yard to the base of the Pottsville formation taking advantage of the excellent exposure in the turnaround ¼, Coeburn Quadrangle, Scott County, Virginia.

	Thickness (feet)
POTTSVILLE FORMATION	
85. Conglomerate, white, resistant, forms a hogback	____
BLUESTONE FORMATION (797.0 feet)	
Upper member (354.0 feet)	
84. Covered interval	131.0
83. Sandstone, greenish-buff, medium subangular grains, locally fine-grained, micaceous, medium-bedded, thin-bedded in base, weathers yellowish-brown mottled with black in lower one-half, greenish above, contains plant fossils, cross-bedded, resistant	56.0
82. Shale, grayish-black with very thin interbed of white sandstone, weathers bluish-gray	4.0
81. Coal, slightly shaly, crumpled	3.5
80. Siltstone, medium-gray with slight greenish tinge, sandy, shaly, micaceous, numerous black macerated plant fragments, weathers yellowish-brown	4.5
79. Shale, deeply weathered, probably was greenish-gray or grayish-green originally, weathers light-red, poorly exposed because of slumping on outcrop	9.0

78. Sandstone and shale interbedded, the sandstone is light gray, very fine-grained and shaly; the shale is greenish-gray and red locally 5.5

77. Siltstone, green, locally red, shaly, sandy, weathers green . . 4.5

76. Sandstone, greenish-gray, very fine-grained, silty, micaceous, medium-bedded, calcareous 3.0

75. Siltstone, green, locally red, shaly, sandy 2.0

74. Sandstone, greenish-gray, very fine grained, silty, micaceous, medium-bedded 2.0

73. Siltstone, green, locally red, shaly, sandy 2.0

72. Siltstone, red, locally green, sandy, slightly calcareous, shaly, ... 7.0

71. Shale, red, muddy 4.0

70. Sandstone, siltstone, and shale, greenish-gray, sandstone is fine-grained and calcareous, reddish locally in base . ; 9.5

69. Sandstone, light-bluish-gray, fine-grained, porous, thin-bedded 1.5

68. Shale, interbedded red and greenish-gray, silty, several thin ribs of light gray fine-grained, micaceous sandstone in base 8.0

67. Sandstone, light-gray, fine-grained, locally medium-grained, angular, micaceous, scattered black mineral, porous, massive, cross-bedded, very resistant, channels underlying unit 34.5

66. Shale, grayish-black, silty, silghtly sandy, weathers medium-gray 3.5

65. Sandstone, light-gray, locally greenish-buff, medium subangular grains, scattered black mineral, porous, massive, weathers tan and to a smooth planar surfaces, very resistant, channels underlying ledge 30.0

64. Shale, grayish-black with greenish tint, includes some slightly calcareous sandstone, changes to sandy, shaly, siltstone in top, nonresistant 9.0

63. Sandstone, light-gray, greenish-gray upward, fine and medium angular grains, scattered black minerals, slightly micaceous in top, thick-bedded, includes some black shale, resistant, top of this unit is near railroad switch of the turnaround Y . . . 20.0

Red member (165.0 feet)

62. Covered interval 1.5

61. Sandstone, light-gray changing upward to buff, greenish-buff in top, conglomeratic in base (quartz pebbles), medium and fine subangular grains, scattered black minerals, slightly micaceous, slightly calcareous in lower part, thick-bedded, resistant . . 16.5

60. Shale, greenish-yellow, very fissile 4.0

59. Sandstone, olive drab, very fine-grained , dirty, thin-bedded, micaceous 1.0

58. Shale, greenish-yellow, very fissile 5.0

57. Sandstone, olive-drab, very fine-grained, dirty, thin-bedded . 3.0

56. Shale, interbedded red and green, very fissile 9.0

55. Covered interval, probably underlain by shale as in overlying unit 12.0

54. Shale, red, extremely fissile, poorly exposed 1.5

53. Shale, interbedded red and green, poorly exposed in upper one-half 20.0

52. Sandstone, olive-drab, fine-grained, dirty, slightly micaceous. 11.0

51. Shale, interbedded red and green, silty 4.5

50. Sandstone, olive-drab, fine-grained, dirty, slightly micaceous. 1.0

49. Siltstone, olive-drab, sandy, shaly, fissile 5.0

48. Shale, red with some green 1.0

47. Covered interval, probably underlain by red and greenish-yellow shale 12.5

46. Siltstone, greenish-yellow, shaly, slightly sandy, includes two beds of red shale 9.5

45. Sandstone, olive-drab, very fine-grained, highly micaceous, thin-irregularly bedded 4.5

44. Shale, red, greenish-yellow in middle 8.5

43. Sandstone, olive-drab, very fine-grained and silty, extremely shaly and thin-bedded 5.0

42. Shale, red 3.0

41. Covered interval, probably underlain by red and green shale . . 8.0

40. Shale, medium-gray, calcareous, finely micaceous, contains irregularly rounded masses which might be fossils, this is the lowest stratigraphic exposure measured along the west leg of the turnaround Y 2.0

39. Covered interval, probably underlain by red and yellowish-green silty sandy shale 26.0

Gray shale member (278.0 feet)

38. Sandstone, buff, fine to medium subround and subangular grains, scattered black minerals, porous, thick-bedded, cross-bedded, resistant 32.5

37. Shale, interbedded red and olive-drab, micaceous, includes some olive-drab sandy siltstone 11.5

36. Siltstone, greenish-yellow, micaceous, shaly, sandy, contains 1 foot bed of grayish black shale near top 10.0

35. Sandstone, greenish-buff, weathers bluish-gray and light-gray; thin-bedded, flaggy, includes some silty yellowish shaly zones as partings 5.5

34. Sandstone, greenish-buff, fine to medium subangular grains, scattered black minerals, conglomeratic (shale pebbles) in base, contains plant fossils in base, porous, massive, cross-bedded, undulating contacts at top and bottom, very resistant 46.0

33. Covered interval, probably underlain by yellowish-green silty shale and siltstone 9.5

32. Sandstone, olive-drab, very fine-grained, micaceous, scattered black minerals, thin-bedded 8.0

31. Covered interval 114.0

30. Shale and siltstone, greenish-gray and dark-gray, weathers olive-drab and bluish-gray, extremely fissile, micaceous, exposed between railroad water tank spout and sandstone ledge (underlying unit) which crops out near southeastern switch of the turnaround Y 41.0

PRINCETON SANDSTONE (129.0 feet)

29. Sandstone, greenish-gray and greenish-buff, fine-grained, micaceous, slightly calcareous, thick-bedded, resistant . . . 7.5

28. Interbedded dark greenish-gray shale and medium-gray greenish weathering calcareous sandstone, the sandstone is very thin-bedded, fine-grained, slightly micaceous and nonresistant . . 5.0

27. Sandstone, greenish-buff, fine-grained, micaceous, weathers greenish, in two beds with slabby sandstone and shale partings 2.5

26. Shale, olive-drab, slaty, silty, weathers green and yellow, greenish-buff, fine-grained, micaceous, flaggy sandstone is present in top 15.0

25. Sandstone, olive-drab, fine-grained, micaceous, medium- to thin-bedded, slightly resistant 2.0

24. Covered interval 47.0

23. Shale, dark-greenish-gray, weathers yellow in upper one-half, slaty, slightly calcareous, includes some very fine-grained buff and white shaly sandstone 12.0

22. Sandstone, medium-gray, weathers green, fine-grained, slightly calcareous, micaceous, resistant 1.0

21. Siltstone, green, shaly, sandy, micaceous, fissile 3.5

20. Sandstone, medium- to light-gray, fine to medium subangular grains, greenish locally, slightly calcareous, quartzitic, conglomeratic (platy shale pebbles) in lower 10 feet, contains plant fossils, thick-bedded, cross-bedded, very resistant . . . 25.0

19. Sandstone, light-gray with greenish tint, medium subangular grains, slightly dirty, calcareous, conglomeratic (quartz pebbles and cobbles), lower 1 foot is actually a conglomerate with well rounded quartz and rock pebbles and cobbles up to 6 inches in diameter, massive, cross-bedded. This and the overlying unit actually form one very resistant ledge. It crops out in railroad cut opposite a small railroad yard shanty 8.5

HINTON FORMATION (Incomplete)

Limestone member (Avis limestone of Reger) (21.0 feet)

18. Covered interval 11.0

17. Shale, interbedded light-green and dark-red, calcareous, silty, sandy, micaceous, mud cracks 10.0

Middle red member (incomplete)

16. Siltstone, red, greenish-buff in base, changing upward to fine-grained sandstone which includes red shale partings, slightly calcareous, locally micaceous, ripple-marked, resistant 17.5

15. Shale, red and green, weathers yellow and red, silty, micaceous, sandy and green in top 18.0

14. Sandstone, olive-drab, fine-grained, porous, slightly dirty, in one bed 3.0

13. Shale, red and green, silty, micaceous 6.5

12. Sandstone, olive-drab, fine-grained, slightly dirty, porous, resistant 3.0

11. Sandstone, greenish-gray, very fine-grained, micaceous, thin-bedded, with sandy shaly siltstone partings 9.5

10. Sandstone, light- to medium-gray, fine-grained, slightly micaceous, hard, massive, slightly calcareous, red in top and includes a lense of red shale near base, weathers grayish black, yellowish-brown and gray, resistant 10.0

9. Shale, greenish-gray, red in base, micaceous, weathers yellowish near base and top, remainder weathering green 16.5

8. Sandstone, greenish-buff, very fine-grained, micaceous, silty, weathers yellowish-brown with some black, lenticular 1.0

7. Shale, red, very fissile, includes two thin buff calcareous sandy siltstone beds from 5 to 6 feet above base 12.5

6. Shale, greenish-gray, weathers yellowish-brown and green, very fissile, contains interbeds of yellow very porous cellular siltstone 17.0

5. Mudstone, probably green originally but weathers to yellowish-brown and yellow, micaceous, contains numerous fracture fillings of secondary limonite; contains silty, sandy fine-grained sandstone in base 9.5

4. Shale, greenish-gray weathers yellow, very fissile, micaceous, contains a thin-bedded very fine-grained micaceous sandstone from 13 to 15 feet above base 22.5

3. Sandstone, buff, fine-grained, weathers dirty greenish-brown and black, porous, massive, very resistant 6.5

2. Covered interval, probably underlain by light-green shale with some siltstone, weathers to yellow 62.0

1. Sandstone, red, very fine-grained, silty, micaceous, thin-bedded, poorly exposed, crops out in railroad cut near southern switch of Miller Yard. The rocks lying between this unit and the base of the Princeton sandstone were measured in the cuts within the yard beyond this switch 10.0

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

[Reports-Open file series] no. 349

W. E. Wrather, Director

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 21

(Hamlin Section)

(Measured 0.5 ± mile southwest of Hamlin, Virginia) along Va. 64 and Clinchfield Railroad, Coeburn Quadrangle, Russell County, Virginia

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[1955]

GEOLOGIC SECTION 21

(Hamlin Section)

Measured 0.5± mile southwest of Hamlin, Virginia along Va. 64 and Clinchfield Railroad, Coeburn Quadrangle, Russell County, Virginia.

	Thickness (feet)
Note: All beds in this section are overturned	
POTTSVILLE FORMATION (not measured)	
21. Sandstone, buff, medium to coarse rounded grains, quartzitic, hard, cross-bedded, very resistant	____
BLUESTONE FORMATION (incomplete)	
Upper member (incomplete)	
20. Shale, green and grayish-black, slightly silty, weathers green and yellowish-brown, crumpled	31.0
19. Coal, impure and shaly	0.5
18. Shale, light-gray, weathers yellow, deeply weathered	3.5
17. Coal, impure and shaly	0.5
16. Siltstone, green and yellowish-brown, micaceous, sandy, very shaly, wavy-bedded	16.0
15. Covered interval	30.0
14. Shale, probably olive-drab originally but is deeply weathered, micaceous, silty, weathers yellowish-brown, yellow and black .	7.5
13. Siltstone and shale, olive-drab, weathers yellowish- brown and greenish-gray	18.5

12. Coal, impure and shaly 0.3

11. Siltstone and shale as unit 13 . . . . . 11.5

10. Limestone, greenish-black, dense to finely crystalline, silty, weathers yellowish-brown, yellow and red 1.0

9. Siltstone and shale as unit 13 . . . . . 3.0

8. Covered interval 11.0

7. Sandstone, greenish-white, weathers internally to buff, fine to medium subangular grains, very micaceous, thick-bedded, is broken by very planar joints, resistant 11.0

6. Covered interval 10.5

5. Sandstone, grayish-white, medium to coarse subrounded grains, micaceous, impure, contains a shaly zone from 2.0 to 3.5 feet above base, massive, cross-bedded 14.5

4. Underclay, light-gray, contains 4 inches of impure shaly coal 2 feet above base 5.0

3. Sandstone, greenish-buff, fine angular grains, very micaceous, contains an abundance of casts and impressions of plant fossils, thin- and wavy-bedded.

