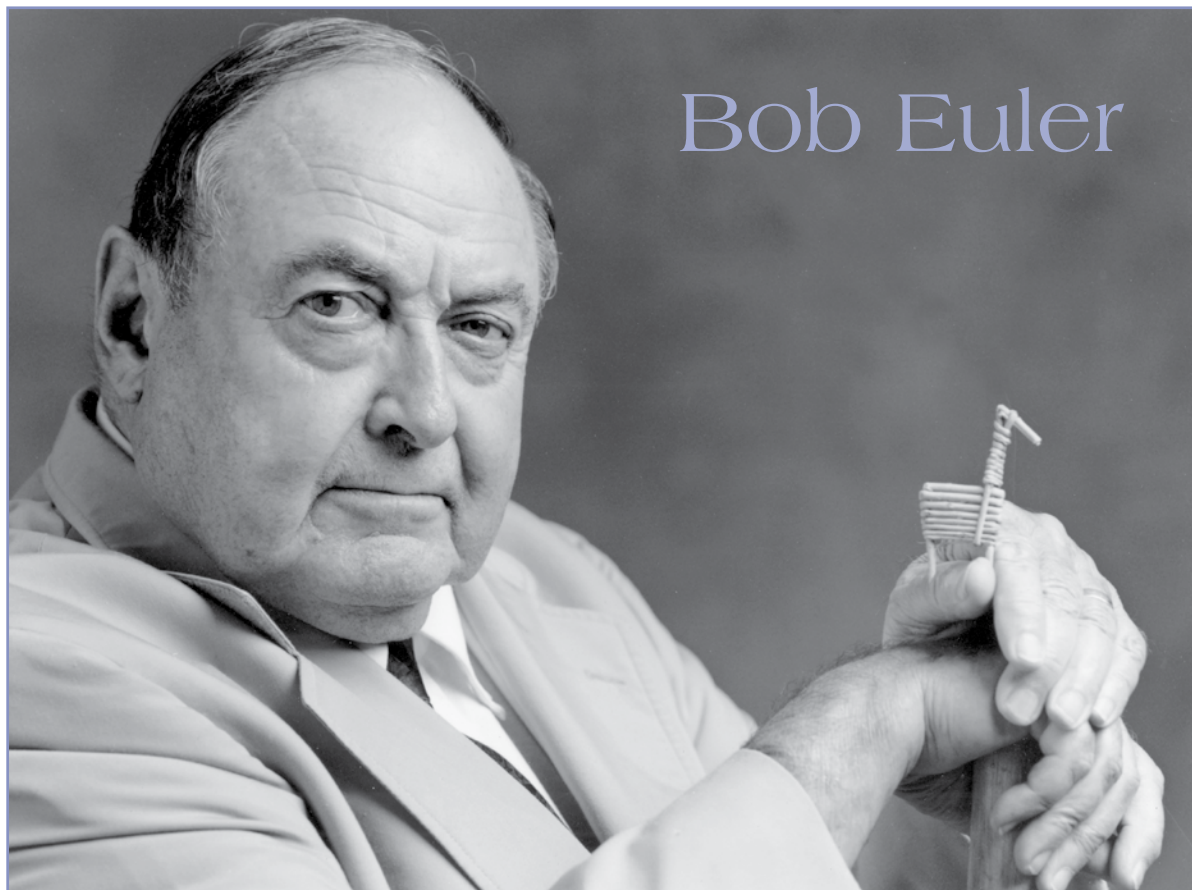




the journal of  
Grand Canyon River Guides, Inc  
volume 13 number 4  
winter 2000 - 2001

# boatman's quarterly review

I DIDN'T HAVE ANY PARTICULAR INTEREST in Grand Canyon until about 1952. Dr. [Harold] Colton [who founded the Museum of Northern Arizona] sent me over to the Hualapai Reservation to assist that tribe in their land claims case against the federal government. I went there and a good friend and colleague of mine, Dr. Henry Dobyns, was with me. I did some excavation for the tribe in some of the canyons tributary to the Colorado River— tributary to Grand Canyon off the South Rim, and that really got me excited about the archeology



Bob Euler

Dugald Brenner

Dear Eddy  
Illness Report  
Call For EIS  
New Superintendent  
Globe Mallow  
Sacred Respect  
The Ways of Rivers  
Boucher Rapid  
David Brower  
LSSF  
Glen, Glenn, Glenda  
Flesh On Bones  
Fall Meeting  
COR Update  
More Condors

of that area. It was very rugged country. The Hualapais had never been interested in having anybody in there at all. They were not quite so sure of what an archeologist could do for them, but I wound up excavating several sites—mostly rock shelters in Mohawk Canyon, in Peach Springs Canyon, in what on the maps is called “Meriwitica” Canyon over in the west end of the Canyon, but what is really called “Muktiwhitika” Canyon by the Indians.

*continued on page 28*

## boatman's quarterly review

...is published more or less quarterly  
by and for Grand Canyon River Guides.

**Grand Canyon River Guides**  
is a nonprofit organization dedicated to

*Protecting Grand Canyon*  
*Setting the highest standards for the river profession*  
*Celebrating the unique spirit of the river community*  
*Providing the best possible river experience*

General Meetings are held each Spring and Fall.  
Our Board of Directors Meetings are held the first  
Monday of each month. All innocent bystanders are  
urged to attend. Call for details.

### Officers

President	Kenton Grua
Vice President	Richard Quartaroli
Secretary/Treasurer	Lynn Hamilton
Directors	Clinton Anderson Dave Christensen Chris Geanius Chris McIntosh John O'Brien Jeff Pomeroy

Gcrg's amwg Representative	Andre Potochnik
Gcrg's twg Representative	Matt Kaplinski
Bqr Editors	Katherine MacDonald Mary Williams

Our editorial policy, such as it is: provide an  
open forum. We need articles, poetry, stories, draw-  
ings, photos, opinions, suggestions, gripes, comics,  
etc. Opinions expressed are not necessarily those of  
Grand Canyon River Guides, Inc.

Written submissions should be less than 1500  
words and, if possible, be sent on a computer disk,  
pc or mac format; Microsoft Word files are best but  
we can translate most programs. Include postpaid  
return envelope if you want your disk or submission  
returned.

Deadlines for submissions are the 1st of February,  
May, August and November. Thanks.  
Our office location: 515 West Birch, Flagstaff, az 86001  
Office Hours: 10:30-4:30 Monday through Friday

Phone	520/773-1075
Fax	520/773-8523
E-mail	gcrg@infomagic.com
Website	www.gcrg.org

## Dear Eddy

I'VE BEEN READING the BQR for some years now and  
must say that I'm sure glad that I was able to guide  
in "the Canyon" when I did. I spent the mid '70s  
through the late '80s as a guide for both rowing and  
motor trips. In those days the big issue was motors or oars  
not commercial/privates. Guys, the Canyon is there for  
everyone to enjoy! I'm sorry that there is as much friction  
as there is. We all seemed to be able to work together in  
the old days. Why can't we do it now? I remember when  
you would pull up to Hance at 5,000 cfs and be there  
to help each other in case of trouble. Now, it seems that  
given the same scenario, private and commercial guides  
are anxious to see each other on the rocks.

I still have the honor to have the chance to run the  
Grand Canyon from time to time. I'm glad to see that  
she still has the majesty and grace that she did when  
I was down there full time. Cheers to the Canyon for  
she'll outlast us all.

*Steve Lawry*

## Back in the Saddle

IT'S BEEN THIRTEEN YEARS since that party/meeting at Brad's house, where some 30 or so of us signed on to create what has evolved into Grand Canyon River Guides (GCRG). I'm often credited with fathering GCRG and for that honor I will always be deeply grateful and proud. But as we all know, fathering is the easy part. It has taken a lot of hard work and dedication from an incredible bunch of people to get us to where we are today—a powerful, respected and unified voice speaking for the Canyon and the life-changing river experience that it offers. We foster an open forum of communication with our semiannual meetings and Boatman's Quarterly Review. We sponsor continued education for our members through the annual Guides Training Seminar and Wilderness First Responder and Wilderness First Aid courses. We honor and respect our past and future by publishing Lew Steiger's Oral History work. We support and participate in the Adaptive Management Planning process for the operation of Glen Canyon Dam to reduce and mitigate its impact on the river experience and the Canyons' resources. We, by our very existence, encourage respect for guides and the guiding profession and strive to do all that we can in a positive and constructive manner to establish industry standards for guide pay and benefits. We run a good ship and one that I am proud to be a part of.

So where do we go from here? There are a lot of issues coming up, the most urgent being the resurfacing of the Draft 2000 Commercial Operating Requirements (COR), which were sent out for comment in the spring of 2000 and so roundly criticized by both guides and outfitters that it was sent back to the drawing board and the 1999 COR remained in effect through 2000. Now, after a year and apparently some minor revision, but no interaction with GCRG's Board of Directors, we are told that this draft document will become the new 2001 COR. This is troubling. This document directly affects the river experience we offer and its sole purpose should be first to protect the resource and the visitor, but also to preserve and protect the experience. It is in need of major modification and restructuring, but in the direction of *less* regulation and bureaucracy not more. Last spring we offered our comments and suggested that GCRG and the National Park Service (NPS) get together and seriously work on revising, updating and simplifying the document. We received no response, which we attributed to the fact that many of the NPS people responsible for the process were moving into other positions and unable to spend time on the issue. We are again asking to be included in the process.

It's clear that we need to get involved with the process of reforming private use allocations. The

"Waiting List" system has achieved critical mass and just plain no longer works. We have a strong interest in doing what we can to come up with a solution that is fair and works well into the future. After all, we are all "private boaters."

To honor David Brower's passing, I would like to see GCRG lend our support to the Glen Canyon Institute's efforts to restore a free-flowing Colorado River in Glen Canyon. But in the meantime, keep praying for snow!

Besides the above mentioned issues, there are myriad others to tackle, so it's shaping up to be a busy year. I'm looking forward to leading the charge, but I need all the help and advice that I can get to do things right. Don't be afraid to let us know what you think needs to be done and how you would suggest doing it.

I want to close by thanking The Gruse for keeping us on track for these past 365 days and while I'm at it, the other past presidents; Christa, Andre, Jeri, Lew, Shane, Brad and Tom. Each of you have contributed immeasurably to the character of our organization. Certainly tall shoulders to stand on.

*Kenton "Factor" Grua*



## 2000 River Season Illness Report

**H**I ALL. For those of you who may not already know me, I am the NPS Public Health Park Consultant. I would like to thank all of the guides I met on the river this season for their hospitality and cooperation during my inspections of their trips again this year. I think that all of you are doing a very good job handling food and sanitation operations.

As most of you are aware, there was a "24- hour" illness occurring on the river this season. Here is the data that I have been able to collect so far on the cases of this illness.

Twelve of the sixteen companies had at least one person sick with this illness during the summer. As near as I can estimate, there were 159 people sick between April 7 and September 8. The symptoms were generally, severe vomiting and diarrhea with headache and chills and usually a fever of 102 plus. The illness usually lasted from 12 to 24 hours. Of the 159 people, 103 were on oar trips and 56 were on motor trips. Illnesses were reported from mile 30 to 260 with most between 60 and 220.

These figures do not include science trips or private trips. From what I have heard from various sources, there were at least as many, if not more,

people ill on private trips during this same period.

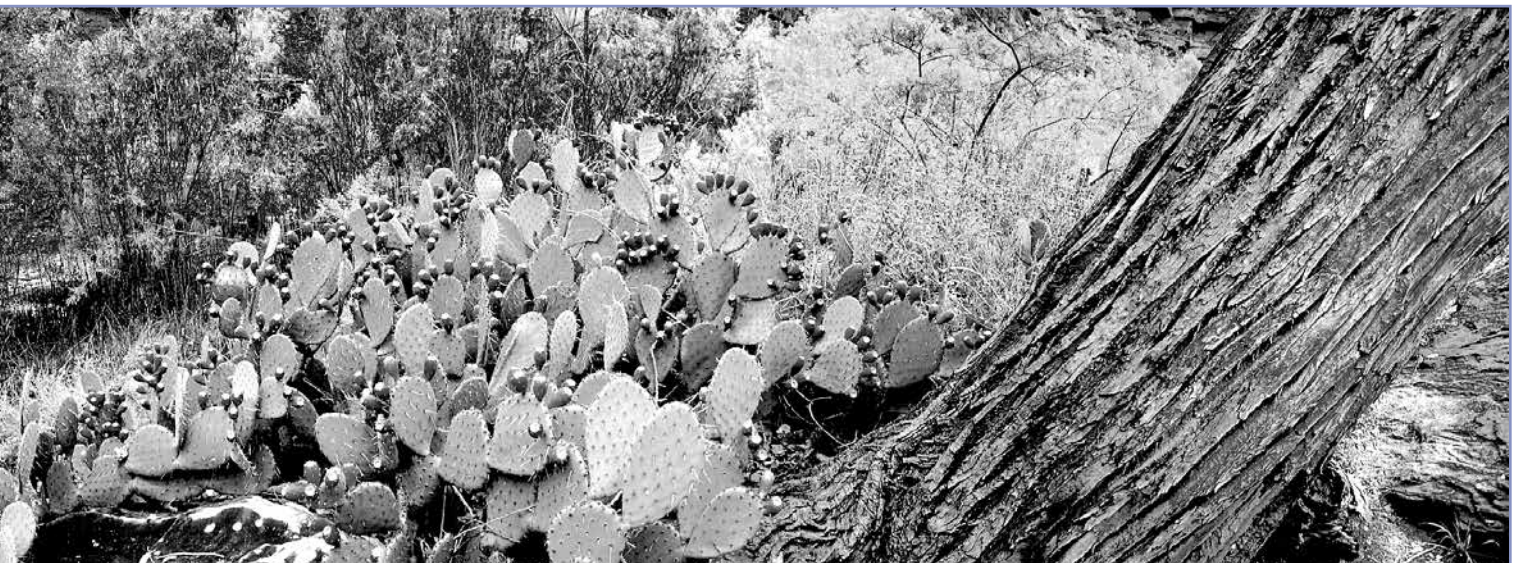
At this point we do not know what it was, where it came from or what to do about it to prevent it occurring again. This situation points out a problem in the present reporting procedures as well as the NPS response to illnesses on the river or in the backcountry. I am working to get changes made in how and when illnesses are reported to my office and how the Public Health Service and NPS respond to these occurrences.

I will be meeting with my department as well as the Park Service administration and concession staff to get useful changes made. I am sure we all would like to know what these illnesses are and what we can do to prevent them.

I will be meeting with the outfitters and the guides before next season to discuss any improvements to our handling of future illness problems on the river.

Again, thanks for a wonderful season on the river and I look forward to working with you again next season.

*Jim Nothnagel*



Sam Walton

# A Call For An Environmental Impact Statement

READ WITH INTEREST Larry Stevens' piece in the fall 2000 BQR on the merits and need for removal of certain Grand Canyon flora, yet I am still not convinced. Although Dr. Stevens implies that an attitude of acceptance of certain biota in the Grand Canyon belongs to deconstructionists, where "nothing much matters," the attitude he endorses is quite absolute on the opposite extreme, and I believe that there is a middle path in dealing with our struggling ecosystems, especially in a unique place like Grand Canyon National Park.

Although it is true that the introduction of non-native species have had damaging consequences to ecosystems in regions around the globe, it is important to consider the human factors involved with the disruption of ecological communities on a case by case basis. In his article, Dr. Stevens lists ten reasons why non-native invasions are "ecologically bad." Four have to do purely with human needs and comforts, four are general to naturally evolving environments, and the remaining two refer to specific cases, which may or may not pertain specifically to the tamarisk he intends to poison.

In our case, the Glen Canyon Dam and the continued misguided meddling with flow rates through the Colorado River corridor have changed the conditions so dramatically that no human being can predict or determine the natural evolutionary process that should be occurring. Instead of general arguments against non-native species, I would like to see more compelling data on the actual threat of tamarisk. Do they really deserve the feeling of panic that Dr. Stevens inspires in his article? Will they really alter natural regimes to intolerable levels and create new disease organisms that will devastate other populations? I don't claim to be a biologist, yet my own experience in the Grand Canyon has witnessed the tamarisk growing harmoniously side-by-side with other species and generally in regions previously uninhabited in pre-dam times, as well as offering habitat to species that survive in the strained post-dam ecosystem.

The more valid (especially since no herbicide use is planned) Lees Ferry restoration project, on the other hand, offers the opportunity to monitor the natural

process that would evolve after a localized eradication. The results of a study of the environment around Lees Ferry would be beneficial in determining the proper long-term plan of managing the changing ecosystem in the river corridor.

It is especially important to consider that continued human meddling in the Colorado River corridor's post-dam transition stage could create a series of repercussions beyond our comprehension that could create even more damage. Our record as nature interventionists sadly does not support great success from mere good intent. Luckily, we have appropriate legislation requiring a more complete and scientific assessment in the form of one of our nation's strongest environmental protection law, the 1968 National Environmental Policy Act. Prior to the large-scale eradication of a living species in the river corridor, an Environmental Impact Statement (EIS) (more detailed than a cursory Environmental Assessment) should be available for public comment. I would also like to see information on the possible impacts of the herbicide that will be brought into the ecosystem and accurate assessments of long term maintenance requirements of the planned eradication. The EIS would ensure an objective and legal opinion, rather than the statement from a representative of a company that will be the recipient of hundreds of thousands of Arizona Water Protection Fund dollars.

Where does nature have the ability to take her own course? Dr. Stevens states that "sacrificing our natural heritage to a bunch of aliens is the wrong path." Is there a clear concept of our natural heritage? His statement rings ominously familiar to historic cries of war and manifest destiny, similar to our country's earlier justification of the slaughter of millions of buffalo. My hope for future generations is that there will remain some regions in the world that are not significantly impacted by human activity. Lest we forget, eradication is also a human activity.

*John Middendorf*

## Welcome to Our New Superintendent

GRAND CANYON RIVER GUIDES would like to extend a warm welcome to Joe Alston, former Superintendent of Glen Canyon National Recreation Area. On October 26, 2000, Secretary of Interior, Bruce Babbitt, announced that Alston would replace Rob Arnberger, at the opening of the Canyon View Information Plaza at Grand Canyon National Park.

Joe Alston has been managing Glen Canyon for the last five years and is credited with creating a water quality program that has cleaned up the shores of Lake Powell. Alston was the deputy superintendent at Yellowstone National Park for five years, before coming to Glen Canyon. However, prior to that,

Alston had some colorful history. In his formative years, he was a firefighter on the North Rim. In fact, he plays a prominent role in many stories in Stephen Pyne's book *Fire on the Rim: A Firefighter's Season at the Grand Canyon*. Alston left the fire crew to go to graduate school in economics, graduated and worked as a buyer for Xerox. He left Xerox to be a River Ranger at Dinosaur National Monument. He then became a concessions specialist at Yellowstone and Alaska, followed by acting Superintendent at Glacier Bay National Park as well as Superintendent at Curecanti National Recreation Area in Colorado.

## Globe Mallow, Sore-eye Poppy

THE BRIGHT ORANGE GLOBE MALLOW (*Sphaerelcea spp*) flowers in Arizona's deserts and forests. Globe Mallow ranges in elevation from 3,000 to 8,000 feet. This perennial herb grows from three inches to five feet in height. The tiny hairs on the entire plant can be irritating to the eyes, which is how the name "sore-eye poppy" came into use.

