FIELD TRIP NO. 6

A FEW OF THE BEST OUTCROPS IN THE NORTH COUNTRY

BY

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STOP NO. 1 Trinity Episcopal Church, Fall Island, Potsdam, and a walk into the Potsdam business district.

Our tour will begin with Fall Island and Trinity Church and will include a short walk downtown. The community has recently been chosen for a Main Street award for its Market Street renovation project. A number of buildings have been restored or built for compatibility with the architecture of the late 1800s, the period of greatest construction in the village. This two-block section of Market Street and a portion of Raymond Street were placed on the National Register of Historic Places in 1979. Here are sandstone and brick buildings (some marble trim) of Italianate and Greek revival and other styles including the simple slab construction of the earliest commercial sandstone building (1821) that houses Eugene Earle, Jeweler. Note also, the slab and binder construction (1840) of Page One Bookstore.

Background

Little was known about the northern Adirondack region at the close of the Revolutionary War. Carlton Island and Fort Oswegatchie (Ogdensburg) were still occupied by the British, and the north shore of the St. Lawrence River was dotted with settlements of Tory refugees and their families. According to Marguerite Chapman (1969), downstate New Yorkers felt the need to establish a buffer region between English Canada and the Mohawk Valley. Settlements south of the St. Lawrence River would act as a deterrent and give warning of potential invasion from the north.

The state legislature acted to provide for the sale of wilderness land and to appoint land commissioners for its disposal. Townships of 100 square miles were created instead of the 36 square mile block adopted by the Federal government in 1785 as the fundamental surveying unit for western lands. Evidently the state government was reluctant to set up the administrative machinery necessary to sell the land in small parcels. An act of May 25, 1787, established five townships along the south shore of the St. Lawrence River and five to the south of these. Following good advertising procedures the land commissioners named some of the towns after old world cities: Louisville, Stockholm, Potsdam, Madrid, Lisbon, Canton, DeKalb, Oswegatchie, Hague (Morristown), Cambray (Gouverneur).

Public notification of the forthcoming land sale was notoriously and perhaps deliberately hurried. The announcement first appeared in the Albany Gazette on June 7, 1787, for a sale which was to be held on the 10th of July in New York City. Millions of acres were sold for a fraction of their value with a Detroit fur trader-turned-land speculator, Alexander Macomb,

buying the lion's share of the pot (3,670,715 acres). Surveying, division and sale of Macomb's purchases began immediately, but evidently did not offset other financial problems because Macomb was imprisoned for debts in the 1790's. Among those solicited for land purchases were the royalty and wealthy of France. The Revolution in America was over. Northern New York promised beaver, wild grapes, maple syrup and even friends of like mind (?) and language in Montreal, a "short" boatride down the St. Lawrence River. Winters were not discussed in detail.

The town of Potsdam was eventually sold to Garrit Van Horne, David M. Clarkson and their associates on November 18, 1802. The saga of the Clarkson family from Bradford County, York, England, begins in the North Country along with the Episcopal heritage represented by this church.

Trinity Church

In early years of the Village, a small frame building on Union Street served as a school during the week and as a community church on Sunday. By the 1820s and early 30s Potsdam was a thriving community with buildings lining both sides of Market Street and stately sandstone houses along Main and Elm. Common worship of the early settlers had given way to organization and construction of churches such as that of Baptists, Methodists, Presbyterians and Universalists. Episcopalians were meeting at the St. Lawrence Academy, a three-story structure, 68 by 36 feet, built in 1825 of Potsdam sandstone and located on the site of the north end of Snell Hall on the downtown campus of Clarkson College.

Although the first Episcopalian priest is said to have visited the county in 1816, the first resident priest was called in 1834 with at least three members of the Clarkson family pledging funds for his support. The Reverend Richard Bury arrived from Ogdensburg, and the parish was formally organized under the name of Trinity Church on March 23, 1835.

