



A Relic Comes Home

by Pam Frazier, Deputy Director

The word “relic,” as defined by Webster, appropriately describes the “esteemed and venerated object” that recently found its way back to Kolb Studio. Looking a bit like an early robot, the original Power’s Cameragraph projector that showed the Kolb brothers’ famous river-running film for many years has reclaimed its rightful place in the projection room.

As William Suran describes in his book *The Kolb Brothers of Grand Canyon* (published by GCA in 1991), “One cold winter night, when the wind whistled in the eaves and a fire crackled in the fireplace, the Kolbs discussed their plan to film a journey through the canyons of

the Colorado and Green rivers, retracing John Wesley Powell’s 1869 trip through this uncharted territory.” Showing the film to visitors would be another way to keep their photography business solvent. They ordered a motion picture camera and two flat-bottomed wooden boats built to their specifications. In September 1911, they set out in two boats from Green River, Wyoming.

By mid-November they had reached the heart of the Grand Canyon and hiked up the Bright Angel Trail to spend a month at home developing film and catching up on business. On December 18, despite cold weather, they resumed their journey,

concluding it a month later when they pulled ashore at Needles, California.

continued page 2

GCA’s Bill Brookins (left) and Daniel Repony installing the original Kolb brothers’ Power’s Cameragraph movie projector at Kolb Studio, June 6, 2006. Photograph by Conrad Szelock



Inside:

| | |
|--|----|
| Superintendent Alston Recovers from Hip Surgery | 2 |
| A Walk on the Wild Side | 3 |
| All in the Family | 4 |
| Really Warm Fire | 6 |
| Over 10,000 Served: GCFI Reaches an Enrollment Milestone | 8 |
| Registration for 2007 Grand Canyon History Symposium Begins in October ... | 9 |
| Canyon Country Community Lecture Series Schedule | 9 |
| Carving Grand Canyon | 10 |
| Canyon Buzz | 11 |
| Calendar | 12 |

The brothers had accomplished their goal, but the U.S. Forest Service supervisor, then in charge of Grand Canyon National Monument, denied them permission to show their film publicly at Grand Canyon. Suran writes, “Never willing to accept defeat, the brothers took the film on tour in the East . . . [narrating the film] to capacity audiences in numerous major cities,” including at the National Geographic Society in Washington, D.C.

By 1915, the forest service relented, agreeing to let the Kolb brothers show the film at the canyon. The brothers added an auditorium to their building on the canyon rim, and they were soon ready to show what would ultimately become the longest-running film in history. Enter the Power’s Cameragraph projector, which would continue to serve them for more than 50 years. (Emery bought a new projector in the late 1960s.)

The projector was recently discovered in the basement of the Williams-Grand Canyon Masonic Lodge #38, where it had been stowed more than 40 years ago by Emery’s friend and colleague Leo Atherton. Kolb and Atherton had both contributed artifacts to the Williams Chamber of Commerce to be used in a new museum of Grand Canyon memorabilia. When the museum venture failed, Atherton put the projector in the basement for safekeeping.

And that’s where building chairman, Daniel Repony, recently uncovered it during renovation of the historic lodge. Repony suggested that Atherton donate the projector to the National Park Service with the stipulation that it be returned to its original home. With Atherton’s approval, Repony took the heavy projector apart, delivered it to Kolb Studio, and reassembled it in place to the delight of visitors and history buffs.

Power’s Projectors were, along with Edison’s machines, the first American film projectors produced on a commercial scale. Thousands were sold in the U.S. and abroad. It is not a rare machine, but it is “esteemed and venerated” for its authenticity. The Kolbs’ projector was patented in 1906. It ran on DC current (50-65 volts/15-30 amps, for you techies) and used Peerless carbon arc lamps for illumination through a Bausch and Lomb optical lens. The lamps produced so much heat that the projection booth was sheathed in metal.

Be sure to stop by Kolb Studio to see the projector next time you are in the park. It doesn’t take much imagination to see Emery at the switch with beads of sweat rolling down his face.



Superintendent Alston Recovers from Hip Surgery

Congratulations to Grand Canyon National Park Superintendent Joe Alston, who has made a successful recovery from hip replacement surgery he had in January. Joe and his wife Judy have completed a number of significant hikes as part of his recovery program, including a rim-to-rim, a hike to Supai, and an off-trail adventure to the top of the Battleship on May 28. Tagging along on the latter hike were GCA Executive Director Brad Wallis, GCA Public Relations Manager Helen Thompson and GCFI guide Wayne Ranney.