At Chaco Canyon, according to Dunmire and Tierney, prehistoric globe-mallow pollen grains are more often associated with the inside of Kivas, than with food preparation rooms. The seeds and flowers have been found in many other archeological sites as well. Today it is still used as a medicinal plant and for food in times of need.

The Rio Grande puebloans use the ground root to pull venom from, and to help heal, snake bites. A tea of the leaves is used for sore throats, diarrhea, cracked hands and boils. The Hopi use the roots as a poultice to cast broken bones.

In my travels I have come across many Yerbarias that use the globe-mallow or yerba de la negrita (as it is called in Spanish) to promote hair growth. The leaves



and roots are extracted then added to shampoo or hair rinse. It seemed to be quite a popular remedy as I found it in most of the tiendas that I visited.

As an herbalist at the Winter Sun Trading Co., I use the dried leaves and flowers in a hair oil to stimulate growth. The entire plant is demulcent, therefore I recommend it for healing skin ailments, sore throats and soothing urinary tract infections. It is quite a reliable little plant that is utilized throughout the entire southwest.

DeeAnn Tracy

### References:

- DUNMIRE AND TIERNEY, *Wild Plants and Native Peoples of the Four Corners*, Museum of New Mexico Press, 1997.
- MARGARITA KAY, *Healing with Plants in the American and Mexican West*, The University of Arizona Press, 1996.
- PHYLLIS HOGAN, Interview, Arizona Ethnobotanical Research Association.



## Respecting A Sacred Place

I ATTENDED A MEETING RECENTLY of the Hopi Tribe's Cultural Preservation Task Force and was given some feedback which I would like to pass on to the guides and outfitters of Grand Canyon. The Hopi Tribe periodically sends tribal delegates down the Canyon in connection with some of their cultural beliefs and practices. In some cases, other Canyon trips have been behaving in ways which are making the Hopis feel rather uneasy about modern recreational uses in Grand Canyon. When I heard the stories, I felt that a general call for respect—call it a reminder—might be in order. I am writing to you in the hopes that you will agree, and will publish something in your newsletter, etc., to let the guides know that there is an issue.

Grand Canyon has great value to the Hopi, as many of you know. They express some of this in their official comments to the Final Environmental Impact Statement on the Operation of Glen Canyon Dam. In our meeting with them, various people who have taken part in official Hopi trips down the Canyon expressed some of the concerns they have about modern uses of the river corridor.

The feedback I want to pass on relates, basically, to the second to last paragraph of their official comments to the Final Environmental Impact Statement on the Operation of Glen Canyon Dam: "Given the sanctity of Grand Canyon, the Hopis are concerned about the attitudes of people who use the canyon for recreation or scientific research. With the proper attitude, use of the canyon for those purposes can be both enjoyable and educational. Using the canyon with a disrespectful attitude can cause serious spiritual problems."

What the Hopi encountered along the river was to them, I think, a good example of a disrespectful attitude. They have seen a degradation of archeological sites, which are also sacred sites to them, due to tourist visitation. They also experienced a large, loud group, intent upon partying, who settled onto the same beach

where the Hopi delegation was camped. While the Hopi group was there for spiritual purposes and "in a meditative mood," they said people from the other group were yelling, running around, playing music and drinking apparently without regard for them. One person even ran over and shoved aside the bedroll of one of the elders to gleefully dig up beer which had been buried there on a previous trip!

While, of course, visiting archeological sites and partying are among the many things people want to be able to do in Grand Canyon, it is a shame that the partying parties (so to speak) could not have been a bit more sensitive to the rights, needs and wishes of others. Instances such as these are hard to forgive and forget, and they don't speak well for tourism in a sacred area. As we all know, Hopi people have suffered more than their share already of loss and infringement on their cultural heritage. It ends up not mattering much whether this was a commercial trip or a private trip, (although I am trying to get the word out to each sector) because the overall perception of recreational use versus abuse is negatively affected.

The lesson here is that sensitivity to cultural issues probably needs to be given more attention in our guide association educational literature and training seminars wherever possible. I hope that you all can receive this as a well-intended wake-up call rather than just a wagging finger. As a lifetime member of the Colorado Plateau River Guides Association, and a full-time guide working with Native American people myself, I fully believe in the power of guides rallying to do some self-reflection/self-correction from time to time. This is one of those times. Some improvement is called for. I hope you will help to pass the word.

Thank you for helping out with this important matter.

*Rebecca Martin*

# Letters From Grand Canyon—

## Nuts and Bolts Part II: The Ways of Rivers

**M**OST OF US DON'T STAY AWAKE MUCH WORRYING about drainage networks—the systems of interconnected rivers, streams, washes, gullies, ponds and lakes that collectively drain water from their watershed. If we think about it at all, our thoughts are more likely to turn to issues such as beauty, transportation, environment, river running, or, deliciously, fishing. In other words, we take river systems for granted. But wait. Perhaps there is more to it than we might think, perhaps we can learn once again to see the world in a new, surprising, and richer way.

As a pleasant example, think of the Rhine, river of song and ancient legend peopled by the Maidens, a silver thread linking the exploits of runic heroes and gods. The legends take us far back in human history, but not far enough to reach the times before humans strode onto the stage. What did the place look like then? Was the river there? Has it always been there? If it has not, then when was it born, and how? And what was there before the birth?

Perhaps there was a time when the landscape was devoid of drainages—no rills, washes, streams, or rivers. Can we envision such a landscape? Has anyone ever seen one? The answer is no. Even the Saharan sand seas bury ancient water courses well known to Paleolithic hunters, and so do glaciers. Emerging coastal plains are criss-crossed by tidal channels, and the beds of lakes quickly develop drainage networks. Only where land is covered by water—seas, lakes—can one speak of an absence of drainage systems. This means that the question, “How old is the Rhine, or the Colorado” leads us back inexorably to the time when the land was last covered by water. That is when these rivers were born. But they probably did not have a course anything like the present one. If one could play the movie of geologic time at a greatly accelerated pace, one would see drainage networks whose configurations, whose connections, would constantly change in response to events such as deformation of the earth's surface, advance and retreat of ice sheets, and the like. Only gradually, and probably rather recently, would the configuration of the drainage networks evolve towards something resembling the modern Rhine, or Colorado. So, the question of how old a river is resolves itself in how much departure from the present configuration one is willing to accept before one is forced to say “This drainage system just does not resemble in any way the Colorado that we know today, therefore I will not call it by that name.” As we shall see presently, the evolution of drainage systems is a question of ruthless Darwinian-type competition in which the strongest and fittest rivers battle it out with lesser ones

and acquire territory at their expense.

The weapons that rivers use in their wars are also the tools that they use in their daily work. In either case, the driving force behind it all is gravity. Gravity is what causes the water of rivers to move relentlessly toward the center of the earth, gravity is what causes all objects to seek that center. Of course, the water of a river cannot flow directly toward the center of the earth, but is constrained to move in a nearly horizontal direction by its channel. Consequently, we can think of water as sliding down a gently inclined plane in response to gravity. For most rivers of any size, the inclination of the plane is measured in feet per mile to a few tens of feet per mile, which is a very shallow slope angle of only a small percentage of one degree.

If the movement of water down the slope were not affected by friction, we could easily calculate the velocity attained by the water. But the water is indeed affected by friction—friction between the water and the river channel, and between the water and the air above it. Many people are surprised by the concept of friction between water and air, yet waves in oceans and lakes are formed precisely by the drag exercised by moving air on the water.

Friction, then, controls the velocity of water moving down a river channel, primarily in these ways:

- *The shallower the water (i.e. the smaller the discharge), the slower the flow.* This happens because friction occurs at the interface between water and everything else, that is, along the perimeter of the water body. This perimeter is greater, relative to the volume of water, when the water is shallow than when it is deep. River runners are well acquainted with the silvery white noise made by gravel bars, where the water is shallow, flows slowly, and dissipates a lot of energy (thus making noise). In contrast, deep, swift water is silent.
- *The rougher the channel, the slower the water.* For the same discharge and gradient, water will move much faster in a smooth concrete canal than in a bouldery streambed.
- *The greater the velocity of the water, the greater the frictional drag, all else being equal.*

For our purposes, the most important thing to remember is that the greater the discharge of a river, the greater the water depth and the greater the velocity. The velocity of the water, together with the quantity of water, that is, the discharge, is the engine that enables a river to do its work.



As is the case with any moving object, moving water has energy, a fact not unknown to anyone trying to row a raft out of a backeddy. This type of energy is known as energy of motion, or kinetic energy. Long ago, people determined that the quantity of this energy ( $E_k$ ) is related to the amount of stuff that is moving ( $m$ ), and to its velocity ( $v$ ), by the equation

$$E_k = 2mv^2$$

“Aha!” says the astute reader, “I see that this energy depends on the amount of stuff moving, and also, and much more strongly, on its velocity.” Precisely. That’s why the velocity of a river is so important in understanding what a river can do and when it can do it.

Because velocity increases with discharge, and energy increases not only with discharge but also and especially with the square of the velocity, it is no great trick to understand that energy increases very rapidly as discharge increases. This is illustrated nicely by data which relates discharge, velocity, and other river properties as measured at the Lees Ferry gauging station, and reported many years ago by the great hydrologist Luna Leopold. Leopold’s data for 1948 show that a 13-fold increase in discharge of the Colorado River (from 7,000 to 91,000 cubic feet per second) resulted in a more than 65-fold increase in energy value (from 56 to 3,686).

And that, my friends, is the great secret of How Rivers Work. Specifically, most work done by a river—transporting sediment, clearing boulder jams, cutting down—is done in highwater (flood) stages, when discharge and velocity are large. Very little happens during low-water stages.

As a consequence of the above, drainages really do not need permanent flow (base flow) to function perfectly well as agents of transport and erosion. This is something that at times is overlooked even by professional earth scientists, yet desert areas are full of washes that function just fine even though they are totally dry most of the time—their work is done entirely during

infrequent floods.

Floods, then, are the key, and floods have an interesting relation to the drainage basin of a river: the greater the basin, the greater the river’s discharge is likely to be—that’s obvious. What is less obvious is that increasing the drainage basin also increases the chance of floods for that basin. All of which means that big rivers with big drainage basins are more likely to have big discharges than little rivers with small drainage basins.

One more thing. Rivers need energy to do their work, whether transporting material or cutting down,

and the source of the energy is explained above. The relation between the amount of material supplied to a river and the energy available to the river determines not only the kind of floodplain that the river has, but also the level, or grade, of this floodplain. If more material is brought to a river than it can carry, the river dumps the material, becoming a braided stream and raising its bed. Examples are common in Alaska and British Columbia, where rivers issue from glaciers. If the amount of material brought to a river is just what it can carry, there will be no net accumulation or erosion. If the material brought in is less than the river can carry, the river will have energy to spare, which it uses by picking up whatever it can



Sam Walton

and by cutting down; the river will be in a highly erosive state. The Colorado River downstream from Glen Canyon Dam is a good example of this last type of river.

Understanding the basic physical controls at work on all rivers helps clarify the ways of Grand Canyon’s Colorado River. The ways of the Colorado have influenced Pueblo farmers, the building of riverine beaches, the effects of Glen Canyon Dam, and more, as will be seen in subsequent *Letters from Grand Canyon*.

Dr. Ivo Lucchitta

*This is the third in a series of “Letters from Grand Canyon” by Ivo Lucchitta that will appear in future issues of the bqr.*

# The Changing Rapids of Grand Canyon: Boucher Rapid

**N**O SHIT, THERE WE WERE. The Inner Gorge on 4,000–5,000 cfs in late October 1987. Glenn Rink had a rowing snout; Jon Hirsh was in a Havasu; I was a passenger on probably my fifth Grand Canyon trip. We had blown out the two rear ports in another Havasu on the Mace Rock while running right in Horn Creek. After a night of repeated curses from the boat-repair crew and within sight of Horn Creek's tail waves, we moved downstream towards all those big rapids. And the only one the crew was really worried about was Boucher.

That was the first time Boucher Rapid caught my attention, but it has not been the last. Most guides I know think of Boucher in three terms: first, you don't want to camp there; second, it usually is a wet ride; and finally, that eddy on lower left seems to catch everything floating downstream. What I think about Boucher is its significance in Grand Canyon as an example of a seemingly benign rapid that once was fairly large, and how a rapid can affect another upstream.

Common sense wouldn't cause most guides to point at Boucher as being the site of one of the largest changes in a Grand Canyon rapid (Webb, 1996). After all, the rapid most people see is relatively wide and rocky with few big waves. It wasn't always so. Boucher was consistently rated as a reasonably difficult rapid (six–eight on the Grand Canyon scale; Simmons and Gaskill, 1969) by pre-dam river runners. The drop was thirteen feet in 1923, making it one of the larger drops in the Inner Gorge. When Dock Marston polled pre-dam boatmen about the difficulty of rapids, Boucher scored high on the list.

Boucher Rapid caught someone else's attention in the early 1950s. Bob Rigg was a young man working for his brother Jim at Mexican Hat Expeditions. On their annual summer trip through Grand Canyon, they noticed something different at Boucher, stopped, and found the debris fan to be oozing mud. They also noticed that the rapid, which already was formidable, was narrower with a larger drop. We don't know how much narrower or larger because no one measured it or wrote it down. The memory stuck with Rigg sufficiently that when I asked him 43 years later about the biggest changes he could remember in Grand Canyon, Bob remembered Boucher. He thought the year it changed was either 1951 or 1952 (Melis and others, 1994).

The early 1950s debris flow inundated most of the debris fan, leaving untouched a boulder terrace downstream from the mouth of the canyon. That boulder terrace, indicative of a far-larger debris flow, caused my crew to hike into Boucher Canyon and seek a date for the larger event. We found a tree branch trapped among very large, slightly weathered boulders upstream from



Boucher Rapid—February 8, 1890.  
The Stanton expedition finishes packing their boats after lining around the head of Boucher Rapid.  
(photograph by Robert Brewster Stanton, courtesy of the National Archives).



Boucher Rapid—February 18, 1992.  
The rocks in the foreground were deposited by the 1951–52 debris flow. Tamarisks partially blocks the view (photograph by Tom Wise).



the mouth. Radiocarbon dated to between ad 1436 and 1638, this debris flow must have completely changed Boucher. We also noticed that a small debris flow had occurred in 1984, unnoticed by river runners who had high-water boating on their minds. All this led to our conclusion that Boucher Canyon produces frequent debris flows.

The reason Boucher Rapid scares few people anymore is that large, nasty rapid downstream: Crystal. When the 1966 debris flow hit Crystal Rapid, it raised the water surface at the head of the rapid a considerable amount (the drop through Crystal rapid increased from seven-

teen to 30 feet), creating Lake Crystal. The head of Lake Crystal is the toe of Boucher; in other words, the backup created by Crystal Rapid has drowned out the tail waves of Boucher, reducing its drop and severity. But this has been known for decades (Simmons and Gaskill, 1969).

What isn't known is what Boucher Rapid did to its nearest neighbor upstream: Hermit. Other than a small debris flow in 1996 that, among other things, really strengthened that fifth wave, Hermit hasn't been changed by debris flows from Hermit Creek. We do know that a prehistoric debris flow dammed the river here; the evidence is over there on the right bank. In this sense, Hermit Rapid is in the same class as Lava Falls and Tanner Creek rapids, all with a large, prehistoric debris flow. Hermit is also in the same class as Boucher, because the 1951–1952 debris flow drowned out Hermit's tail waves, making the rapid easier to run, believe it or not.

In our language, we use the metaphor of a pebble thrown into a lake creating ripples that extend radially, affecting a larger area. In Grand Canyon, we should think of debris flows as having ripple effects upstream. So, you might remind people of Lake Boucher as well as Lake Crystal and tell the story of young Bob Rigg and the oozing mud on the debris fan. One more thing: you might have wondered why some large canyons, such as Clear Creek, do not have significant rapids. Look downstream, and you will see Zoroaster Rapid, which drowns out "Clear Creek Rapid." Trust me, Clear Creek Rapid will rise again. So will Boucher.

*Bob Webb*



Hermit Rapid—November 6, 1909.  
The tail waves of Hermit Rapid indicate a significant drop through Son of Hermit.  
(photograph by Raymond Cogswell, courtesy of the Bancroft Library).



Hermit Rapid—March 4, 1994.  
The secondary rapid is gone, replaced by dissipation waves in the head of Lake Boucher. On the basis of an upstream view, the discharge in both photographs is the same.  
(photograph by Steve Thornstrom).

- Melis, T.S., Webb, R.H., Griffiths, P.G., and Wise, T.J., 1994, Magnitude and Frequency Data for Historic Debris Flows in Grand Canyon National Park and Vicinity, Arizona: U.S. Geological Survey Water Resources Investigations Report 94-4214, 285 p.
- SIMMONS, G.C., AND GASKILL, D.L., 1969, River Runners' Guide to the Canyons of the Green and Colorado Rivers, Volume III, Marble Gorge and Grand Canyon: Flagstaff, Northland Press, 132 p.
- WEBB, R.H., 1996, Grand Canyon, a Century of Change: Tucson, University of Arizona Press, 290 p.

# David Brower

**O**N NOVEMBER 5, 2000, the greatest force ever known in conservation, environmentalism, and the fight for the earth, was stilled. David Ross Brower, former Executive Director of the Sierra Club and founder of Friends of the Earth, the League of Conservation Voters, and Earth Island Institute—fondly called the Archdruid—died in his home in Berkeley, California. He was 88 years-old.

Few who work in the outdoors or have followed the environmental movement are unaware of Brower. His exploits, battles, and numerous victories form the basis for much of today's fight for the preservation of things wild. The list is too long to begin in this short tribute—in fact, his two large autobiographical volumes, *For Earth's Sake*, and *Work in Progress*, merely scratch the surface.

Brower was born and raised an outdoor enthusiast, visiting the High Sierra often as a child with his family and blind mother. He became a prominent rock climber, logging dozens of first ascents in the Sierra and throughout the West. In 1939 Brower led the first team to summit New Mexico's Shiprock. During World War II Brower put his alpine experience to use in Tenth Mountain Division in the Alps.

Although a lifelong devotee of wilderness, Brower's role as its leading defender did not begin until he was 40 years-old, when he took the job as first Executive Director of the once docile Sierra Club. Brower soon entered the battle against the Echo Park Dam, which the Bureau of Reclamation claimed was instrumental to the Colorado River Storage Project (CRSP). Yet it would flood part of a National Monument, something Brower, the Sierra Club, and a large consortium of national organizations held inviolate. Against the advice of his own advisors, Brower took on the evaporation figures of the Bureau's engineers with what he called his own "eighth grade arithmetic"—and won.

Yet in the horse trading leading up to Congressional approval of the CRSP, Echo Park was saved but Glen Canyon was lost—something Brower flagellated himself about for the rest of his life. "I was lazy," he said. "I should have called a special meeting of the Sierra Club Board of Directors and insisted we not cave in. Instead, I obeyed their telegram to capitulate and had a drink at the Cosmos Club. After the vote, Senator Douglas asked

me why we gave in. He said we had enough votes to defeat the entire CRSP."