The site chosen for construction of a church was Fall Island adjacent to and on the south side of the Parishville Turnpike Road. Thomas Clarkson offered stone from his quarry, free of charge, for the "neat gothic edifice of stone 44 by 64 feet." The original design for the building and name for the parish was taken from Trinity Church constructed in 1788 in New York City. The name also emphasized, for good measure, a theological distinction between Episcopalians and local Universalists. The building was completed and consecrated on a warm July afternoon in 1836. A procession that began at the Academy was concluded with a sermon by Rev. Bury on Fall Island. An engraving of the church as it appeared in 1836 (Figure 1) shows that the church lacked the tall steeple possessed by its namesake in New York. Windows were plain glass, and the high-backed, rented pews were complete with doors. Colorful upholstering was installed by pew renters accustomed to long services, and several pews were reserved for "strangers."

The side walls are about all that remain of the original structure. These walls consist of horizontal layers that alternate rows of flat-faced sandstone blocks (slabs) whose bedding is laid horizontally with rows of blocks (binders) whose bedding is laid vertically. This layer by layer alternation added style and texture to a smooth wall and was said to give

added strength. Compare the slab and binder construction with that of strictly flat slabs in the Earle Jewelers building on Market Street.

The simplicity of architectural style of this early church was not acceptable in the second half of the 19th century. Victorian tastes in these parts leaned toward "roughened" (ashlar) stone construction whereby soaring walls of massive stone could be topped or garnished by highly carved stone or wrought iron decoration. The ashlar stone fence in front of the church (1867) was a prelude of changes to come. An ashlar chapel was added in 1885 and the present facade was finished in 1886. The towers capped with ornamental stone are a tribute to the skills of quarrymen and stone cutters as well as to the faithful who paid the bills. A new spirit seems to have prevailed in the church. In 1886 the pews were declared free of rent.

Windows were installed and dedicated as donations became available in the 1890s. Created by Louis Tiffany and Company of New York, the windows depict the designs of notable paintings such as Holman Hunt's "Christ the Light of the World." The beauty of these windows, accentuated by dark ash ceilings, is most striking from the inside on a sunny day. The present rector of the parish, the Rev. Canon James Pennock, is also mayor of the Village of Potsdam.

STOP NO. 2 Former Site of No. 1 Quarry of the Potsdam Red Sandstone Company about 3 miles south of Potsdam on the West Hannawa (Back Hannawa) Road, Colton quadrangle.

Introduction

Much sandstone in buildings throughout the area was taken from quarries that were strung along both sides of the Raquette River south of Potsdam Village. Several sandstone houses (about the size of large log cabins) were built between 1809 and 1820 along the Back Hannawa Road. Much stone was hauled along this road in later years to construct the homes and businesses of Potsdam.

The qualities of Potsdam sandstone were highly praised in the 1850s. The stone was cheap, available and of pleasing red coloration. Elsewhere it may be white or gray. It was also durable and not as susceptable to spalling in case of fire as was granite building stone. Iron furnaces in Ontario and New York State had sandstone lining. Note, say various appraisers, the sharpness of outline in natural exposures that has lasted "several centuries." The stone occurs in even-bedded strata and cleaves into slabs with flat faces and straight edges. There is nothing in the rock to "nourish parasitical mosses." Walls made from this siliceous stone do not become moldy and decaying as is the case with walls of limestone in damp climates. This stone keeps its color, and the claim was made that exposure to air actually hardens it. Perhaps this is over zealous advertising; it may refer to the tight silica cementation that naturally existed once broken and loosened quartz grains were brushed away. This old quarry site is now the property of Niagara-Mohawk Power Co., but sandstone is still taken on occasion for patio or building trim.

Geologic Setting

The Cambrian Potsdam sandstone has been stripped from the Adirondack dome northward to the vicinity of Potsdam Village. Present distribution of that sandstone, however, is uneven. The small park on Fall Island across from the church is underlain by Precambrian amphibolite whereas the Cambrian Potsdam sandstone of No. 1 Quarry is located to the south near the border with the Adirondack highlands.