2. Shale, light-gray, weathers greenish-gray, contains a bed of shaly coal from 1.5 to 2.0 feet above base 5.5

1. Sandstone, grayish-white and white, weathering internally to buff and greenish-buff, fine, subangular grains, locally coarse and rounded grains, scattered black minerals, micaceous, thin and wavy-bedded, slabby 11.0

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

W. E. Wrather, Director

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 23

(Blowing Rock Gap Section)

(Measured on northwest slope of Pine Mountain in abandoned quarry)

Blowing Rock Gap, Clintwood Quadrangle, Pike County, Kentucky

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

Prepared in Cooperation with the Division of Geology of the Virginia Department of Conservation and Development

[1955]

GEOLOGIC SECTION 23

(Blowing Rock Gap Section)

Measured on northwest slope of Pine Mountain in abandoned quarry, Blowing Rock Gap, Clintwood Quadrangle, Pike County, Kentucky

		Thickness (feet)
GREENBRIER LIMESTONE (incomplete)		
39.	Limestone, dark-gray with tannish tint, subcrystalline, oolitic, silty, thin-bedded in top and bottom, medium-bedded between, fossiliferous, fetid odor, resistant (forms hogback)	18.0
38.	Limestone, greenish-gray and grayish black, shaly, silty, finely crystalline, nonresistant, poorly exposed	7.0
37.	Limestone, dark-gray with tannish tint, sub- to medium-crystalline, oolitic, slight fetid odor	3.5
36.	Covered interval	45.0
35.	Limestone, dark-brown with grayish tint, sub- to finely crystalline, scattered small oolites, silty, shaly, contains thick beds of smoky chert in upper 5 feet, fossiliferous, very strong fetid odor	13.0
34.	Covered interval probably underlain by thin-bedded shaly limestone	17.0
33.	Limestone, medium- to dark-gray with tannish tint, thin-bedded, medium-bedded in top, silty, oolitic, rubbly, fossiliferous (Spirifer, corals), fetid odor	9.0

32. Limestone, medium-gray, interbedded with silty and shaly purplish-red and buff limestone, ooloitic locally, weathers rubbly, nonresistant, slight fetid odor, fossiliferous (Spirifer, corals). 11.0

31. Covered interval 9.0

30. Limestone, dark-gray with light tannish tint, dense to subcrystalline, oolitic locally, weathers ribby, thin-bedded, fetid odor 6.5

29. Limestone, dark-gray to tan, oolitic, medium-bedded 7.0

28. Limestone, grayish-buff to medium-gray with strong tannish tint, dense to subcrystalline, very oolitic, massive, fetid odor 15.0

27. Limestone, grayish-white to medium-gray, silty in base, scattered oolites, dense to subcrystalline, ~~xxxxxxxxx~~ contains thin black (asphaltic?) shaly seams, fossiliferous partings, nonresistant . . . 6.0

26. Limestone, light-gray, dense to subcrystalline, oolitic, massive 13.0

25. Limestone, light- to medium-gray with slight greenish tint, scattered oolites, weathers shaly, fossiliferous, nonresistant, slight fetid odor 1.0

24. Limestone, dark-gray, with tannish tint, dense to subcrystalline, oolitic, weathers rounded and knobby, medium- to thick-bedded, fetid odor 15.0

23. Limestone, medium- to light-gray, locally dark-gray, fine- to medium-crystalline, scattered oolites, ~~locally~~ slightly locally silty, fetid odor, weathers spheroidally 2.5

22. Limestone, dark-gray with tannish tint, dense to subcrystalline, several shaly limestone beds included, crinoidal, fetid odor 4.0

21. Limestone, dark-gray with brownish tint, dense to subcrystalline, scattered oolites locally, rubbly, fossiliferous, fetid odor, shaly in base 4.5

20. Limestone, dark-gray with tannish tint, very oolitic in lower one-half, dense above, slight fetid odor. 7.5

19. Limestone, dark-gray, finely crystalline, silty, scattered black minerals, medium-bedded 9.0

18. Limestone, dark-gray, oolitic, the oolites forming a definite laminae, slight fetid odor 2.5

17. Limestone, dark-gray with tannish tint, very oolitic, fossiliferous, massive, thin-bedded, weathers rounded 6.5

16. Limestone interbedded with shaly calcareous mudstone, dark-gray and greenish-gray, sub- to medium-crystalline, the mudstone is bedded; wavy; fossiliferous (crinoids, brachiopods). 7.5

15. Limestone, dark-gray with slight tannish tint, chiefly medium-crystalline, very fossiliferous (brachiopods, crinoids), thin-bedded, fetid odor, shaly in top 10.0

14. Limestone, grayish-buff becoming dark-gray upward, dense and subcrystalline, fossiliferous, medium-bedded 5.0

13. Limestone, medium-gray with tannish tint, alternating zones of dense and oolitic limestone, contains shaly green limestone partings, stylolitic, thin seams of black (asphaltic?) material, medium-bedded, fossiliferous (crinoids), top bedding plane channeled by overlying unit, weathers ribby 27.5

12. Limestone, grayish-green, buff, medium-gray and dark-gray, subcrystalline to finely crystalline, very oolitic locally, stylolitic in middle, fossiliferous, thin- to medium-bedded, slight fetid odor, nonresistant 8.5

Taggard red member (top)

11. Limestone, light- to medium-gray and very oolitic in base, from 6.5 to 10.5 feet above base consists of tannish-gray locally red and green oolitic limestone 22.5

10. Limestone or calcareous mudstone, medium-gray mottled red and green, medium-crystalline, oolitic, nonresistant, fetid odor, lenticular 5.5

9. Limestone or calcareous mudstone, medium-gray with tannish tint, buff locally, sub- to finely crystalline, conchoidal fractures, channeled by overlying unit, fetid odor locally, lenticular 5.5

8. Limestone, medium-gray with tannish tint, very oolitic, slightly channeled by overlying unit, slight fetid odor . . . 2.0

7. Limestone, dark-gray, buff in top, subcrystalline, scattered black minerals, stylolitic, conchoidal fracture, sparsely fossiliferous, channeled in top, very slight fetid odor . . . 5.0

6. Limestone, red mottled with grayish-green, dark-gray in top, medium crystalline chiefly, hackly and conchoidal fractures, fossiliferous, stylolitic, slight fetid odor 9.5

Taggard red member (base)

5. Limestone, medium- to dark-gray with tannish tint, dense to subcrystalline, oolitic locally in lower one-half, oolitic above, fossiliferous (Spirifer), Stylolitic, medium-to thick-bedded, channeled strongly in base, slight fetid odor locally, grayish-green shaly limestone partings in base 17.0

4. Limestone, mottled red and yellowish-green, silty, muddy, micaceous, subcrystalline, conchoidal fracture, strongly channeled in top, lenticular, scattered green minerals (glauconite?) 2.5

3. Limestone, medium-gray with tannish tint, dense, scattered smoky calcite grains, conchoidal fracture, channeled by overlying unit, stylolitic, fossiliferous, lenticular 2.0

2. Limestone, yellowish-brown and yellow, silty, contains some calcareous siltstone in lower one-half, nonresistant 4.0

MACCRADY SHALE (not measured)

1. Sandstone, red, very fine-grained, shaly, medium-bedded, contains scattered irridescent minerals, mottled with greenish-gray locally . . . . . ____

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

[Reports - Open file series] no. 347.

W. E. Wrather, Director

[Descriptions of 14 measured sections in south west Virginia and eastern Kentucky]

Geologic Section 27

(Sinkhole Valley Section)

(Measured along Va. 600 on southwest side of road and on northwest slope of Sinkhole Valley, 0.75 miles southeast of village of Dump Creek) Carterton Quadrangle, Russell County, Virginia

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

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GEOLOGIC SECTION 27

(Sinkhole Valley Section)

Measured along Va. 600 on southwest side of road and on northwest slope of Sinkhole Valley, 0.75 miles southeast of village of Dump Creek, Carterton Quadrangle, Russell County, Virginia.

GREENBRIER LIMESTONE (466.0 + feet)

Note: Upper beds of the Greenbrier limestone are not present; they have been removed through faulting and subsequent erosion.

	Thickness (Feet)
68. Limestone, medium-gray with strong tannish tint, very oolitic, (oolites vary in size and are deformed), the rims of some oolites have been altered to yellowish-brown, medium-bedded, fossiliferous, (fragmentary), fetid odor, weathers dark gray and to rough irregular surfaces	10.0
67. Siltstone, calcareous, ~~slightly~~ silty, or limestone, medium-gray with greenish tint, locally pink or reddish-purple, breaks lumpy	3.0
66. Shale, calcareous, slightly silty, weathers light buff to gray	0.5
65. Limestone, dark-gray with tannish tint, lower one-half dense to subcrystalline, upper one-half medium-crystalline with some very oval oolitic zones, scattered black chert nodules in top, thin-to medium-bedded, fossiliferous (fragmentary), noted Pentremites and bryozoa, fetid odor .	8.5

64. 64. Limestone, buff and dark-gray, medium-crystalline, scattered oolites, thin-bedded, and shaly, fossiliferous, weathers mottled dark gray and buff, fetid odor locally 3.5

63. Covered interval 2.5

62. Limestone, dark and medium-gray, very oolitic near top, thin-bedded at base and medium-bedded upward, fossiliferous stylolitic, fetid odor 8.5

61. Covered interval 1.5

60. Limestone, dark-gray with bluish-black and brown tints, dense to subcrystalline, scattered black and yellowish-brown minerals, thin-bedded, fossiliferous, hackly fracture . . 5.5

59. Covered interval 1.5

58. Limestone, dark-gray, sub-to medium-crystalline and locally thin-bedded, fossiliferous, slight fetid odor, weathers to slightly knobby surfaces 3.5

57. Limestone, dark-gray to grayish-black, subcrystalline, dense locally, scattered oolites in top, fossiliferous, (Pentremites, brachiopods, crinoids), black chert nodules throughout replacing fossils, thin-bedded 8.5

56. Covered interval 3.5

55. Limestone, dark-gray with tannish tint, dense, locally subcrystalline, thin-bedded, fetid odor, fossiliferous . . . 7.5

54. Covered ~~section~~ interval 2.0

53. Shale, calcareous, or shaly limestone, medium- to dark-gray, some silty laminae 1.0

52. Covered interval 1.0

51. Limestone, dark-gray, oolitic, contains black chert nodules in beds one inch thick, fossiliferous, (crinoids, brachiopods, Pentremites), thin-bedded, resistant 11.5

50. Limestone, dark-gray, dense in lower half and subcrystalline above, oolitic locally, thin- to medium-bedded, stylolitic, fossiliferous, slight fetid odor 20.5

49. Covered interval 5.0

48. Limestone, dark-gray with tannish tint, lower 7 feet subcrystalline, upper 3.5 feet very oolitic, scattered orange-red mineral throughout, scattered black chert nodules in middle, slight fetid odor 10.5

47. Covered interval, probably underlain by limestone . . . 5.5

46. Limestone, greenish-gray and dark-gray, oolitic, fossiliferous at top, fetid odor, weathers dark-gray and to rounded surfaces 3.5

45. Covered interval, probably underlain by yellowish-green silty limestone 3.5

44. Limestone, dark-gray with tan and green tints, finely crystalline, oolitic locally, silty, thin-bedded, fetid odor. . . 6.5

43. Limestone, dark-gray with tannish tint, chiefly syberystalline with scattered oolites locally, thin-bedded, fossiliferous, fetid odor locally, stylolitic about 4 feet above base..... 10.0

42. Covered interval 3.0

41. Limestone, dark-gray with yellowish-green silty layers, finely crystalline, scattered oolites locally, thin-bedded 2.5

40. Covered interval, probably underlain by limestone 7.5

39. Limestone, dark-gray, sub-to finely-crystalline, scattered dark-gray chert nodules, fossiliferous, thin-bedded, fetid ordor 4.0

38. Limestone, medium-gray in base, dark-gray upward, oolitic, very fossiliferous, (corals, brachiopods, and crinoids), thin-to medium bedded 3.5

37, Limestone, dark-gray with slight tannish tint, dense to subcrystalline, oolitic locally, fossiliferous, thin-bedded, cherty .11.0

36. Limestone, dark-gray, very oolitic, fossiliferous, (corals and brachiopods), thin-bedded in lower one-half and thick bedded upward, stylolitic, resistant 7.0

35. Limestone, light-gray with slight tannish tint dense to subcrystlline, fossiliferous, thin-bedded, stylolitic, resistant . . 2.5

34. Covered interval, probably underlain by dark-gray ~~xiiiy~~silty limestone 6.0

←Taggard red member (top)

33. Limestone, very dark-gray with brownish tint, locally purplish-red and greenish tints, finely crystalline, silty, thin-bedded and shaly, strong fetid ~~xxxx~~ odor 8.0

32. Covered interval, probably underlain by limestone 3.0

Taggard red member (base)

31. Limestone, medium-to dark-gray with tannish tint, dense, oolitic locally, conchoidal fracture, fossiliferous, thin-bedded in lower one-half, thin- to medium-bedded upward 11.5

30. Limestone, medium- to dark-gray with strong tannish tint, oolitic, fossiliferous, thin-bedded near top, medium-bedded, resistant . . . 10.0

29. Limestone, dark-gray with tannish tint and mottled with black spots throughout, dense, very thin-bedded, weathers ribby, fetid odor 1.5

28. Limestone, medium-gray with tannish tint, dense to subcrystalline, locally very oolitic, especially in the top, thick-bedded in base, massive above, fetid odor 4.5

27. Covered interval, probably underlain by limestone 6.5

26. Limestone, dark-gray with slight tannish tint and brownish-buff in base chiefly dense, hackly and conchoidal fracture, fossiliferous, thin-bedded, stylolitic, strong fetid odor 5.0