The loss of Glen Canyon helped steel Brower's "No Compromise" stance on many later issues. In the 1960s Brower took on the Bureau again. This time they meant to build two dams in Grand Canyon. As Brower made headway in the fight, the Bureau offered to compromise by removing one dam from the project. Brower rebuffed, calling it just one bullet through the heart instead of two. When the Bureau boasted of the improved access to Grand Canyon the reservoirs would provide, Brower crafted full-page advertisements that ran in newspapers nationwide, asking if we should also flood the Sistine Chapel so tourists could get nearer to the ceiling. Although the fight was not Brower's alone—Martin Litton, whom Brower called "my conscience" played a pivotal role as did many others—Brower's leadership was key in defeating the dams.

Brower's style and tactics were often controversial, so much so that the Sierra Club finally ousted him. Not one to weep, he founded Friends of the Earth, who also later ousted him for his quixotic campaigns. Yet Brower marched on.

One of the keys to Brower's effectiveness was his optimism. He never believed all was lost—there was always hope. In later years he pushed what he called Global CPR: Conservation, Preservation, and Restoration. It is no longer enough to try to stop the rate at which things were being destroyed, he said. It is time to turn the tide and begin restoring those things lost. Chief among those was Glen Canyon, whose restoration he was still making bold strides toward when he died.

Brower was not a hand-wringer. He was an enthusiastic defender of what he believed in, and could bring an entire auditorium to laughter and then to tears with his hard-hitting oratory. With his passing, the cause of the earth has suffered a devastating loss. Yet it is not a time to wring our own hands. It is time to roll up our sleeves and step boldly into the shoes that no one man or woman will ever fill again. It is a time to, as Brower often wrote next to his signature in books,

"Persevere!"

*Brad Dimock*





Dugald Brenner

# Preliminary Results of the LSSF on Native Fishes in the Grand Canyon

EARLY IN THE YEAR 2000, projected inflows to Lake Powell were determined to be low enough to trigger test flows as called for in the 1995 Fish and Wildlife Service (USFWS) Biological Opinion (BO) on operation of Glen Canyon Dam. The BO calls for experimental test flows during water years in which the inflow approaches 8.23 million acre feet (MAF), which is the minimum allowed by law to be delivered to the Lower Colorado River Basin. The Low Steady Summer Flows (LSSF) test included a 31,000 cfs spike in early May, followed by steady flows of 8,000 cfs through the end of September, except for another 30,000 cfs spike from September 5–9. The 8,000 cfs flow was dictated by the necessity of delivering the minimum 8.23 MAF to the Lower Basin. Without the LSSF experiment, the outflow would have fluctuated between 6,000–13,000 daily from May through September.

The present population of humpback chub is limited in the Grand Canyon. The highly fluctuating and cold year-round releases from Glen Canyon Dam in the past contributed to this situation by reducing reproduction and survival of the young, although the cold, nutrient-rich output has produced a remarkable rainbow trout fishery below the dam. Summer releases from Glen Canyon Dam still fluctuated as much as 8,000 per day even under the Modified Low Fluctuating Flow regime which was adopted in 1996.

The rationale for this summer's test flows was that low steady flows would increase the stability and allow greater warming of shoreline habitats, including backwaters, which would in turn enhance the growth and survival of young fish, including the endangered humpback chub. Steven W. Carothers Associates (SWCA), Inc. was awarded a contract to study the effects of the LSSF experiment on native and non-native fishes, particularly young of the year native fish, and small-bodied non-native minnows. We collected fish by shoreline electrofishing, setting shoreline hoop nets and minnow traps, and by seining backwater habitats. The vast majority of the fish were collected by seining in backwaters.

## *What we expected*

From this experimental flow regime, we expected to see a longitudinal increase in main channel temperatures, and increases in nearshore temperatures. We did not expect to see any immediate effect on adult native fishes, other than enhanced spawning. We hoped to see increased spawning of native fishes resulting in greater abundance of young, higher growth rates and survival, and eventually greater recruitment into the adult age

classes. Increased main channel temperatures would reduce the temperature shock of young humpback chub coming out of the Little Colorado River (LCR) into the main channel.

Possible negative effects of the flow regime include enhanced reproduction, growth, and survival of warm-water species of non-native fish that may be predators or competitors with the native species. The stable habitats and warm temperatures could expand the upstream distribution of both small- and large-bodied warm water fishes. The fall flow spike was intended to negatively impact the non-native species by flushing them out of habitats occupied by native fishes, while native fishes were expected to better withstand the increased flows.

## *Results*

There was a substantial linear increase in main channel temperatures over recent years. The dam outflow is usually about 48 degrees fahrenheit and increases about 1.8 degrees for every 30 miles downstream in June. This year, temperatures increased about 1.8 degrees for every 22 miles, reaching 66.5 degrees fahrenheit near Diamond Creek, and 61 degrees fahrenheit near the LCR confluence. Previously, temperatures at Diamond Creek reached only 60 degrees fahrenheit. The 61 degrees fahrenheit mark is an important threshold, as it is the minimum temperature in which humpback chub can spawn, and eggs will hatch successfully. Nearshore temperatures within the main channel did not increase more than main channel temperatures. Daily minimum and maximum temperatures for nearshore and main channel were nearly identical. However, the more protected backwater habitats held temperatures of up to 80 degrees fahrenheit and averaged three to four degrees warmer than the main channel.

The increase in main channel temperature may have actually induced some spawning of humpback chub in the main channel. Part of the BO calls for establishing a second reproducing population of humpback chub in the Grand Canyon (Valdez et al. 1999 in review). Currently, the vast majority humpback chub in the Grand Canyon are in a population centered around the LCR, with reproduction taking place in the LCR. Other humpback chub in the canyon are collected sporadically and no reproduction seems to occur outside the LCR, except occasionally near other tributary mouths, or near warm springs. This year, our sampling produced several larval humpback chub near river mile 197, approximately 130 miles below the LCR, and not close to any other tributary or spring. These fish were estimated to be between two

and three weeks old. humpback chub were collected near this location on each of our three trips to date. This is strong, though circumstantial, evidence that these humpback chub were spawned in the main channel. We have not yet compared the growth of humpback chub to growth rates in previous years.

There were large numbers of juvenile suckers present in backwater habitats this year as well, with larval suckers present throughout the summer. Personal observations by boatmen and biologists familiar with the canyon and its denizens indicate higher than normal densities of these young suckers. However, we still need to compare our data with previous years' data to be sure.

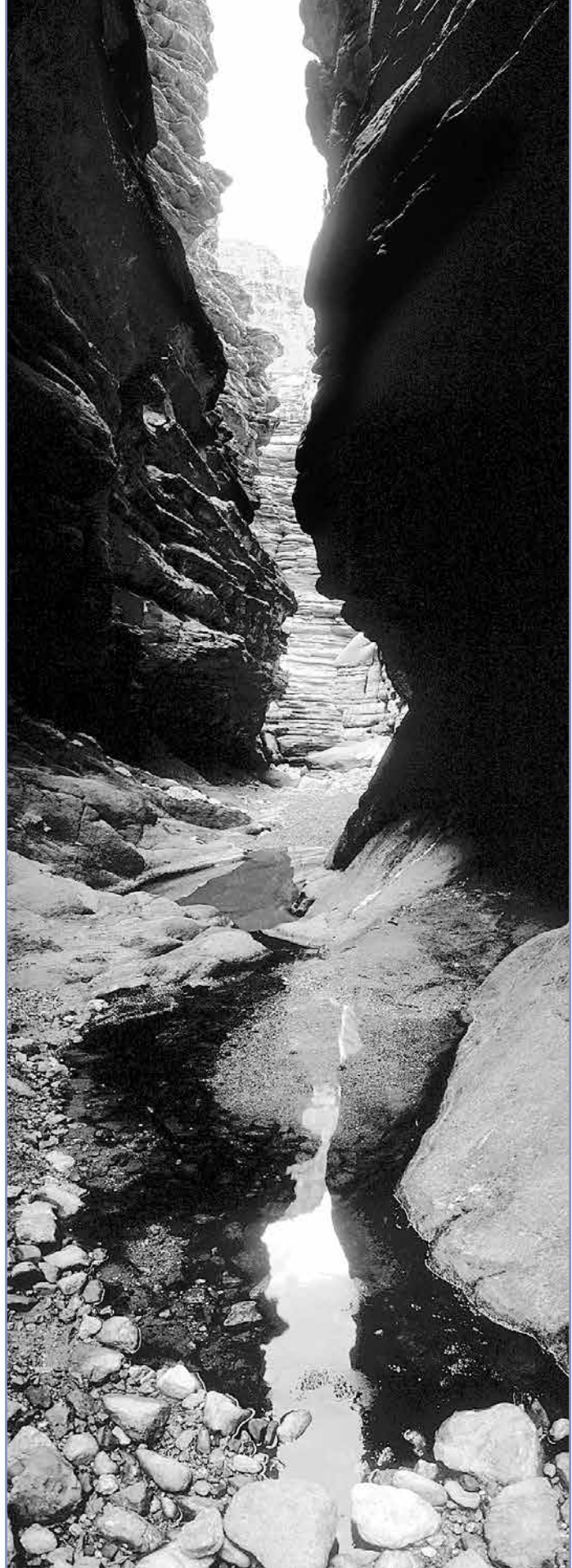
The total numbers and density of all fish in backwaters increased downstream. The numbers of non-native fishes increased faster than natives, so that by river mile 200, the relative abundance of non-native fish was greater than that of natives. After the fall spike, numbers of natives and non-natives decreased substantially, down 65 percent for natives and 70 percent for non-natives.

One effect of the LSSF not directly anticipated was its effect on the number of backwater habitats. The 30,000 CFS spring peak did rearrange some beaches, frequently resulting in a backwater habitat forming at the upstream end of eddy-formed beaches. The subsequent steady flows allowed these backwaters to persist all summer, providing cover and food for native and non-native species alike.

This effect may have contributed to the anticipated effect of increased numbers of small non-native fish, particularly the fathead minnow. Our sampling in backwaters produced large numbers of fathead minnows increasing downstream, particularly during the August trip. There did not appear to be substantial upstream expansion of non-native fishes. The majority of fathead minnows were collected below river mile 160.

Based on these preliminary results, the LSSF appears to have been beneficial to native fishes, while not benefiting non-native fishes to an equal extent. However, repeated years of low steady flows could have a cumulative effect of increasing numbers of non-natives. We still have a lot of analysis to do, to compare the catch rate and growth rates seen this summer to previous years' data to determine if growth and abundance were significantly better than in previous years. The true success of this experiment will not be known for three or four years, until this year class of young fish matures, or recruits into the adult population.

*Melissa Trammell*



Sam Walton



## Glen, Glenn, and Glenda Parallel Universes Collide

**I**T WAS MIDNIGHT, JANUARY 7, when the phone rang. I tried to wake up enough to speak intelligibly. Glenda, Glenn Hyde's daughter, was calling from Chicago.

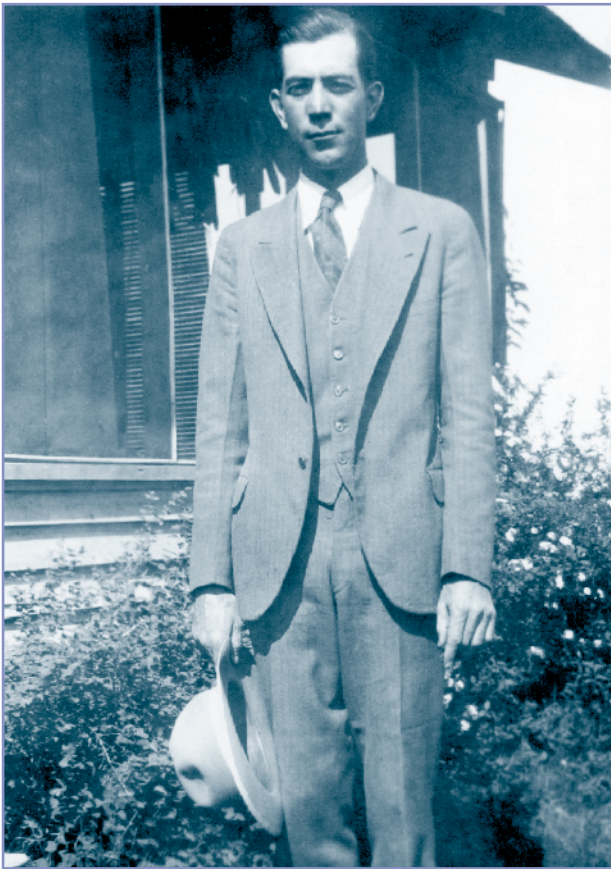
Scott Thybony had given me her name. He had spoken to her fifteen years ago, discussed the life and exploits of her father, and decided it could not be the same Hyde who had vanished with Bessie in 1928. But I had to find her to be sure. I had left messages around Chicago looking for Glenda. Now, in the middle of the night, she was on the phone.

She and her brothers felt there was a good chance their father was the same Hyde who ran Grand Canyon

ever say about the trip on the Colorado, however, was that "it didn't work out."

Glenda's father died when she was a mere two months old, and what she knew of him came primarily from her family—in particular her uncle Roy, Glenn's older brother. Although Glenn himself had been quite reticent about his adventures during the missing years, he had confided in Roy, who later told Glenn's children of their father's doings. Roy added two details to the Grand Canyon trip: that Glenn "pretty nearly didn't make it" and that "he stayed with some Indians in the desert afterward while he recovered."

Glenda told me her father, Glenn William Hyde,



*Glen Rollin Hyde, 1927*



*Glenn William Hyde, 1948*

with young Bessie. Their father had disappeared in 1928, gone on the road, and reappeared some seven years later with tales of having rafted several rivers. He had been on rivers in Idaho and Canada, had run crude, home-made wooden barges with one long oar off either end, and had attempted a Grand Canyon trip. All he would

had been born in Bolivar, Missouri. I told her my guy, Glen Rollin Hyde, had been born in Spokane. She was relieved, as her family history was strange enough without the Glen and Bessie story becoming part of their heritage. I added that my Glen Hyde had an older sister named Edna.



"What?!" she said

"Edna"

"E-D-N-A?" she asked.

"Yeah, Edna."

"Oh my God!" she said. "That's what he named his first daughter!"

"Really?" I said, intrigued. "His younger sister was named Jeanne."

"Jeanne?" she said. "Oh my God! That was Roy's wife's name!"

Two months later I sat across from Glenda in the Ravenswood Restaurant on the north side of Chicago. It was late afternoon and we talked for an hour over coffee. I had already confirmed much of her father's life story through public documents, and Glenda had reviewed my documentation of Glen Hyde's heritage and birth in Spokane. We were confident that Glen and Glenn were different people. But I had to ask:

"On the phone you mentioned there was a woman in your father's life named Bessie. What can you tell me about her?"

Glenda said she and her brothers knew little of Bessie. Glenda's mother and uncles would talk about her from time to time, but as soon as the children moved within earshot, the conversation abruptly changed. One time, however, Glenda was playing unseen under the dining room table and overheard a conversation. Whoever Bessie was, she was involved with Glenn during the missing years, the rafting years. And the big scar on Glenn's back was from Bessie. She had stabbed him. Glenda crawled out from under the table and asked why Bessie had stabbed her father. She was sent away.

I stared at Glenda, slackjawed. She smiled and shrugged. "That's all I know about her," she said. Glenda handed me an eight-by-ten manila envelope. "I made you copies of the few pictures of my father," she said. I pulled them out and stared at the top one for some time. The coffee began to boil up the back of my throat.

*Brad Dimock*

## Glen and Bessie Debut

ON MARCH 3, 2001 AT 7:00 P.M., Cline Library at Northern Arizona University will present an audio-visual display and lecture by Brad Dimock on the lives of Glen and Bessie Hyde, and host the publication debut and book signing of Dimock's Hyde biography, *Sunk Without a Sound*. Among the special guests planning to come are Glen Hyde's nephew. Admission is free and open to the public.



Sam Walton

# Putting Flesh On The Bones

**W**E ON THE Adaptive Management Work Group (AMWG) have been working in committee meetings for nearly two years to write a Strategic Plan for the Adaptive Management Program to benefit downstream resources. It will provide direction to all river research and long-term monitoring projects for the near future and influence our recommendations to the Interior Secretary on how to accomplish the primary directive of the Grand Canyon Protection Act of 1992. That directive is to operate the dam to preserve, mitigate adverse impacts to, and improve the values for which the two national parks were created, including natural and cultural resources and visitor use. We plan to complete the Strategic Plan for acceptance by the full AMWG in July, 2001.

As your recreation representative on the AMWG, I've worked to include language that places value on native species, natural pattern and process, and adequate public access. So far, we've drafted a Vision-Mission statement, 8 Principles, 13 Goals, 54 Management Objectives arrayed beneath the Goals, and a Glossary of Terms.

Presently, we are "putting flesh on the bones" of the Management Objectives by quantifying our baseline and target levels for each one. I am leading the effort to quantify the Management Objectives for Recreation Goal 10 and Sediment Goal 6.

Following, is the draft Strategic Plan language we've developed to date. I've only included the Management Objectives for Recreation Goal 10. If you want to see the other Management Objectives or the Glossary, or provide your thoughts, contact me at [gcr@infomagic.com](mailto:gcr@infomagic.com), attn: AMP Strategic Plan.

It's a good time for feedback. I'm all ears.

*Andre Potochnik*

## Glen Canyon Dam Adaptive Management Program Draft Strategic Plan—November, 2000

THIS DOCUMENT consists of the following components, which should be viewed as an integrated whole. Together, they guide the work of the Glen Canyon Dam Adaptive Management Work Group.

[Vision and Mission](#)  
[Principles](#)  
[Goals](#)  
[Management Objectives](#)  
[Glossary of Terms](#)

### Vision and Mission

The Grand Canyon is a homeland for some, sacred to many, and a national treasure for all. In honor of past generations, and on behalf of those of the present and future, we envision an ecosystem where the resources and natural processes are in harmony under a stewardship worthy of the Grand Canyon.

We advise the Secretary of the Interior on how best to protect, mitigate adverse impacts to, and improve the integrity of the Colorado River ecosystem affected by Glen Canyon Dam, including natural biological diversity (emphasizing native biodiversity), traditional cultural properties, spiritual values, and cultural, physical, and recreational resources through the operation of Glen

Canyon Dam and other means.

We do so in keeping with the federal trust responsibilities to Indian tribes, in compliance with applicable federal, state, and tribal laws, including the water delivery obligations of the Law of the River, and with due consideration to the economic value of power resources.

This will be accomplished through our long-term partnership utilizing the best available scientific and other information through an adaptive ecosystem management process.

### Principles

The Glen Canyon Dam Adaptive Management Work Group embraces the following Principles. They guided development of the Goals and Objectives for the Glen Canyon Dam Adaptive Management Program (GCDAMP). These Principles are:

The Goals represent a set of desired outcomes that together will accomplish our Vision and achieve the purpose of the Grand Canyon Protection Act. Some of the Objectives and actions that fall under these Goals may not be the responsibility GCDAMP, and may be funded by other sources, but are included here for completeness.

The construction of Glen Canyon Dam and the introduction of non-native species have irreversibly changed the Colorado River ecosystem.