The Potsdam sandstone is of variable thickness. It was deposited upon an irregular surface of low hills and ridges of resistant Precambrian gneisses or as filling in sinkholes where bedrock consisted of marble. Erosion nearly to the level of that surface has left many sandstone outliers scattered here and there in the Potsdam area and in Precambrian portions of the northwest Adirondacks.

The Raquette River at the quarry site has cut a channel into glacial and deltaic sediment now exposed in the bluffs of Figure 4. The quarry is located within the sandstone outlier that was buried by till deposits during glacial advance and by outwash during glacial retreat. These sediments, in turn, were covered with a layer of magnetite-bearing quartz sand that, in the vicinity of Hannawa Falls, forms a large fan-shaped delta that opens to the north. These sands probably were deposited by the Raquette River when it entered a pro-glacial lake impounded between the highlands to the south and the ice front to the north. Retreat of the glaciers was accompanied by lowering of the lake level, by entrenchment of the Raquette River into the underlying sediments, and by exposure of the sandstone outlier at this quarry. The river at Hannawa Falls, thus, has a relatively steep-walled channel. To the north, however, the braided and meandering channel seems deliberately to avoid disturbing a topography of glacially-deposited hills that consist of ribbed moraine in varying stages of drumlinoid molding (Carl, 1978).

STOP NO. 3 Sand terrace overlooking the St. Lawrence Valley, junction highway 56 with Tucker Road, 1 mile northwest of Colton, Colton quadrangle.

The transition from Adirondack lowlands to highlands occurs between Hannawa Falls and Colton. Our stop marks the southern boundary of the glacially deposited and overridden hills of the lowlands. Presumably (?) it also marks the southern extent of Fort Covington glaciation. We will walk under the power lines toward the edge of the terrace. Ottawa, the Gatineau hills and the other side of the Valley are out there but too far away to be seen. In language understood by corporate executives, the view from the top is superior, even if incomplete.

This area of transition is also the site of at least three sand terraces, the uppermost here at 800 feet elevation which includes the continuous but slightly higher surfaces (up to 900 ft.) along the Colton-Parishville road to the east. Compare terrace elevations here with those of other St. Lawrence Valley terraces as given in MacClintock and Steward (1965, p. 42). A second terrace remnant is preserved 200 feet below this level along highway 56 near Brown's Bridge road. The third or lowermost terrace begins at 580 feet

and slopes northward in true deltaic fashion at Hannawa Falls. The delta ends abruptly at Sweeney Road, Potsdam quadrangle, in a northeast-trending, nearly undissected slope. This slope may represent middleset beds draped over the northeasterly end of a till hill. The contact between deltaic sands and underlying till or kame material is observed in gravel pits throughout the area.

Terrace sands consist of moderately well-sorted, angular, magnetite-bearing quartz sands that include heavy minerals derived from mountains to the south. The sands show cross bedding, channeling, climbing ripples and occasional boulders and gravel lenses. Similar sands underlie flat surfaces at lower elevations to the north including that at a recent housing development in Raymondville. Sand grains here are more rounded and contain less magnetite than at Colton. They were evidently recycled in the Champlain Sea. The uppermost terraces at Colton, Parishville and elsewhere along the Adirondack highland-lowland boundary represent the ancient shorelines of pro-glacial lakes that were impounded by retreating ice to the north. Imagine the view from this terrace at Colton roughly 10,000 years ago.