Atop the Battleship. From left: Wayne Ranney, Helen Thompson, Judy Alston, Joe Alston, and Brad Wallis. Photograph by Helen Thompson



A Walk on the Wild Side

by Brad Wallis, Executive Director

Since the founding of the Grand Canyon Natural History Association in 1932, it has been our mission to support science and education at Grand Canyon National Park (GCNP). In fact, Edwin D. "Eddie" McKee, then the park naturalist, was the first person to serve as the association's executive secretary (equivalent to my title today). Often our efforts in supporting education seem to overshadow our support of science.

Many of our members will be aware that GCA aids the National Park Service (NPS) in the development and production of the park's newspaper *The Guide*, which is published four times a year and is available in six languages. In addition, we publish the *Backcountry Trip Planner*, the *North Rim Guide*, the *Accessibility Guide*, site bulletins and many other free educational publications for park visitors. GCA also works directly with the park in the development of *Nature Notes*, a periodic companion to *Canyon Views*.

Did you know, however, that GCA supports scientific research within the park? Recently, we matched a generous donation from Earth Friends, a nonprofit organization focused on protecting wildlife, to help fund an NPS study of desert bighorn sheep. GCNP is home to the largest wild population of desert bighorn sheep in the nation. Despite this, Grand Canyon wildlife biologists do

not yet know the locations of desert bighorn lambing grounds. In an effort to identify and protect these lambing areas, GCNP will begin a limited collaring program in the fall of 2006. Selected bighorns will receive satellite-transmitter collars, which will help park biologists monitor seasonal migrations and locate the lambing grounds. Once identified, the lambing grounds will be protected from human encroachment to insure that pregnant ewes and newborn sheep are afforded a safe environment in which to begin their journey.

GCNP also recently requested that GCA establish a working relationship with the Colorado Plateau Cooperative Ecosystem Studies Unit, a collaboration of federal land management agencies, universities and area museums, specializing in the study of the Colorado Plateau. In cooperation with this entity, GCA offered a \$30,000 fellowship in 2005 for scientific studies related to Grand Canyon. In an average year, the national park may have up to 300 scientific research permits outstanding, but these are requests from outside scientists studying specific subjects of their choosing and are not directed by the national park. The GCA fellowship, in contrast, is directed by GCNP, allowing park managers to select and fund projects that meet their highest priorities for scientific research. In

2005 the park selected an archaeology study focusing on the earliest evidence of a human presence at Grand Canyon. With the recent discovery of a Clovis projectile point fragment, it now seems likely human habitation of or travel through the region dates back at least 11,000 years. GCA also approved \$30,000 for scientific research in 2006, funding which has not yet been allocated by the park.

Since the days of Eddie McKee, GCA has worked in cooperation with GCNP to fund top-quality scientific research that aids in protecting and preserving the natural community of this world-class resource. Often, just a little kernel of scientific knowledge will significantly affect park planning and will help ensure that the NPS mission of maintaining park resources "unimpaired for future generations" continues to be met.

Some of the park's desert bighorn sheep will be tracked with satellite-transmitter collars, a project partially funded by GCA. Photograph courtesy U.S Fish and Wildlife Service

All in the Family

by Hap Williams

Say the words “national parks” and most people will think of bears, wolves, wildflowers, lakes, mountains, starry skies . . . and family (family picnics, family sightseeing trips, family camping trips, family vacations). Say “national parks” to the Verkamp family, and they think of the family *business*. This year, Verkamp’s Curios, the souvenir shop on the South Rim, passed the century mark as a family-owned business in Grand Canyon National Park. In fact, Verkamp’s is the oldest continuously family-owned concessioner in the National Park System.

Four generations of the Verkamp family have worked in the store, which offers Native American rugs, jewelry and pottery, as well as souvenir pins, pens, postcards, playing cards, whistles and T-shirts. Founder John George Verkamp built the present-day store in 1906. But even before Verkamp constructed the building

that was to house his family, his descendents and his business for the next century, he envisioned a successful tourist business at Grand Canyon. According to the late Margaret M. “Peggy” Verkamp, her father brought in Grand Canyon’s first souvenirs, for Babbitt Brothers Trading Company. In 1898 Verkamp displayed his curios in a rented Bright Angel Hotel and Camp tent. However, he abandoned his business after a few weeks when a steady stream of customers failed to materialize. Still, Verkamp saw early visitors come to the canyon on horse-drawn wagons, stagecoaches, and, by 1901, on the Santa Fe Railway. With more and more tourists visiting the canyon, Verkamp returned in 1905 to pursue his plans for his curio business.