Much remains unknown about the Colorado River ecosystem below Glen Canyon Dam and how to achieve GCDAMP ecosystem Goals.

The Colorado River ecosystem is a managed ecosystem. An ecosystem management approach, in lieu of an issues, species, or resources approach, will guide our efforts. Management efforts will prevent any further human-induced extirpation or extinction of native species.

An adaptive management approach will be used to achieve GCDAMP ecosystem Goals, through experimentation and monitoring, to meet the intent of the Grand Canyon Protection Act, the Environmental Impact Statement, and the Record of Decision.

Management actions, including changes in dam operations, will be tried that attempt to return ecosystem patterns and processes to their range of natural variability. When this is not appropriate, or beyond the range of operational flexibility of the dam, experiments will be conducted to test other approaches.

Because management actions to achieve a Goal may benefit one resource or value and adversely affect another, those action alternatives that benefit all resources and values will be pursued first. When this is not possible, actions that have a neutral impact, or as a last resort, actions that minimize negative impacts on other resources will be pursued, consistent with the final Glen Canyon Dam EIS and the Record of Decision.

Recognizing the diverse perspectives and spiritual values of the stakeholders, the unique aesthetic value of the Grand Canyon will be respected and enhanced.

## Goals

- Goal 1. Protect or improve the aquatic foodbase so that it will support viable populations of desired species at higher trophic levels.
- Goal 2. Maintain or attain viable populations of existing native fish and remove jeopardy from humpback chub and razorback sucker.
- Goal 3. Restore populations of extirpated species, as feasible.
- Goal 4. Maintain a wild reproducing population of rainbow trout above the Paria River, to the extent practicable and consistent.
- Goal 5. Establish water temperature, quality, and flow dynamics to achieve GCDAMP ecosystem goals.
- Goal 6. Maintain or attain levels of sediment storage within the main channel and along shorelines to achieve GCDAMP ecosystem goals.
- Goal 7. Maintain or attain viable populations of Kanab ambersnail.

Goal 8. Protect the presence of southwestern willow flycatcher and its critical habitat in a manner consistent with riparian ecosystem goals.

Goal 9. Protect or improve the biotic riparian and spring communities.

Goal 10. Maintain or improve the quality of recreational experiences for users of the Colorado River ecosystem, within the framework of GCDAMP ecosystem goals.

Goal 11. Maintain or increase power and energy generation within the framework of GCDAMP ecosystem goals.

Goal 12. Preserve, protect, manage, and treat cultural resources for the inspiration and benefit of past, present and future generations.

Goal 13. Maintain a high-quality monitoring, research, and adaptive management program.

## Management Objectives for Goal 10

- MO35: Maintain physical access and safety for visitors to the main stem.
- MO36: Maintain or improve the quality and quantity of the recreational spectrum in Glen Canyon.
- MO37: Maintain or increase camping beaches along the main stem, including: size, quality, number, and distribution.
- MO38: Maintain or improve the navigability of rapids in the main stem.
- MO39: Maintain or enhance the wilderness experience in Grand Canyon.

## Glossary of Terms

**Adaptive Management:** Adaptive management is an iterative process, designed to experimentally compare selected management actions by evaluating alternative hypotheses about the ecosystem being managed. It consists of three parts: management actions, monitoring, and adaptation. Management actions are treated as experiments subject to modification. Monitoring is conducted to detect the effects of the management actions. Finally, management actions are refined based on the enhanced understanding about how the ecosystem responds.

**Biodiversity:** Biodiversity is “the variety of organisms considered at all levels, from genetic variants belonging to the same species through arrays of species to arrays of genera, families, and still higher taxonomic levels [including]...the variety of ecosystems...”(38)

**Biotic Community:** A biotic community is a “group of



organisms...that co-occur in the same habitat or area and interact through trophic and spatial relationships..."(20)

**Colorado River Ecosystem:** The Colorado River ecosystem is the Colorado River mainstem corridor and interacting resources in associated riparian and terrace zones, located primarily from the forebay of Glen Canyon Dam to the western boundary of Grand Canyon National Park. It includes the downstream inundation level to which dam operations impact physical, biological, recreational, cultural, and other resources. The scope of GCDAMP activities may include limited investigations into some tributaries (e.g., the Little Colorado and Paria Rivers).

**Conceptual Model:** A conceptual model is an "assessment of the dynamics of the more important compartments and fluxes of material or energy in a system [i.e., patterns and processes], or of changes in a population."(20) A conceptual model is a heuristic tool to provide a framework for thinking about how an ecosystem functions and to discover gaps in our knowledge.

**Cultural Resources:** Cultural resources includes, but is not necessarily limited to, any prehistoric or historic district, site, building, structure, landscape, or object included in, or eligible for inclusion in the National Register, including artifacts, records, and material remains related to such a property or resource. Properties of traditional religious and cultural importance to an Indian tribe are included in this definition under Section 101(d)(6)(A) of NHPA.

**Ecosystem:** An ecosystem is "a community of organisms and their physical environment interacting as an ecological unit."(20) An ecosystem consists of patterns and processes that are dynamic and occur within a particular range of temporal and spatial variability.

**Ecosystem Integrity:** Ecosystem integrity is "the ability to support and maintain a balanced, integrated, adaptive biological system having the full range of elements (genes, species, and assemblages) and processes (mutation, demography, biotic interactions, nutrient and energy dynamics, and metapopulation processes) expected in the natural habitat of a region."(13) Ecosystem integrity is related to ecosystem resilience (i.e., the capacity to maintain characteristic patterns and processes) following a disturbance.

**Ecosystem Management:** An ecosystem management approach differs from an issue-, species-, or resource-



Sam Walton



specific approach. Ecosystem management is a method for sustaining or restoring ecosystems and their functions and values. "It is goal driven, and it is based on a collaboratively developed vision of desired future conditions that integrates ecological, economic, and social factors. It is applied within a geographic framework defined primarily by ecological boundaries."(11) Ecosystem management is a process that attempts to mimic appropriate ecosystem patterns (abundance and distribution of species and habitats) and ecosystem processes (drivers of ecosystem patterns). It includes managing for viable populations of all native species.

**Ecosystem Patterns:** Ecosystem pattern is the abundance of species, biotic communities, and physical habitats, as well as their spatial and temporal distribution. This is a broader concept than "composition and structure." Composition usually refers only to species presence or absence, and structure usually refers to the distribution of biotic communities.

**Ecosystem Processes:** Ecosystem processes are the abiotic (i.e., non-living) and biotic (i.e., living) functions, disturbances, or events that shape ecosystem patterns. There are physical processes (e.g., fire, hydrologic, geomorphic, and climatic regimes; air chemistry, nutrient cycling), biological processes (e.g., competition, predation, herbivory, parasitism, disease, migration, dispersal, gene flow, succession, recruitment, maturation), and anthropogenic processes (e.g., habitat conversion, novel toxins, vandalism).

**Monitoring:** Monitoring is the "collection and analysis of repeated observations or measurements to evaluate changes in condition and progress toward meeting a management objective."(4) Monitoring needs to produce data of sufficient statistical power to detect a trend if in fact it is occurring.(8) Monitoring differs from inventorying, which is the measurement of environmental attributes at a given point in time to determine what is there. It also differs from research, which is the measurement of environmental attributes to test a specific hypothesis.

**Range of Natural Variability:** The Range of Natural Variability is the spatial and temporal variation in ecosystem patterns and ecosystem processes under which the ecosystem has evolved. The range of natural variability for ecological processes is usually defined by their frequency (e.g., number/year), intensity (e.g., cubic feet per second), duration (e.g., number of days), magnitude (e.g., acres), seasonally, and rate of change. See Landres(18) for a full discussion.

**Reasonable and Prudent Alternative:** "Reasonable and prudent alternatives refer to alternative actions identified during formal consultation that can be implemented in a manner consistent with the intended purpose of the action, that can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, that is economically and technologically feasible, and that the Director believes would avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat."(5)

**Reasonable and Prudent Measure:** "Reasonable and prudent measures refer to those actions the Director believes necessary or appropriate to minimize the impacts, i.e., amount or extent of incidental take."(5)

**Recovery:** Recovery is improvement in the status of a listed species to the point at which listing is no longer appropriate, under the criteria set out in section 4(a)(1) of the Endangered Species Act (5).

**Removal of Jeopardy:** To "jeopardize the continued existence of [a listed species] means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."(5) Removing (or avoiding) jeopardy is intended to be accomplished through the implementation of reasonable and prudent alternatives.

**Riparian Ecosystem:** The riparian ecosystem is the streamside zone that is influenced by riverine processes, e.g., flood regime and distance to subsurface water.

**Riverine Ecosystem:** The riverine ecosystem is any area typically inundated by the river.

**Viable Population:** A population is considered viable when there is a high chance of persistence over a long timeframe without demographic or genetic augmentation. Population viability is not the same as "recovery" or "removal of jeopardy" for a species. However, the concept of population viability is an important consideration in determining recovery and removal of jeopardy.

## GCRG Fall Meeting 2000

**I**F YOU COULDN'T COME, you missed out! Grand Canyon River Guides' Fall Meeting was held on Saturday, November 4th here in Flagstaff at the Professional River Outfitters (PRO) warehouse. Approximately 50 guides attended with the numbers swelling to over 100 by the afternoon. Speakers and topics ranged from:

- Chris Coder—A discussion of human pre-history in Grand Canyon.
- Barry Gold—GCMRC programs with an overview of Adaptive Management and the role GCMRC plays in that process.
- Steve Carothers and Melissa Trammell—The effects of Low Summer Steady Flows on native fish. See Melissa's article in this issue.
- Matt Kaplinski—GCRG's role in the Adaptive Management Program and a preliminary report on the effects of the LSSF on sediment in Grand Canyon.
- Jeffrey Cross—As the new Science Center director at GCNP, Jeffrey gave us an overview of Science Center priorities and programs. Glad to meet you, Jeffrey!
- Mike McGinnis—Mike now serves as the acting head of the Wilderness District (newly formed combination of river and backcountry ranger districts).
- David Chapman—As the new Lees Ferry Ranger, David filled us in about updates in their operating procedures including the development of a new guide database which will include all certifications and expiration dates for each guide licensed in Grand Canyon.
- Jim Nothnagel—Responsible for public health issues in Grand Canyon National Park, Jim spoke about the flu symptoms prevalent this summer during the Low Summer Steady Flows. Perhaps this past season should have been dubbed, "Fish, Flies, and Flu"! See Jim's article in this issue for details.
- Catherine Roberts—A discussion of the computer model project designed to simulate "virtual river trips" and their potential impacts on crowding and congestion in Grand Canyon. Catherine also works with David Chapman on the guide database and on launch schedule availability on the web.



*Brad Dimock as the maniacal Walter Powell.*

Entertainment was in the form of the movie "First Journey", while a subsequent party and general merriment rounded out the evening. The "Great Guide Get-together" was a huge success with tons of information, lively discussions, stories swapped and friendships renewed.

GCRG would like to heartily thank Bruce Helin and Professional River Outfitters for allowing us to use their new warehouse for our event. We also owe a debt of gratitude to Mark Thatcher and Teva Sport Sandals for sponsoring our Fall Meeting by helping us out with food and drink

costs. Additional kudos go to all the people who made this happen: the GCRG Officers and Board of Directors,



*The crowd enjoying themselves.*

our many fine speakers, Carly Williams (our cook), the employees of PRO, Brian Dierker and the "First Journey" actors, Brad Dimock for his hilarious stories about the making of the film as well as the many others who lent a helping hand for the event. We couldn't have done it without all of you!

*Lynn Hamilton*

## COR Update

LAST SPRING, GCRG submitted comments on the “Draft 2000 Commercial Operating Requirements” regarding significant regulatory changes that we saw as unnecessary or unclear. GCRG officers and board members also met with Park officials to outline our concerns. At our recent Fall Meeting, GCRG was taken aback to learn from Mike McGinnis (the new acting head of the Wilderness District) that the Superintendent and Chief Ranger of Grand Canyon National Park had since signed off on the Draft 2000 cor’s with implementation planned for 2001. We should point out that Mike is new to this position and had nothing to do with this decision (other than to make us aware of it). As Mike said, “Don’t shoot the messenger!” We’ve included here GCRG’s comment letter as well as our recent letter to the Acting Park Superintendent.

*Following is a letter written by GCRG to Patrick Hattaway and Allen Keske of GCNP on January 31, 2000.*

Thank you for asking our input regarding the draft copy of the year 2000 Commercial Operating Requirements (COR). After careful examination of the draft 2000 COR and comparison with the 1999 COR, we have found several significant changes that we believe need further discussion and revision before incorporation in the final COR. They are: [1.] Supplement G in general and the inclusion of US Coast Guard (USCG) regulations in particular (see pages C-33 thru 35) and [2.] changes in the level of emergency medical training required of guides (see page C-7, III.B.e.) and [3.] sponsoring by outfitters to apply for certification (see page C-6, III.B.1.).

[1.] Supplement G (see pages 33 thru 35)

Five years ago Grand Canyon River Guides (GCRG) joined forces with the NPS to properly determine that the Coast Guards’ jurisdiction did not extend to whitewater boating in Grand Canyon or whitewater boating in general in the United States. Therefore, GCRG must firmly object to the application, by the NPS, of USCG rules anywhere in the draft COR. We feel that all regulations governing boating in the Canyon should be clear, concise, understandable, reasonable and crafted by the NPS, the guides and outfitters, not borrowed from other agencies. We also feel that “Supplement G” should be abandoned in favor of the 1999 COR format because it is redundant, unclear, and difficult to understand.

[2.] Changes in the level of emergency medical training required of guides (see page C-7, III.B.2.e. and III.B.2’.c.).

This change is from “Must possess a valid emergency medical certificate equivalent to or higher than the American Red Cross Emergency Response or Department of Transportation (DOT) First Responder”, to “Must be certified as a Wilderness First Responder (WFR) through a program sponsored in the United States. Higher emergency medical certifications

obtained in the United States above WFR will also qualify (EMT, WEMT, Emergency Medical Doctor).” While GCRG is, in principle, in favor of maintaining a high standard of emergency response training, we must question the justification for such a change on the part of the NPS. In other words, what specific incidents/evacuations have occurred recently that have caused concern that the current requirements are not adequate? If the justification exists, then we feel strongly that such a change needs to be phased in, allowing currently accepted certifications to expire or be bridged to the new standard. Certainly, any changes to this regulation cannot be made in 2000 from both a practical and logistical standpoint. GCRG is going forward with our Wilderness Advanced First Aid (WAFA) course as well as our Review course (re-certifies WAFA, WFR and WEMT) scheduled for this spring. Our courses were planned months ago based on the 1999 COR and exceed the DOT standard. We also believe that bridge courses to upgrade existing certifications need to be developed and implemented. Most importantly, though, we understand that at the present time there is no national standard for this type of emergency response course. This is a serious concern. According to the Draft language, any course that calls itself a “Wilderness First Responder” course and is offered in the United States would qualify regardless of actual content. Clearly a national standard for wilderness medicine needs to be established.

GCRG proposes that the current (1999 COR) wording be retained until such time as a national standard for a wilderness emergency medical course curriculum is established. In the interim, we are committed to working together with the NPS and current wilderness medicine course providers to determine an appropriate licensing agency to work towards that goal. In addition, we will also continue to offer WAFA and WFR courses and encourage guides to voluntarily upgrade their certifications to WAFA or higher.

For the above reasons, two related items need to be removed from the Draft COR. They are page C-4, II.B.2., which states that, “There will be a WFR for every



18 passengers or portion of 18.” (on each trip?) and page C-11, IV.F., which states that, “Hikes involving distances more than one mile from the river should have a WFR or higher qualified individual with the group”.

[3.] Sponsoring by outfitters (see page C-6, III.B.1.)

It reads, “Any individual wishing to become a new commercial guide or trip leader must submit a nomination letter to the Lees Ferry Ranger from a licensed outfitter sponsoring their certification.” GCRG vigorously opposes this requirement on the grounds that it creates a bias against individuals wishing to become freelance guides not associated with a particular outfitter.

In conclusion, we suggest that, in light of the magnitude of the changes proposed in the Draft 2000 cor, more discussion is needed. We also would appreciate the opportunity to meet with River Sub-district personnel and go over the entire document. Since the initial authoring of the cor over 25 years ago, new regulations have been added as needed, however, no regulations have been removed. It seems probable that at least a few of them could be outdated and the cor could benefit from a reassessment with a historical perspective. We also have some suggestions for changes in the cor that could significantly reduce crowding at certain key attraction points along the river.

We look forward to hearing from you and meeting with you soon. Thank you again for asking our input.

\*\*\*\*\*

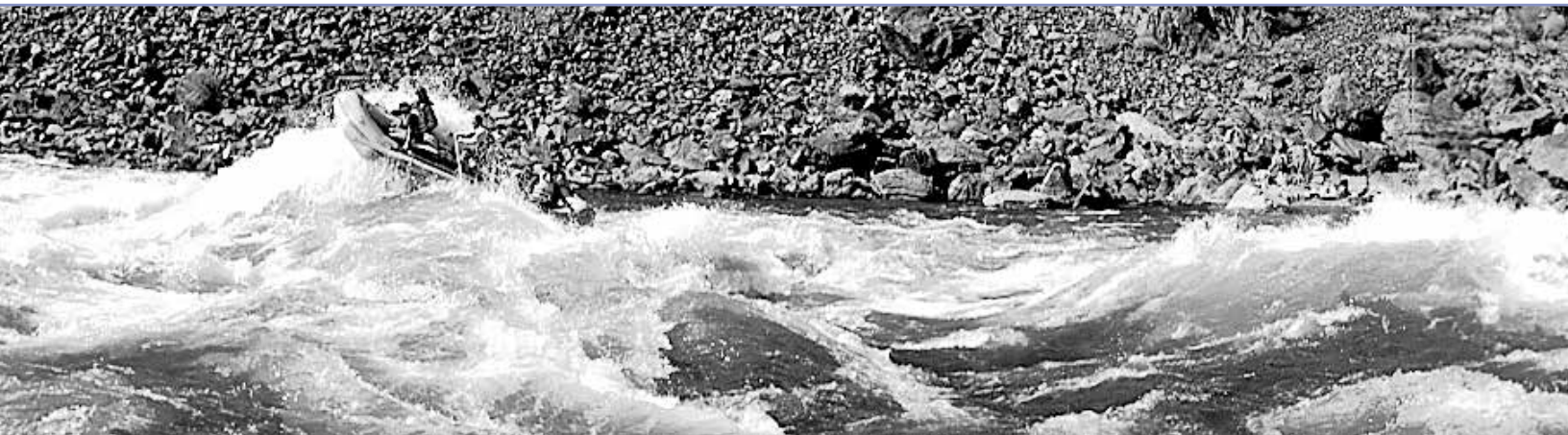
*The following is a letter written to J.T. Reynolds (Acting GCNP Superintendent) by GCRG on November 9, 2000.*

It is with a sense of grave disappointment that we again write to you concerning the latest version of the

“Commercial Operating Requirements,”—originally the “Draft 2000 cor’s” and now apparently being adopted without changes as the “2001 cor’s.” The Officers and Board of Directors of Grand Canyon River Guides Inc. responded in good faith to the park’s request for comment on the Draft 2000 cor’s twice by mail (January 31, 2000 and March 22, 2000) and once in person (February 24, 2000). After considerable discussion at the February meeting at Grand Canyon National Park, you personally stated your intention of reviewing the specific regulations in question, getting clearer definitions, opening discussions with Sherry Collins and articulated your desire to find reasonable solutions to the issues we raised. It was also clear at the meeting that GCRG would be appraised of any changes and would be offered further opportunity to work towards solutions with Grand Canyon National Park.