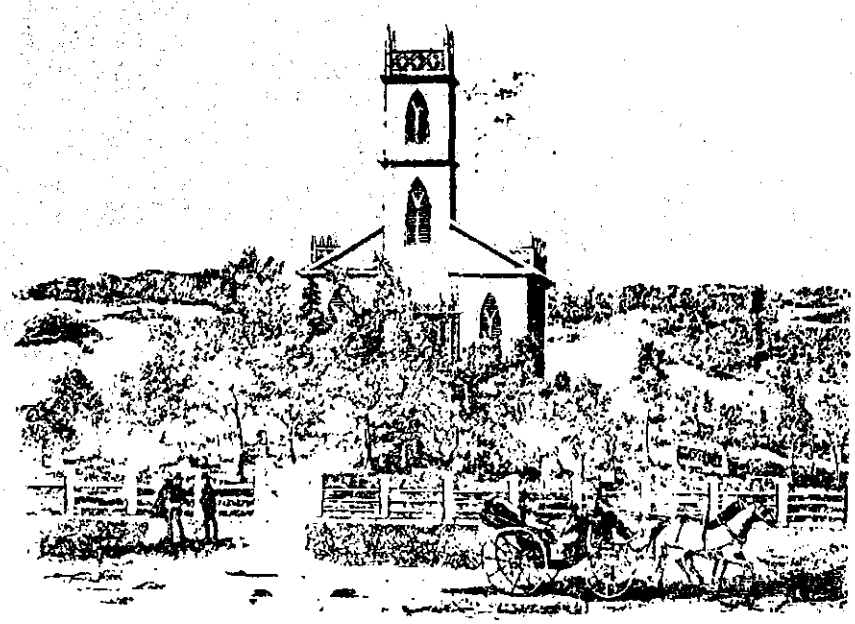


Figure 1 Trinity Church, Potsdam, in 1836. Parishville Turnpike in the foreground. Design for the church was taken after Trinity Church in New York City.

