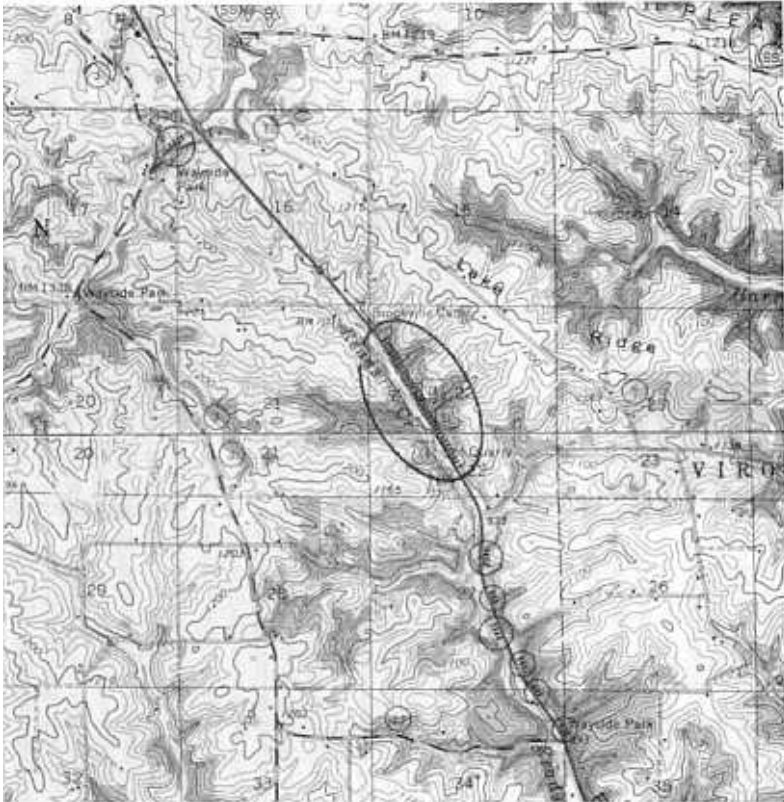


Title: Reads Creek

Location: Exposures in stream and roadcuts along Reads Creek and U. S. Highway 14 between Viroqua and Readstown commencing about 1.5 miles southeast of Viroqua with a roadcut at the north side of Highways 27 and 82 and about 0.1 mile west of junction with U. S. 14 in the NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 16, T.12N., R.4W., Vernon County (Viroqua 15-minute topographic quadrangle, 1965) and ending with roadcuts just south of the Wayside Park in the SE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 27, T.12N., R.4W., Vernon County (Viroqua 15-minute topographic quadrangle, 1965).



Author: M. E. Ostrom (modified from Ostrom, 1965).

Description: Roadcut on north side of Highway 27-82 about 0.1 mile west of junction with U. S. Highway 14 located 1.5 miles southeast of Viroqua in the NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 16, T.12N., R.4W., Vernon County (Viroqua 15' topographic quadrangle, 1965).

Here a lithologic sequence similar to those seen at Whitehall, Arcadia, and Coon Valley can be seen. It begins at the base with quartz sandstone believed to be the Tonti of Templeton and Willman (1963) and to be lithologically analagous with the Galesville and Van Oser seen at previous stops. This is overlain by a discontinuous and thin layer of poorly-sorted sandstone which is succeeded by 4.5 feet of greenish gray shale. At this stop the poorly-sorted sandstone and the shale are distinct units whereas at previous stops the two lithologies were interbedded. The overlying 4.0 feet of the Pecatonica Member of the Platteville Formation

is lithologically analagous with the basal Oneota of previous stops.