Verkamp’s customers examine the wares with the help of employee Cherie Benefield. Photograph by Mike Quinn

Below: Verkamp’s Curios, circa 1910. Photograph by U.S. Forest Service, courtesy GCNP Museum Collection (#11365)





The 1906 building he constructed just east of Hopi House (1905) had display space downstairs and the family quarters upstairs. The family quarters included a large living room with a fireplace, a bedroom at each end of the building, a kitchen and a spectacular view of one of the world's greatest natural wonders. The pump that is still on the store's front porch drew drinking water from an underground cistern, which was once replenished by funneling rainwater from the roof. John George Verkamp's wife Catherine and their four children moved into the family quarters in 1936.

From President Theodore Roosevelt's proclamation of Grand Canyon as a national monument in 1908 to Arizona's admission to statehood in 1912 to the canyon's designation as a national park in 1919, Verkamp's business slowly grew and prospered. At the close of his first day of business in

the new store, on January 31, 1906, Verkamp noted in his ledger: "\$4.95 in sales—a good day!" Thirty years later, between 300,000 and 400,000 people visited the park each year, and in 2005 the park saw just under 4.5 million visitors. Continually serving those increasing numbers has been the ongoing job and pleasure of the Verkamp family.

The founder's son, John George "Jack" Verkamp Jr., managed the store for 55 years, with help from his wife Mary, his children and his sister Peggy. They survived the lean times brought on by two world wars and one Great Depression, and they prospered in the boom years as vacationers sought their "kicks on Route 66," with a short detour to the canyon.

Jack and Peggy trained Jack's children, the third generation of Verkamps working in the store, to

take inventory, re-stock and, most importantly, treat every guest as a member of the family. As the Verkamp's showroom overflowed with tourists, the Verkamp children grew used to the sound of "Help!" on the family intercom; they would come running when summoned to help visitors with their purchases.

Jack's son Mike managed the store for 25 years and spearheaded its 1988 renovation. Mike painstakingly restored the store's historical features and structural components, and he brought in new sales items that would appeal to modern-day shoppers.

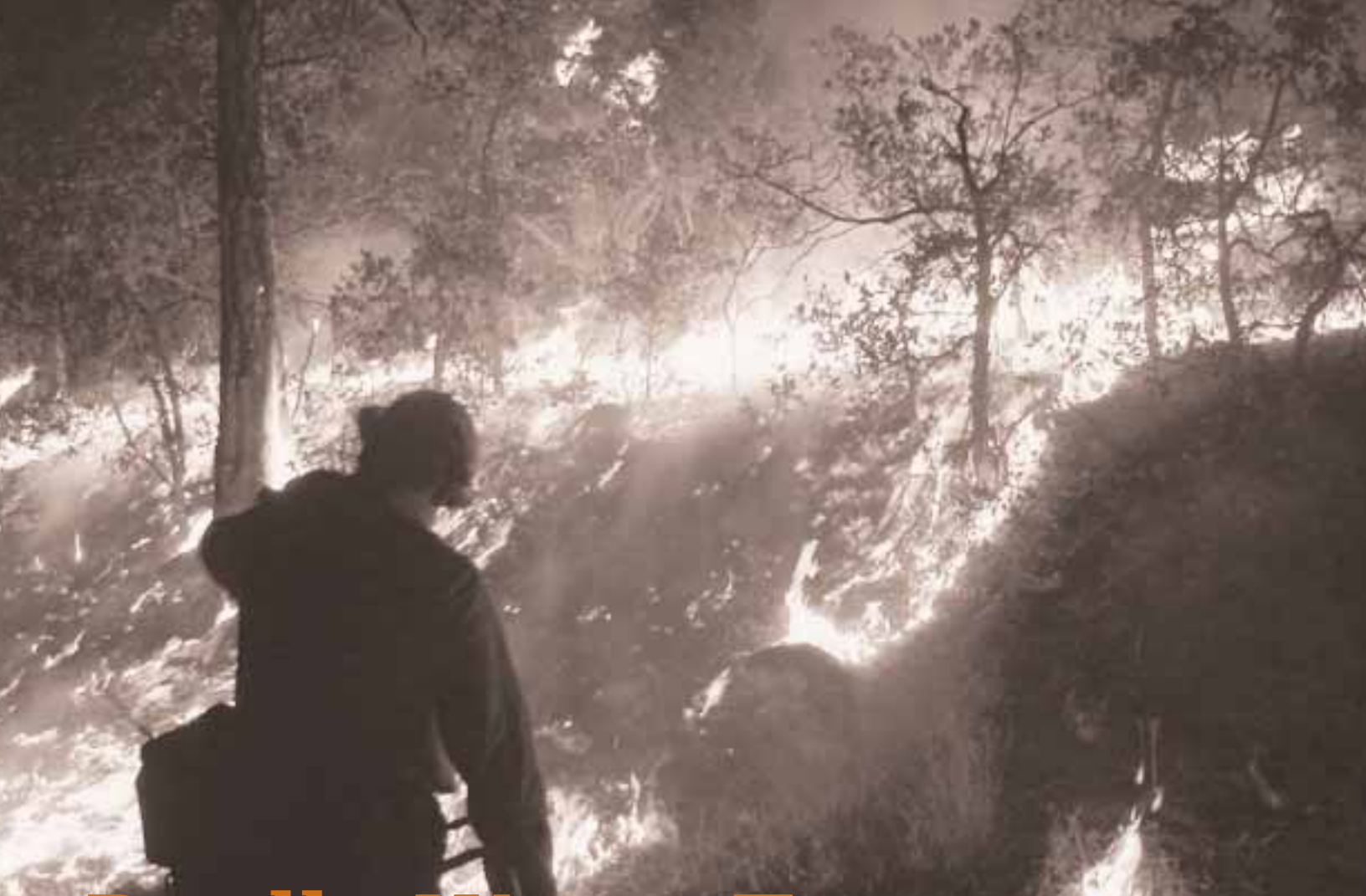
Visitors today can read plaques on the storefront about the store's history, but the building remains "just home" to the Verkamp family. This was evident on May 18, 2006, as park visitors, friends, family, and Grand Canyon residents gathered in front of Verkamp's Curios to commemorate the store's 100th anniversary. Speeches by Verkamp's Board President Susie Verkamp, Grand Canyon National Park Superintendent Joseph F. Alston and others gave weight to the ceremony.