25. Covered interval, probably underlain by limestone 2.5

24. Limestone, same as unit 22 except it has alternating beds of very oolitic and dense limestone, thin-to medium-bedded 6.5

23. Covered interval, probably underlain by limestone 4.5

22. Limestone, dark-gray with strong brownish tint, very oolitic but locally is dense to subcrystalline with scattered oolites, massive becoming medium- to thin-bedded at top, fossiliferous, strong fetid odor. (This is the highest stratigraphic unit exposed in the quarry. Units 23 to 68 were measured on hillside and in fields to the south) . . 24.0

21. Limestone, grayish-white very oolitic locally with silty zones, fossiliferous, thin-bedded, slight fetid odor, nonresistant 4.5

20. Limestone, medium-gray at base changing to light-gray upward, very oolitic, fossiliferous, massive, strong fetid odor, resistant .13.5

19. Limestone, dark-gray with tannish tint locally, dense to subcrystalline, scattered oolites, massive, contains black seams (asphaltic ?) throughout 15.0

18. Limestone, medium-gray and buff with some grayish-black beds, dense to subcrystalline, conchoidal and hackly fractures, fetid odor, contains scattered black (asphaltic ?) seams 4.0

17. Limestone, dark-gray, highly oolitic, fossiliferous, massive, strong fetid odor locally (Units 17 - 22 measured in old quarry adjacent to highway) 16.5

llsdale member (top)

16. Limestone, medium-to dark-gray, slight tannish tint, sub-to finely crystalline, scattered black chert nodules throughout, sparsely fossiliferous, medium and thin-bedded in lower half, thick-bedded in upper half, fetid odor 14.5

15. Limestone, medium-gray to grayish-black, dense to subcrystalline scattered oolites locally, conchoidal fracture, thin-bedded in lower half, massive in upper half, slight fetid odor 7.0

14. Limestone, dark-gray, dense to subcrystalline, scattered oolites in lower 2.5 feet, breaks shaly and platy, sparsely fossiliferous, black chert nodules in upper 1.5 feet, medium-bedded at base, thin-bedded upward 3.5

13. Limestone, dark-gray to grayish-black, sub-to finely crystalline in lower 11.0 feet, coarsely oolitic in upper 3.5 feet sparsely fossiliferous (cephalopods), thin-bedded below, medium-bedded above 14.5

12. Limestone, medium-to dark-gray and grayish-black near top, very oolitic in middle, fossiliferous, medium-bedded in lower half, massive bedded upward, cross-bedded 7.5

11. Covered interval, probably underlain by greenish-buff, silty limestone 4.5

10. Limestone, grayish-black, dense to subcrystalline with scattered oolites locally, red, black and yellowish-green chert beds and nodules, fossiliferous (corals and brachiopods), medium-to thick-bedded in lower half, thin-bedded upward, resistant. . . 14.0

9. Limestone, grayish-black, dense to finely crystalline interbedded with green to greenish buff silty and muddy limestone, laminated, contains nodules and thin beds of grayish-black chert, very fossiliferous (Spirifer and crinoids), weathers ribby 8.5

8. Limestone, grayish-black, silty locally with greenish zone at base and upward, sub-to finely crystalline, fossiliferous, strong fetid odor, stylolitic (?) break at top 3.0

7. Limestone, dark-gray, buff in and base, sub-to medium-crystalline with scattered oolites locally, several thin bluish-gray and black chert beds and some scattered nodules, fossiliferous (crinoids, brachiopods, and bryozoa), medium-bedded, and thin-bedded in top, strong fetid odor 7.0

6. Limestone, dark-gray in lower 3.0 feet and medium-gray to light-grayish buff in upper 9.0 feet, silty and muddy, glauconitic (?), very fossiliferous locally (bryozoa and brachiopods), slightly dolomitic, laminated, weathers ribby. . 12.0

5. Limestone, grayish with yellowish-green laminae in lower 2.5 feet, buff in top, above, silty, subcrystalline with local oolites, thin-bedded and platy, weathers ribby 3.0

4. Limestone, dark-gray to grayish-black with brownish tint, sub-to finely crystalline, slightly silty, one inch beds (one foot apart) black nodular chert in upper four feet, fetid odor, top channeled by overlying limestone, dolomitic in middle 6.0

Hillsdale member (base)

3. Limestone, dark-gray to grayish-black with brownish tint, sub-crystalline, thin-bedded, slight fetid odor, weathers ribby, poorly exposed. (The base of the Greenbrier Limestone is only 4 or 5 feet below this unit but is not exposed). 16.0

MACCRADY SHALE

2. Covered interval, probably underlain by shale and siltstone of the Maccrady shale, as unit 1. The Greenbriar-Maccrady contact is probably near the top of this unit 63.0

1. Shale and siltstone, light-gray but weathers to yellowish brown, greenish-buff and pinkish locally, sandy friable .....

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

W. E. Wrather, Director

[Reports - Open file series, no. 349.

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 28

Measured along Musick School Tributary of Weaver Creek (beginning 0.4 mile up tributary from Weaver Creek) Carterton Quadrangle, Russell County, Virginia

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

Prepared in Cooperation with the Division of Geology of the Virginia Department of Conservation and Development

This report is preliminary and has not been edited or reviewed for conformity with U. S. Geological Survey standards and nomenclature.

[1955]

GEOLOGIC SECTION 28

(Buffalo Mountain Section)

Measured along Musick School Tributary of Weaver Creek beginning 0.4 mile± up tributary from Weaver Creek, Carterton Quadrangle, Russell County, Virginia.

		Thickness (feet)
POTTSVILLE FORMATION (not measured)		
68.	Conglomerate	———
BLUESTONE FORMATION (758.5 feet)		
67.	Covered interval	301.0
66.	Sandstone, buff and brownish to greenish-buff, composed chiefly of very fine subangular grains, fine-grained locally, thin-bedded with flaggy, platy zone in middle, scattered black minerals and muscovite, porous	6.0
65.	Covered interval	10.0
64.	Shale, in upper 4.0 feet, chiefly purple-red with some green, lower 4.0 feet consists of greenish-gray, buff, and dark reddish-brown, very fine-grained, muscovite-bearing sandstone which contains black macerated plant fragments .	8.0
63.	Covered interval	24.5
62.	Sandstone, brownish-buff and greenish-gray upward, very fine and fine subangular grains, thin-bedded in lower one-half and massive upward, cross-bedded; scattered black minerals, muscovite, and macerated black plant fragments . .	15.0

61. Covered interval 15.5

60. Sandstone and shale, upper 13 feet consists of interbedded greenish gray very fine-grained sandstone, sandy shale, and shale, lower 10 feet consists of greenish buff to brown silty and sandy shale, entire unit minutely cross-bedded . 23.0

59. Covered interval 8.0

58. Sandstone, poorly exposed, variegated (gray, buff, red, yellow, and purplish-black), very fine subangular grains, micaceous, thin and medium bedded, contains scattered black minerals, muscovite and macerated black plant fragments, breaks along very smooth joint surfaces 16.0

57. Covered interval 119.0

56. Shale, silty, interbedded with thin, wavy bedded, flaggy, fine-grained, porous sandstone, medium-gray, buff, brown, greenish-buff, contains macerated black plant fragments throughout 27.0

55. Covered interval 55.0

54. Sandstone, poorly exposed, greenish-gray and greenish-buff with one dark red bed 3.0 feet above base, very fine to fine subangular grains, scattered black minerals and micaceous (muscovite) locally, thin-bedded 11.5

53. Covered interval 119.0

PRINCETON SANDSTONE (49.5 feet)

52. Sandstone, same as Unite 47 except all very greenish-buff and fine-grained.. . . . . 2.0

51. Covered interval 4.5

50. Shale, poorly exposed, brown to buff, sandy in base and silty upward, scattered black minerals and muscovite . . . 8.0

49. Sandstone, same as basal part of Unit 47, medium-bedded, weathers dark-gray and to yellowish-brown 2.0

48. Sandstone and shale, interbedded, greenish-buff, dark-gray and grayish-white, very fine to fine angular grains, poorly sorted, unit is chiefly shaly, slabby, and wavy bedded with 7 or 8 thin quartzitic sandstone beds, contains macerated black plant fragments 26.0

47. Sandstone, light greenish-buff to light-gray, very fine to fine subangular grains, poorly sorted, micaceous, thin-bedded at base and medium-bedded upward, cross-bedded, cavities in base which may represent shale pebbles which have been removed through leaching 7.0

ELINTON FORMATION (814.0 feet)

46. Covered interval 57.0

45. Shale, green with yellowish tint, sandy and silty, micaceous 5.5

44. Sandstone, brown to light-gray mottled with orange-brown spots, very fine-grained; contains scattered black minerals and is micaceous, even thin to medium beds 5.5

43. Covered interval 1.5

42. Shale, reddish-brown with macerated plant fragments in upper 1.5 feet, greenish-buff silty and slightly sandy in lower 4.5 feet 5.5

41. Covered interval 89.0

40. Sandstone, reddish-brown, very fine-grained, micaceous, scattered black minerals, poorly exposed 2.0

39. Shale, red, mottled with light-green locally, sandy locally in lower 12 feet, interbedded with platy red, green, and gray sandstone in upper 10 feet, macerated plant fragments present in the shale 22.0

38. Covered interval, but probably underlain by grayish-black to red sandstone 17.0

37. Shale, red, mottled with green, lower 2 feet consists of siltstone and red very fine-grained sandstone is present from 14 to 17 feet above base 17.0

36. Shale, red, very fissile in general except from 6.5 - 10.5 feet above base where a shaly, friable, silty mudrock is present, micaceous 16.5

35. Sandstone, very shaly or sandy shale, medium-gray with red and green beds, very fine-grained, micaceous, scattered black macerated plant fragments 3.0

34. Covered interval, probably underlain by dark-gray, black, and red platy shaly sandstone 6.0

33. Sandstone, dark-gray to grayish-black, very fine to fine subangular grains, dirty, with scattered black minerals, irregularly thin beds and laminae, weathers dark-gray, moderately resistant 1.5

32. Covered interval 5.0

31. Sandstone, red and brown, platy, shaly, and nonresistant in upper 4.5 feet, dark-gray mottled with black and red, very fine-grained, thin-to medium-bedded in lower 2 feet . 6.5

30. Mudstone, red, silty, micaceous, friable, contains macerated black plant fragments, breaks into angular lumps, nonresistant 3.5

29. Covered interval 3.0

28. Sandstone, red, very fine to fine grains, streaks of black hematite, micaceous, dirty, friable 2.0

27. Sandstone, red, dark-gray in base, silty, micaceous, minutely cross-bedded within the platy beds, contains numerous small black globules which may be microfossils, less resistant than overlying and underlying units 12.0

26. Sandstone, dark gray with tannish tint, very fine grains, dirty, scattered black minerals, laminated, smooth planar bedding surfaces, relatively resistant, weathers dark gray with yellowish brown tints and into rectangularly-shaped blocks 3.5

25. Shale, red, silty, very fissile, micaceous 5.0

24. Sandstone, dark brown with reddish tint, very fine-grained, shaly and silty at top, platy at bottom, micaceous 4.0

23. Sandstone, dark gray with brownish tint, slabby and laminated, resistant 2.0

22. Sandstone and siltstone, upper 3.5 feet is red, very shaly siltstone, consists of deep maroon-red silty sandstone from 3 to 5 feet above base; lower 3 feet consists of dark-gray (with red tint) very fine-grained, micaceous, resistant sandstone 8.5

21. Shale, red in upper 7 feet, yellowish-green, silty, with 2 or 3 thin beds of sandstone in lower 5 feet 12.0

20. Shale, red with some green, sandy, silty, micaceous, 6 inch bed of reddish-brown friable very fine-grained sandstone in top 11.0

19. Sandstone and shale, interbedded, the sandstone is dark brown with reddish tint, very fine-grained, friable, dirty, with scattered black minerals, the shale is dark brown with reddish tint, silty, and micaceous 8.5

18. Shale, red, silty, micaceous 15.0

17. Sandstone, red, silty, shaly, thin-bedded in top and medium-bedded in base 3.0

16. Shale, red, contains sandy and silty zones 7.5

15. Shale, mudrock, and siltstone, red, locally yellowish-green, very poorly exposed 12.0

14. Sandstone, dark-gray, mottled with dark-brown and red, very fine-grained, dirty, numerous scattered black minerals, thin-bedded and laminated 3.0

13. Shale, red, silty shale in upper 3 feet; from 1 to 4 feet above base consists of slightly sandy, silty, olive-drab shale; basal foot consists of olive-drab, fine-grained, silty sandstone 7.0

12. Shale, mudrock, and siltstone, chiefly red with some buff and green, sandy, micaceous, macerated plant remains locally 30.0

~~Stony Gap sandstone member~~

11.	Covered interval	270.0
Stony Gap sandstone member (middle Maxton sand of the driller)		
10.	Shale and sandstone (shaly), greenish-gray; the sandstone is shaly, silty, fine-grained, and very thin-bedded	1.5
9.	Sandstone, grayish-white, very fine to fine subangular grains, medium-bedded in lower 13 feet; upper 7.5 feet is chiefly greenish-buff, slabby and shaly, wavy-bedded, micaceous, fine-grained, and contains black films on cross-bedded surfaces, slight petroliferous odor	20.5
8.	Shale, greenish-buff to dark-green with yellowish tint, very fine-grained, very sandy and silty, contains scattered black minerals and macerated plant fragments, very micaceous, weathers to light-and medium-gray with greenish and yellowish-brown tints	11.5
7.	Covered interval	10.0
6.	Sandstone, white, fine subangular to subround well-sorted grains, quartzitic, scattered black mineral throughout, thin-bedded, porous, resistant, contains macerated plant remains in top, weathers to dark-gray, buff, and yellowish-brown, petroliferous odor	22.5
5.	Covered interval	38.0
4.	Shale, light-gray and brown, sandy, silty; with occasional very thin beds of buff and yellowish fine-grained sandstone.	3.0
3.	Covered interval	10.0

2. Sandstone, light-gray to bluish-gray, many scattered black minerals, clayey, thin-bedded and laminated with shaly partings in lower 5 feet but becomes thicker-bedded upward, micaceous 14.0

1. Covered interval (The Greenbrier limestone is present about 10 feet stratigraphically below the base of Unit 2. A fault probably is present within this covered interval) . .