To be honest, we weren’t entirely surprised at the lack of response last spring. At that same February meeting between GCRG and the Park, Superintendent Arnberger informed us of the halting the CRMP process. Soon after that, lawsuits were filed and changes were happening fast and furious in the park with major shifts in the Superintendent’s office and the Ranger Division. Timing wasn’t entirely conducive to working on regulations that might not be in effect until 2001. However, we fully expected the opportunity to begin work with the Park on these issues again this fall.

We were taken aback when Wilderness District Ranger Michael McGinnis announced at GCRG’s Fall Meeting on November 4th that GCNP planned to propose the “Draft 2000 cor’s” as the “2001 cor’s”. A November 6, 2000 phone call from Ranger McGinnis to Lynn Hamilton at GCRG further confirmed that the draft had been signed with no changes by the Superintendent





and the Chief Ranger and would be presented at the outfitters meeting at the Park the next day. It was also clear that Ranger McGinnis, being new to the position of the newly formed Wilderness District, had no knowledge of GCRG's comments or efforts in this regard and was merely relaying the information.

We, as the Board and representatives of the GCRG guiding membership, feel very strongly concerning our previously transmitted opinions on the "COR" changes, specifically: [1.] Supplement G in general and the inclusion of US Coast Guard (USCG) regulations in particular (see Pages C-33 thru 35); [2.] changes in the level of emergency medical training required of guides and trip leaders (see page C-7, III.B.e.); and [3.] sponsoring by outfitters to apply for certification (see Page C-6, III.B.1.). We have again attached our full comments here for your review.

Our input and concern are nothing new. Rob Arnberger became Superintendent in September 1994. In March of 1995 and after several requests, GCRG finally received the "1995 COR's". At a Constituency Panel meeting, attended by GCRG Representative Jeri Ledbetter and current GCRG VP Richard Quartaroli, among others, and after complaints about changes and some discussion, Superintendent Arberger concluded that the "1995 COR's" would not be implemented and the "1994 COR's" would remain in place with no changes for the 1995 season. He stated at that time that there was no need for the Commercial Operating Requirements to be changed annually and that he felt further input and discussion were needed before he authorized any changes. He reiterated this position at the spring 1995 GCRG annual meeting and Guides Training Seminar. Revising a GCNP position on COR changes is not unprecedented.

At that time GCRG stated "... we feel that denying the input of those with the most continuous and in-depth experience is folly. We are here, we are anxious to be part of the solution, and we look forward to helping create a workable set of 'COR's' for 1995." History seems to be repeating itself. Weighing in on the Commercial Operating Requirements to make them balanced, clear, concise and achievable for guides working in the unique environment in Grand Canyon is something GCRG has always tried to accomplish. Each new regulation should be carefully evaluated for merits or flaws and should be in response to a problem or a direct need. Pursuant to our goals of protecting Grand Canyon and the river experience, GCRG and the guiding community have a tremendous commitment to the resource and to safety. An average of ten years experience on the river allows us in-depth knowledge of the canyon and what makes a safe river trip. Our collective knowledge, conscientious professionalism and stewardship role in Grand Canyon should be considered for decisions directly involving the guiding community. As an organization, GCRG has always held open communication with Grand Canyon National Park as our operating philosophy. It is something for both organizations to remember. We would like to schedule a meeting with you at your earliest convenience to discuss these issues and will be contacting you shortly in this regard.

With close to 2,000 members and representing 770 guide members, Grand Canyon River Guides must firmly protest the adoption of the new Commercial Operating Requirements in this form. We respectfully request continued input into any changes that may be proposed now and in the future. And again, "We are here and anxious to be part of the solution...."



Sam Walton

## More Condors

SIXTEEN REINTRODUCED California Condors were captured and treated for lead poisoning in Grand Canyon National Park this summer after five birds were either found or presumed dead from the substance. The incident suggests that the birds may be becoming victims of their own success.

Though scientists could not pinpoint the source of the lead, they suspect the birds fed on an animal carcass full of lead shot—showing that they are increasingly finding their own food sources instead of relying on carcasses left by the recovery team.

Grand Canyon National Park Biologists and The Peregrine Fund's manager for the project in Arizona have observed the birds feeding together and suspects the poisoning could come from a single carcass—although they don't know exactly where the carcass was located because the radio collar signals used to track the condors are interrupted when they fly below the Canyon's rim.

Scientists can only speculate too why the carcass was full of lead shot. Hunting is allowed on some federal lands surrounding the Canyon, but no season was open when the birds began dying in June. Bill Heinrich, species restoration manager for The Peregrine Fund, said that it's possible that some kids may have used a dead animal for target practice or the birds found the carrion on private land.

All of the condors captured in July had lead in their bloodstream. Most were treated with chelate, a substance that binds to the lead and allows the birds to excrete it; a few needed surgery to remove the lead pellets. All six birds have been re-released.

The poisonings are also a concern because they are an indication that the toxic environment could be harming other creatures that are not being monitored. Likely, eagles and turkey vultures could have been affected too.

Getting the condors to forage on their own has been one challenge of the program, which began in 1996 as a cooperative effort by The Peregrine Fund, the US Fish and Wildlife Service, the Arizona Game and Fish Department, the National Park Service and Bureau of Land Management (BLM). The first captive-reared birds were released at Vermilion Cliffs, Arizona, BLM land north of the Grand Canyon. Each year, about a dozen birds are released in this area, and to train the young birds to forage, carcasses are left out by the recovery team. Some of the older condors, however, are now showing a preference for dead bighorn sheep, deer, and elk in the park.

In addition to continuing to provide a healthy source of food for the young birds, the recovery team also aims

to persuade local hunters to use nontoxic bullet alternatives as they become available. One such "green" bullet, a composite of tungsten, tin, and bismuth (TTB), is being considered for use by the military to reduce contamination on its training grounds.

While foraging skills improve among the birds at the Grand Canyon, high mortality and the condor's inquisitive nature create other obstacles for recovery. In the wild, a baby condor stays with its parents for the first year, learning to feed and avoid dangers. The released birds are juveniles that must fend for themselves. Some are killed by golden eagles and coyotes while competing for food; others have flown into power lines or ingested antifreeze.

Because condors cannot smell, the bird's curious nature evolved to help them find food by following visual cues from other animals, such as ravens or eagles. The reintroduced condors have shown up in campsites, parking lots, and picnic areas. They have shown up in some fishermen's sites and backpackers camps and dragged away firewood, tents and other camping equipment.

Inside the park, people have put children next to the birds for a photo or walked up to them for a close view, not behavior that the park recommends. It's a wonderful experience to see one of them, and we want people to know that the Endangered Species Act works. But we also want people to see them in their natural, wild state. This means keeping people at a distance so the birds are not habituated.

If the juvenile birds learn to avoid the dangers of human interaction and competitive species, they have a good chance of reaching sexual maturity. The first condors released—now about six years old—are reaching that stage and beginning to show signs of pair bonding. The team hopes to see wild birds born in the next three to four years. As of July, 48 California condors lived in the wild in Arizona and California, and 123 were in captive breeding facilities. Thirteen more condors are scheduled to be released in the Grand Canyon vicinity in December.

*Elaine Leslie*





Sam Walton

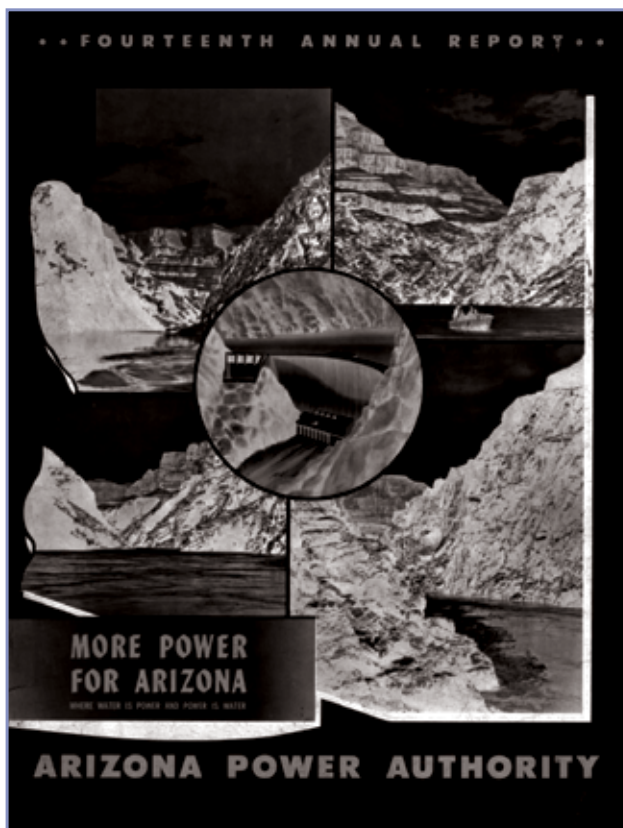


Sam Walton



*Bob Euler, continued from cover*

Then I thought to myself: “Gosh! Wonder what the rest of Grand Canyon is like archaeologically.” And I hooked up with, just by coincidence, the Arizona Power Authority. At that time they were interested in building a couple of dams in Grand Canyon: one at Bridge Canyon and one at Marble Canyon... It was the late '50s by that time: '58, '59. They took me on a couple of trips over to where they wanted to build Bridge Canyon Dam. They even took me on a river trip up from Pierce Ferry up to the damsite just above Separation Canyon. And that whetted my appetite even more. So the Arizona Power Authority in 1960 said: “Would you like to take a river trip and just sort of see what archeological resources are in the way, that would have to be excavated if and when we build these dams?”



*Arizona Power Authority 1958 Annual Report showing before and after photo-renderings of Bridge Canyon Dam*

So 1960 was my first river trip and I went with the Sandersons. It wasn't a company then. They were just a family affair. They had three small outboard boats—aluminum boats: fourteen feet long, each with twin 35-horse engines on them. And I remember on that trip there were twelve of us and nine of the twelve were

Sandersons. It was just a “family outing”. That's what it amounted to. And the Arizona Power Authority paid my expenses on the trip. I think they gave Sanderson something like \$200 for the whole trip...which lasted—I can't remember exactly—about eleven days, something like that—that we were on the river.

Another professional archeologist had preceded me on river trips in the early 1950s: Dr. Walter W. Taylor, who was a very well-known archeologist, retired now. I don't remember the details of his trip except it was on some boats that had inboard motors. And he was among the first 200 to make the trip down the river, when Dock Marston was still keeping records of how many people went on those trips. He was among the first 200. Somebody on my trip in 1960 was among the first 500 to make the trip.

It was a pretty exciting trip. The river was flowing a little over 60,000 cfs. This was in June of 1960. And I really didn't know what I was getting into at all (laughing). But I do remember that when we got above Lava Falls it was the only time Rod Sanderson ever said anything to us. He said, “I just want you to remember, no matter what happens, hang onto that boat. That's your transportation out of here!” And we made it all right. We took a lot of water, but we got through it just fine on that trip.

I did revisit some of the archeological sites that Walt Taylor had recorded a few years before, and recorded a few more at that time. That of course whetted my appetite even more. “I got sand in my hip pockets”, as they say! And, um, I managed to make altogether three trips with the Sandersons prior to the building of the Dam. The last trip I remember was— guess the Dam was being filled then— 1965 I think it was. Um...those three boats had just about had it. On our first trip in 1960 we took welding equipment with us for the aluminum. When we'd hit rocks they would stop and patch it. On the third trip in those boats they were so full of holes that we were patching them with flattened out tin cans and pieces of Levis and that sort of thing. They were in pretty bad shape by that time. They'd made ten trips altogether and I made three with those boats and I think it may have been the last trip they ever made. It certainly was the last trip I ever made in, uh, an aluminum power boat, going down the river.

*Do you remember who were the pilots or who was driving the first three boats?*

Well, Rod Sanderson, Jerry's father. Jerry was too young to drive one himself. He was learning then. And Jerry's uncle from Phoenix—big, husky man, I've forgotten his name, now; maybe it was Bill, something like that. He ran another one. And I've forgotten who ran the third, maybe it was [Jerry's brother, Bill.]





*Running Lava Falls with Rod Sanderson, June 1960*

Somewhere in my files I've got pictures of that, that trip, going through various rapids. And we ran every single one of them. I didn't have too much time to stop and look for archeological sites because it was too difficult at that high water to tie up where we wanted to. Although I know on the last trip we, at lower water, maybe 40,000, something like that, we were able to run back up the river through Granite Narrows because I had seen a site up on the cliff and I didn't have time to stop and the next day they ran me back up with these power boats. So they had pretty good power for them.

*And you remember them actually hitting rocks.*

Oh, you bet! Yeah! You bet. And I remember them beaching the boat, turning it over, welding the gashes that were in it. I remember they told me it was very difficult to weld aluminum. But some of the Sandersons were expert at this and so we had torches and I don't know how big the tanks were they used. But that was the only trip we had welding equipment with us. The rest of the time it was patching with other materials.

In the last trip I took with those power boats, in 1965, I said earlier they were in pretty bad shape by then, the boats were, and so were the motors. And I remember having all sorts of trouble with the motors. Uh, down near Fern Glen we ruined a lower unit and the Sandersons stuck it up under a rock on the left bank. Last time I was down you could barely see it.... They did that just to mark our passage, I guess! On that same trip, by the time we got to Lava Falls, we were out of spare parts for the motors. One of the boats was down

to one motor. So I remember very vividly we ran one boat through and then we waited below Lava Falls to watch the second boat come through. And then we were supposed to take off...uh...to go to St. George to try to find another lower unit while the second boat carried one of their engines back up above Lava Falls, through that mess over at Warm Springs. Uh, and they all made it...made it through.

We hiked up and I think it was with Bill Sanderson. Let me back up a minute. We were met on each of these trips at the foot of the Bundy Trail, there [at Whitmore], with gasoline. Uh, I know we took on...in that time they had a pipeline coming down from the rim and they'd pour five gallons in the top and we'd catch it at the bottom. They rigged that up for those jet boats that were going upriver about the same time. The Bundys met us at the foot of the trail, three Bundys. And they had a pickup truck up on top. And we hiked up that trail, something like 1300 feet up, and got in their pickup and drove to Bundyville, which had 28 Bundys living in it at the time. And then they drove us into St. George and we did find a lower unit that would fit, and drove back, got to the rim of the Canyon about eleven o'clock at night, and hiked down in the dark...carrying that thing. Forgot to take a flashlight, of course!...

In all those trips the boats never flipped, I was never out of the boat at all. I thought I was once in Lava Falls, but, uh, you know, at that high water it was just terrible and I hung on for dear life and made it! [laughing]

*Man, I tell you! To be down there at 60,000 in a...And*

*these are fourteen foot boats?*

Yes. Seven feet wide, fourteen...They held four people—a pilot and three passengers. And we didn't have much room for gear. We didn't take tents or anything like that with us.

*What would you do in the rain?*

We all huddled together and put a tarp over us [laughing]...Over all twelve people, when it rained. I can remember on one of those trips, opposite Deer Creek Falls, it just poured all night and we had this tarp over us that got hot and sticky and we were afraid of scorpions in fact [laughing]. We stayed relatively dry anyway.

*What was Rod Sanderson like? How did he strike you? How was he to be around?*

Uh...he was a no-nonsense person. Very stern with the kids. I know on one of those trips he caught Jerry up at Phantom Ranch drinking beer and he raised holy hell about that. I can remember him saying, "This river water and booze don't mix! There won't be any of it on my trips!"

*So he didn't...so he wasn't a hard-drinking guy himself.*

Oh, I think he might have been. Yes. But not on the river he wasn't. Yes. But he was very skilled. He'd been on the river lots before that. I think he told me once he'd been on at some great flood of over a hundred thousand cfs and, uh, just had practically no control over the boats. He was working, I guess, for the Bureau of Reclamation at an early damsite, which was...hmm... up near Redwall Cavern someplace. So that's when he first got on the river, I think. And then he's the one that found the body of that Boy Scout in the late '40s that drowned up in Glen Canyon and they found him at...in that big eddy at President Harding Rapid. The same place where Hansbrough was found by the Stanton Expe-

dition and buried there up in the cliffs. Rod was on the trip with Willie Taylor who's grave is just down below President Harding there. He died of a heart attack down there.

So Rod was a very fine person, a very good man with those power boats. He was a very strict individual with everybody on the trips. He was quite conservative. Above many of the rapids we would stop and look them over and he and the other two pilots would plot a course down. Of course this was especially true at Lava. We'd always stopped on the left side of Lava in those days to look it over, rather than the right bank...

Well, those were exciting days. I didn't get as much archeology done as I would have liked because we just didn't have the time to spend a lot of time on land exploring. And on my last trip with the Sandersons, last trip in the power boats, Walt Taylor went with me, the archeologist who had been on the river in the '50s. And we plotted out some research sitting around the campfire. And I think that must have been '65, because in 1966 I got a National Science Foundation grant—I've forgotten how much money was involved—but it was enough for me to spend a couple of months in a helicopter flying all the side canyons from the dam down as far as Havasu on the left and Kanab Canyon on the right. And I...it was just marvelous. The pilot was very



*Upstream view from Furnace Flats site.*





*Landing at a Kayenta site in White Canyon.*

good. It was an old piston-driven Hiller. But we'd go up the side canyons and then just sort of moosh our way down as low and as slow as he could fly. When we'd spot a ruin we'd land and record it and then go on our way. Those were exciting trips in those piston-driven helicopters.

The pilot...uh...I think his name was Wayne Learn. And he had visions of starting the first helicopter tour business out of Tusayan. I contracted with him with my National Science Foundation money to fly us every day—two of us—my assistant, Larry Powers, who lives in Flagstaff now. And, uh, we just had a marvelous time in that helicopter. There were times when we got a lot of down-drafts and we had trouble getting up out of the Canyon. And we'd search around until we found an updraft and then away we'd go. It was much different from the Jet Rangers that I flew in later with the Park Service.

I've forgotten how many ruins I recorded—about 60 on that long couple of months that we were flying almost every day. And, uh, then just to wind up that part of the story, in later years when I was with the Park Service at Grand Canyon I was able to commandeer, so to speak, the Jet Ranger and fly into other areas that I had not been in before. For example, we flew the area that's called the Havasupai Traditional Use Lands—

mostly the Esplanade, around the Great Thumb and near Mount Sinyala. We spent three weeks every day flying that area and recorded a tremendous number of ruins in there. I finally got to the point where I felt I knew something about the archeology of Grand Canyon.