The poorly-sorted sandstone and the shale is assigned to the Glenwood Member. The poorly-sorted sandstone attains a maximum thickness of nearly 8 feet near Beeton in Grant County, southwestern Wisconsin, and eastward toward New Glarus in Rock County it thins irregularly due to an uneven basal surface. Its upper contact with the shale is even. In western Wisconsin the shale can be separated into a lower non-calcareous greenish-gray portion and an upper calcareous grayish-brown shale (Templeton & Willman, 1963). The shale and its two subdivisions thin to disappearance eastward to New Glarus, the lower shale persisting the furthest (Ostrom, 1969). In the New Glarus area the shale is absent and the poorly-sorted sandstone is in direct contact with the overlying Pecatonica Dolomite Member of the Platteville Formation. The basal bed of the Pecatonica has been assigned the name Chana by Templeton and Willman. This bed attains a maximum thickness of 20 inches in Wisconsin and consists of sandy dolomite with scattered phosphate pellets in its base. Its occurrence is coincident with the Pecatonica Dolomite.

Although the Glenwood has been assigned to the Platteville by many investigators the reasoning behind such an assignment is questionable. Briefly it can be said that neither lithology nor persistence of beds justify its assignment to the Platteville.

ORDOVICIAN SYSTEM

Platteville Formation

Pecatonica Member (+4 feet)

0'	4'	4'	Dolomite, light yellowish brown, fine- and medium-crystalline, dense, thin- and medium-bedded. Sandy with phosphate pellets in base (Chana member of Templeton & Willman, 1963).
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St. Peter Sandstone Formation

Glenwood Member (6.4 feet)

4' - 5.5'	1.5'	Shale, brownish green, slightly dolomitic, silty.
5.5' -10.0'	4.5'	Shale, greenish-gray
10.0' -10.2'	0.2' +0.2'	Sandstone, poorly-sorted, with grains from very coarse sand down to silt.

Tonti Member +15 feet)

10.4' -25.4'+	+15'	Sandstone, light yellowish gray, medium and fine-grained, massive-bedded, cross-bedded.
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BASE OF EXPOSURE AT ROAD LEVEL

Proceed southward on Highway 14 for 3.2 miles, 0.3 miles southeast of quarry at east side of highway.

Roadcut on left (east) side of Highway 14 about 4.5 miles southeast of Viroqua in the center of the NE $\frac{1}{4}$, Sec. 27, T.12N., R.4W., Vernon County (Viroqua 15-minute topographic quadrangle, 1965).

At this stop a St. Peter "channel" is exposed. Here the St. Peter Sandstone can be seen to fill what is believed to have been a stream erosion channel cut in the surface of the Oneota Dolomite at a time when the sea had retreated far to the southeast. The sand filling the channels is believed to have been deposited when the sea once again advanced over the land. Each new advance of the sea is marked by the deposition of quartz sand. In the case of this outcrop the erosion surface is an obvious feature because it developed in a resistant rock having a lithology much different from the sandstone deposited on it. In other instances with other cycles the lack of an obvious erosion surface can be explained as the result of that surface having been cut in silts and sands not markedly different from the sands deposited on them by the advancing sea. In such a case it would be difficult if not impossible to identify the surface as being one of erosion.

FROM HERE WALK DOWN HIGHWAY TO FIRST OUTCROP ON WEST SIDE OF HIGHWAY 14.

Roadcuts on both sides of Highway 14 about 4.8 miles southeast of Viroqua in the NW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 27, T.12N., R.4W., Vernon County (Gays Mills 15' topographic quadrangle, 1966).

This stop differs from those at Arcadia and Coon Valley in that the Sunset Point Member is thinner by three quarters. The name Sunset Point was proposed by Raasch (1952) as a replacement for the name Madison which was previously used for this unit. The exposure here is significant because supposedly the Madison Sandstone does not extend beyond the Madison area. Raasch recognized the Sunset Point in Vernon County and assigned it this name because he believed the name Madison to be preempted for use elsewhere.

ORDOVICIAN SYSTEM

Prairie du Chien Group

Oneota Formation (+32.6 feet)

111.9' - 114.9'	3.0'	Dolomite, gray, finely-crystalline, slightly porous, has "chiton" zones 8" and 20" above base; also scattered white oolitic chert nodules.
111.2' - 111.9'	0.7'	Dolomite, gray, finely-crystalline, dense, thickness varies from 5" to 8"; locally appears to contain cryptozoa.
108.6' - 111.2'	2.6'	Dolomite, massive, gray, medium- and coarsely-crystalline, dense, oolitic, little oolitic white chert 6" above base. Oolites abundant in base and rare in top.
105.6' - 108.6'	3.0'	Dolomite, very light brownish gray, medium- and coarsely-crystalline, dense to slightly porous, medium- to thin-bedded and irregularly-bedded, otherwise massive.