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

W. E. Wrather, Director

Reports - Open file series, no. 344.

Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky

Geologic Section 45

(Sandy Section)

(Lower 1016 feet measured 11,300 feet North of 37°05" and 10,500 West of 81°40" upper 665 feet measured 19,400 feet North of 37°05" and 10,000 feet East of 81°40") Pounding Mill Quadrangle, Tazwell County, Virginia,

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

Prepared in Cooperation with the Division of Geology of the Virginia Department of Conservation and Development

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[1955]

GEOLOGIC SECTION 45

(Bandy Section)

Lower 1016 feet measured 11,300 feet North of 37°05' and 10,500 West of 81°40; upper 665 feet measured 19,400 feet North of 37°05' and 10,000 feet East of 81°40', Pounding Mill Quadrangle, Tazewell County, Virginia.

Thickness (feet)

HINTON FORMATION (incomplete)

Middle red member (incomplete)

Thickness (feet)

148. Shale, dark-gray and greenish-gray becoming yellowish-brown and silty in top 24.0

147. Sandstone, buff, very fine-grained, calcareous, overlain by dark greenish-gray slightly calcareous shale which in turn is overlain by buff and gray silty thin-bedded limestone 7.0

146. Shale, greenish-gray, gray and dark-green, with very thin beds of calcareous sandstone 10.0

145. Shale, dark-brown changing to maroon-red upward, contains thin beds of buff and grayish-green calcareous sandstone and two thin beds of dark-gray subcrystalline limestone near top 11.5

144. Covered interval 19.0

143. Limestone, dark-gray to buff, subcrystalline, interbedded with calcareous shale, fossiliferous, strong fetid odor, locally resistant 15.0

142. Covered interval 6.0

141. Limestone, buff to brownish-buff, silty, muddy, weathers rounded, and spalls off on weathered surfaces, fossiliferous, fetid odor . 1.5

140. Covered interval 11.0

Stony Gap Sandstone member (middle Maxton sand of the driller) (143.0 feet)

139. Sandstone, buff to medium-gray with greenish-tint locally, very fine to fine subangular grains, quartzitic, macerated carbonaceous, material on bedding surfaces, medium- to thick-bedded, cross-bedded 16.5

138. Shale, olive-drab, sandy with buff to greenish-buff very fine- to fine-grained thin and cross-bedded sandstone in base and top . . .28.0

137. Sandstone, buff, greenish-buff, and yellowish-brown, very fine-grained, thin- to medium-bedded, cross-bedded, ripple-marked, macerated black plant fragments 12.5

136. Covered interval 15.0

135. Sandstone, brownish-buff to light greenish-gray, very fine-grained, slightly micaceous, thin and medium-bedded, cross-bedded, black carbonaceous macerated plant remains 20.0

134. Shale with sandy and silty beds, olive-drab and dark grayish-green, black macerated plant fragments on bedding surfaces, highly contorted and drag-folded 30.0

133. Sandstone, dark-gray, greenish-gray with some yellowish-brown, very fine-grained, thin- to medium-bedded, cross-bedded, macerated plant remains on bedding surfaces 21.0

BLUEFIELD FORMATION (593.5 feet)

132. Covered interval 5.0

131. Shale, olive-drab, light-gray, and yellowish-brown, very fissile, abundant black carbonaceous macerated plant fragments on bedding surfaces 90.0

130. Covered interval 51.5

129. Shale, olive-drab, brownish-buff, and medium-gray 17.0

128. Shale, dark-gray with greenish tint, grayish-buff and grayish-black, calcareous 57.0

127. Limestone, dark-gray, subcrystalline, silty and muddy, fossiliferous, (brachiopods), weathers ribby, fetid odor, includes a two foot very calcareous dark-gray shale in middle 7.0

126. Shale, yellowish-brown, yellowish-green, and olive-drab, with a thin red calcareous streak about 39.0 feet above base 44.0

125. Limestone, dark-gray, very silty, numerous small white limestone pebbles, fossiliferous, fetid odor 2.5

124. Covered interval 6.0

123. Limestone, greenish-black in lower one-half, upper one-half consists of greenish-buff to reddish-brown very silty limestone, very fossiliferous, (crinoids and brachiopods), fetid odor 2.5

122. Shale, olive-drab to yellowish-brown in base, medium-gray with greenish-tint, and dark-gray above, and olive-drab and red in top, calcareous, fossiliferous, (bryozoa) 35.0

121. Covered interval 102.0

120. Limestone, shaly or calcareous shale, dark-gray but weathers internally to buff, greenish-buff, and brown, sub- to finely crystalline , fissile, silty, fossiliferous, oolitic locally . . . 72.0

119. Covered interval 35.0

118. Limestone, dark-gray, weathers internally to brown with purplish tint, medium- to coarsely crystalline, oolitic, very crinoidal, thin- to medium-bedded, strong fetid odor locally, resistant, (forms hogback), this is the last resistant limestone unit on the northwest flank of the Hurricane Ridge syncline 38.0

117. Shale, calcareous or shaly limestone, dark-gray and bluish, fissile locally, sub- to finely crystalline, includes 2½ feet of dark-gray coaly, silty shaly limestone in base 29.0

GREENBRIER LIMESTONE (816.5 feet)

116. Limestone, dark-gray, very oolitic, silty, scattered black chert nodules in upper part, rubbly, fossiliferous, strong fetid odor, resistant 13.0

115. Limestone, shaly, scattered oolites locally, includes some calcareous shale, fossiliferous (brachiopods, crinoids, bryozoa, and corals), weathers ribby, fetid odor 39.0

114. Limestone, very dark-gray, dense to subcrystalline, fossiliferous, (brachiopods, crinoids, and corals), thin-bedded, includes shaly silty grayish-buff limestone partings, fetid odor 7.0

113. Limestone, dark-gray to grayish-black with black chert nodules in base, Composita, fetid odor 7.5

112. Limestone, dark-gray to grayish-black, dense to subcrystalline with scattered oolites, black chert nodules in upper one-half, Composita, thin-bedded, weathers ribby 4.5

111. Limestone, very dark-gray with brownish tint, subcrystalline, fossiliferous, thin-bedded, weathers ribby, fetid odor 8.5

110. Covered interval 7.0

109. Limestone, medium-gray, finely oolitic, fossiliferous, thin-bedded, fetid odor 4.0

108. Limestone, medium- to dark-gray, very finely oolitic, silty, numerous black chert nodules, fossiliferous, thin-bedded, fetid odor 4.0

107. Limestone, dark-gray, large calcite pebbles in top, shaly, silty and medium-crystalline 8.5

106. Limestone, medium- to dark-gray, very oolitic, very fossiliferous, and includes crinoids ranging from one-twelfth to almost one inch in diameter, Pentremites, medium- to thick-bedded, strong fetid odor, is top unit exposed in small limestone quarry 16.0

105. Shale, dark-gray, weathers greenish-buff, yellowish-brown and yellow, calcareous, includes muddy and silty laminae 5.0

104. Limestone, dark-gray and greenish-buff, finely crystalline, oolitic locally, very fossiliferous in upper part, Pentremites, thin- to medium-bedded, resistant 19.5

103. Limestone, medium-gray with tannish tint, massive, stylolitic . . 5.0

102. Limestone, dark-gray, dense, silty locally, scattered oolites, fossiliferous, thin-bedded, fetid odor, weathers to knobby surfaces 7.5

101. Limestone, dark-gray, dense to subcrystalline becoming finely oolitic upward, fossiliferous, massive, stylolitic 6.0

100. Covered interval 20.0

99. Limestone, medium-gray, very oolitic, fossiliferous, massive becoming thick-bedded upward, fetid odor, stylolitic, resistant . . . 13.5

98. Covered interval 15.0

97. Limestone, dark-gray with tannish tint locally, very oolitic, fossiliferous, thick-bedded to massive, fetid odor 19.0

96. Limestone, light-gray to buff, sub- to finely crystalline, scattered oolites, fossiliferous, medium-bedded, thin-bedded in top, fetid odor, weathers black 10.5

95. Limestone, dark-gray with tannish tint, dense, scattered oolites locally, fossiliferous, fetid odor, laminated, thin-bedded 10.0

94. Limestone, dark-gray, brown and buff, shaly and silty in base, finely crystalline, fossiliferous, fetid odor, [illegible] . . . 10.0

93. Limestone, dark-gray, oolitic locally in base, dense to subcrystalline, fossiliferous, thin-bedded, fetid odor, resistant 14.0

92. Limestone, medium-gray, weathers internally to buff, subcrystalline, very silty, laminated, thin-bedded, weathers to fine ribs and black fetid odor 3.0

91. Limestone, dark-gray with greenish-buff, silty and muddy zones locally, very oolitic locally, fossiliferous, thick-bedded at base, thin-bedded at top, strong fetid odor 3.5

90. Limestone, as unit 95 except thin- to medium-bedded 14.0

89. Limestone, dark-gray with tannish tint, dense to subcrystalline with many local oolitic zones, fossiliferous, thin- and medium-bedded, stylolitic 5.0

88. Limestone, dark-gray, dense and subcrystalline, hackly fracture, fossiliferous, thin-bedded with shaly and silty limestone partings, fetid odor, stylolitic 14.5

87. Limestone, dark-gray, sub- to finely-crystalline, silty, oolitic locally, fossiliferous, thin-bedded, fetid odor, weathers ribby . . 6.0

86. Limestone, dark-gray, oolitic, finely-crystalline, very fossiliferous, (brachiopods, corals, crinoids, Pentremites), very crinoidal in upper one-half, medium-bedded becoming thick-bedded upward, fetid odor 10.5

85. Limestone, gray with strong tannish tint, subcrystalline, thin-bedded, very stylolitic 5.5

84. Limestone, medium- to dark-gray with strong tannish tint, very oolitic in base, subcrystalline, muddy, black (asphaltic?) seams locally, thin- to medium-bedded, fetid odor, stylolitic, resistant 14.5

83. Limestone, dark-gray with strong tannish tint, subcrystalline with scattered oolites, massive becoming thin-bedded at top, very stylolitic 4.5

82. Limestone, medium-gray, subcrystalline, muddy, medium-bedded 1.5

81. Limestone, medium- to dark-gray, sub- to finely-crystalline, very oolitic near top, nodular black chert in base, thin- to medium-bedded, fetid odor 4.5

80. Limestone, dark-gray with strong tannish tint, dense, nodules of black chert in beds near top, slightly fossiliferous, medium-bedded, becoming thin-bedded upward, fetid odor 10.5

79. Limestone, poorly exposed in stream bottom 50 feet east of bridge on Va. No. 627, medium- to dark-gray, fine- to medium-crystalline, thin-bedded and slabby, weathers ribby 3.5

78. Limestone, dark-gray with greenish ~~tint~~ silty zones locally, very oolitic, scattered green minerals, very fossiliferous, (Spirifer, Pentremites, corals, and crinoids), thin and medium-bedded, fetid odor locally, weathers ribby, resistant 5.0

77. Limestone, medium-gray, silty, oolitic, and calcareous siltstone, thin-bedded, fossiliferous, slight fetid odor, scattered green mineral, (Glauconite) 2.5

76. Covered interval 1.0

75. Limestone, medium-gray with greenish tint becoming medium- to dark-gray upward, silty, scattered oolites locally, weathers ribby, fossiliferous, (crinoids, corals, and brachiopods), medium-bedded becoming thin-bedded upward, fetid odor, resistant 4.5

74. Covered interval 3.0

73. Limestone, light- to medium-gray, coarsely oolitic, fossiliferous, thin-bedded, fetid odor, stylolitic, weathers ribby 8.5

72. Limestone, dark-gray with slight tannish tint, dense and oolitic, and dense upward, black chert nodules in top, fossiliferous, (corals, brachiopods, and crinoids), medium-bedded in base, thin-bedded above, stylolitic, weathers ribby, fetid odor 12.5

71. Covered interval 5.5

70. Limestone, light- to dark-gray, shaly, silty, oolitic locally, fossiliferous, thin-bedded and slabby, fetid odor 6.5

69. Covered interval 3.5

68. Siltstone, yellowish-buff, calcareous, muddy, sandy, ~~laminated with~~ laminae of dark gray limestone, fossiliferous, weathers ribby, slight fetid odor, nonresistant 15.5