All in the family—still. Even though Dan Ashley was hired in 1995 as the first non-Verkamp general manager of the store, Jack Verkamp's seven offspring make up the modern-day board of directors that oversees the business. Speaking proudly of continuing her grandfather's legacy in the second century of Verkamp's operation, Susie Verkamp said, "Despite all the changes over 100 years, the thing I am most proud of is the quality of service we give to our customers—it's our knowledgeable staff that keeps the tourists coming back."

You see, "families" and "national parks" do go hand in hand, especially at Verkamp's.

Hap Williams is a visitor use assistant with the National Park Service. She previously served as GCA's membership coordinator and as a floor manager at Verkamp's.

Looking out from the front door of Verkamp's during the 100th anniversary celebration, May 18, 2006. Photograph by Mike Quinn



Really Warm Fire

by Todd R. Berger, Managing Editor

On June 8, 2006, the North Kaibab Ranger District of the Kaibab National Forest was bone dry when lightning struck a ponderosa pine some three miles southeast of Jacob Lake. An unusually dry winter left much of the Southwest parched, and many in northern Arizona feared that conditions were ripe for a major wildfire.

At first, the small fire burning primarily in the heavy accumulation of pine litter on the forest floor caused little concern. The U.S. Forest Service categorized the blaze as “wildland fire use” status, meaning the fire would be monitored but allowed to burn in order to reduce the fire fuels on the forest floor. Although conditions were dry, the fire did not threaten “life, property or resources,” making wildland fire use status appropriate.

Named the Warm Fire, the blaze continued to behave just as fire managers expected it would. By June 11, U.S. Forest Service press releases noted that the fire, then covering approximately 105 acres, was actively burning and, thereby, rejuvenating “the landscape with low-to-moderate intensity fire.” As one press release notes, “The Warm Wildland Fire Use Fire is demonstrating how fire behaves when it is allowed to actively function as an ecological process. It is creating a mosaic across the landscape, with some areas burned at a low level of intensity and others burned at higher intensity.” In these first days, 88 fire personnel monitored the fire.

“From our management plan standpoint, it was doing well,” Tom Zimmerman, director of fire and aviation management for the forest service’s

Southwest region, told the (Flagstaff) *Arizona Daily Sun*. “It had moved to the east, into lighter fuel.”

All signs pointed to a fire under control contributing to the health of the forest. Many lightning-caused fires similar to the initial Warm Fire burn each year on the Kaibab Plateau and throughout the Southwest. This wasn’t a big deal—at first.