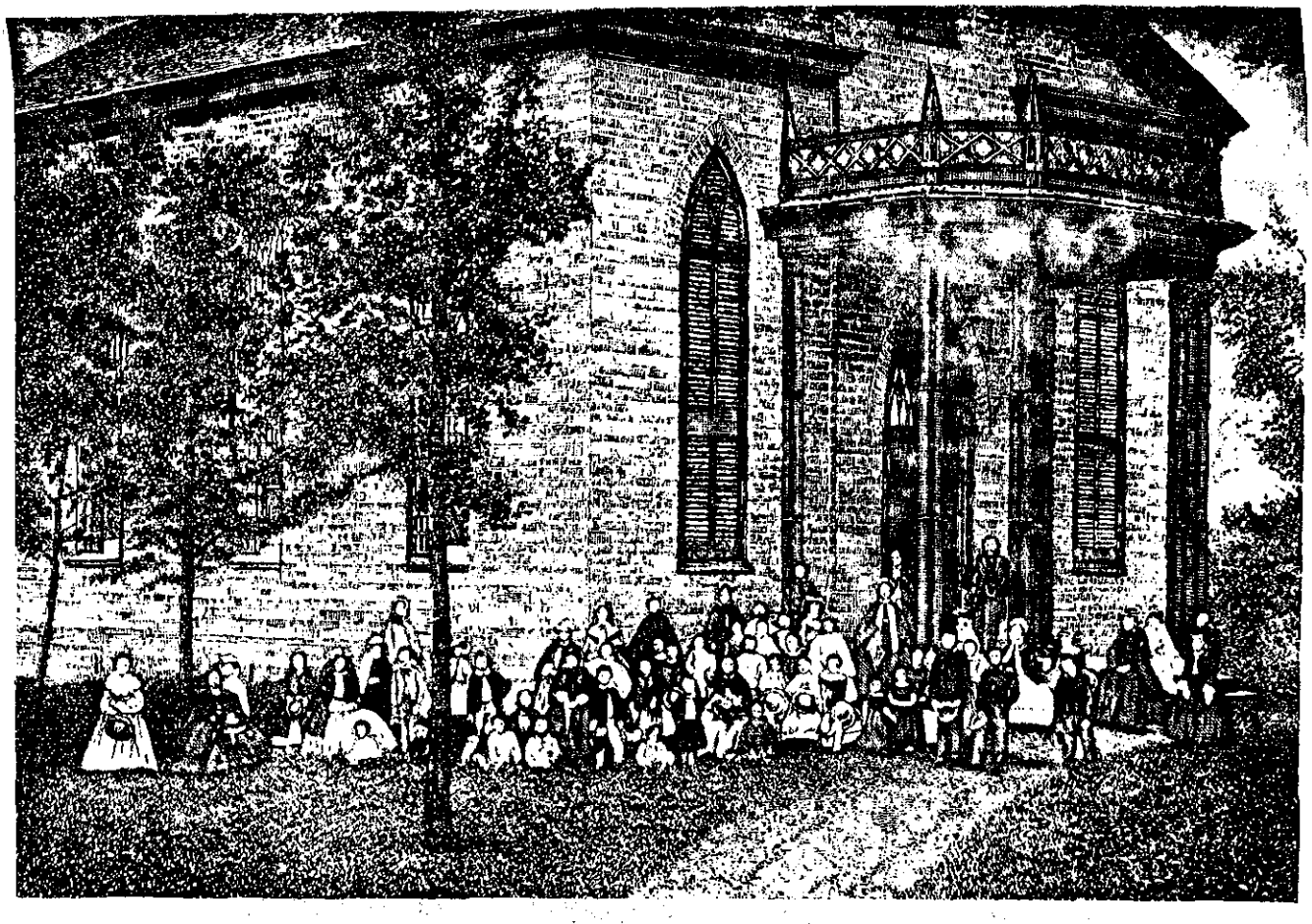
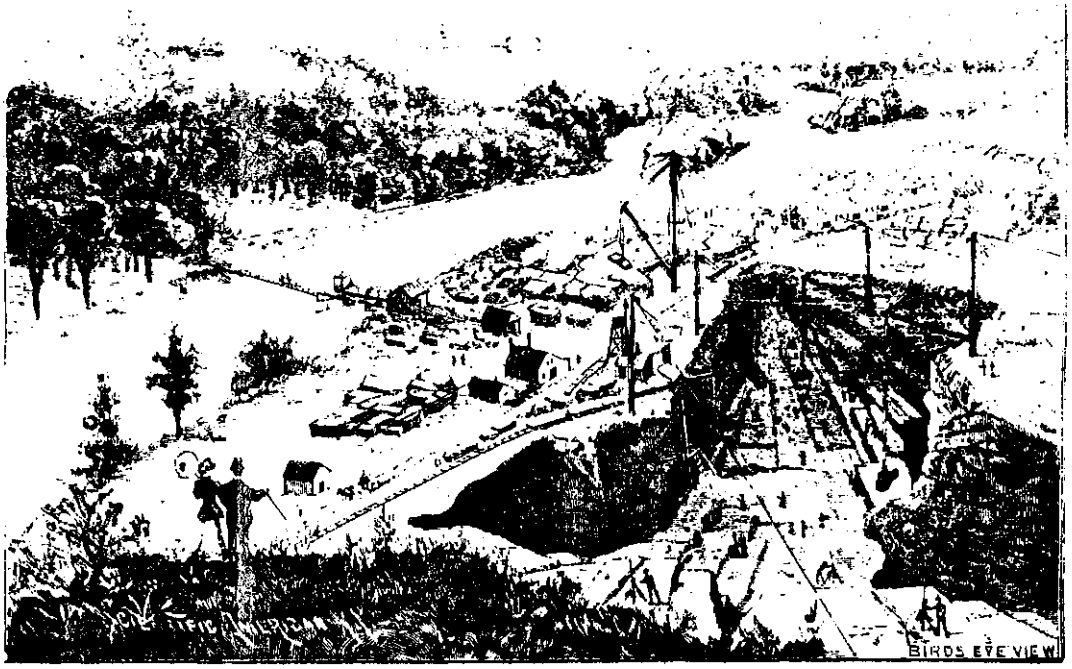


Figure 2 The slab and binder sandstone construction of Trinity Church is illustrated in this 1862 lithograph. The conical figures are teachers and students of the Sunday School. Figures 1 and 2 taken from Annie Clarkson's book "An Historical Sketch of Trinity Church, Potsdam, New York 1835-1896."



SANDSTONE QUARRIES AT POTSDAM N. Y.—[See page 8.]

Figure 3 View southward in 1892-3 over the No. 1 Quarry (now flooded) of the Potsdam Red Sandstone Company which we visit on this trip. The Raquette River flows from upper right to lower left and turns the water wheel located at the walking bridge. Note derricks and booms and numerous outbuildings for stone cutting and machine repair. The gentleman and lady are gazing over a capitalistic enterprise of considerable proportions.