67. Limestone, greenish-buff and dark-gray, silty and shaly in base, coarsely oolitic above, medium and thin-bedded 13.0

66. Limestone, light-gray with tannish tint, medium- to dark-gray in top, clastic and oolitic, very fossiliferous (crinoids), medium- and thick-bedded in lower half, thin-bedded above, strong fetid odor, resistant 10.0

65. Limestone, dark-gray with greenish-buff tints locally, silty, clayey, very fossiliferous (brachiopods, bryozoa, Penteremites, and crinoids), very oolitic locally, medium- to thick-bedded, slight fetid odor, weathers ribby, (this is highest unit in old quarry) 3.5

64. Limestone, grayish-black, dense with scattered oolites locally, breaks hackly, minute black seams (asphaltic?), brittle, scattered black chert nodules, cavernous . . . . . ; 3.5

63. Limestone, grayish-black to black with slight purplish tint, fine- to medium-~~grained~~ crystalline with sdattered oolites, silty, muddy, very fossiliferous in middle (brachiopods, Penteremites, Spirifer, and crinoids), strong fetid odor, thick-bedded to massive, weathers ribby 20.5

62. Limestone, dark-gray, sub- to finely crystalline, silty, scattered oolites, medium-bedded becoming thin-bedded upward, weathers ribby and spalls off, fetid odor, {top of this unit is lowest exposure in small quarry} 3.0

61. Limestone, dark-gray, subcrystalline, oolitic, fossiliferous, thin-bedded 1.5

60. Limestone, dark-gray, finely crystalline, silty, contains some black macerated plant remains, weathers ribby, thin-bedded, strong fetid odor 6.0

59. Limestone, dark-gray, dense and locally subcrystalline with scattered oolites, fossiliferous, thick-bedded and massive and medium-bedded upward, fetid odor, bedding surfaces irregular and knobby, stylolitic 15.0

58. Limestone, dark-gray with strong tannish tint, dense and subcrystalline, oolitic in top, medium- and thick-bedded 6.5

57. Limestone, dark-gray with strong tannish tint, dense with scattered oolites, thin-bedded, cross-bedded 6.5

56. Limestone, dark-gray, weathers brownish-buff, sub- to finely crystalline, shaly and silty, in one bed, weathers rounded and spalls off 1.0

55. Covered interval 2.0

54. Limestone, medium- to dark-gray, ~~with slight greenish and brownish tints, fine- to medium-crystalline with scattered~~ oolitic, fossiliferous, ~~thin- to medium-bedded, fetid odor~~ massive becoming thin-bedded upward, fetid odor 3.5

53. Limestone, medium- to dark-gray with strong tannish tint, dense with some scattered oolites, thin-black(asphaltic?) seams, medium to thick-bedded at base, thin-bedded upward, slight fetid odor . . . 4.0

52. Limestone, medium- to dark-gray, dense, very stylolitic, fossiliferous, medium-bedded, fetid odor locally 11.5

51. Covered interval 5.5

50. Limestone, dark- to very dark-gray, coarsely crystalline becoming dense with scattered oolites upward, glauconitic?, stylolitic, fossiliferous, thin-bedded, fetid odor 4.5

49. Covered interval 5.0

48. Limestone, medium- to dark-gray with slight greenish and brownish tints, fine- to medium-crystalline with scattered oolites, fossiliferous, thin- to medium-bedded, fetid odor 1.5

47. Covered interval 5.0

46. Limestone, dark-gray, sub- to finely crystalline, scattered oolites locally, slightly silty, fossiliferous (crinoids and brachiopods), glauconitic?, thick-bedded, fetid odor 5.0

45. Limestone, medium-gray, dark-green tint op, silty, sandy, glauconitic?, fenestrate, bryozoa, weathers yellowish-brown or buff 5.0

44. Covered interval 4.0

43. Limestone, greenish-gray to greenish-buff, sub- to finely crystalline, very silty, glauconitic?, shale partings, thin-bedded, slight fetid odor 6.0

42. Limestone, medium- to dark-gray, medium-crystalline, oolitic, contains green silty zones, fossiliferous (crinoids), fetid odor, in one bed 1.0

41. Limestone, greenish-buff, subcrystalline, silty, ribby, nonresistant, slight fetid odor 2.5

40. Limestone, medium- to dark-gray, dense with scattered oolites, fossiliferous, medium-and thick-bedded, thin-bedded in top, fetid odor . . 6.5

Taggard red member (top)

39. Siltstone, buff with slight greenish tint, calcareous, shaly, scattered black and green (glauconite ?) minerals, weathers ribby and brown 11.0

38. Shale, maroon-red mottled with greenish-buff, calcareous, silty, laminated, shaly, ribby 8.0

Taggard red member (base)

37. Limestone, buff and dark-gray, finely crystalline with scattered oolites, glauconitic(?), dolomitic, thin-bedded, fetid odor, nonresistant 8.0

36. Limestone, buff and dark-gray becoming grayish-black upward, finely crystalline and muddy becoming very oolitic upward, very fossiliferous (corals, brachiopods, and crinoids), conglomeratic in top, fetid odor . 5.5

35. Limestone, dark-gray to grayish-black, fine- to medium-crystalline, in base, oolitic above, fossiliferous (crinoids, corals, and brachiopods), thin-bedded, strong fetid odor, cavernous 8/0

34. Limestone, dark-gray, sub- to finely crystalline, highly crinoidal, medium-bedded, weathers ribby 5.0

33. Limestone, dark-gray, sub- to finely crystalline with shaly, silty, and sandy zones about every 0.5 feet, thin- to medium-bedded, strong fetid odor, weathers ribby 16.0

Hillsdale member (top)

Hillsdale member (top)

32. Limestone, dark-gray to grayish-black, sub- to finely crystalline, with scattered oolites in lower one-half, dense above, abundant black and smoky brown chert nodules, fossiliferous (coarsely crinoidal, brachiopods), massive in base, thin- and medium-bedded above, weathers ribby 22.5

31. Limestone, grayish-black and black, finely crystalline, cherty (black, red, and brown nodules and fossil replacements), fossiliferous, massive and thick-bedded, fetid odor, resistant 12.0

30. Limestone, buff and silty becoming medium-gray above, oolitic, numerous large black and red chert nodules which have replaced corals, fossiliferous, fetid odor 4.0

29. Limestone, buff, silty, subcrystalline, fossiliferous, nonresistant . 1.5

28. Covered interval 6.0

27. Limestone, dark-gray and greenish-gray, dense and finely crystalline with scattered oolites, fossiliferous (brachiopods), thin-bedded, fetid odor 7.5

26. Limestone, grayish-black, dense becoming finely crystalline with scattered oolites upward, thick-bedded, fetid odor 6.0

25. Limestone, greenish-buff, very silty, fossiliferous, thin-bedded, non-resistant 2.5

24. Limestone, grayish-black, sub- to finely crystalline, very oolitic in top, contains black, bluish-gray, and brown chert nodules and beds, silty shaly limestone partings, thick-bedded, thin-bedded in top, fetid odor 7.5

23. Limestone, greenish-gray, grayish-black in top, dense to sub-crystalline, shaly, slabby, thin-bedded, fetid odor, non-resistant 3.0

22. Limestone, dark-gray, fine- to medium-crystalline with scattered oolites, very fossiliferous (brachiopods, crinoids, and bryozoa), black chert nodules and stringers, thin-bedded and slabby, strong fetid odor 4.0

21. Limestone, dark-gray, finely crystalline, scattered oolites, fossiliferous, black, red, and light bluish chert stringers and nodules, weathers ribby, fetid odor 4.0

20. Limestone, light greenish-gray in top and bottom, grayish-black between, fine- to medium-crystalline, fossiliferous, non-resistant 2.0

19. Limestone, medium- to dark-gray, fine- to medium-crystalline, shaly, silty, fossiliferous (Spirifer, crinoids, and bryozoa), thin-bedded, fetid odor 2.5

18. Limestone, light- to medium-gray, sub- to finely crystalline, muddy and silty locally, scattered oolites, and stylolitic in top, fossiliferous, medium-bedded in base, massive above 7.0

17. Limestone, black, subcrystalline in base, dense above, conchoidal fracture, fossiliferous, thin-bedded with shaly medium-gray limestone partings, fetid odor 4.0

16. Limestone, grayish-brown becoming grayish-black to black upward, sub- to finely crystalline, stylolitic in top, fossiliferous, weathers ribby, fetid odor 4.0

15. Limestone, light- to dark-gray becoming grayish-black upward, sub- to finely crystalline, fossiliferous, scattered black chert nodules which replace corals, thin-bedded, strong fetid odor 3.0

14. Limestone, black locally dark-gray, sub- to finely crystalline, black chert beds and nodules, thin-bedded, strong fetid odor 6.0

Hillsdale member (base)

13. Limestone, light- to medium-gray, dark-gray in base, subcrystalline, shaly, conchoidal fracture, laminated, fossiliferous near top, slight fetid odor, dolomitic near top 8.5

12. Limestone, medium- to dark-gray, fine and subcrystalline, conchoidal fracture, slightly dolomitic in top 1.0

11. Limestone, gray and greenish-buff, silty, laminated, fossiliferous, limestone breccia in base 5.5

10. Limestone, medium- to dark-gray, weathers buff locally, muddy locally, conchoidal fracture, laminated, thin-bedded, dolomitic, slight fetid odor 8.0

9. Limestone breccia, silty dark-gray limestone fragments in a greenish-buff to dark-gray silty limestone matrix, drusy, shale in base, nonresistant, slightly dolomitic in top 2.5

8. Limestone, dark-gray, sub-to finely crystalline, shaly, well-laminated, slight fetid odor, slightly dolomitic in top 2.0

7. Limestone, dark-gray and brownish-buff with slight reddish tinge locally, shaly, conchoidal fracture, fetid odor, weathers bluish-gray 4.0

6. Limestone, dark grayish-brown, slightly silty, subcrystalline, slightly dolomitic, in one bed, fetid odor 1.0

5. Siltstone, buff to yellowish-brown, calcareous, thin dark-gray limestone in top, cross-bedded, dolomitic 2.5

4. Limestone breccia, weathers ~~porous~~ cellular and drusy 0.5

3. Limestone, medium-gray in base, dark-gray above, mottled red and green near top, subcrystalline, silty, well laminated, wavy-bedded, weathers maroon-red in top, dolomitic in top, shaly 10.0

2. Limestone, medium-gray becoming dark-gray and maroon-red upwards, silty, very dolomitic, laminated, platy 4.0

MACCRADY SHALE

1. Siltstone, buff with slight greenish tint, shaly, calcareous, breaks lumpy . . . . . —

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

[Reports - Open file series] no. 549

W. E. Wrather, Director

[Descriptions of 14 measured sections in southwest Virginia and eastern Kentucky]

Geologic Section 46

(Bishop-Stony Ridge Section)

(Measured along Va. No. 16 on northwest slope of Stony Ridge. Section starts 0.6 miles southeast of Bishop) Pounding Mill Quadrangle, Tazewell County, Virginia

by

Ralph H. Wilpolt and Douglas W. Marden

OPEN FILE

Prepared in Cooperation with the Division of Geology of the Virginia Department of Conservation and Development

This report is preliminary and has not been edited or reviewed for conformity with U. S. Geological Survey standards and nomenclature.

[1955]

GEOLOGIC SECTION 46

(Bishop-Stony Ridge Section)

Measured along Va. No. 16 on northwest slope of Stony Ridge. Section starts 0.6 miles southeast of Bishop, Pounding Mill Quadrangle, Tazewell County, Virginia.