But by June 14, the fire began to grow rapidly. A storm system moving in from the east pushed the

A night-shift firefighter confronting the Warm Fire, June 21, 2006. Photograph by Brennan Baldwin, Engine 35, Cleveland National Forest

fire back into the dense ponderosa forest of the North Kaibab. The next day, the forest service closed the section of the Kaibab National Forest where the fire was active. It now covered 548 acres and initially burned in the direction of Jacob Lake, a tiny North Kaibab community that is home to a lodge, a campground, and the Kaibab Plateau Visitor Center, GCA's newest outlet.

Although the fire did not reach Jacob Lake, it did burn as far north as U.S. Highway 89A, closing the highway and cutting off direct access to the North Rim from Flagstaff, the South Rim, and other areas south and east of the North Kaibab. Between June 22 and June 26, the fire ballooned in size to some 30,000 acres of dense forest. The forest service soon recategorized the blaze as a wildfire, meaning it would be actively suppressed.

The next day, the number of personnel on the scene reached 470, including two hotshot crews. Armed with helicopters, air tankers, more than two dozen fire engines and several bulldozers, firefighters worked to build a fire line and slow the spread of the blaze, now moving to the south. The North Kaibab Ranger District of the national forest closed in its entirety that same day.

Grand Canyon National Park's North Rim also closed, along with Arizona Highway 67, the only paved access road to the northern section of the national park. The sudden, dramatic expansion of the burn area stranded some 950 tourists and employees at the North Rim. Although temporarily unable to leave the area by car, these people



were never in danger from the Warm Fire. It remained in the national forest some 25 miles north of the national park boundary.

The smoke, however, was not so polite. "The canyon is covered in smoke," Amber Boeldt, a tourist visiting the North Rim, told the *Arizona Daily Sun*. "That's all you can smell." The smoke soon spread to Grand Canyon Village on the South Rim, and ash fell like snow, coating cars and roofs and ponderosa pines all over the region.

Although Highway 67 remained closed, officials were able to escort some 200 people out of the North Rim area via a gravel road through the national forest on June 26. The long convoy snaked down off the Kaibab, reaching Fredonia some two hours later. The next day, after officials inspected Highway 67 and deemed it safe, the remainder of the visitors left, following a pilot car north along the otherwise-deserted highway. Most of the remaining employees left the same way on June 28.

Although the North Rim and the North Kaibab Ranger District were now closed, and most visitors and employees had left the area, the fire had grown nearly as much as it would. On June 28, the number of people fighting the fire also reached its zenith at 884 people. The firefighters, aided by an early start to the monsoon rains, finally cornered the blaze. It was considered fully contained by the evening of July 4. The burn area covered 58,300 acres.



On July 3, the North Rim reopened. "There was a steady stream of visitors," Grand Canyon National Park spokesperson Maureen Oltrogge told the Associated Press. "People arrived early and seemed very enthusiastic to have the (North Rim) open again." The North Kaibab Ranger District reopened three days later.

According to the Northern Arizona Incident Management Team, which took over active suppression of the Warm Fire on June 26, some 65 percent of the acreage burned at a low-intensity level, cleaning out the ponderosa pine litter but leaving the trees alive. The remainder burned at moderate to high intensity, and these areas are readily visible along Highway 67, with many trees burned all the way to their crowns. The ponderosas and other plants in some of these areas will not grow back.

Wildfire management in the Southwest is a tricky business. Experts estimate that 85 percent of the region's forests are badly in need of fire to rejuvenate the ecosystem. Fire goes with the territory, even fire that blazes its own trail.

Below, left: On the front lines of the Warm Fire, June 28, 2006. Photograph by Mike Gillespie, Northern Arizona Incident Management Team

Below, right: North Rim employees evacuating through the burn area along Highway 67, June 28, 2006. Photograph by John Pauls

Over 10,000 Served: GCFI Reaches an Enrollment Milestone

by Mike Buchheit, GCFI Director

The Grand Canyon Field Institute (GCFI), GCA's field seminar program, reached an overall enrollment milestone this year by surpassing 10,000 participants since the inception of the program in 1993. This includes participation in everything from single-day rim walks to our annual eighteen-day Colorado River float trip, and it translates to well over 300,000 educational contact hours.

Formed at the request of Bob Chandler, then the superintendent of Grand Canyon National Park, GCFI has emerged as a nationwide leader in association-based outdoor education. GCFI works closely with the National Park Service (NPS) as a complement to their wide-ranging interpretive efforts. All GCFI endeavors are approved by the NPS. Each has an educational component that addresses either the natural or cultural history of the Grand Canyon region, or provides training for the larger guiding community.