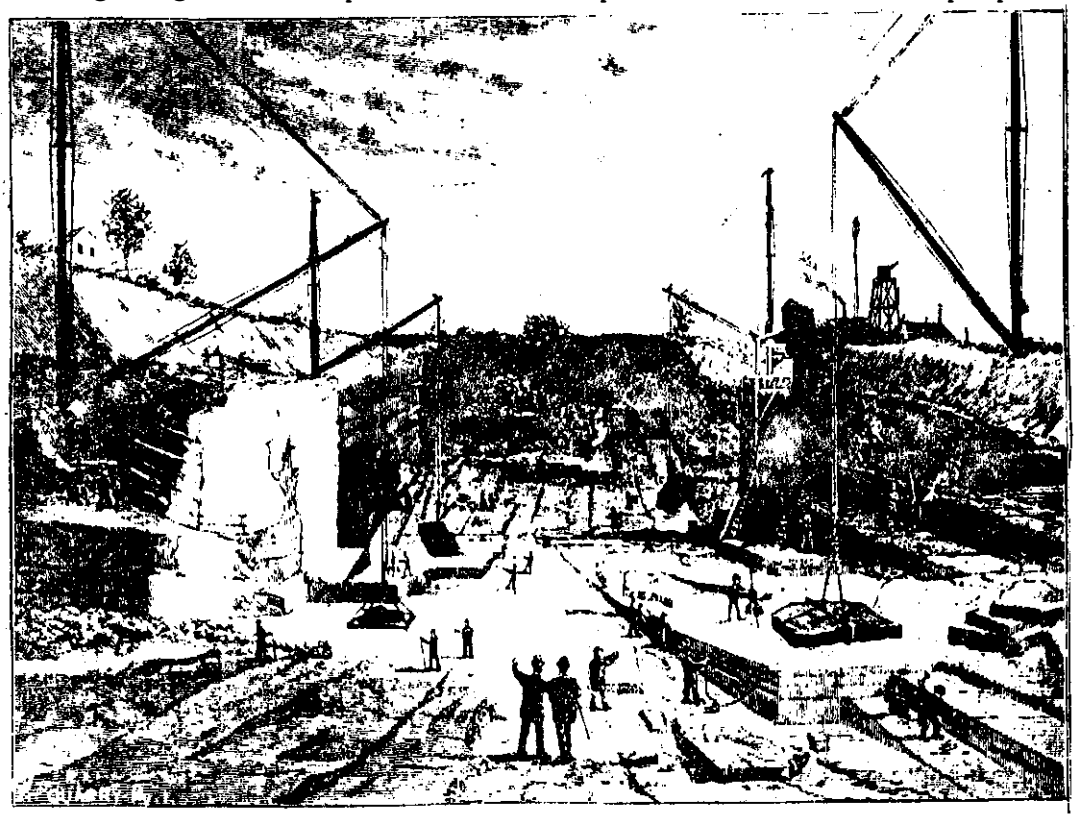


Figure 4 View from inside the quarry northward toward the elevated ground occupied by the couple in Figure 3. Steam power drills are in use, but workers in the lower right corner are using handtools to loosen slabs along bedding planes. Unconsolidated sediments in bluff to left.