		Thickness (feet)
BLUESTONE FORMATION (108.5+ feet)		
Gray shale member		
304.	Sandstone, buff and greenish-buff, thicker bedded than Units 300-303, highly cross-bedded, medium subangular grains, resistant	19.0
303.	Sandstone, as Unit 302 but thinner-bedded than underlying and overlying units, brown plant remains	8.5
302.	Sandstone, as Unit 300, scattered brown plant fragments and shale pebbles, thin-bedded	15.0
301.	Sandstone, buff-green to olive-drab, very fine-grained, hard, quartzitic, extremely thin wavy beds	6.0
300.	Sandstone, greenish-buff, micaceous, hard, quartzitic, thin-bedded, fine-grained, weathers greenish-gray	8.0
299.	Covered interval	12.0
298.	Shale, with some siltstone, olive-drab, weathers green	24.0
297.	Shale, chocolate-brown, weathers brownish-black in lower one-half and bluish-gray upward, calcareous in upper one-half	16.0

Note: Units 297-304 measured along Va. No. 16, starting about 150 feet north of intersection with Va. No. 643

PRINCETON SANDSTONE (94.0 feet)

296. Sandstone, buff and light-gray, weathers reddish-brown and black (mottled), fine subangular grains, scattered black mineral, micaceous, thin-bedded, cross-bedded, ripple-marked, quartzitic, exposed in top of quarry 34.0

295. Sandstone, grayish-white and buff, medium subangular grains, scattered shale pebbles, thin-bedded, cross-bedded, ripple-marked, quartzitic, weathers mottled red, black, brown, and buff 20.0

294. Sandstone, very fine-grained and siltstone, sandy, light-gray, finely laminated with numerous filmy partings of grayish-black shale 10.5

293. Sandstone, buff, grayish-white, and pink, fine and medium subangular to subround grains, thick-bedded, quartzitic, ... 10.0

292. Sandstone, greenish-buff, buff, and light greenish-gray, fine to medium subangular grains, micaceous, quartzitic, contains an abundance of partially carbonized macerated black plant fragments 9.5

291. Sandstone, white and buff, subangular medium grains, scattered black mineral, medium-bedded, quartzitic, weathers rounded, extremely resistant and ~~makes~~ forms a hogback on Stony Ridge to the northeast 10.0

HINTON FORMATION (1,515.5 ± feet)

Upper red member (1,393.5 ± feet)

290. Covered interval 45.0

289. Shale, maroon-red and green (alternating), calcareous 40.0

288. Shale, maroon-red, calcareous, well-exposed 20.0

287. Shale, greenish-yellow, calcareous, poorly exposed . 16.0

286. Covered interval 20.0

285. Sandstone, fine-grained, green, micaceous, friable, thin-bedded (slabby) 3.0

284. Shale, deep maroon-red, calcareous, soft 20.0

283. Sandstone, ~~fine-~~green, micaceous, friable, fine-grained 1.0

282. Covered interval, but probably underlain by green, yellow-weathering silty shale 50.0

281. Shale, poorly exposed, silty, micaceous, calcareous . 5.5

280. Sandstone, greenish-buff, calcareous, thin-bedded . . 3.0

279. Poorly exposed but underlain by yellow-weathering siltstone and shale 16.0

278. Sandstone, greenish-buff, hard, calcareous 1.5

277. Poorly exposed, but underlain by siltstone and shale. 3.0

276. Sandstone, greenish-buff, hard 1.5

275. Shale and siltstone, greenish-gray, weathers yellow, sandy, (intersection of Va. No. 644 and Va. No. 16 within this interval, Units Nos. 275-290 measured northeastward along Va. No. 644; the Princeton sandstone was measured in abandoned sandstone quarry about 0.25 mile northeast of the above intersection) to base of Princeton sandstone 38.0

274. Covered interval, the crest of Stony Ridge lies withing this interval. There is a sign on northeast side of road which reads, "Stony Ridge, Elev. 2700 Feet" 35.0

273. Sandstone, greenish-gray, micaceous, shaly, thin-bedded (slabby), calcareous 5.0

272. Covered interval, but probably underlain by red shale, green siltstone, and green shale 13.0

271. Sandstone, light-green and greenish-gray, fine-grained, micaceous, quartzitic, cross-bedded, well-laminated, weathers brownish-gray and slabby, very resistant (forms cliff ~~uphill~~ on hillside above highway) 18.5

270. Covered interval 25.0

~~263~~

~~HINTON FORMATION (____ feet)~~

Limestone member (Avis limestone of Reger) (33.0 feet)

269. Limestone, medium-gray, silty, muddy, shaly, thin-bedded and laminated, resistant, weathers yellow and greenish-yellow, fossiliferous (numerous brachiopods and a few crinoid stems) 33.0

Middle red member (1035.0 feet)

268. Mudrock, maroon-red, ~~and~~ green in top, very calcareous 2.5

267. Limestone, mottled red, ~~and~~ greenish-gray, and yellow, rubbly and nodular, impure 3.5

266. Sandstone, reddish-brown, greenish-gray locally, calcareous in part, micaceous, thick-bedded, blocky, from 3.5 to 9.0 feet above base consists of maroon-red calcareous siltstone and shale 13.0

265. Shale, maroon-red, fossiliferous, nonresistant . . . 7.5

264. Sandstone, red, fine-grained, micaceous, medium-bedded, resistant, calcareous in top 4.0

263. Shale and mudrock, maroon-red, calcareous, contains a rubbly zone of nodular limestone from 4 to 7.5 feet above base and a mottled red-green-gray-yellow bed of impure limestone from 7.5 to 8.5 feet above base . . 27.0

262. Sandstone, reddish-brown, medium-bedded, fine-grained micaceous, calcareous, resistant, contains red shale partings 6.5

261. Shale, maroon-red, silty; a fine-grained micaceous bed of sandstone is present from 14 to 15 feet above base, small culvert present in upper part of unit . .52.0

260. Sandstone, reddish-brown with yellowish-green tinge locally, fine-grained, thick-bedded, cross-bedded, micaceous, weathers slightly rounded 12.0

259. Shale, maroon-red, fissile, calcareous in upper part, contains 2 very fine-grained red calcarous micaceous [illegible] of sandstone from 11.5 to 14.0 feet above base 18.5

258. Sandstone, as Unit 256, micaceous 5.5

257. Shale, maroon-red, fissile 17.0

256. Sandstone, reddish-brown, fine-grained, porous, medium-bedded, resistant, friable 3.0

255. Covered interval 8.5

254. Limestone, impure, rubbly, silty and shaly, impossible to determine original color but weathers mottled lavendar and yellow 4.0

253. Covered interval 12.0

252. Sandstone, maroon-red, fine-grained, micaceous, silty, in four 1 foot beds separated by 3 zones of maroon-red shale 10.0

251. Shale, maroon-red, ... 3.5

250. Sandstone, green, locally reddish-brown, calcareous, fine- and very fine-grained, micaceous, weathers thick-bedded in lower one-half and thin-bedded above, however, thin irregular laminations are visible in the rock (they are separated by filmy micaceous shale partings), weathers rounded, resistant 7.0

249. Shale, maroon-red, from 2 to 4 feet above base contains zone of rubbly nodular reddish-green highly calcareous material; from 8 to 9 feet consists of greenish-black, highly calcareous mudstone 12.0

248. Sandstone, reddish-brown, fine-grained, dirty, thin-bedded with maroon-red shale partings, calcareous in middle 10.0

247. Shale and mudrock, maroon-red, contains abundant small nodules of green and red highly calcareous material in the mudrock zone from 1.5 to 4.5 feet above base . 8.0

246. Siltstone, maroon-red 1.0

245. Shale and mudrock, maroon-red, calcareous 4.5

244. Siltstone, maroon-red 1.5

243. Shale, as Unit 241, maroon-red in upper one-half . . . 3.5

242. Sandstone, green, very fine-grained, silty, micaceous 2.5

241. Shale, green, includes some green siltstone 4.0

240. Sandstone, greenish-gray and dark-gray, weathers reddish-brown, black, and green, fine-grained, micaceous, dirty, medium-bedded becoming thin-bedded upward, several maroon-red shale partings 9.0

239. Interval as follows (in descending order): 31.0

23.5-31 - siltstone or mudrock, apple-green, very calcareous

23.0 - 23.5 - siltstone, greenish-gray, sandy, slightly calcareous
19.5 - 23.0 - shale, maroon-red, changing upward to mudrock, very calcareous
18.0 - 19.5 - siltstone, maroon-red, hard, sandy
5.0 - 18.0 - shale, maroon-red, calcareous upward
4.0 - 5.0 - limestone, grayish-black, shaly
3.0 - 4.0 - sandstone, green, fine-grained
0.0 - 3.0 - shale, green and maroon-red

238. Sandstone, green, extremely fine-grained, silty, laminated 4.0

237. Interval as follows (in descending order): 19.5

16.5-19.5 - siltstone, red, becoming green upward, very calcareous
15.5-16.5 - limestone, black, dense
11.5-15.5 - siltstone, greenish-blue, weathers yellow, micaceous, very calcareous
5.0-11.5 - shale, maroon-red, slightly calcareous
4.0-5.0 - sandstone, reddish-brown, fine-grained
0.0-4.0 - shale, maroon-red, slightly calcareous

236. Sandstone, greenish-gray with reddish tint, medium-bedded, weathers rounded, calcareous, micaceous, fine-grained, ripple marks in base, exposed at and near small culvert 6.5

235. Mudrock, maroon-red, calcareous locally 3.5

234. Sandstone, reddish-brown, very fine-grained, porous, silty, micaceous, shaly, medium-bedded, cross-bedded . 12.5

233. Mudrock and shale, maroon-red, bluish-green locally, calcareous in upper one-half, reddish-brown sandstone in base, ...18.0

232. Covered interval, ... 15.0

231. Shale, apple-green, very fissile 4.0

230. Shale and mudrock, maroon-red with occasional thin seams of green, calcareous in part 19.0

229. Sandstone, reddish-brown, extremely fine-grained, micaceous, slightly calcareous, bluish-green mudrock in top 3.5

228. Mudrock, shaly, maroon-red but contains some green calcareous zones 8.0

227. Shale and shaly siltstone, yellowish-green, weathers yellow, includes limestone conglomerate from 1.5 to 2 and from 3.5 to 4 feet above the base and very fine-grained micaceous thin- and wavy-bedded sandstone from 4 to 7 feet above the base 35.0

226. Sandstone, greenish-buff, micaceous, friable, shaly, contains abundance of black and brown macerated plant fragments on bedding planes, fine-grained, weathers greenish 3.0

225. Covered interval 8.0

224. Limestone conglomerate, discoidal limestone pebbles in a light gray matrix 2.0

223. Sandstone, greenish-buff, very fine-grained, micaceous, silty, thin-bedded 4.0

222. Shale, greenish-gray, fissile, yellow-weathering, . . 3.5

221. Coal, impure, flaky, woody, crops out about 20' north of two mailboxes (one of which has the name, Carl Tatum) (in measuring the remainder of the section the writers moved up the hill along the highway and around several curves to pick up the outcrop of the same coal bed) 2.5

220. Shale (underclay), medium-gray, weathers light gray, muddy 5.0

219. Sandstone, fine-grained, pure, weathers yellowish-brown (impossible to find fresh surface), hard, resistant 1.0

218. Shale and siltstone as follows (in descending order):

14.5-20.5 - siltstone, light gray, sandy, micaceous, shaly
10.5-14.5 - shale, weathers yellow [illegible], probably green originally
9.0-10.5 - shale, maroon-red
0.0-9.0 - shale, weathers yellow, probably green originally

217. Sandstone, green, hard, quartzitic, medium-bedded, micaceous 1.0

216. Shale, grayish-green, weathers yellow 2.0

215. Sandstone, as Unit 217 . . . . . 3.0

214. Siltstone, weathers yellow but probably was green originally, shaly, sandy, micaceous, very thin-bedded, scattered black plant fragments 3.5

213. Mudrock and shale, maroon-red, yellowish-green in top . 5.5

212. Sandstone, green, weathers light-gray, very fine-grained, silty, porous, in thin irregular beds 3.0

211. Mudstone, mostly maroon-red but includes some green, changes upward to shale 2.0

210. Sandstone, greenish-buff, very fine-grained, slightly micaceous, silty, porous, thin-bedded 1.5

209. Shale, grayish-black, weathers olive-drab, very fissile. 7.0

208. Sandstone,green, weathers brownish-black and purple, fine-grained, micaceous, thin-bedded 2.0

207. Shale, chocolate-brown, very silty, ... 2.5

206. Sandstone, as Unit 208, but is quartzitic, hard, and resistant 9.0

205. Siltstone, chocolate-brown where fresh, weathers light greenish-gray and yellow, sandy, shaly, porous, grades into overlying sandstone 9.0

204. Shale, green, weathers greenish-yellow 6.0

203. Sandstone, yellowish-green, fine-grained, micaceous, deeply weathered to yellowish-brown, very thin-bedded in base, becoming thicker-bedded upward, silty 3.0

202. Shale, greenish-yellow, weathers yellow and greenish-gray, grades upward into overlying unit 2.0

201. Sandstone, olive-drab, extremely fine-grained, silty, micaceous, thin-bedded 1.0

200. Shale, olive-drab, weathers greenish-yellow, silty . . . 7.5

1991 Shale, green, maroon-red, and light-gray and black in top 12.5

198. Sandstone, light-green, silty and extremely fine-grained, shaly, calcareous locally, micaceous, slabby, thin-bedded 5.0

197. Siltstone, olive-drab, weathers yellowish-green and red, micaceous, calcareous locally, shaly 2.0

196. Mudstone and shale, slightly sandy, maroon-red and green, calcareous in part, includes some siltstone . .20.5

195. Siltstone, olive-drab, calcareous in part, weathers green and brown, sandy, shaly, micaceous 2.0

194. Mudstone, maroon-red, becoming green and calcareous upward 2.5

193. Siltstone, as Unit 192, but weathers blackier and yellow, very calcareous 5.0

192. Siltstone, as Unit 195 . . . . . .6.0

191. Covered interval in bend of highway 50.5

190. Sandstone, green, very hard, quartzitic, resistant, slabby and thin-bedded, weathers mottled green and yellowish-brown 4.0

189. Mudrock or shale, maroon-red, slightly fissile, bleached to yellow in top . . . . . [illegible]

188. Sandstone, olive-drab, very fine-grained, micaceous, medium-bedded, weathers mottled green, yellowish-green, brown, yellow, and black 2.0

187. Siltstone, weathers light-yellow, shaly, and sandy . 19.5

186. Siltstone, green, very sandy, micaceous, very thin-bedded, weathers mottled light greenish-gray, yellow, and yellowish-brown 11.0

185. Sandstone, green, micaceous, medium-bedded, cross-bedded, hard, resistant, weathers greenish mottled with black, brown, and yellow 19.0

184. Siltstone, olive-drab, weathers mottled green, brown, and black, micaceous, sandy, shaly 4.0

183. Covered interval, Va. No. 644 leaves Va. No. 16 in middle of unit 115.0

182. Sandstone, light-gray with greenish tint, fine-grained, hard, resistant, clean 1.5

181. Covered interval 12.0

180. Sandstone, very fine-grained, shaly, and silty, and siltstone, entire unit green but is deeply weathered and bleached to yellowish-brown and grayish-white . . 4.0