103.8' - 105.6'	1.8'	Dolomite, light gray, medium-crystalline, slightly sandy, massive, with porosity that may be due to fossils (first ledge below top of bluff west side of road). Upper surface has algal structures although this does not show at edges.
101.0' - 103.8'	2.8'	Dolomite, light gray, medium-crystalline, very sandy, has white discontinuous chert bed through midportion. Very sandy 8" below top.
99.6' - 101.0'	1.4'	Dolomite, light gray, finely-crystalline, massive, very oolitic.
99.3' 99.6'	0.3'	Dolomite "breccia".
98.5' 99.3'	0.8'	Algal Dolomite.
97.9' 98.5'	0.6'	Dolomite, brownish gray, medium-crystalline, dense with much green clay in top.
97.2' 97.9'	0.7'	Sandstone, very dolomitic, few oolites, some "green speckled" beds, (clay). Has some clay and finely-crystalline dolomite clasts. Locally much green clay.
96.7' - 97.2'	0.5'	Sandstone, light gray streaked yellowish brown, poorly-sorted, predominantly medium-grained with much fine and very little coarse, silty trace green clay.
95.2' 96.7'	1.5'	Dolomite, light gray, medium-crystalline, massive slightly porous, appears to contain cryptozoa; clastic in upper 6".
93.2' 95.2'	2.0'	Dolomite, very light yellowish brown, medium-crystalline, dense, very oolitic, thin- and medium-bedded where weathered horizontally streaked with thin brown closely spaced and crinkly partings. Lower 2" no oolites.
92.4' 93.2'	0.8'	Sandstone, ripclast, very light yellowish gray to light gray, poorly-sorted, very fine to very coarse clasts of finely-crystalline dolomite and of green shale.
90.4' - 92.4'	2.0'	Dolomite, light yellowish brown, medium-crystalline, very sandy, contains oolitic chert, massive-bedded.
89.6' 90.4'	0.8'	Sandstone ripclast with clasts of dolomitic sandstone and of sandy oolitic dolomite.

88.8' - 89.6'	0.8'	Sandstone, very pale light greenish gray, medium- and fine-grained, massive-bedded, many fucoidal (?) markings. Very argillaceous in basal 6". Upper contact uneven and has very sandy dolomite deposited in depressions.
87.3' - 88.8'	1.5'	Dolomite, light grayish brown, sublithographic to very finely-crystalline, dense, much very fine sand. Beds uneven.
85.8' - 87.3'	1.5'	Sandstone, same as in #18
82.3' - 85.8'	3.5'	Dolomite, gray, massive- to thin-bedded, discontinuous beds, sandy (locally a dolomitic sandstone). Appears brecciated and has considerable distortion of bedding. Highly silicified and brecciated in basal 3" to 12". Laterally beds are even, medium- to thin-bedding, and continuous. (Top of lower ledge west side of road)

CAMBRIAN SYSTEM
Trempealeau Group
Jordan Formation

Sunset Point Member (13.2 feet)

70.3' - 82.3'	12.0'	Sandstone, light gray, medium-grained, massive-bedded and cross-bedded with some green clay along cross beds.
69.3' - 70.3'	1.0'	Dolomite, gray, finely-crystalline, massive-bedded, sandy, some porosity along bedding planes. Very sandy at base - slightly sandy at top.
68.1' - 69.3'	1.2'	Sandstone, light yellowish gray, medium- and fine-grained with little coarse, poorly-sorted, silty, very dolomitic, scattered clasts.
65.6' - 68.1'	2.5'	Sandstone ripclast; coarse sand matrix, sandy dolomite pebbles, with scattered specks of green clay. Pebbles are flattened and rounded.
64.5' - 65.6'	1.1'	Sandstone, very light gray, coarse- to fine-grained with trace very coarse, poorly-sorted, trace green clay, massive, slightly dolomitic; good reference bed.
63.8' - 64.5'	0.7'	Sandstone, mottled brown and light yellowish brown, fine- to coarse-grained, poorly-sorted, locally cross-bedded.
63.3' - 63.8'	0.5'	Sandstone, light yellowish gray, very fine-grained dolomite, streaked light brown.