Whether it's an archaeological survey in support of the national park's Science Center, a rim-to-rim backpack with a seasoned geologist, wilderness medical training for outdoor professionals, a lecture on backcountry travel, or a day hike on the Bright Angel Trail with a vacationing family, GCFI is in the business of providing quality education and training for park visitors and for the people who serve park visitors.

Doing the heavy lifting is GCFI's team of knowledgeable instructors. An eclectic mix of scientists, historians, authors, academics and former park rangers, these dedicated individuals (independent contractors in most cases) lead anywhere from one to a dozen classes annually in addition to their myriad responsibilities elsewhere.

Our students hail from all fifty states and every continent around the globe. It's a hard group to

pigeonhole, but the typical participant (as determined by a recent demographic survey) is a forty-something female from an urban setting in the Southwest. She possesses an advanced degree, is a frequent visitor to public lands, and is employed in the educational, legal, or health care professions.

To say that GCFI has cultivated a large number of "groupies" would be an understatement. A typical class is composed of 30 percent returnees (high by industry standards), some of which have participated in more than a dozen GCFI classes over the years.

GCFI continues to be an engine for bringing new members into the GCA family. GCA members represent some of the most passionate champions of the GCFI program. To acknowledge this ongoing support GCFI extends a member's discount for most GCFI classes.

For a full listing of GCFI classes and biographical information on our talented team of instructors, visit GCFI's Web site at <http://www.grandcanyon.org/fieldinstitute>. Space is available in most of this year's remaining classes. We encourage you to let GCFI show you the canyon as you've never seen it before!

Instructor Wayne Ranney discusses canyon geology with a GCFI class. Photograph by Mike Buchheit





Registration for 2007 Grand Canyon History Symposium Begins in October

On January 25–28, 2007, the Grand Canyon Historical Society, the Grand Canyon Association, the National Park Service, and Xanterra will host the 2007 Grand Canyon History Symposium at the Shrine of the Ages on the South Rim. Speakers with widely varied backgrounds will discuss aspects of Grand Canyon history from prehistoric times to the twentieth century. Attendance at the symposium will be limited, and the historical society encourages anyone interested in attending to be prepared to *register on-line* when registration opens on **October 16, 2006, at 8:00 a.m. MST**. For more information about the symposium and on-line registration, please visit <http://www.grandcanyonhistory.org/symposium.html>.

Canyon Country Community Lecture Series Schedule

Flagstaff, Wednesday, September 27, 7:00 p.m.
Preposterous Landscapes: The Arizona-Utah Borderlands

Presented by Gary Ladd

The Arizona-Utah border is a stunning landscape of ecological diversity and geologic features ranging from soaring mountains to nearly impenetrable canyons. Photographer Gary Ladd will take you to many of the border country's wildest areas.

Prescott, Sunday, October 15, 2006, 1:00 p.m.
Fire and the Southwest Ponderosa Forest
Presented by Bryan Bates

Prior to Euro-American settlement, the Southwest's forests burned every two to ten years. These natural fires reduced tree density, recycled nutrients and improved the health of forests. Bryan Bates will discuss the natural and human-caused shifts in the Southwest's forests over time.

Flagstaff, Wednesday, October 18, 7:00 p.m.
Flagstaff's "America Tour"
Presented by Tom Paradis
 Geography professor Tom Paradis will take you

on a virtual tour that explores five distinct American cultural landscapes in Flagstaff, through their historical development, architecture, and urban design.

Flagstaff, Wednesday, November 15, 7:00 p.m.
Glen Canyon Dam: Impacts and Solutions
Presented by Andre Potochnik

Glen Canyon Dam on the Colorado River profoundly impacts the downstream river ecosystem in the Grand Canyon. Andre Potochnik, Ph.D., will discuss the state of the river ecosystem, actions that have been taken and future directions for preserving the natural, cultural and recreational resources in the Grand Canyon.

Prescott, Sunday, November 19, 1:00 p.m.
Life in Stone
Presented by Christa Sadler

If you've ever wondered what creatures wandered this area before we got here, you're a paleontologist at heart. Join paleontologist Christa Sadler on a trip back in time through northern Arizona and the Four Corners region.

Prescott, Sunday, December 19, 1:00 p.m.
Prickly Plants of Grand Canyon
Presented by Sally Underwood

Join Grand Canyon Field Institute instructor and Prescott native Sally Underwood as she discusses the cacti, yuccas and agaves found in Grand Canyon. You will never look at this group of prickly and pokey plants the same way again.