179. Sandstone, greenish-buff, hard, quartzitic, blocky, medium-bedded but is thin-bedded in base and top, resistant 12.0

178. Sandstone, yellowish-green to olive-drab, silty, micaceous, very thin-bedded with thin partings of micaceous green sandy shale, ribby on outcrop . . . 6.0

177. Siltstone, sandy or very fine-grained silty sandstone, very thin-bedded, shaly, micaceous 4.0

176. Shale, olive-drab in lower one-half and grayish-black in upper one-half, very fissile, sandy in base . . . 17.0

175. Shale, greenish-gray and olive-drab, very fissile, calcareous 13.0

174. Limestone, medium-gray, weathers bluish-gray, very shaly, numerous very thin beds of very fossiliferous (coquina-like) shaly limestone which weather greenish-gray, large brachiopods, crops out under drainage pipe

and culvert 7.0

173. Limestone, black, weathers yellow, dense 2.0

172. Shale, olive-drab to yellowish-green, moderately fissile, silty, sandy, poorly-exposed 22.0

171. Shale, maroon-red, very fissile, poorly-exposed . . 10.0

170. Covered interval 48.0

169. Shale, greenish gray-black to greenish-gray, weathers yellow, very calcareous, silty 24.0

168. Limestone, greenish-gray, silty, fossiliferous, weathers yellow, dense 3.5

167. Siltstone and shale, yellow and yellowish-green, soft, poorly exposed in base, weathers yellow 12.0

Stony Gap sandstone member (middle Maxton sand of the driller) (54.0 feet)

166. Sandstone, olive-drab, weathers green and yellow, fine-grained, very shaly, silty, thin filmy dark shale partings in lower one-half, hard, ribby 7.0

165. Siltstone, olive-drab, shaly, sandy, micaceous . . . 2.5

164. Sandstone, light greenish-gray, very fine-grained, quartzitic, hard, blocky, weathers yellow and yellowish-brown 2.5

163. Sandstone and shale, olive-drab, very thin beds of sandstone alternating with micaceous shale 11.0

162. Sandstone, greenish-gray, weathers yellowish-brown, very hard, micaceous, thin green silty and sandy shale partings, ripple-marked, wavy-bedded 7.0

161. Shale, grayish-black, very fissile, weathers black and to yellowish-brown locally 5.0

160. Sandstone and shale, alternating thin beds of greenish-gray and olive-drab sandstone and olive-drab, sandy silty shale, slightly wavy-bedded, flaggy, ribby . . 6.0

159. Sandstone, grayish-black, fine-grained, weathers mottled yellowish-browns, highly calcareous, thin-bedded 2.0

158. Sandstone and shale, as Unit 160 . . . . . 9.0

157. Sandstone, weathers yellowish-brown (too deeply weathered to determine the fresh color), medium- to fine-grained, subround to subangular grains, thin-bedded 2.0

~~BLUESTONE FORMATION~~

Go directly to next Page.

BLUEFIELD FORMATION (588.5 feet)

156. Shale, greenish-yellow and yellowish - green, weathers yellow and where deeply weathered is limonitic-stained, small culvert about 8 to 10 feet above base - - - - - 72.0

155. Shale, greenish-yellow, weathers yellow, extremely fissile (weathers to small chips), small culvert 24 feet above base and logging road to north at top of unit - - - - - 106.0

154. Limestone, grayish-black, shaly, muddy - - - - - - - - - 1.5

153. Shale, yellowish-green, extremely fissile, weathers yellow - 10.0

152. Limestone , medium-gray, finely-crystalline, shaly , highly fossiliferous, (brachiopods and crinoids) weathers greenish-yellow and locally is mottled with bluish gray - - - - - - - - 8.0

151. Shale, yellowish-green to olive-drab, very calcareous, slightly fossiliferous, weathers greenish-yellow - - - - - - - 8.0

150. Covered interval, probably underlain by shale as in unit 151 - 44.0

149. Limestone, dark gray, finely-crystalline, shaly, fossiliferous (numerous crinoids and Spirifer), weathers rounded due to shaly partings about every foot. - - - - - - - - - - - - - 10.0

148. Shale, yellowish-green, weathers olive-drab, calcareous, silty, small culvert near top - - - - - - - - - - - - - - - - - -27.0

147. Limestone, as unit 143, coarsely crinoidal - - - - - - - - - 3.5

146. Covered interval - - intersection Va. No. 642 & Va. No. 16 in middle of interval - 22.0

145. Shale, olive-drab, mottled locally, to light-bluish-gray, calcareous, weathers to thin chips because of its extreme fissility - 80.0

144. Shale, olive-drab, weathers greenish yellow, finely micaceous, silty, very calcareous, small culvert near top - - - - - - - 24.0

143. Limestone, medium-gray, medium-crystalline, highly crinoidal, shaly - 3.0

142. Shale, green, weathers to yellowish-green, silty, calcareous, poorly exposed - 4.0

141. Limestone, greenish-gray to grayish-buff, weathers olive-drab to greenish-yellow, very impure, shaly, silty, extremely thin-bedded-18.0

140. Limestone, dark-gray, weathers light bluish-gray, green and black, impure, shaly, laminated - 38.5

139. Limestone, dark-gray, weathers medium-gray, extremely fossiliferous (crinoids, brachiopods and some bryozoa), medium-bedded - - - 4.0

138. Shale, as unit 136 - 8.0

137. Covered interval, probably underlain by shale as units 136 & 138, small culvert in middle - 19.0

136. Shale, dark-gray and greenish-gray, weathers green and light bluish-gray, weathers similar to a limestone on out-crop, extremely calcareous - 48.0

135. Limestone, from 1.5 to 3.5 feet is medium-gray with strong brown tint, remainder is grayish with buff tints, silty, shaly partings, fossiliferous, very thin-bedded, weathers ribby - - - - - - - - 5.5

134. Limestone, greenish-buff to buff and bluish-gray, shaly, thin oolitic layers, weathers bluish-gray to greenish-buff & shaly - 3.5

133. Limestone, as unit 127 but not as oolitic and fossiliferous — 2.5

132. Shale, with thin beds of calcareous siltstone, greenish-buff with some reddish zones, calcareous - - - - - - - - - - - - - - 18.5

← GREENBRIER LIMESTONE (843.5 feet)

131. Limestone, as unit 129 - 2.5

130. Interval as follows: Lower 3 feet consists of very fissile, greenish-buff, silty, calcareous shale with thin beds of dark-gray and greenish, silty, oolitic limestone; upper 1½ feet :

consists of yellowish-green and red calcareous mudstone with a few very thin beds of limestone 4.5

[illegible]. Limestone, as Unit 127 except yellowish-green silty shale partings are present in lower 1.5 feet 7.0

[illegible]. Shale, dark-gray and greenish-buff, silty, calcareous, contains thin laminae of limestone, nonresistant 1.5

[illegible]. Limestone, medium-to dark-gray, coarsely-crystalline, very fossiliferous, (crinoids), and oolitic, thick-bedded in lower part and thin-bedded in upper, strong fetid odor 4.0

[illegible]. Limestone and shale, silty limestone interbedded, the limestone is dark gray, sub- to finely-crystalline, oolitic locally 13.0

[illegible]. Limestone, dark gray with bluish tint, slightly silty, sub- to finely crystalline, oolitic in top, thin-bedded with shale partings, nonresistant 6.5

124. Limestone, medium- to dark-gray, medium to coarsely crystalline, scattered oolites, very fossiliferous (extremely crinoidal with crinoids present in laminated cross-beds), in 2 beds 3.5

123. Limestone, dark-gray with strong brownish tint, fine-to sub-crystalline, with shaly, silty, calcareous partings, scattered oolites in top 2.5 feet, numerous nodules of black chert in 1 inch beds in lower 8 feet, fossiliferous, strong fetid odor . . 10.5

122. Limestone as unit 121, not as shaly 4.0

121. Limestone, dark-gray with brownish and brownish-red tints, shaly, silty, yellowish-green limestone interbedded, fossiliferous (crinoids and brachiopods), nonresistant, very strong fetid odor 12.0

120. Limestone, dark-gray, medium-to coarsely crystalline, oolitic, crinoidal, medium-and thick-bedded in base and upper half, remainder very thin-bedded, yellowish-green shaly partings 12.0

119. Limestone and shale interbedded, the limestone is dark-gray, coarsely oolitic locally and thin-bedded, the shale is yellowish-buff, calcareous, and silty 8.0

118. Limestone, dark-gray with brownish-tint, coarsely crystalline, very oolitic, very fossiliferous, (crinoids-up to ½ inch in diameter), the fossils being in layers, medium-bedded in base, massive upward 18.5

117. Shale, brownish-gray, weathers to buff and brown, silty, calcareous, contains 2-6 inch beds of oolitic limestone . 27.0

116. Limestone, dark-gray with brownish-tint, oolitic in base, remainder dense to subcrystalline with scattered oolites, fossiliferous, medium-bedded 4.5

115. Limestone, dark-gray with brownish-tint, with silty reddish brownish and buff calcareous shale partings, contains abundant bryozoa, thin-bedded, strong fetid odor 12.5

114. Limestone, dark-gray with brownish-tint, dense-to sub-crystalline with scattered oolites, scattered black chert nodules in beds, fossiliferous, medium-bedded 12.5

113. Limestone, dark-gray with bluish-tint, slightly silty, sub-to finely crystalline, medium and thick bedded in lower half, thin-bedded upward, shaly, greenish-buff partings, slightly fossiliferous, weathers ribby 26.5

112. Limestone, grayish-black, dense to subcrystalline with scattered oolites, fossiliferous throughout, ~~bedding with~~ shaly partings, fetid odor 6.5

111. Limestone, dark-gray with brownish-tint, dense-to sub-crystalline becoming coarsely crystalline upward, scattered oolites, very fossiliferous, medium-bedded, greenish-yellow calcareous shale partings near top, fetid odor . . 4.0

110. Limestone, dark-gray, medium-to coarsely crystalline, oolitic, fossiliferous, thick-bedded, cavernous, scattered yellowish-brown porous earthy masses on surfaces . . . 11.0

109. Limestone, medium-to dark-gray with strong tannish tint, sub-to medium-crystalline with scattered oolites, thin-lenses and nodules of black chert in middle, fossiliferous, ~~mass~~ massive, weathers red locally 7.0

108. Limestone, dark-gray, scattered oolites, pink calcite crystals scattered throughout, crinoidal, silty and shaly ribby zones 3.0

107. Limestone, dark-gray locally greenish, sub-to medium-crystalline, scattered oolites, thin-bedded at base and medium-bedded upward, films of black material (asphalt?), in minute cracks 3.5

106. Limestone, dark-gray with tannish-tint, dense to sub-crystalline with scattered oolites, scattered pink calcite crystals, fossiliferous, conchoidal fracture, medium-bedded in lower part, thin-bedded upward, fetid odor 7.5

105. Limestone, dark-gray with brownish tint, very oolitic in lower 7.5 feet, dense to sub-crystalline with scattered oolites above, fossiliferous, (Pentremites, crinoids, and brachiopods), Massive but is thin-bedded in middle, cavernous 12.5

104. Shale, brownish-yellow to greenish-buff, mottled locally, with red, silty, calcareous, slight fetid odor 9.5

103. Limestone, dark-gray with slight brownish tint, chiefly dense with scattered oolites near top, fossiliferous, thin-bedded becoming massive upward, minute seams of black material, (asphalt?) 7.5

102. Shale, greenish-buff and greenish-gray, calcareous, silty, fron 1 to 2 feet above base is a bed of grayish-black, very finely oolitic limestone 4.0

101. Limestone, dark-gray to grayish-black, scattered oolites, thin, silty, calcareous, olive-drab, shaly partings about 4 inches apart throughout, fetid odor 4.0

100. Limestone, olive-drab, sub-to finely-crystalline, thin-bedded, silty, fetid odor 2.0

99. Limestone, medium-to dark-gray, extremely oolitic with local dense layers, fossiliferous, medium-bedded at base, massive-upward, bedding planes stylolitic (?). (This unit is crossed by a driveway 5 feet above base which leaves highway at a sharp horse-shoe curve) 33.0

98. Covered interval, probably underlain by limestone 10.5

97. Limestone, grayish-black, dense-to sub-crystalline, fossiliferous, (corals,crinoids, and brachiopods), thin-bedded, fetid odor, numerous fractures filled with calcite 4,5

96. Limestone, dark-gray with brownish tint locally, sub-to finely-crystalline with scattered oolites, scattered black chert nodules, medium-bedded becoming thin-bedded upward, fetid odor . 4.0

95. Limestone, grayish-black, medium-crystalline with scattered oolites, very fossiliferous, thin-to medium-bedded, weathers ribby 7.0

94. Limestone, black, dense-to subcrystalline, scattered oolites, with thin beds of greenish calcareous siltstone, fossiliferous, thin-bedded, medium-bedded near top, thin black seams (asphalt?) throughout rock, fetid odor 8.0

93. Limestone, grayish-black to dark-gray, medium-crystalline with scattered oolites, fossiliferous, massive, thin-bedded at top . . 5.0

92. Limestone, as unit 91 except is medium-bedded 6.5

91. Limestone, black, dense-to subcrystalline, slightly oolitic, scattered black and red minerals, fossiliferous, thin-to medium-bedded, fetid odor, poorly exposed 6.5