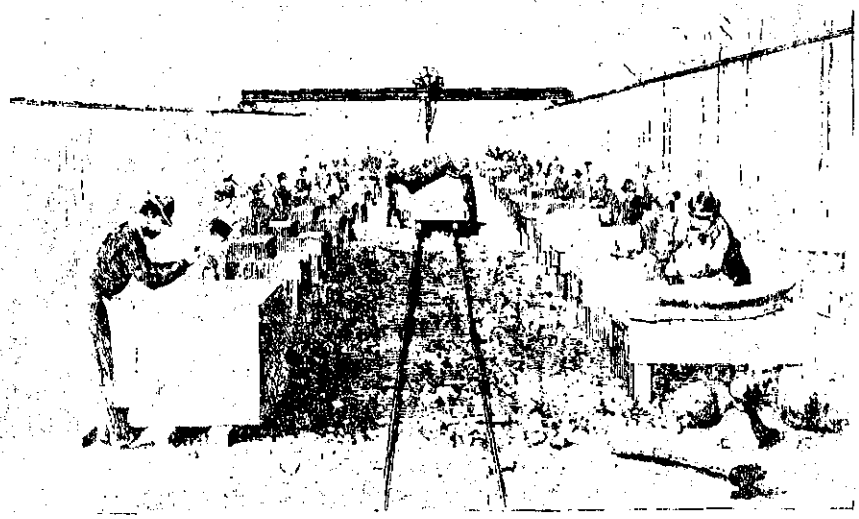


Figure 5 Interior of a stone cutting shop, perhaps the building depicted in Figure 3 to the rear of the quarry. Stone cutting was done by hand according to sketches and measurements made for each type of block. Blocks were labeled, carried to the building site, and the building was quickly assembled like pieces in a 3-D jigsaw puzzle.