\* \* \*

*Dr. Bob Euler is an archeologist who has spent a good part of his career studying people who lived in the Grand Canyon. Dr. Euler has worked for, been affiliated with, or taught at a variety of institutions and entities, including the Hualapai Nation, the Museum of Northern Arizona, the Arizona Power Authority, the National Park Service, Northern Arizona University, and Prescott College to name just a few. He was pretty much a Grand Canyon fixture from the late '60s through the early '80s.*

*We sat down with him at his home in Prescott for two different sessions way back in the winter of 1994 and recorded the interview from which the following excerpts were taken.*

\* \* \*

I was born in New York, 1924, and my parents moved to Colorado when I was about eight and so I really grew up in Colorado right under the shadow of Pikes Peak, west of Colorado Springs. Went to high school there. Became interested in Indians at that time. I had a job cleaning out an Indian curio store—sweeping it out in the evenings while I was in high school. And I got all interested in Indians. And I decided to go to college and study anthropology. I didn't know much about it and I didn't know where I wanted to go to college. But in my senior year in high school the famous Egyptologist, James Henry Breasted, came to talk in our little high school—200 kids in the whole high school—and my mother said, "Why don't you go up after his talk and ask him about where you might go to college or university?"

So I did. I went up and introduced myself and he said, "Well, are you interested in New World or Old World archeology?" Well, I barely knew the difference. I said, "Well, I'm in the New World. I guess I'm interested in that." And he suggested that I apply to go to the University of New Mexico in Albuquerque, which had a very up and coming department even that time before World War II.

So I went there as a freshman in 1940. I spent two years there, until I had to go into the service for World War II. I joined the Marine Corps in the fall of 1942, sort of following in my father's footsteps—he'd been in the Marines in World War I and the Marine Corps at that time promised they'd leave me in school till I graduated, which was a big lie! So by the first of July of '43 I was on active duty. And I had my first experi-



ence with Flagstaff that year. The Navy had a v-12 unit, training unit, there. They had 200 Marines and 200 sailors there; and I spent two semesters in school at what is now NAU before I went back to boot camp and on to officer candidate school. I got my commission in the end of September of 1944. Immediately shipped overseas to join a unit in Hawaii and from there went to Iwo Jima. Spent nineteen days there until I got shot and then back to various hospitals on Guam and in Hawaii and finally, back to the States.

After I was relieved from active duty I went—I liked NAU quite a bit and I went back to school there—eventually took a bachelor's degree and the master's degree there. But not in anthropology—they didn't have any anthropology there. But I took it in economics.

And then I decided, "Well, economics isn't really what I want after all. I want to go back to anthropology." So I reapplied to the University of New Mexico. They took me in on sort of a probationary status and I spent three or four years there in course work, trying to make up for what I had missed all the years of the war. And I finally took a job in 1952 at the Museum of Northern Arizona with Dr. Harold Colton. I hadn't quite finished my degree then, but I was out of money and I needed to get a job, so I went there and eventually finished my Ph.D in 1958 while I was working part time at the museum in Flagstaff and teaching part time at what later became NAU...

Dr. Colton founded the Museum of Northern Arizona in the late 1920s. And he was a very wealthy man from Philadelphia, I believe. But he had a Ph.D in zoology that he took about 1908, something like that. He and his wife used to spend their summers in Flagstaff, out in what is now East Flagstaff. And then they decided they liked it so much that they built a house up on Fort Valley Road and started that museum. He was a wonderful old gentleman. Uh, I don't know how to really to describe him. He was a very gentle man, came from a very wealthy family in Philadelphia, and was very supportive of me when I worked there. I worked for him from 1952 until 1956 when I went full-time teaching at the university. All the time I was trying to finish my Ph.D dissertation and raise a family and that sort of thing...I mentioned a little bit earlier that Colton had sent me over to the Hualapai Reservation to help them with their land claim case. I wound up excavating ten archeological sites, not all on the Reservation. I said earlier some, in some of those tributary canyons, but also some off the Reservation that we thought had a bearing on their land claim case. Excavated ten of them and I turned that into a Ph.D dissertation...

When I first started doing archeology I wasn't interested solely in archeology, but I was also interested in the relationship of archeology to living peoples, like the Hopi or the Hualapai or Havasupai. And, um, we

simply would develop a research design and a series of questions that we wanted answered through our research and try to follow that as best we could in the field. A lot of my early work was just pure archeological survey. By that I mean you simply went out and covered a piece of ground and tried to see what was there in the way of either historical or prehistorical ruins, before you started thinking about excavating sites. Then you picked out a few important sites that you thought might shed more light on the prehistory of the people you were dealing with and excavate those.... It was about the time that what then was called "salvage archeology" was getting going...uh, when highways were supposed to be constructed. We were able to go out and do a reconnaissance of that highway right-of-way. And, uh, that became very big business, uh, not just on highways but dams, reservoirs, pipelines. In fact before Glen Canyon Dam was built there were huge archeological projects in the area of that proposed reservoir pool to excavate. The University of Utah had a big contract. The Museum of Northern Arizona had another one. And a tremendous amount of work was done, thanks to those federal laws that required this sort of thing.

\* \* \*

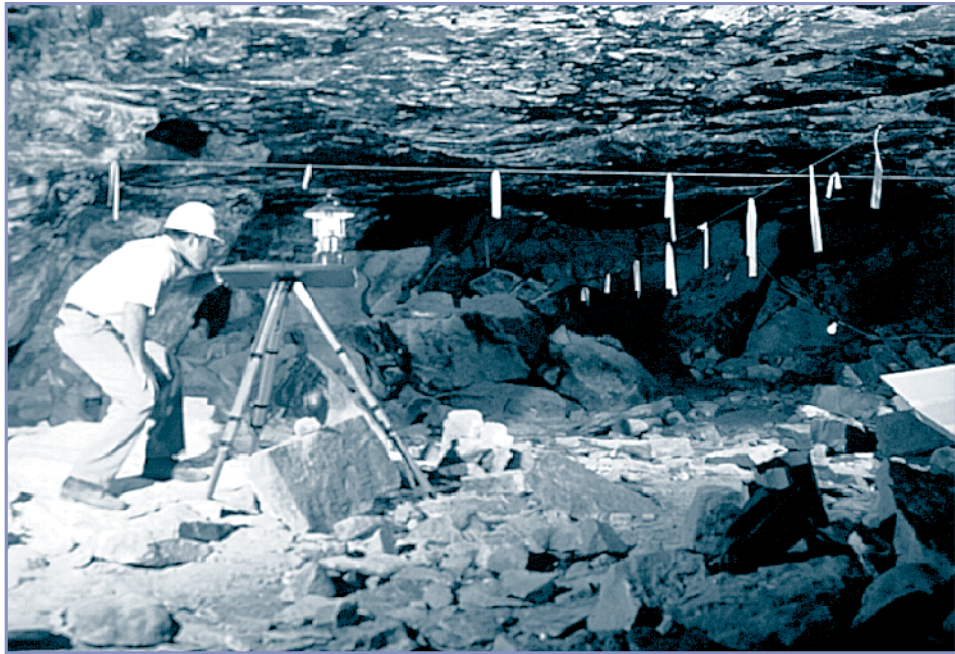
The earliest record that we have of human beings in Grand Canyon is represented by the makers of the split-twig figurines, which have been radio-carbon dated at between 3,000 and 4,000 years ago. They are found in a number of isolated caves in the Redwall Limestone in the Canyon. They've also been found out on the Mojave Desert of California and at one site in Walnut Canyon south of Flagstaff. We don't know who made these figurines. They left no evidence except the figurines themselves. They're very ingeniously, but simply, made out of one twig of willow—usually willow—sometimes squaw bush, the plant that's called *Rhus trilobata*. A twig about three feet long usually, although this varied, which was split lengthwise down most but not all of its length. The unsplit portion became the hind leg of the animal. One of the splints was bent to wrap around and form the body. The other splint was put up vertically to form the neck, head, and front legs of this animal. Occasionally, relatively rarely, we find pieces of dung stuck inside the body of the figurine, usually the dung of a now-extinct mountain goat that lived in the Canyon, a goat called *Oreamnos*. But that goat lived and died long before the split-twig figurine makers came along. They found the dung in these caves and, uh, for some reason or other they put a piece in the body occasionally.

While we don't know who made these we have a guess. Along the South Rim of the Canyon and near the summit of Red Butte just south of the Canyon we've recorded some sites of archaic...um...hunters who

were in the area making a distinctive type of spear point that we refer to as a Pinto Basin point because the first of them were found over in the Pinto Basin of the Mojave Desert. Now, the Pinto projectile points or spear points have been dated at about the same age as the figurines. So we assume, if they're found in proximity to one another, maybe the Pinto Basin hunters are the ones who made the figurines. We're never going to be sure of this, of course, until we find one of those Pinto Basin points sticking in one of the figurines...

More recently some paleontologists working in the Canyon, looking primarily for remains of Pleistocene birds and animals, have found additional figurines in caves that are exceedingly difficult to get into, requiring ropes and climbing equipment. In those caves they've found the cairns of rock or in some cases cairns of the dung of this extinct mountain goat with figurines in association. This gives us a little bit more information, perhaps, as to the significance of the figurines. That's about all we know at present about them.

When I was working in the Canyon I took a National Geographic photographer down to Stanton's Cave. He was interested in the cave and the figurines and the history of Stanton leaving his gear in the cave. And we talked about the figurines quite a bit and he said at that time, "Why don't you do an excavation in the cave to see if you can find out more about the figurine makers." And I said, very blankly, "Because it costs money to do this." Well, lo and behold, the National Geographic Society



*Bob Evler mapping the main room of Stanton's Cave, June 1969.*



*Bob Paige and figurine cache in situ, Stanton's Cave.*

then came up with two grants to enable me to go down.

I spent a month down there in the summer of I think it was 1969 with a couple of my students—three of my students. Um, we camped on the beach just below the mouth of South Canyon and worked in the cave every day. We put in two test trenches. We didn't find any evidence of human use below the surface. That is to say, all of the figurines that we recovered, and we recovered



over 60 of them, which are now at Grand Canyon National Park, all of them were on the surface or just covered by a little cave dust or, in a number of cases, hidden under rockfall. The cave floor was littered with rockfall when we first started to work there. As we dug down, like sensible archeologists, we went down all the way to bedrock. We did find a great deal of biological material in those trenches that we put down, very important biological material that, when analyzed, told us a great deal about the past environment of the Canyon, perhaps going back as much as 40,000 years. Right resting on bedrock in the bottom of our trenches were masses of driftwood—wood that was bedded in the cave deposits just like driftwood is buried or deposited along the beach lines. We've had this driftwood dated at ...well, it's almost beyond the ability of normal radio carbon equipment to count, to determine. We sent it off, some of it off to a usgs lab in Palo Alto, California, and they came back with a date of 47,000 plus years ago, for the driftwood. They don't know how much beyond that it was. There are some geologists who feel that perhaps the driftwood was put in there about the time one of the lava dams by...down by Lava Falls, caused the huge backup in the river. That may well be. I've never done any actual measurements, elevational measurements, to see whether that's true or not.

The other biological materials we found—a lot of plant remains that indicated that at about 12 or 13,000 years ago, the Canyon environment was a cold desert, like you get up in Northern Utah today with sagebrush and that sort of thing. We also found above the driftwood the dung and the remains, fragmentary remains, of this extinct mountain goat, *Oreamnos*... That's the genus. It was not related to the present bighorn sheep at all that are in the Canyon, but a distinct species of goat that is now extinct, died out around the end of the Pleistocene geological period.

We found also the fragmentary remains of a giant vulture, whose scientific name is *Teratornis*. It was in some ways related to the condors. This beast had a wingspan of seventeen feet. A huge beast that probably brought its prey into the cave to eat and then some of them died there. At least we found fragmentary remains of it. Condors have also been found in the Canyon—Pleistocene condors, but not in Stanton's Cave. The paleontologist, Steve Emslie and his colleague at NAU,



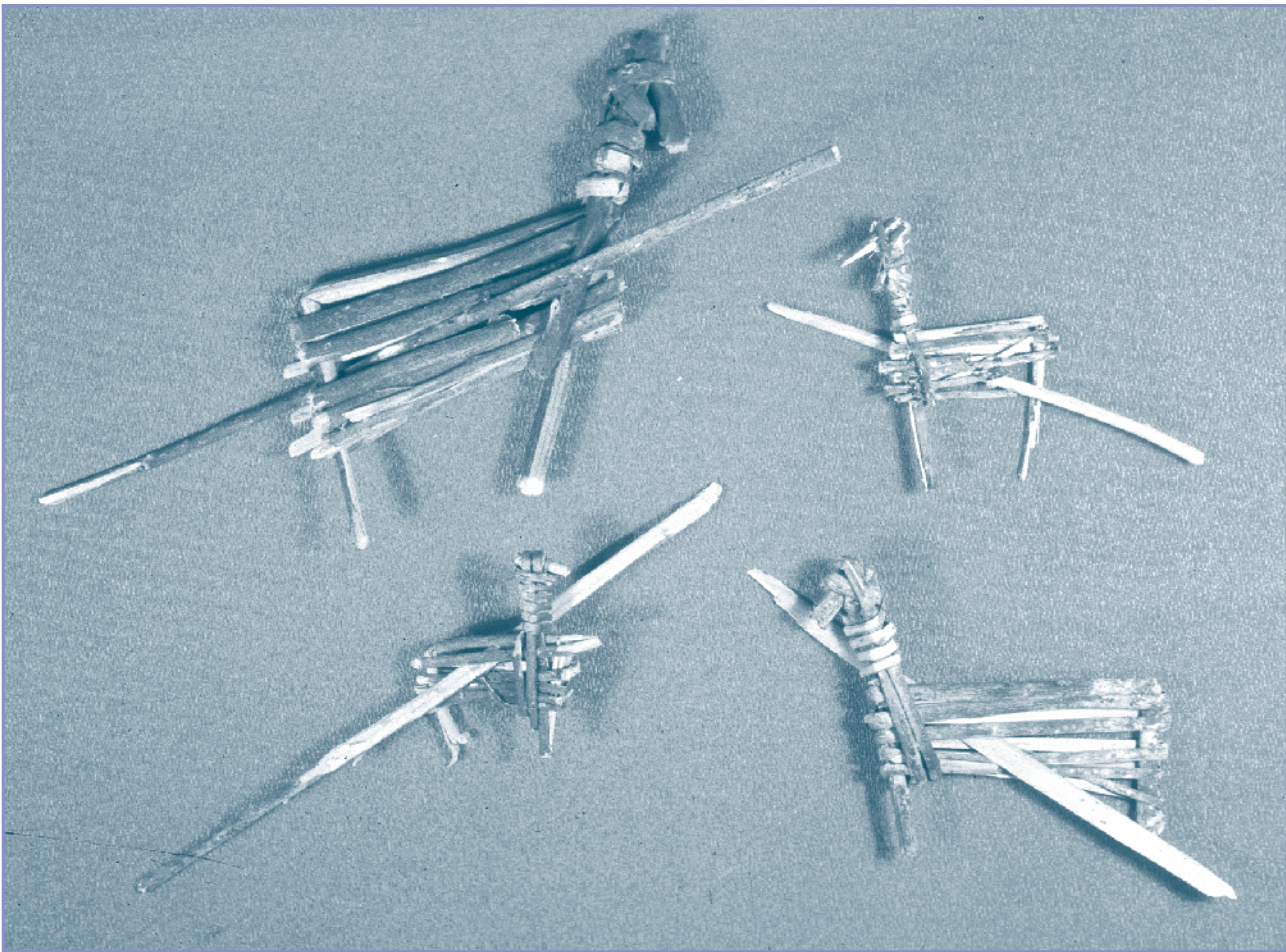
Stanton's Cave

Jim Mead, are the ones that are hot in pursuit of this Pleistocene fauna; doing quite a bit of work in these isolated caves, today.

So that's the earliest evidence we have of human beings in the Canyon.

Interestingly enough during the work that Emslie and Mead have done in the last year, one of the members of their party came across another very early type of projectile point somewhere up on Nankoweap Mesa. It's the fragment of a Folsom projectile point, the first one ever found in the Canyon. We have no idea what it's doing there, it wasn't found in association with anything else. But the Folsom hunters were mostly out on the high plains hunting giant Pleistocene bison. And, how this got into the Canyon I don't know...





*Split twig figurines from Stanton's Cave*

The other evidence that we have for early people in the Canyon has to do with some pictographs, archaic pictographs that are very similar to some up in Utah, relating to an archaic culture that lived up there. These are found at one site in the western part of the Canyon and, nowhere else that I know of. But they've been studied fairly carefully. And they seem to date less than 3,000 years ago, but not much less. I don't think at the moment we can say there is any connection between the people who painted these weird human-like figures on the rocks or walls of the Canyon with the split-twig figurine people.

Then we don't get any more evidence of humans in the Canyon until around 300 or 400 A.D., maybe even 500 A.D., when the "Anasazi" (or "Hisatsinam") people first made some halting explorations into the Canyon, coming from their heartland just to the east, around the present-day Hopi and Navajo country. Apparently they found the Canyon to their liking and by 1050, 1100, there were simply hundreds of ruins occupied by Anasazi hunters and farmers; farming corn, beans, squash, maybe a little cotton, even, in the Canyon. And, uh, they enjoyed

a pretty good life there. They moved around almost at will on some very hairy trails in the Canyon, for about a hundred years. By 1150 A.D. or shortly thereafter, primarily because of drought conditions in the northern Southwest, at that time they moved out and moved probably back to the present-day Hopi country because they were the direct ancestors of the Hopi Indians.

At the same time, beginning about 700 A.D., a little bit to the west of the Anasazi area of the Canyon, there was another group of people, whom we call the Cohonina. They were in friendly contact with the Anasazi. They tried to emulate the cultural traits of the Anasazi—pottery and pottery designs, and architecture in the form of masonry structures. They didn't always get the hang of it, but there they were, mostly along the South Rim, oh, just west of the Bass Trail, in that area, and also in some places even east of there on the South Rim, as far east as Tusayan Ruin where they were in contact with the Anasazi people. They disappeared from the record about A.D. 1150 and we have no idea where they went. As I may have mentioned the other day the archeologist Doug Schwartz believed at one time



for a number of years that they were the ancestors of the Havasupai and the Hualapai, but there's no evidence of that. In fact, as I said the other day, the Canyon seems to have been abandoned by human beings from about 1150 or 1200 until 1300 A.D. At that time the correct ancestors of the Havasupai and the Hualapai, people archeologists speak of as belonging to the Cerbat traditions, moved eastward up over the Grand Wash Cliffs and settled the entire area of mostly the south side of the Canyon extending, that is, in the Canyon as well as on the South Rim, extending over as far as the Little Colorado River, maybe even a little bit beyond that.

While the Cerbat or Pai people were settling the South Rim, the ancestors of the Southern Paiute were coming in from the north, settling the North Rim, some of this...the tributary canyons to the North Rim. Paiute evidences have been found, oh, down in Nankoweap Canyon. Way to the west, in what is called Indian Canyon, there are good Paiute sites in there. A lot of Paiute sites in Parashant Canyon. And, uh, they remained there in the Canyon as well as up on the rim and back up into southern Utah, including all of the Arizona Strip country, until they were forcibly removed from there by European advances. Farther north Europeans wiped out a lot of Southern Paiute.