90. Covered interval, probably underlain by limestone 2.0

89. Limestone, medium-to dark-gray with greenish-buff tint locally, finely-crystalline, slightly silty, weathers shaly 1.0

88. Limestone, dark-gray, medium-crystalline, oolitic, fossiliferous, (bryozoa, brachiopods, and crinoids), medium-and thin-bedded, fetid odor 15.0

87. Limestone, dark-gray to black, medium-to coarsely crystalline, in base and dense to subcrystalline upward, oolitic in lower 7 feet, slightly fossiliferous, thin-bedded in base and from 7 feet above base to top, remainder thick-bedded, fetid odor, stylolitic in top 22.0

86. Covered interval, probably underlain by limestone 1.5

85. Limestone, dark-gray and grayish-black, slightly silty, shaly, fetid odor . . ; 1.0

84. Limestone, grayish-black, medium-to coarsely crystalline in base, dense to subcrystalline above and oolitic in upper 4 feet, fossiliferous, (crinoids, brachiopods, Pentrimetes), . . thin-to medium-bedded in base, massive above, fetid odor 6.5

83. Limestone, dark-gray but weathers to greenish-gray of greenish-buff, sub-to finely-crystalline, fossiliferous, (Spirifer, and other brachiopods), thin-bedded, weathers ribby 4.0

82. Limestone, dark-gray, oolitic locally, finely crystalline and dense, fossiliferous, thin and medium-bedded in lower 10 feet, medium and thick-bedded above, stylolitic in lower half, weathers ribby 16.5

81. Limestone, very dark-gray and grayish-black in top, dense-to subcrystalline, fossiliferous, thin-bedded, weathers ribby . . 9.0

80. Limestone, dark-gray, very oolitic in base, fossiliferous, (corals and brachiopods), in two beds 3.5

79. Limestone, grayish-black to black, dense, scattered black chert nodules, thick-bedded, stylolitic 8.5

78. Siltstone, greenish buff in top and dark gray below, shaly, micaceous, fetid odor locally, non-resistant 6.5

77. Limestone, medium-gray with greenish streaks parallel to bedding in lower half, upper half grayish-black to black, dense to coarsely-crystalline and slightly oolitic to very oolitic, silty and muddy, fossiliferous, (crinoidal, brachiopods, Pentermites), medium-to thick-bedded, fetid odor, weathers ribby 11.5

76, Siltstone and silty shale, yellowish-green in base with some grayish bands above, calcareous, contains sandy laminae, breaks chunky, laminated, non-resistant, scattered malachite-green film throughout rock 2.0

75. Covered interval, probably underlain by same rock as unit 76 . . 5.0

74. Limestone, dark-gray with yellowish-green, muddy, streaks throughout, coarsely crystalline and very oolitic, very fossiliferous,(Pentermites, brachiopods, and crinoids), massive, slight fetid odor, weathers ribby, cavernous 3.0

73. Limestone, medium-gray, medium-crystalline, oolitic, fossiliferous, (crinoids and brachiopods), some of the fossils probably were replaced by pyrite that has now weathered to limonite, in one bed, fetid odor 1.0

72. Limestone, grayish-black to black, chiefly dense, breaks conchoidally, fossiliferous, oolitic locally, thin-bedded becoming medium-bedded upward, fetid odor, stylolitic 13.0

71. Siltstone, buff with slight greenish tint, calcareous,2 inches red earthy bed at top, non-resistant 4.0

70. Limestone, grayish-black, coarsely-crystalline and oolitic, fossiliferous, fetid odor 1.0

69. Shale, yellow with greenish tint, silty, calcareous, non-resistant 1.0

68. Limestone, medium-gray, coarsely-crystalline, slightly oolitic, crinoidal, thick-bedded, very resistant 11.0

67. Limestone, dark-gray with slightly silty, yellowish-green beds, sub-to medium-crystalline, closely spaced nodules of black chert in 1 to 2 inch beds, scattered oolites, fossiliferous, massive (in 2 beds) 11.0

66. Limestone, as unit 65 except no shaly, silty layers 2.5

65. Limestone, dark-gray with yellowish-green tint in base and grayish-black above, medium-crystalline, shaly and silty, scattered black chert nodules, fossiliferous, (brachiopods, crinoids, Pentremites) 5.5

64. Limestone, grayish with greenish-buff tint, silty, coarsely crystalline, interbedded with a greenish-buff, sandy, and calcareous siltstone, fossiliferous, fetid odor, non-resistant . . 4.0

63. Limestone, grayish-black, finely-crystalline, muddy, silty, greenish partings, extremely fossiliferous, (corals, crinoids, and brachiopods), scattered chert and earthy brown nodules in upper 6 feet, medium-bedded, fetid odor, weathers ribby 11.0

62. Limestone, dark-gray to GRAYISH-black, sub-to finely crystalline, silty, sandy, streaks of black (asphalt?) material in minute fractures, weathers ribby, fetid odor 6.5

61. Limestone, and calcareous shale interbedded, grayish-black in base and greenish-yellow upward, finely crystalline, thin-bedded, fetid odor, weathers ribby 6.5

60. Limestone, grayish-black, dense-to subcrystalline, very oolitic in top, fossiliferous, medium-bedded, stylolitic, weathers ribby 29.0

59. Covered interval 3.0

58. Limestone, dark-gray to grayish-black, coarsely oolitic in base, sub-to finely crystalline above, slightly silty, fossiliferous, medium-bedded, fetid odor 4.0

57. Limestone, grayish-black, dense to subcrystalline, fossiliferous, thin-to medium-bedded becoming thin-bedded upward, stylolitic bedding planes 11.0

56. Limestone, grayish-black to black, dense to medium-crystalline, oolitic locally, fossiliferous (corals, crinoids, and Pentremites), yellowish-brown earthy masses on bedding surfaces, thin-bedded, cavernous, very fetid odor, weathers ribby 9.0

55. Shale, greenish-buff, very silty, calcareous, some thin laminae of white limestone, nonresistant 3.5

54. Limestone, similar to lower part of unit 52 . . . . . 1.5

53. Limestone, dark-gray with slight greenish-tint, subcrystalline, slightly silty, fossiliferous, medium-bedded, fetid odor 4.0

52. Limestone, dark-gray, dense-to subcrystalline and slightly oolitic in base; grayish-black, coarsely crystalline, medium-bedded above, extremely fossiliferous throughout, (Spirifer, Pentremites, and crinoids), fetid odor 5.0

Taggard red member (Top)

51. Siltstone, yellowish-green, calcareous and shaly locally, fossiliferous, fetid odor, weathers chunky 2.0

50. Limestone, as unit 49 but is more silty and sandy and is slightly dolomitic 3.0

49. Limestone, grayish-black, sub-to finely crystalline, fossiliferous, (brachiopods), silty and sandy locally, contains plant fragments, medium-to thick-bedded, strong fetid odor, weathers ribby 16.5

Taggard red member (Base)

48. Covered interval 14.0

47. Sandstone, greenish-buff, shaly, calcareous, fossiliferous, non-resistant 1.0

Hillsdale member (Top)

46. Limestone, black with brownish tint, dense-to subcrystalline, fossiliferous, (corals, brachiopods, and crinoids), cherty in middle, thick-bedded, medium-bedded upward, stylolitic 14.5

45. Limestone, grayish-black to black, sub-to finely-crystalline, fossiliferous, massive, slight fetid odor 3.0

44. Limestone, poorly exposed, same as unit 45, dolomitic 4.0

43. Interval as follows: bottom one-half foot consists of limestone conglomerate; from one-half to two feet above base consists of coarsely crystalline dark limestone; remainder consists of shaly, very fine-grained siltstone and calcareous sandstone; entire unit weathers yellowish-buff mottled with grayish-black, ~~and it~~ and is sandy, silty dolomitic locally 6.0

42. Limestone, grayish-black to black, dense to subcrystalline, very fossiliferous, some fossils having been replaced by pyrite which has been oxidized to limonite, breaks conchoidal fractures, thick-bedded, cavernous 18.0

41. Covered interval 2.0

40. Limestone, grayish-black, sub-to finely crystalline, fossiliferous, silty, thin-bedded 5.0

39. Limestone breccia, the fragments are black and dense to subcrystalline, the matrix is light-to medium-gray and medium-crystalline, fossiliferous, becomes shaly towards top 3.0

38. Limestone, black, sub-to finely crystalline, laminated, fossiliferous, cavernous, fetid odor,
Note: (Units 37 and 38 are present in second curve in highway southeast of school at Bishop, Virginia) 1.5

37. Limestone, grayish-black, fine-to medium-crystalline, silty in certain beds, very fossiliferous, thick-bedded becoming massive upward, cavernous, weathers ribby 11.0

36. Limestone, dark-gray, finely crystalline, silty and sandy locally, slightly fossiliferous, dolomitic at base and top, weathers yellowish 4.5

35. Shale, yellowish-green, calcareous, silty, sandy, non-resistant . 0.5

34. Limestone, grayish-black to black, subcrystalline, fossiliferous, medium-bedded, fetid odor 4.5

33. Limestone, grayish-black, subcrystalline, silty, fossiliferous (brachiopods), medium-bedded, fetid odor, weathers yellowish . . 1.5

32. Limestone, black, dense-to subcrystalline, numerous corals, thin bed of black chert 2.5 feet above base and some bluish-white chert nodules near the top, fetid odor 3.5

31. Covered interval 2.0

30. Limestone, greenish-buff, finely-crystalline, silty, platy, very fossiliferous, (numerous corals, brachiopods), the corals have been replaced by bluish-white chert 0.5

29. Covered interval 10.0

28. Limestone, grayish-black, medium-crystalline, fossiliferous, (brachiopods and bryozoa), yellowish shale partings, bluish-gray chert nodules, weathers ribby 3.5

27. Limestone, black, shaly, very fossiliferous, (bryozoa and brachiopods), slight fetid odor 1.0

26. Limestone, as unit 25, 2 inch bed of grayish-black chert 18 inches above base 2.0

25. Limestone and calcareous mudstone interbedded, grayish-buff becoming gray upward, fossiliferous, (brachiopods and crinoids), bluish-white chert nodules in upper half, siltstone and white crystalline calcite nodules throughout, medium-bedded, stylolitic, fetid odor 5.5

24. Limestone, grayish-black to black, dense-to subcrystalline, scattered yellow, silty calcite nodules, very fossiliferous, (brachiopods), fetid odor, non-resistant 1.5

23. Limestone, grayish-black, sub-crystalline, fossiliferous, slight fetid odor 6.0

22. Shale, dark-gray, calcareous, weathers yellowish-gray 0.2

21. Limestone, dark-gray becoming grayish-black and black upward, finely crystalline, laminated, scattered black chert nodules, fossiliferous, fetid odor 3.0

20. Siltstone, buff-to yellowish-brown, shaly, sandy, calcareous . 0.5

19. Limestone, black, subcrystalline to dense, conchoidal fracture, calcareous, shaly breaks in middle, laminated, nodules of black chert in beds, ~~of black chert,~~ fossiliferous, strong fetid odor 8.0

Hillsdale member (Base)

18. Mudstone, light-gray, calcareous, silty, stylolitic, conchoidal fracture 2.5

17. Limestone, dark-gray bedoming buff upward, dense-to subcrystalline slightly dolomitic, fetid odor, weathers locally to pinkish-purple and green 2.0

16. Limestone, grayish-black, sub-to finely crystalline, conchoidal fradture, in one bed, fetid odor 1.5

15. Limestone, grayish-buff to buff, subcrystalline, muddy, laminated, yellowish-brown earthy masses on surfaces, slightly dolomitic, weathers to fine ribs 5.0

14. Limestone, light grayish-buff to brownish-yellow, subcrystalline, dolomitic 0.3

13. Limestone breccia, matrix of dark-gray limestone with fragments of slightly calcareous siltstone, numerous irregularly shaped voids, probably due to the bleaching out of limestone fragments, slightly dolomitic 9.0

12. Limestone breccia, cellular, due to the bleaching out of limestone and fossil fragments 1.5

11. siltstone, yellowish-gray in base becoming light gray upward, shaly, slightly calcareous, slightly dolomitic 2.0

10. Covered interval 9.5

9. Limestone and calcareous siltstone, the siltstone is white with slight yellowish tint, the limestone is grayish-brown and finely-crystalline, laminated, shaly, and slightly dolomitic 1.5

8. Covered interval 2.0

7. Limestone breccia, as unit 12 . . . . . 1.0

6. Shale, grayish-buff to brown, calcareous, laminated, silty, slightly dolomitic 2.5

5. Limestone, yellowish-buff in base and medium-to dark-gray upward, silty, fine-to medium-crystalline, laminated, abundant brachiopods, slightly dolomitic, this unit has been drag-folded 7.0

4. Shale, yellowish-brown to buff, silty and dark gray cellular limestone breccia interbedded, fossiliferous, ... 5.0

3. Limestone, buff in base, becoming medium-gray to grayish-black upward, shaly, silty, thin-bedded, slight fetid odor 4.0

2. Limestone, buff but weathers to yellow, shaly, silty, laminated, non-resistant 3.5

MACCRADY SHALE (Not measured)

1. Shale, grayish-buff to yellowish-brown with greenish tint, limestone pebbles about 1½ inches in diameter in basal 2 feet, silty, non-resistant . . . . . ___