

## THE STONECUTTER & THE MISSOULA FLOOD ERRATICS

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*In 1884 a local stonecutter installed a granite cornerstone in the new Catholic church under construction in Vancouver, Washington. The origin of this block of stone has presented something of a mystery. Was it mined from the only vein of granite in the area, which lay at some distance and several thousand feet in elevation, or was it somehow obtained from a source much closer at hand? An examination of competing geological theories and information provided by local residents helps to solve this puzzle.*

On the first day of November 1879, Victor Zepherinus Barthelemy filed a homestead claim in the LaCamas area of Washington Territory, about 15 miles east of Fort Vancouver. He, his wife, and two sons lived in a 300-square-foot cabin that Barthelemy had built in October of that year. The family had only recently traveled to the area from Ohio, where both sons were born and Barthelemy had been raised. Relatives on his wife's side of the family had already homesteaded in the LaCamas area; Barthelemy selected a parcel immediately adjacent to theirs.

Although he was raised in the United States, Barthelemy had been born in France in late 1841 or early 1842 and emigrated with his family to the United States in 1849. On November 7, 1854, Victor's father, John Barthelemy, received United States citizenship in the common court of Montgomery County, Ohio. As John's minor son, Victor also was granted citizenship.

Despite the establishment of several adjacent homesteads in the area, the 1880 census of the Washington Territory describes the locale surrounding the "House 20 - Family 20" homestead of the Barthelemys as "Mountainous country—no villages, Clarke County." When queried, 38-year-old Victor Barthelemy gave his occupation as "Stonecutter."

Luckily for Barthelemy, the La-Camas area was soon selected as the site for a new paper mill. Henry J. Pittock, a prominent Portland resident, formed the LaCamas Colony Company shortly after inspecting the LaCamas area on May 12, 1883. The company purchased 3,000 acres of land—mostly forested, embracing three lakes and both sides of LaCamas Creek down to the Columbia River. This gave the company rights over a lake several miles square and a stream more than a mile in length with a fall of approximately 130 feet. With the resources and planning in place to make the site a center of industry, the associated town of LaCamas boomed.

On January 3, 1884, a note in the *Independent*, a newspaper in the nearby community of Vancouver, addressed the preparations for construction of the new paper mill and noted, "The granite quarry is to be opened at once...."

On Thursday, July 31, 1884, the Vancouver *Independent* ran an article under the headline, "Imposing Ceremony," which described events surrounding the formal dedication of the new Catholic cathedral, specifically relating, "Sunday last, July 27th, was the day appointed for the laying of the cornerstone of the new cathedral in Vancouver." The article notes the arrival of 150

"friends" on a steamer from Portland and names the many "right reverends" and "very reverends" present, including the "Rt. Rev. Aegidius Junger, D.D., bishop of [Nisqually], dressed in full pontificals." The article describes Bishop Junger, "thence proceeding to the cornerstone, a huge beautiful granite 36x24x18 inches, quarried, dressed and presented by Mr. Bartholomy [sic] of LaCamas, W.T., where the stone is found, his lordship blessed and signed it."

After the reading of a formal dedication statement by Father Schram, a copy of that document was placed into the cornerstone along with:

*1st. Relics of the Saints. 2d. Medals of the sacred heart of Jesus, of the immaculate conception of St. Joseph, of the angel guardian and St. Aloysius. 3d. A bunch of Irish shamrock. 4th. Coins of the U. S. of America, England, France, Belgium, Pontifical States, Prussia, Spain, Mexico and Sweden. 5th. Copies of the Catholic Sentinel, Monitor of San Francisco, New York Freeman's Journal, Vancouver Independent and Register, daily Standard, daily Oregonian and West Shore of Portland.*

*After the Rt. Rev. bishop had cemented the cap over the opening where the documents, etc., were placed, he proceeded with the blessing, after which Rev. P. Gibney delivered the oration, keeping his audience spellbound by the eloquent expoundings of the great Catholic truths. A collection was taken up, realizing the gratifying amount of \$165.*

The article concluded by noting that the cornerstone bears a Latin inscription that in English says:

*This temple of God was built under the great Pontiff Leo XIII and Aegidius Junger, II Bishop of Nesqually In the year of our Lord 1884.*

The *LaCamas News* first began printing in May 1887, and the following advertisement appeared on December 23, 1887: "V. Z. Barthelemy. Dealer in marble and granite. Monuments and Gravestones. Lots inclosed [sic] in granite or soft stone. Also contracts in all kinds of stonework. All communications addressed to me will receive prompt attention. LaCamas W.T."

A brief entry in the "Local Items" section of the *LaCamas News* on January 18, 1889, states: "A nice block of dressed granite was shipped from the wharf in this town for Corvallis, Oregon, last Wednesday."