Flagstaff lectures are held at Cline Library, at the intersection of Knoles Drive and McCreary Road on the NAU campus. Parking is available to the west of the library (Lot P13 on Riordan Road).

Prescott lectures are held at Sharlot Hall Museum, 415 W. Gurley (two blocks west of Courthouse Plaza). Space at the Prescott lecture series is limited; please call (928) 445-3122 to inquire about seating. All lectures are free and open to the public. For more information, call GCA at (800) 858-2808, ext. 7033, or visit us on the Web at <http://www.grandcanyon.org>.



Carving Grand Canyon

by Wayne Ranney

One of the most commonly asked questions at Grand Canyon National Park is, “How old is the Grand Canyon?” After almost 150 years of scientific study it seems there would be a quick and easy answer. It’s not that simple, however, because the more geologists delve into the details of this question, the more they disagree on how and when the canyon was likely carved. Geologists can agree on a broad outline of events and processes, but the specifics still elude us.

The problem arises because as the Colorado River chisels deeper into the landscape, it causes the canyon to widen, removing more and more evidence of its already hazy origins. It is possible that humans arrived here too late to ever know with certainty the details of how and when the canyon formed. Yet the question remains, and our curiosity is piqued, when we consider the origins of this world-class landscape feature. So what exactly is known about the carving of the Grand Canyon?

John Strong Newberry was the first geologist to view the canyon. In 1859 he espoused the basic observation that the Colorado River eroded the canyon. This might seem all too obvious to many of us today, but back then, the known geology of the Southwest was limited. At first glance, even a mid-1800s geologist might think that it could have been formed by a giant rift in the earth’s crust that was later occupied by the Colorado River. Newberry noticed, however, that the stratification on either side of the river was “conformable,” that is, not offset by faults. Up to this time, no other place like the Grand

Canyon had been studied, and Newberry’s initial observations of the canyon helped spawn a new branch of geology known as fluvialism—the study of how erosion by running water creates landforms.

So when speaking of the origin of the Grand Canyon, we also ask questions about the origin of the Colorado River. The broader study of the geologic evolution of the Rocky Mountain West tells us that when seawaters last withdrew from the Grand Canyon region some 80 to 90 million years ago, the initial river system imprinted on the landscape flowed from southwest to northeast, *opposite the direction that the river flows today*. Ironically, this seemingly contradictory scenario is the one idea regarding the history of the river on which most geologists agree.

If the river flowed the other way, when did it reverse its course? Certainly, the formation of the San Andreas Fault in California is a pivotal event in the geologic history of the Grand Canyon. When this fault was born about 17 million years ago, it caused subsidence (sinking) in the formerly mountainous landscape, destroying the ancient mountains that once held the headwaters of the northeast-flowing streams. These ancient rivers would have been compromised by this, and they may have dried up, become ponded, or even been partially reversed. But as the San Andreas continued to rip through the Southwest, rivers must have been redirected south and west as the land along the lower Colorado River corridor sank. Perhaps the course of the river in Grand Canyon had already been imprinted upon the landscape at this time.

By 5.3 million years ago, the Colorado River can be identified as flowing west off the Colorado Plateau and into the Gulf of California. However, at this time the Grand Canyon was probably less than half as deep as it is today, perhaps entrenched only into the Hermit or Supai formations. Imagine a river flowing along the same course we see today, but set within the youthful confines of a much smaller and shallower Grand Canyon.

With the beginning of the last ice age about 2 million years ago, all of western North America became wetter, and large glaciers grew and expanded in the Rocky Mountains. As these glaciers periodically retreated, large volumes of runoff flowed through the Grand Canyon, moving huge boulders along the bed of the river. In combination with the continued lowering of the landscape to the west along the Toroweap and Hurricane faults, these huge meltwater floods scoured deeper into the Redwall and Tonto Group formations. Eventually, perhaps as recently as only 1 million years ago, the river exposed the Vishnu basement rocks. Essentially, the Inner Gorge of the Grand Canyon is a giant, youthful slot canyon. And as the river’s track deepened, other forces of erosion, such as undercutting and gravity, made the canyon wider, revealing the spectacle we see today.

These are the broad outlines of how and when the Grand Canyon came to be. But not all geologists agree. Some think the canyon was cut much earlier—as long as 80 million years ago. Some think that catastrophic floods 5.3 million years ago played a role. That is part of the intrigue and mystery of this phenomenal landscape. We may never know the details but remain humbled by the results.