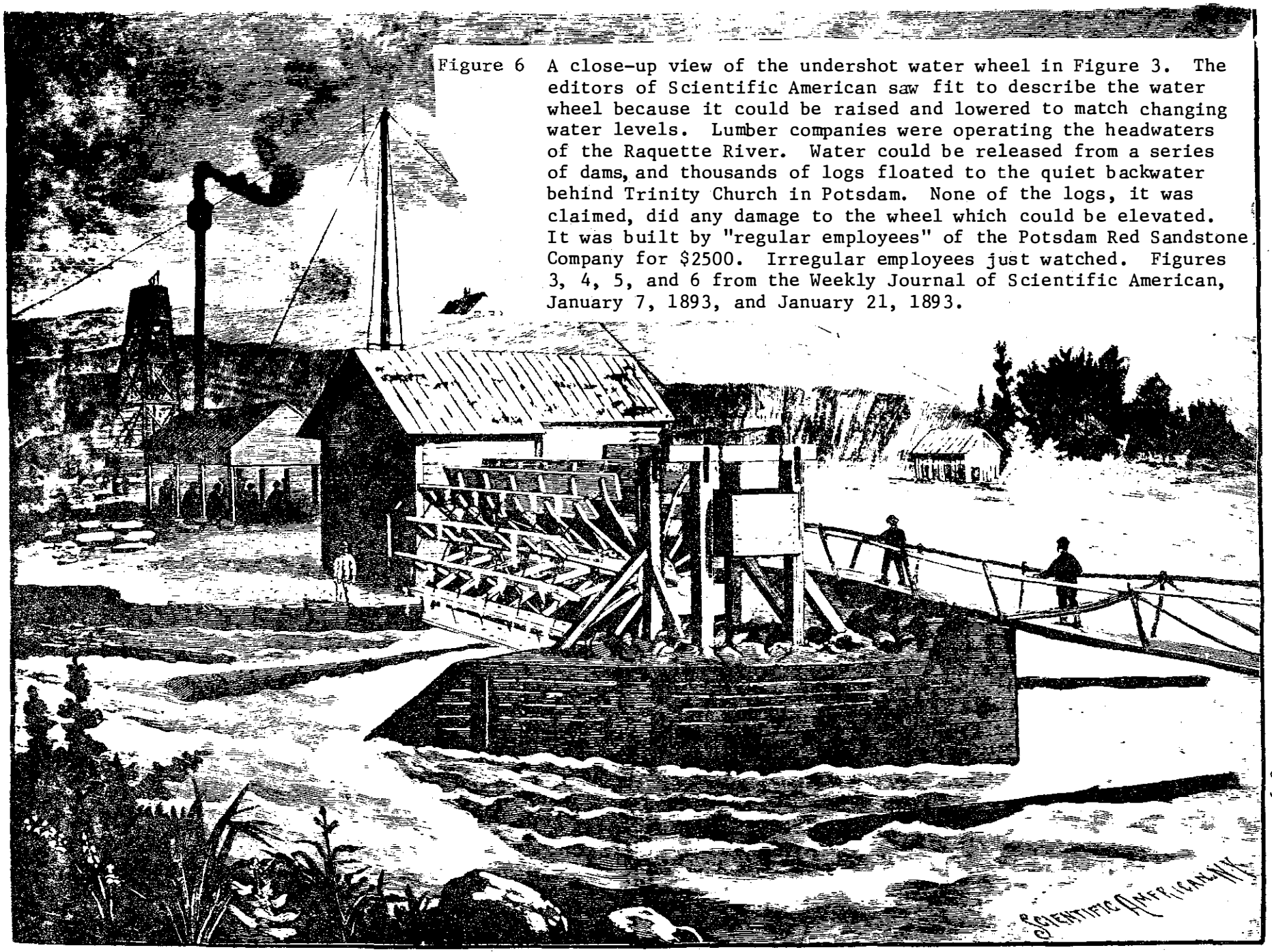


Figure 6 A close-up view of the undershot water wheel in Figure 3. The editors of Scientific American saw fit to describe the water wheel because it could be raised and lowered to match changing water levels. Lumber companies were operating the headwaters of the Raquette River. Water could be released from a series of dams, and thousands of logs floated to the quiet backwater behind Trinity Church in Potsdam. None of the logs, it was claimed, did any damage to the wheel which could be elevated. It was built by "regular employees" of the Potsdam Red Sandstone Company for $2500. Irregular employees just watched. Figures 3, 4, 5, and 6 from the Weekly Journal of Scientific American, January 7, 1893, and January 21, 1893.

1. General view of wheel and outer counterpoising 2. Side end view of wheel. 3. Bracing of wheel shaft. 4. Counterpoising. 5. Adjustment for varying water level.

ADJUSTABLE UNDERSHOT WATER WHEEL FOR VARYING WATER LEVEL, OF THE POTSDAM RED SANDSTONE CO.—[See page 38.]

STOP NO. 4 Gouverneur-type marble about 4 miles west of Canton on highway 11.

Recumbant folding of marble and a thin layer of silicate minerals within that marble. This is the "snake" outcrop described in Brad Van Diver's book, Rocks and Routes of the North Country, and in field trip 2 of this guidebook. If the spray-paint antics of anguished lovers, religious zealots and fraternity pledges permit, we will observe a diopsidic reaction rim between the marble and the layer whose mineralogy includes quartz, microcline, sphene, phlogopite, pyrite, actinolite and tourmaline. The layer may have originated as air-born volcanic ash.

STOP NO. 5 "Train wreck" outcrop. Fragments of "basaltic" rock in Gouverneur-type marble.

An outcrop eminently suited for black and white photography. Clustering of blocks and their rectangular outline suggests disruption of a basaltic dike during folding. Mineralogy of the dike, however, is adjusted to metamorphic conditions. Plagioclase is absent in contact zones in the dike rock which contains meionite scapolite, diopside, microcline, sphene, tremolite, biotite, quartz, tourmaline, and apatite. This lengthy roadcut also contains a basaltic dike that is not disrupted.

STOP NO. 6 Popple (Poplar) Hill migmatite, 1/2 mile north of intersection of highway 58 and Fowler Road, Gouverneur quadrangle.

Best exposure of Major Gneiss in the northwest Adirondacks. A good introduction to problems of origin for migmatite and for the protolith of a widespread rock type in the Canadian Shield. This oligoclase-K-feldspar-quartz-biotite, sometimes sillimanite-garnet gneiss lies between the carbonate units and is traceable for more than 70 km from Philadelphia, New York, to Colton. It is consistently gray and fine-grained except where strewn with convolute quartzo-feldspathic veins, boudins, K-feldspar porphyroblasts, amphibolites and thick sill-like bodies of leucogneiss, all of which are visible at this outcrop. See the discussion for stop number 4 in Field Trip number 4, this guidebook.

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