62.5' - 63.3'	0.8'	Sandstone ripclast; same as #25
59.0' - 62.5'	3.5'	Sandstone, light yellowish brown, medium- and fine-grained with some coarse, poorly sorted, cross-bedded, becomes finer-grained upward.
58.9' - 59.0'	0.2/0.1'	Sandstone, brown and yellowish brown, fine- to coarse-grained, poorly-sorted, very argillaceous, iron-enriched in base, scolithic.
58.5' - 58.9'	0.5/0.2'	Sandstone, light gray, very coarse- to very fine-grained, trace silt, poorly-sorted, conglomeratic.
		Van Oser Member - +15.0 feet
43.5' - 58.5'	15.0'	Sandstone, light yellowish gray to light yellowish brown, medium-grained, with some fine and trace of coarse, well-sorted, massive-bedded and cross-bedded.

BASE OF EXPOSURE

Return to cars and proceed southeast on Highway 14 to Wayside opposite County Highway "J" in the SW $\frac{1}{4}$, NO $\frac{1}{4}$, Sec. 35, T.12N., R.4W., Vernon County. (Gays Mills 15-minute topographic quadrangle, 1966). Walk north about 0.4 miles to first outcrop located at the east side of Highway 14 in SE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 27, T.12N., R.4W. Description begins at base of Sunset Point Member which forms prominent ledge at top of exposure.

CAMBRIAN SYSTEM Trempealeau Group

Jordan Formation

		Van Oser Member (23.5 feet)
39.5' - 43.5'	4.0'	Sandstone, light yellowish brown, medium- and coarse-grained, some poorly-sorted, especially in upper 0" to 8". Weathers as a reentrant. Cross-bedded.
27.5' - 39.5'	12.0'	Sandstone, light gray, medium-grained with little coarse, massive-bedded. Upper 1" contains rounded sandstone concretions that have both siliceous and calcareous cement. Commonly iron-enriched in upper few inches. Shows evidence of burrowing in upper part. Cross-bedded. Discontinuous shale partings throughout.
27.0' - 27.5'	0.5'	Sandstone, pink, dolomitic, medium- and fine-grained with little coarse; ledge former.
20.0' - 27.0'	7.0'	Same as #3, with less cement and only a trace of coarse sand, massive, forms reentrant.

0.0' - 20.0' +20.0' Sandstone, very light yellowish brown to light yellowish gray, fine-grained, thin- and medium-bedded, horizontally laminated with very low-angle cross-beds. In lower 8' sandstone is fine- and very fine-grained, silty, thin- and medium-bedded and has some burrowed beds.

BASE OF EXPOSURE

Walk to exposure located at the east side of Highway 14 opposite its junction with County Highway "J" just south of the Wayside in the NE $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 34, T.12N., R.4W., Vernon County (Gays Mills 15-minute topographic quadrangle, 1966).

At this outcrop the Norwalk Member of the Jordan Formation and underlying Lodi Member of the St. Lawrence Formation are exposed. The contact of the two members is believed to be about 3 feet above road level and is marked by the change downward from very fine-grained sandstone with minor silt and very little calcareous cement to siltstone that is calcareous and which contains very fine sand and thin beds of gray dolomite. There is a transition zone of about 4 feet which is assigned to the Norwalk. Estimated thickness of the Norwalk in this area is 35 feet.

Significance: Two cycles of sedimentation are represented in this series of exposures. Each is similar to the other, but there are distinct differences. In addition, each differs from older cycles seen at previous stops.

What are the differences between the two cycles seen here? How do you explain the differences? How do the two cycles seen here differ from older cycles seen at previous stops? How do you explain the differences? What fossil evidence is there at this stop and what is its significance? Do you agree with the description of the pre-St. Peter erosional unconformity?

References: Raasch, 1952; Templeton & Willman, 1963; Ostrom, 1965.