From these notices, it appears that Victor Barthelemy was clearly able to obtain granite in the LaCamas area as raw material for his stonecutting trade. Granite is an igneous rock that is typically derived from rising magma. These rising magma bodies (known to geologists as plutons) may intrude into the surrounding rock but typically never reach the surface of the earth via a volcanic pathway or outlet. Trapped in the earth, magma cools slowly, allowing larger crystals to form within the rock structure. Because granitic rock forms within the earth's crust, it is usually only exposed when long-standing erosive processes remove the overlying geology.

The modern town of Camas (which dropped the "La" portion of its name in 1894 to avoid confusion with the Washington towns of LaCenter and LaConner) has a nearby quarry in the Fisher's/Prune Hill area west of town that is well-known for the quality of its basalt rock. However, detailed geologic mapping of the southwest Washington region only shows one outcrop of granitic rock near the Camas area. That outcrop, the Silver Star pluton, is a deep-seated intrusion of what geologists call granodiorite and quartzdiorite on the eastern slope of Silver Star Mountain. The peak and intrusion lie northeast of Camas at a straight-line distance of 22 kilometers, through thick Cascade Mountain forests of Douglas fir and western hemlock.

Although granitic rock may have been obtainable there, it does not seem practical that Barthelemy traveled all the way to Silver Star Mountain and ascended over 4,000 feet in elevation for source material, especially in that horse-powered era. Barthelemy's source of granite must have lain closer at hand.

In 1935 geologist Ira Allison published a paper in the *Bulletin of the Geological Society of America* titled "Glacial Erratics in the Willamette Valley." In this paper he recounted that the occurrence of "foreign boulders" in Willamette Valley had been known for many years. Many of these boulders also exhibited the well-defined scoring and striation that definitively tied them to a glacial origin. Yet these rocks were repeatedly discovered in areas where no other evidence of glaciation was apparent. Allison quoted J. S. Diller of the fledgling United States Geological Survey, who reported in 1896, "A number of boulders [sic] of granite and schist were observed under conditions that strongly suggest transportation by ice, probably in the form of icebergs...." Allison also excerpts a 1915 paper by C. W. Washburne who wrote: "Erratic boulders of granite occur on the hillsides [of Yamhill County] up to an altitude of 400 feet." Exactly how the boulders came to be there was the subject of some controversy.

Allison related that these previous researchers generally agreed that the uniformity in maximum elevation of the deposition clearly indicated that the erratics could only have been emplaced as part of a strand line of icebergs floating upon a body of water. This proposed inundation of the Willamette valley was not altogether shocking. In 1871 Thomas Condon, the "Father of Oregon Geology," had postulated just such a submergence based on the elevations of certain stratigraphic features in the Shoalwater [now Willapa] Bay area and fossil beds near the mouth of the Deschutes River in the Columbia River Gorge. Condon theorized that the body of water was a large inland estuary, much like Washington's Puget Sound; he called it the Willamette Sound.

In 1919 J. Harlan Bretz had expanded Condon's Willamette Sound concept by interpreting the existence of the few erratics in the Willamette valley and the more numerous ones on the east side of the Cascades as evidence for an estuary even larger than that described by Condon. Bretz abandoned that theory in 1923, instead promoting the idea of a Spokane Flood, an event of catastrophic scale.

While conducting field research in eastern Washington, Bretz had become convinced that the landscape he encountered could only have been shaped by a flood of enormous proportions. His efforts to document the size of the flood and to convince a pantheon of eminent but skeptical geologists have been well-reported in many publications, including this one (see "The Great Columbia Flood," by Tom Mullen, *COLUMBIA* 19 (Spring 2005). Bretz's flood was not widely accepted by the geologic community until many years after its initial proposal, when a water source capable of instigating such a cataclysmic event was finally identified.

Only in 1942 was Bretz's flood inextricably linked to the Cordilleran-era Lake Missoula of Montana, which formed when advancing glacial ice dammed the Clark Fork of the Clearwater River. When the lake level rose high enough, the impoundment caused the ice dam to lift; water then undermined the obstruction, releasing a flood that was unprecedented in scale and catastrophic in scope. Eventually, scientists recognized that the single Spokane Flood proposed by Bretz had actually been more than 40 and possibly as many as 100 unique glacial outburst flooding events, each one capable of scouring great portions of Washington and Oregon down to bedrock and inundating vast areas with temporary lakes. Over time, these events have come to be known as the Missoula Floods.

The physical effects of these floods have been well-documented on the east side of the Cascade Mountains where they carved out dry falls and coulees and deposited thick sediment beds in backwater areas. In the Willamette valley the physical effects are less visible, but it is generally recognized that the elevations of erratic boulders deposited by the floods indicate the entire valley was submerged at least once to a maximum limiting elevation of 400 feet above sea level. Repeated inundations by smaller volumes certainly covered the basin multiple times, leaving several strand lines below the maximum extent of inundation.