*When you say "Europeans", do you mean the Spanish or...?*

When I talk about "Europeans" I'm talking first of all about the Spaniards who had fairly decent relationships on their explorations through Paiute country in the late 1700s, early 1800s. When the Anglos came along, uh, the relationships changed. The Anglos looked down on the Paiutes, they took advantage of them, they shot a lot of them, and, uh, tried to teach them how to farm, which they already knew how to do, and finally put them on reservations, such as at Kaibab and Shivwits and places like that. So that was essentially the end—let's say in the 1850s, 1860s. That was essentially the end of Paiute occupation of the North Rim of Grand Canyon.

\* \* \*

*Maybe we ought to go over how you found the Anasazi Bridge and um...Kenton and Elly hiking out the route for you.*

Okay. Alright. Harvey Butchart claims that one of his friends first discovered that bridge and that may be the case. I first saw it...oh, when was it?...Nineteen...60...oh, in the 1960s sometime...I was doing this helicopter survey for the Arizona Power Authority at the proposed Marble Canyon dam site and we just saw it

from the air. And, somebody climbed up to it. I guess it was Harvey Butchart that later climbed up to it and brought me down a piece of wood from the bridge so I could have it radio-carbon dated. Later on, on one of my river trips, I managed to climb up to it and found broken bits of prehistoric pottery along the route. I don't know how in the devil I ever got down from there—I'm not much of a climber, but I know they had a rope around me and helped me to get back down from that. Then we got Kenton Grua and Ellen Tibbetts interested in it and we arranged to fly them up to the bottom of the route to the bridge in the helicopter and gave them one of the Park Service radios so they could talk to us. We—Trinkle Jones and I stayed down on the beach. And we have good telephoto slides of their route climb up to there. You can see their white hardhats as they went up. They took ropes with them, but they didn't use them—they made a free climb all the way. And didn't step on the bridge—it's just very fragile. And they worked their way around behind it and on up several traverses. And some distance above the bridge they came across this cave in which they found pieces of weaving equipment



Trinkle Jones

The Anasazi Bridge—look closely



Kenton Girva and Ellen Tibbetts, working their way around the Anasazi Bridge.

from a loom. Um...they went all the way up to the top of the rim and then back down bringing us some of those loom tools down with them so that we could, as archeologists, analyze them and make sure that's what they were. Those two are up in the study collections at Grand Canyon now. And they got back down and away we went, flying...and flying out.

Trinkle Jones and I wanted to get in that cave once...after that. We wanted to really study it. So we had a very good helicopter pilot who took us up there just below the mouth of the cave. And he said, "Now, I can put you down here on one skid and let you get out very gently and then I'll fly off and come back later and pick you up." Well, he did that and just as he was about to tell us to get out, the rock on which the skid was sitting collapsed! And we peeled off and that was the end of our attempts to visit that cave.

*Um...This loom that Kenton and Elly found... I'm trying to grasp the implications of that.*

Okay. The Anasazi were carrying this...pieces of this wooden loom on the route out of the Canyon that they had pioneered. And they for some reason or another left the parts of it in the cave. I'm sure they weren't doing any weaving down there; they just were taking it from

one place to another and left it there.

*Does that mean that they grew cotton and used it? Is that...I wonder what they would weave with it.*

They wove things out of cotton, out of dog hair, and out of a flax-like wild plant, the name of which escapes me at the moment, a wild fibrous plant, you know. Now...we found very little evidence of cotton in the Canyon proper. But we know that the Hisatsinam were growing cotton elsewhere and weaving very nice robes from it.

*I'm trying to visualize, when they were living down there during the heyday, there are places that...uh...you know, kind of the typical spots where we visit, in South Canyon; where we talk about the bridge; and we talk about Nankoweap and Unkar and stuff, maybe it would be good to just visualize what...Did they...were they actually farming right there in all those places?*

Um, yes, they certainly were, but probably not right up by the area going up to the bridge or not right at above Vasey's Paradise where that ruin is.

*Those were migratory routes.*

That's too rugged a country, yes. But down at



the...Basalt and Unkar we found check dams, rock dams across areas where drainage would come down, that were ideal for farming. And then, going back to the bridge, up on top, there by Buck Farm—the rim at Buck Farm Canyon —um, there’s an area... really it’s the very upper part of the South Canyon drainage where it’s just a very shallow swale...uh, I have recorded up there...I think I am correct in these figures...over 30 Anasazi ruins that were occupied around 1100 A.D. And, in the wash, 77 check dams. And I dug down behind one of those dams to recover soil from which pollen analysis could be done and we found corn pollen there. That was a big Anasazi settlement up there above South Canyon...

Same is true on the North Rim. As one explores the North Rim itself, oh, from Bright Angel Canyon westward, wherever there’s a way to get down into the Canyon there are ruins on the rim. Where there’s no route down there aren’t any sites, or very, very few. All of the sites are located.... I say all...most of them... the Anasazi sites are located near the Rim and there’s plenty of evidence of farming in the way of check dams and little what we call “waffle gardens,” that sort of thing. And the reason that they could farm up at that altitude, um, say 8,000 feet, was because unknowingly they took advantage of the warm air coming up out of the Canyon. And you get a hundred, 200 yards back from the rim, you’re back in a different vegetative zone. You’re into white fir and spruce, things like that, aspen. And there are no sites. They just...it was just too cold to farm there.

There is a story I’ll tell you...maybe I shouldn’t... um, when I was working up at the Canyon one winter the heaviest snowfall on record fell at the North Rim, 300 inches, and I conned the Park Service into letting me take the helicopter over there because they had a helipad packed down. I told them I wanted to see whether Indians can survive up there in the winter time. Well, two or three of us went over in the helicopter and we dug down into one of the Park Service cabins so we could get the door open and get in, and then we went cross-country skiing all over that area. And we skied up on the roof of the North Rim Lodge and sat there and had a beer and [laughter]...and I’m sure that Indians were not there in the dead of winter. Just too much snow.

*I think the thing that...one of the things that hits me the longer...the more time I spend there...is how extensive the... population was. I mean, it seems like when you...from the perspective of a river passenger or a river guide, when you first go down and there’s a few sites that you see and you know, there’s these...the ones that are easily accessible from the river, um...it’s been my experience that the more time I spend the more I realize that there was quite the culture,*

*quite the numbers of people down there. Is that true?*

Well, the Park Service recently contracted...or a couple of years ago...contracted to do a thorough survey along the river corridor in connection with this GCES study. And they went back up the cliffs, or in the side canyons just a little way, I don’t know how far, and they said they found over 400 sites along the river corridor there. And I don’t doubt that. I think in all my trips down I may have found as many as 60 sites, something like that.

\* \* \*

Now, with James White...

I got very intrigued with the James White story back in the 1950s when the historian, Richard Ling-enfelter, wrote a little book called *First Through the Grand Canyon*, and I was asked by a historical journal to review that book. And I didn’t know anything about the Canyon or the River or anything else. But I concluded that, yeah, he probably did. He may not have deserved to have been the first through the Canyon, but I think he did.

And then I got all involved with Dock Marston on this and Dock introduced me to James White’s granddaughter. And to make this story relatively short, James White’s granddaughter lives down in Lake Havasu City and she and I are co-authoring a book. My portion of the book has to do with what evidence do we have that James White actually made this trip. The evidence is pretty slim. We’ll never know for sure whether he actually did it. But, I’ve been able to retrace the area that he claims he and his partners were ambushed by Ute Indians. Uh, I’ve been able to take aerial photographs of the area that fits his description of the area they were in, the distance that he and his companion, George Strole, had to hike down to the Colorado River from where they were ambushed, and Captain Baker was murdered.

And, the impossibility of White’s fabricating this by going overland down to Callville, either on the south side or the north side. The north side would have been just almost impossible for somebody that didn’t know the canyon country up there—Waterpocket Fold and that...that general region. And getting over the Kaibab—impossible. And on the south side the Indians would have killed him. The Hualapais were at war with all white people in 1867 and they would have just done him in. I think the only reasonable thing is to have gone down on his little raft.

There’s one thing in his... I can’t say his journal—he was semi-literate; he just...we just have this letter that he wrote to his brother. The one thing that rings a bell, that someone who had never been on the river would not be able to describe and that’s Deer Creek Falls. He talks about this stream of water, about the size of a man’s

body, coming over a notch in a cliff about a hundred feet above the...above the river. Uh, I don't think that was Vasey's Paradise. I think it was Deer Creek Falls. And that, had he not been there, he would not have known how to describe that thing.

The one fact that we really do know is that he was pulled off the river at Callville and in a horribly emaciated, sunburned state. He thought he'd been on the river twelve days, but we think it may have been longer than that. Um, he was just practically incoherent when they found him and pulled him off the river.

He had bumped into a Paiute camp just a couple of days before he reached Callville and he traded one of his pistols that he still had with him to the Paiutes for the hind quarters of a dog that they were cooking...there in a camp. And he still had that dog in his hand when they found him at Callville.

Well, his granddaughter remembers her grandfather, remembers what kind of a man he was. Uh, he never tried to make anything out of this. He just said, "Well, I accidentally came down the river and I didn't mean to." And he lived to a ripe old age of almost 90, I think. Lived up in Trinidad, Colorado.

His detractors are numerous, of course. Major Powell didn't want to acknowledge that somebody had beaten him to the...to the first trip down the river, although he did mention it to some of his men while they were on the river. And some of them...his men's journals...they talk about this. Stanton, of course, who wrote in his *Colorado River Controversies* a long story, and who interviewed White certainly didn't want to be the third man down the river. It was bad enough to be the second, so he pooh-pooed the whole thing. And, um, other explorers of the river, Julius Stone, people like that, have claimed it was impossible to do.

Anyway, we think he did it and we're doing this book...or I'm doing the physical evidence and Eilean, his granddaughter, is doing a really interesting narrative of, oh, how he was taken off the river and what people thought down there at Callville when they took him off. And the newspaper accounts a few days later about it. And then her reminiscences of her grandfather.

A lot of people say that he was a hothead and killed his companions. Well, he'd gotten himself in trouble, alright. He was in the Civil War and he got arrested by the Army for allegedly stealing some equipment. When he got out of the service he and two or three other men went on this prospecting trip and they went up to, oh, somewhere near Lake City in Colorado. And he got in an argument with one of the men on the party, and he shot him. It didn't kill him—wounded him, left him there to get well again. So people say, "Well, he just murdered his companions." Well, in 1867, where he was between the Colorado River and the San Juan, he could simply have gone back to the settlements in Southern

Colorado and said, "We were ambushed by Indians and everybody was killed except me" and nobody would have thought a thing about it. But he didn't. He went on to describe as best he could this trip that he took...

They had come down from about where Silverton is now, in Colorado, down into the area around Mancos, and then they started down the San Juan. And they were on horseback, three of them. And when they got to the mouth of Comb Wash, and where the San Juan becomes entrenched going down toward Mexican Hat, they couldn't get their horses through. So they turned north and, uh, we've been able to follow this route through the descriptions that he made...um, about 50 miles over to the Colorado. Well, they had to skirt Grand Gulch, for one thing, and there are several canyons, side canyons, going down to the Colorado that may be candidates for the trip down, but the first one they came to was White Canyon. No relationship to James White. Can't get horses down there. The next canyon, I've forgotten the name of now at the moment, but the...visibility of that canyon is blocked by the Red House cliffs there. And the first place they could get through was...uh...uh, what's the name of that pass? It's now on the paved road going down to the ferry there. Well, it's a break in the...in the Red House cliffs there that goes over past a spring. And then there's a place where White said, "We needed water for the horses and we saw water in this little canyon and we worked our way down a sand dune and got water, but we couldn't get up the other side because there were sheer cliffs." And that's about the time they were ambushed by the Ute Indians. There's only one place that fits that description and it's in Moki Canyon about twelve miles from the Colorado. I've flown over it and got all the photographs of it. Sand dunes are still there, the cliff's still on the other side. And I think that's about the place where they...where they started.

And then his companion, Strole, was washed off the raft a few days later and drowned. Of course they didn't have life jackets or anything. Then White went on from there.

People...his detractors have said, "Well, he couldn't remember which side of the river the Little Colorado came in on." That sort of thing. Well, this poor man was uneducated. He'd never been in that area before. He was hallucinating by that time. It's, uh, no wonder that he couldn't remember where certain things were, as we know today. As a matter of fact in the 1950s there was a...a pilot that was forced down up in Glen Canyon. He survived and built himself a raft and got down to Lees Ferry in two days and he was just...non compos mentis by the time he got there. He didn't know anything. He was so hallucinating and so afraid of this whole situation. So...I can understand why somebody wouldn't

remember just where he was.

But, as I say, in the final analysis we'll never be able to prove it. We just know that he was pulled out of the river at Callville and the rest of it's his story.

\* \* \*

*Well, thinking along the lines of really leaving some information behind for posterity or whatever, I wonder if you can think of something that isn't written down. You know, something important...that we haven't covered.*

The minute you drive away I'll think of something I suppose [laughing].

*That's the way it works.*

Well, let me say something personal for a few moments here. I am just so pleased that I was able to make three trips down the river before the Dam was filled up...or the reservoir was filled up. Those were exciting trips in those...those power boats and really got me excited about the archeology of...of the Canyon. Likewise the long trips in 1966 that I had in the helicopter.

As I told you before, I made my first trip in 1960 at a little over 60,000 cfs, with Rod Sanderson in three little aluminum power boats. The water was warm and of course very muddy. All we had to drink was that river water. And I remember when Jerry Sanderson was a kid on those trips he came up with some little tablet called "Fizzies" that was supposed to make soda pop, if you put it in water. And we would drop one of those in a cup full of this muddy, sandy water, and it would fizz and fizz and all this sand would come up in bubbles over the side [laughing]. We took some fresh food for the first couple of days and after that we just had to...had canned goods. We didn't have any other fresh food at all, except on that first trip when we were at Tapeats and camped there and one of the Sandersons said, "Now, you go and hike up the River looking for ruins. When you get up so far you'll see us there and bring a fork and a piece of aluminum foil. We'll have some trout." And, lo and behold, they did. We had trout right up there, below where Thunder River comes in.

It was also on that first trip when we had stopped briefly at the mouth of Monument Canyon, and the other boats had gone on. There were just two Sandersons and myself and the boat started to drift away and one of the men yelled at me...I was closest, "Jump on that boat and start that motor! Bring it back in!" And I did and I pulled on that cord and threw my shoulder out of joint. Separated shoulder. And I said, uh...I had done it before in skiing accidents, but I said to them, "Any of you know how to put a shoulder back in place?" "No."

So I'd heard of this "sock method" where somebody lies down next to you and puts their socked foot up in your armpit and pulls on it. And I said, "Well, that's... You know, we have to do something here. I can't...I can't stand the pain, I can't ride the rest of the river with the thing out of joint." So they did and we got it back in. But I rode the rest of the trip with my arm in a sling [laughing], sort of like Major Powell!...And it took a week or so and I was all better again.

The Sandersons were marvelous people to travel with. Rod was a very stern person on the river. He commanded those boats. He told you what to do and what not to do. At that time there was a big ledger in an overhang down near Elves Chasm and we all signed in on that and other people, parties, had before us. And on my later trips, that thing, somebody stole it. It was missing. Dock Marston said he never knew what happened to it. It was a marvelous, big, leather-bound ledger, about so big [demonstrating]. And a lot of historic names in there—people who had gone down the River in the 1930s and '40s...

We made that trip in about ten days, I think. And, um, for example, we stopped for a day at Tapeats, camped two nights there. But when we wanted to make time we could really move it out and, uh, could make 40 miles a day easily.

We got down to the Grand Wash Cliffs at the beginning of the Lake and we stopped someplace there where there were some other boaters that come up the lake. And here we were in these three dinky little power boats and somebody said, "Where are you coming from?" We said, "Lees Ferry". Well they thought that was some place like Pierces Ferry on the...on the Lake. And they said, "Where are you going?" And we said, "We're going down to Pierces Ferry." And he said, "I wouldn't go out there in those little boats. That water is pretty bad, pretty choppy today." And away we went, down through the Lake [laughing]. And I guess we went to Temple Bar, that's where it was, where we ended up.

So they were great...great trips...really.

*It must have seemed like—when you started out there, that first trip—it must have been such an adventure. Was there doubt that you would make it?*

I never had any doubt. Because Rod had done it before and he knew what he was doing. I was pretty frightened at times in some of the big rapids. But the boats never tripped over. In fact, in 40 trips I've never been out of a boat. I used to say I swim like an anvil. [laughter] So we did just fine. I would guess I was too naive to be scared about too much of it. [laughing]

*Did people who knew you were going...I wonder what the general feeling at that time was. It must have seemed like*



*quite the adventure.*

Oh, yes. Yes. As I said, somebody in our party was number 500 to have made the trip. I have a list that Marston gave me years ago of the first 200 people to make the trip. Um...Well, my wife knew about it. And she didn't know any more about the river than I did, so she wasn't particularly worried. She thought I could handle myself alright. Other members of the Sanderson family—I don't know whether I'd mentioned this or not—when we got down near Tanner we built a big fire on the beach and there were people up at Desert View who were Sanderson family, so they knew we'd gotten that far all right without any great problems. Didn't have any radio or anything like that with us. Rod did have a list of side canyons through which people thought, if we got in trouble, we could make it...hike up to the rim. But we never had to use that at all.

*So I guess cooking and stuff was just, uh, would you just make a fire and cook on the fire?*

Yes. It was a...we had a pretty neat set-up. The hatch covers on the boats could be taken off, turned over, and legs screwed in and make a little table there for cooking on. Uh, yes, in those trips we built fires right on the beach out of driftwood. In fact the Park Service said, according to what Rod had told me, encouraged us to burn driftwood...uh...that in high water would break loose and go down and be a navigational hazard down on the Lake. And we burned some tremendous piles of driftwood on that trip. [laughing] And we just sat around, eating. We had a little game that we played in the evening that we called "Washers". They'd bury a...it was almost like horseshoes...they'd bury a can in the sand and we had these big washers that we'd toss at that can to see if we could flip it in...into the open part of the can. Just for something to do in the late evening before it got dark.

*Did you see the riparian zone, comparing it the way, um, between the way it was the first trip and, say, the last trip?*

Yes, indeed. There were a lot more beaches on that first trip, first three trips, to camp on. We never had any trouble finding a place to camp except way down in the far end of the Canyon toward the...toward the lake. Uh, we did find that sometimes when we'd tie the boats up at night we'd simply drive a big metal stake into the dune and tie the boat up. And I remember a couple of times when we heard noises like the whole sand bank was caving off into the river and it was the boats chafing against the bank that was causing this—huge chunks of sand going off to the point where we had to really move the boats and be very, very careful. But wonderful campsites, really.

I remember one time, on the third trip in the power

boats, we were camped there at Tapeats, like we always did, and we woke up in the morning and, we were in the little lagoon there at Tapeats, one of the boats was under water. It had developed a leak somehow or other, a hole in the boat, and there it was, nose sticking up, the rest of it down in the bottom of that little lagoon. [laughing] And we managed to get it out, of course. I don't remember just how. I think we tied a line onto the stern and...and pulled with the other boats to try to get it out of there. But they patched it, fixed it up. Those Sandersons were very self-sufficient, I'll tell you. Very... what shall I say...very tough guys. They knew what they were doing.