Wayne Ranney is the author of Carving Grand Canyon, published by GCA. He is also a Grand Canyon Field Institute instructor and an adjunct professor of geology at Yavapai College in Sedona.

Top, left: John Strong Newberry, the first geologist to see the Grand Canyon. Photograph courtesy U.S. Geological Survey

Opposite: The Colorado River from Toroweap. By 5.3 million years ago, the river was flowing west, but the Grand Canyon may only have been half as deep as it is today. Photograph courtesy GCNP Museum Collection



Canyon Buzz

GCA and Park Activities Since the Last Issue of *Canyon Views*

June 13: GCA Facilities Manager Chris Maragos and his significant other Kate LaPierre welcomed the birth of their daughter Sophia Christine. GCA held a baby shower in Sophia's honor on July 21.

June 15: Yavapai Observation Station, including GCA's bookstore, reopened to the public after a ten-month renovation.

June 18: Lasting Light: 125 Years of Grand Canyon Photography opened at Kolb Studio on the South Rim. The exhibit continues through October 15.

June 26: The National Park Service closed Grand Canyon National Park's North Rim as a result of the Warm Fire, which was burning in the Kaibab National Forest north of the national park. The North Kaibab Ranger District of the national forest closed the next day. (See story on page 6)

June 30: On the 50th anniversary of the commercial airliner collision over the Grand Canyon, which killed 128 people, GCA sponsored a lecture at the Shrine of the Ages. Author Dan Driskill, Emery Riddle Aeronautical University professor William Waldo, and moderator Richard Quartaroli discussed the accident and its aftermath.

July 21: California Condor 134, which had been receiving treatment at the Phoenix Zoo for acute lead poisoning, was re-released to the wild at Vermilion Cliffs National Monument after five months of captivity. Condor 122, which also suffered from acute lead poisoning, is awaiting his freedom at the Peregrine Fund's treatment facility near Marble Canyon.

August 4–6: Grand Canyon National Park's North Rim celebrated the 13th annual Native American Heritage Days, with activities and performances related to Havasupai, Hopi, Hualapai, Navajo and Paiute culture.

September 1–4: GCA exhibited at the Coconino County Fair in Flagstaff.

September 16: GCA exhibited at the Prescott Book Festival.

September 16–17: GCA held the annual Members' Gathering at the South Rim. Please see the full report in the winter issue of *Canyon Views*.

Get Your Reading Materials before the Snow Flies!



Lasting Light: 125 Years of Grand Canyon Photography

by Stephen Trimble

Featuring the work of 23 of the

finest Grand Canyon photographers, *Lasting Light* highlights the history of photography at the canyon along with the personal narratives of the people who aimed their cameras at the "Titan of Chasms" over the years. This heavily illustrated book covers the breadth of Grand Canyon photographic history, from the work of the first canyon photographer in 1871 to today. Published by Northland Publishing in cooperation with GCA. More than 230 photographs. Hardcover, 11" x 12", 210 pages. **Member price: \$34.00 plus S & H**



Earth Notes: Exploring the Southwest's Canyon Country from the Airwaves

Edited by Peter Friederici

Published by GCA in cooperation with KNAU/Arizona Public Radio and the Center for Sustainable Environments, *Earth Notes* captures the diversity of

the Colorado Plateau's landscape through essays from the radio program of the same name.

Whether you are a visitor or a resident, you will find this book an inspiring look at how the human culture on the plateau rises to the level of the extraordinary scenery. A GCA original. Paperback, 5 1/2" x 8 1/2", 72 pages. **Member price: \$5.91 plus S & H**

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Calendar

In addition, please check out the lecture schedule on page 9.

September 20-23: GCA will exhibit at the Natural Areas Conference at Northern Arizona University in Flagstaff. For more information on the conference, please visit <http://www.naturalarea.org/conference.asp>.

November 1: GCA will host an opening-night reception at Kolb Studio for the exhibit Joella Jean Mahoney: A 50-Year Retrospective. The reception begins at 7:00 p.m., and the exhibit continues through February 18, 2007.

Canyon Views is published quarterly by the Grand Canyon Association to inform members of association and park activities, as well as of topics related to these activities. Please feel free to suggest subjects and information that you would like to see in *Canyon Views*. GCA also welcomes article submissions related to the association and/or park activities. Address all editorial correspondence to Grand Canyon Association, Attn: Todd R. Berger, Managing Editor, PO Box 399, Grand Canyon, AZ 86023; tberger@grandcanyon.org.

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Designed by Rudy Ramos

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