Typically, the floodwaters burst from the mouth of the Columbia River Gorge and spilled out over the Portland basin, leaving pendant gravel bars trailing out many miles behind the monolithic volcanic vents of Rocky Butte and Mount Tabor in Oregon as well as Prune Hill in Washington. In other areas, floodwaters scoured down to bedrock, leaving behind pothole type "kolk" lakes. Often, landscape-sized features emplaced by one flood were incised or retransported by the next. As the waters poured down the channel of the Columbia River and filled the Portland basin, hydraulic damming occurred at the Kalama narrows, causing the floodwaters to rise and backfill into the Willamette valley.

Although Ira Allison identified at least five early publications noting the existence of erratic boulders, his 1935 work was the first paper to specifically investigate the topic. Allison summarized the literature and his fieldwork, saying, "No less than 300 occurrences...have been recorded and the list is still growing.... Counting only the boulder sizes, the erratics number hundreds; including the pebble and cobble sizes, the total is probably many thousands."

In an attempt to determine whether Victor Barthelemy was actually using Missoula Flood erratic boulders as source material, the author researched and obtained information on the precise location of the old granite "quarry" on Woodburn Hill between the modern communities of Camas and Washougal. First-person interviews with local historians and quarry neighbors revealed many stories, though few could be substantiated.

"Certainly there was granite up on the hill, but most of it was all taken out." said one, "Several buildings in Portland were faced with it." "Some young men came in the 1960s from Washington State University and examined the deposit." said another, "They left quite excited, but I never heard anything more."

When queried about the origin of the granite and the possibility of its being erratic boulders of Missoula Flood origin, all the neighbors remarked that they thought the granite was a belowground deposit that was dug out or uncovered in place, though they had no actual firsthand knowledge.

Examination by the author of the quarry site on Woodburn Hill (240 feet in elevation) revealed several interesting details. Several large shards of granite lay about the site, many showing drill holes two to three inches deep. These drill marks were invariably arranged along the edge of a split face of boulder, as though they had been used to weaken a certain axis or provide prying points used to split a boulder into a certain desired shape.

Further examination of the nearby slope revealed intact granite boulders (up to the dimensions 3'x3'x5') resting on the surface. Recent road construction in another nearby area revealed other smaller, softball-sized granite cobbles under the surface. Finally, other types of exotic rocks were also found on the hillside, including quartzite cobbles and a single piece of banded sandstone. No evidence of granitic intrusion, deformation associated with intrusion, or matrix modification associated with the heat of granitic intrusion was found that would support the

existence of a granitic outcrop occurring on the hillside. Consultation with professional geologists from both the Washington State Department of Geology and Earth Resources and the United States Geological Survey supported the supposition that there is no physical evidence for granitic intrusion on that hillside.

In light of these field results and professional opinions, it seems likely that Victor Barthelemy was using Missoula Flood erratic boulders as source material for the gravestones and monuments he advertised. The reference to the opening of the granite quarry, published in the *Vancouver Independent* on January 3, 1884, followed by the July 27, 1884, cornerstone-laying ceremony at the St. James Catholic Cathedral in Vancouver, may provide the earliest known references to Missoula Flood erratic boulders in the Willamette River valley.

In 1986 (only 50 years after Allison's work), geologist John Eliot Allen wrote, "Probably less than 50 of the many hundreds of boulders observed by Allison in the 1930s can be observed today. They have been broken up for road metal, built into foundations, made into steps, used in rock gardens or hauled away and buried." While this statement is true, it is likely Allen never suspected that this process started as early as 1884.

Some of the most notable Missoula Flood erratics that are still readily observable include the Belleview erratic, located just off Highway 18 in Oregon, between McMinnville and Sheridan. A roadside sign directs interested sightseers to the erratic itself, which is half a mile north of the highway in a small state park. Additional erratics may be viewed outside the Oregon Museum of Science and Industry (OMSI) in Portland and outside the science building on the branch campus of Washington State University in Vancouver.

Another erratic is important for reasons beyond its manner of emplacement. The Willamette meteorite, the largest ever found in the United States and sixth largest in the world, is now on display in the Rose Center for Earth and Space in the American Museum of Natural History in New York City. Recently, other boulders of exotic origin were discovered at the meteorite's original location, supporting the idea that the meteorite originally fell on and was incorporated into the Cordilleran ice sheet. Untold millennia later it was ice-rafted to Oregon by one of the Missoula Flood events.

Multiple conversations between the author and historians in Benton County, Oregon, wherein lies the city of Corvallis, could not identify the disposition of Barthelemy's "nice block of dressed granite" noted in the *LaCamas News* in 1889. However, the granite cornerstone he provided to the St. James Cathedral in Vancouver can still be seen today, to the immediate right of the stairs at the south entrance of the building.

Finally, the sunny, south-facing slope of Woodburn Hill between Camas and Washougal, where Victor Barthelemy labored over Missoula Flood granite erratics, is slated for suburban development. In a nod to its history, the neighborhood tracing down that hillside has been named "Granite Highlands."

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