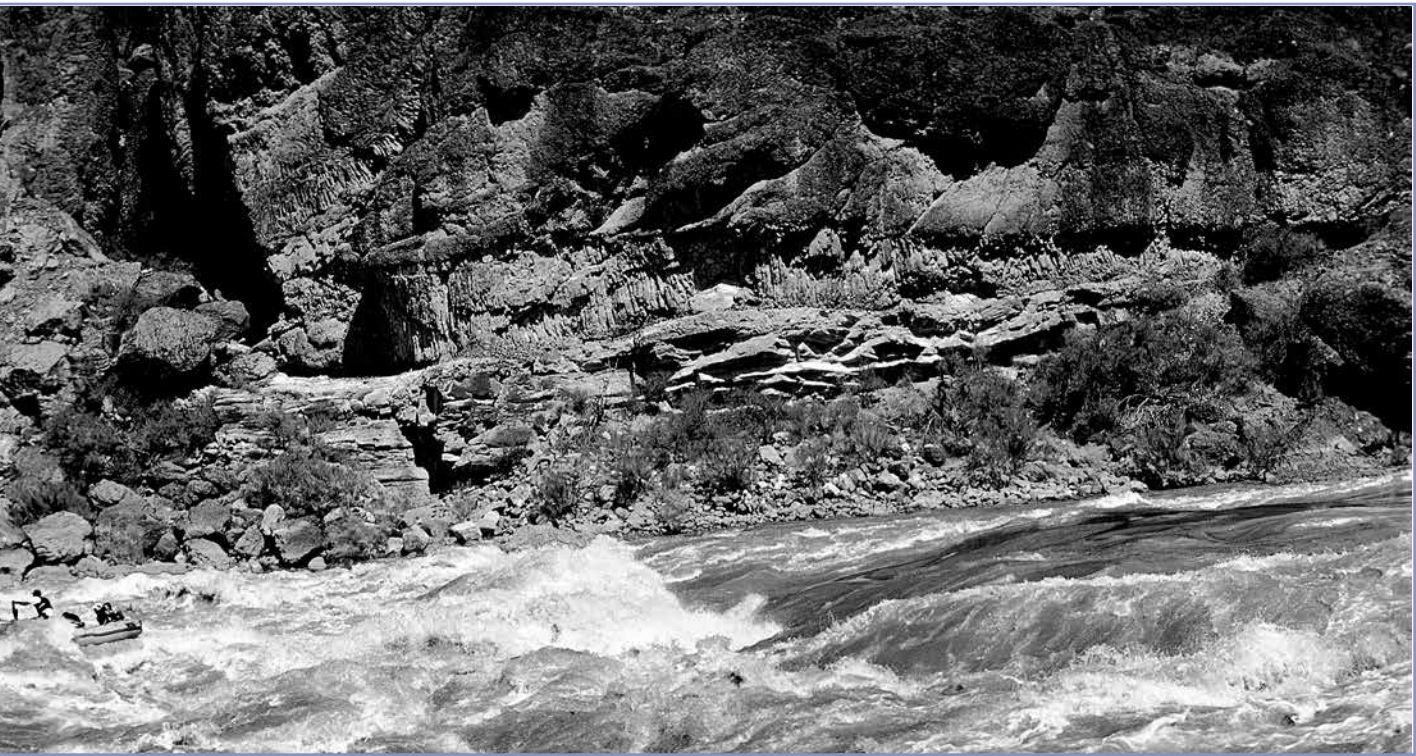
*How...did...that first trip, how did it affect you, just the Canyon and all that stuff at that point in your life? I wonder what kind of impression it made on you.*

Well it was...it was really awesome to me. I was trying to do my scientific work, the archeology, I was trying to stay in the boat and not get flipped out. There were a lot of times when I had to concentrate on that. But, gosh, especially sitting around a campfire in the evening and looking up at the cliffs, I just...I could hardly believe it. You know, I had seen the Canyon from the rims before, but nothing like that. And...to be able to get...well, we didn't do much hiking. We had to move along pretty fast. Um...hiked a little bit up Fossil Canyon, because I'd heard about a ruin up there. And the two days we spent at Tapeats. I just thought...you know, this...the immensity of this thing! And I thought, "Gosh, it's just impossible that a lot of Indians ever came in here." I knew that Major Powell had found a few ruins along the river and I thought, "Well, maybe if we find 40 or 50 sites, that will be it. And they weren't up in these side canyons." I didn't know anything about routes at that time and nothing was farther from the truth when I really started doing reconnaissance in the Canyon. I don't know how many sites I personally recorded over the years I was there. Several hundred anyway.

Yes, it was very exciting for me. Intellectually stimulating and exciting to be in that type of natural environment that was relatively unspoiled.







Sam Walton



Sam Walton



## The Language of River Runners

**H**AVE YOU NOTICED that river runners have a distinct vocabulary? Have you traveled enough to experience how the language differs by region? Do you participate in more than one mode of river travel, or are you an expert in one? Do you raft, and if so, do you specialize in rowing or paddle rafting? Do you kayak, and if so, do you run big water or steep creeks? If you canoe, do you paddle tandem or solo, decked or open? Do you stride?

The variations are astounding. If you find these questions intriguing, then you will enjoy my project. I am collecting "vocababble" from every aspect of whitewater river running.

I am an Eastern creek boater (kayak) and paddle guide who has rowed rubber down most of the classic Western multi-day runs, as well as spending time in the Rockies and Sierras. Everywhere I go I learn that there are more levels to whitewater language. I would love to hear what you have learned.

Send me stories or words or phrases. Tell me your phone number. Meet me in Flagstaff or beside your favorite river (and I do mean anywhere) for a beer. I'd like to know the stories behind the words. I'd like to hear about your worst swim ever, and the gnarliest wrap you ever saw, and the day you broke a boat in half.

*Teresa Gryder*

PO Box 1002  
Flagstaff, AZ 86002  
520-853-3174 (messages mainly)  
River\_wench@yahoo.com  
Thanks for your help!

## Think XMAS!

**J**UST REMEMBER all the GCRG goodies that you can purchase for friends and family while supporting GCRG at the same time! See the back page of this issue for ordering information. In addition to what's listed there, we also have Paul Winter's "Canyon Lullaby" CD on sale for \$13 each. Paul was very generous in donating these CD's to GCRG so we are able to keep 100% of the proceeds. It features lovely instrumental music recorded in the Canyon with liner notes that mention our organization! It will give you the feeling of Grand Canyon even if you can't be there. What a great gift for all Canyon lovers.

## Boatman's Almanac 2000

**A**S MANY OF YOU KNOW, Jeff Sorensen, a wildlife biologist for Arizona Game and Fish who is studying the Kanab Ambersnail, has compiled a book of monthly sunrise and sunset times for campsites and cool hang-outs in Grand Canyon. He has recently come out with a new updated edition.

Jeff, with the help of Nels Niemi, has also come out with a laminated reference card called "Looking for Early Shade", that illustrates 48 popular shady campsites. They are working on a winter version that will eventually be called "Where to Dry Your Laundry".

If you are interested in receiving either one of these handy items, please contact Jeff at [sorensen\\_jeff@hotmail.com](mailto:sorensen_jeff@hotmail.com) or 602-331-3562.

Jeff is not charging anyone for copies of the Almanac or "Looking for Early Shade" and says that they are his gifts back to the river community. It is his way of saying "thanks" for everyone's help with his research down in Grand Canyon. However, a small donation or a beer on the river would never be rejected.

## WFR Course

**D**ESERT WHITEWATER, in conjunction with Canyon REO, will be offering a Wilderness First Responder (WFR) course, with recertification available, in Flagstaff during the month of January. Nadia Kimell, director and instructor with Desert Mountain Medicine, will be providing the 80-hour course over nine days and participants will leave with a three-year WFR certification and CPR/Health Care Provider certificates.

Sign-up is limited to 25 participants. If interested in knowing more about the course or to sign up and get your deposit in, call Mike at 774-1743.

Michael R. Heffernan  
Owner and General Manager  
Desert Whitewater, Inc.  
P.O. Box 3493  
Flagstaff, AZ 86003  
(520) 774-1743 or  
Toll Free 866-703-7238 (RAFT)  
(520) 774-3343 (fax)

## Amulet Design Contest

I AM AN IDAHO RIVER GUIDE AND KAYAKER. For the past eight years, I have been making silver jewelry for river runners. My unique line of products include earrings, river beads, totem button bracelets, boater amulets and most recently a paddler's earcuff, which I guarantee to make any old river-wart feel young and handsome. My "Colorado River Boater's Amulet" is about to reach the 500 mark, at which time it will be taken out of production.

I am having a design contest for the new Colorado River Boater's Amulet and am hoping that some of you river lovers/guides will be interested in offering your ideas for this amulet's design. The photo illustrates the current amulet's oarblade shape which will most likely be used for the new version as well.



Please send your entries to: John Caccia, PO Box 4225, Ketchum, ID 83340. Feel free to include informative text and/or reasons why you think your submitted design symbols should be used. Everyone is welcome to participate. The two people whose design is selected (frontside and back) will receive five river amulets of your choice.

Thank you for your consideration in this matter. To receive a free catalogue of products phone 1-800-808-9787 or log onto my website at [www.RiverJewelry.com](http://www.RiverJewelry.com).

*John Caccia*

## GTS 2001

IT'S HARD TO BELIEVE that another river season has come and gone. We are already gearing up for next year so mark you calendars for the spring GTS. The location has yet to be determined, but we will update you in the next BQR when we know more.

March 30	Spring Meeting
March 31 & April 1	GTS Land Session
April 3-9	Upper-half of river trip
April 9-17	Lower-half of river trip

## Announcements

### LOST

In a Crystal mishap in June, I lost one ten-foot Smoker oar, the partner to my flawless pair. The defunct phone number of Larry Keeling, the good buddy who gave them to me, is painted on the blade. Please contact me if you know anything regarding my missing oar. I can be reached at

*Tim Cooper*  
26518 Rd. R  
Dolores, CO 81323  
(970) 882-1431  
[tlcooper@fone.net](mailto:tlcooper@fone.net)

### JOB

Canyoneers, Inc. is accepting applications for River Operations Manager for their Grand Canyon division. The job is full-time with benefits and salary is negotiable, based on experience and skills. Although this is not an on-river position, we are looking for a qualified motor rig, trip leader with good management and training skills, who also has exceptional communication skills. Please send resume to:

Joy Staveley  
c/o Canyoneers, Inc.  
PO Box 2997  
Flagstaff, AZ 86003  
or email [joy@canyoneers.com](mailto:joy@canyoneers.com).

### JOB

PRO is looking for a full time office person. River experience and computer skills are needed. We will also have two positions open in food services. All positions are open as of March 1, 2001. Wages commensurate with skills and commitment. Please submit resume to Box 635, Flagstaff, AZ 86002. Call if you have any questions. (520) 779-1512

## Businesses Offering Support

Thanks to the businesses that like to show their support for gcr by offering varying discounts to members.

<b>Canyon Supply</b> Boating Gear 505 N. Beaver St. Flagstaff	779-0624	<b>Marble Canyon Lodge</b> Lodging and trading post merchandise, Marble Canyon, AZ	355-2225
<b>The Summit</b> Boating equipment	774-0724	<b>Cliff Dwellers Lodge, AZ</b> Lodging and store merchandise (excluding tobacco, alcohol & gas)	355-2228
<b>Chums/Hellowear</b> Chums and Hello clothing. Call Lori for catalog	800/323-3707	<b>Mary Ellen Arndorfer, CPA</b> Taxes 230 Buffalo Trail, Flagstaff, AZ 86001	525-2585
<b>Mountain Sports</b> River related items 1800 S. Milton Rd. Flagstaff	779-5156	<b>Trebon &amp; Fine</b> Attorneys at law 308 N. Agassiz, Flagstaff	779-1713
<b>Aspen Sports</b> Outdoor gear 15 N San Francisco St, Flagstaff	779-1935	<b>Laughing Bird Adventures</b> Sea kayak tours Box 332, Olga. WA 98279.	503/621-1167
<b>Teva Sport Sandals and Clothing</b>	779-5938	<b>North Star Adventures</b> Alaska & Baja trips Box 1724 Flagstaff 86002	800/258-8434
<b>Sunrise Leather</b> , Paul Harris Birkenstock sandals. Call for catalog.	800/999-2575	<b>Chimneys Southwest</b> Chimney sweeping 166 N. Gunsmoke Pass, Kanab, UT 84741	801/644-5705
<b>River Rat Raft and Bike</b> Bikes and boats 4053 Pennsylvania Ave. Fair Oaks, CA 95628	916/966-6777	<b>Rescue Specialists</b> Rescue & 1st Aid Box 224, Leavenworth, WA 98826 www.rescuespec.com	509/548-7875
<b>Professional River Outfitters</b> Equip. rentals Box 635 Flagstaff, AZ 86002	779-1512	<b>Wilderness Medical Associates</b> 189 Dudley Pond, ME 04219 www.wildmed.com	1888-945-3633
<b>Canyon R.E.O.</b> River equipment rental Box 3493, Flagstaff, AZ 86003	774-3377	<b>Rubicon Adventures</b> Mobile cpr & 1st aid Box 517, Forestville, CA 95436 rub_cpr@metro.net	707/887-2452
<b>The Dory Connection</b> Dory rental 823 1/2 W. Aspen #4, Flagstaff, AZ 86001	773-1008	<b>Vertical Relief Climbing Center</b> 205 S. San Francisco St., Flagstaff	556-9909
<b>Winter Sun</b> Indian art & herbal medicine 107 N. San Francisco Suite #1, Flagstaff	774-2884	<b>Fretwater Press</b> www.fretwater.com	774-8853
<b>Mountain Angels Trading Co.</b> River jewelry Box 4225, Ketchum, ID 83340 www.mountainangels.com	800/808-9787	<b>Randy Rohrig</b> Casitas by the beach for rent in Rocky Point.	526-5340
<b>Terri Merz, MFT</b> Counselling 1850 East Flamingo Road #137 Las Vegas, NV 89119	702/892-0511	<b>Dr. Mark Falcon</b> Chiropractor 1515 N.Main, Flagstaff	779-2742
<b>Dr. Jim Marzolf, DDS</b> Dentist 1419 N. Beaver Street, Flagstaff, AZ	779-2393	<b>Willow Creek Books</b> Coffee & Outdoor Gear 263 S. 100 E. St., Kanab, UT	801/644-8884
<b>Snook's Chiropractic</b> Baderville, Flagstaff	779-4344	<b>KC Publications</b> Books on National Parks Box 94558, NV 89193-4558. www.kcpublications.com	800/626-9673
<b>Fran Sarena, NCMT,</b> Swedish, Deep Tissue, & Reiki Master	773-1072	<b>Roberta Motter, CPA</b> 316 East Birch Ave., Flagstaff, AZ 86001	774-8078
<b>Five Quail Books</b> Canyon and River books 8540 N Central Ave, #27, Phoenix	602/861-0548	<b>Flagstaff Native Plant &amp; Seed</b> 400 East Butler, Flagstaff, AZ 86001	773-9406
<b>Canyon Books</b> Canyon and River books Box 3207, Flagstaff, AZ 86003	779-0105	<b>High Desert Boatworks</b> Dories & Repairs andy @wileywales.com Durango, CO	970/259-5595
<b>River Gardens Rare Books</b> First editions 720 S. River Rd. Suite a-114, St. George, UT 84790	801/674-1444	<b>Hell's Backbone Grill</b> Restaurant & catering Hwy 12, Box 1397, Boulder, UT 84716 www.boulder-utah.com	435/335-7464
<b>ERA Conley Realty</b> 123 W. Birch Ave., Suite 106, Flagstaff, AZ 86001	774-4100	<b>Boulder Mountain Lodge</b> Hwy 12, Boulder, UT 84716 www.boulder-utah.com	800/556-3446
<b>Design and Sales Publishing Company</b> geology guides www.edu-source.com/fieldguide.html	520/774-2147	<b>Marble Canyon Metal Works</b> mcmetalworks@worldnet.att.net www.marblecanyonmetalworks.com	520/355-2253
<b>River Art &amp; Mud Gallery</b> River folk art 720 S. River Rd. Suite A-114, St. George, UT 84790	801/674-1444		



# Wilderness First Aid Courses 2001

**Wilderness Review Course Date: March 27-29, 2001 (2 1/2 days)**

Prerequisite: Must be current wfr, wemt, wafa or Review by Wilderness Medical Associates (wma), wmi or solo (If your previous course was not with wma you'll need to make special arrangements.) Give our office a call at (520) 773-1075.

Cost: \$165

**Note:** If your current first aid card expires prior to our review, you must call wma at (207) 665-2702 and get an extension letter.

Gcrg reserves the right to cancel any classes due to insufficient enrollment.

**Place:** Canyon Explorations / Expeditions warehouse, Flagstaff, AZ

**Lodging:** On your own.

**Meals:** On your own.

**Course:** includes two-year cpr certification.

Class size is strictly limited. Guides and private boaters welcome. Send your \$50 nonrefundable deposit with the application below to Grand Canyon River Guides to hold a space. The course is already filling, so act now.

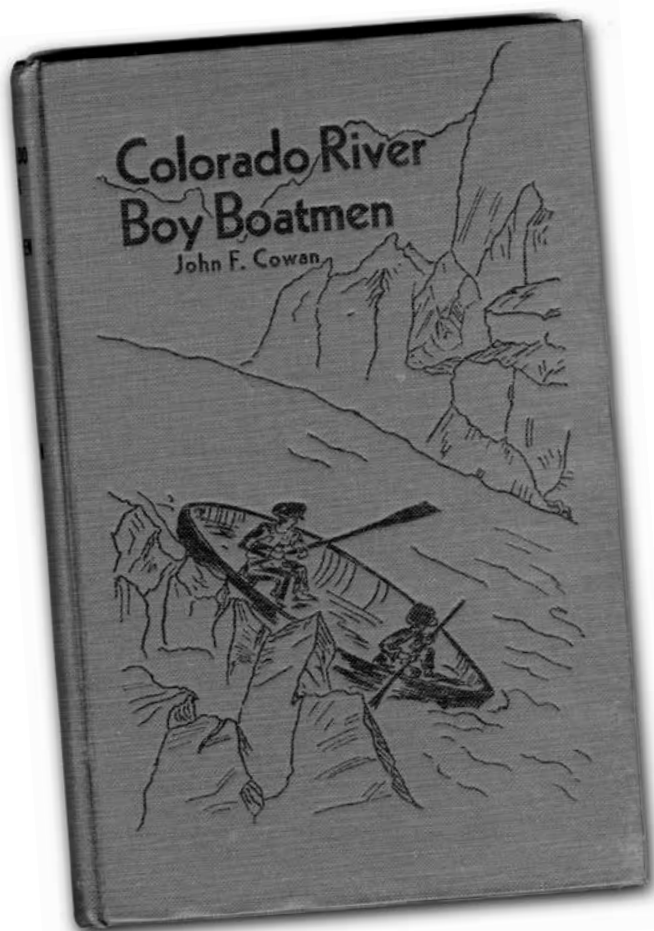
Review Course			
Name _____			
Address _____			
City _____	State _____	Zip _____	_____
Phone (important!) _____		Outfitter _____	
Guiding since _____	# Trips _____	Type of current first aid _____	_____

## Care to join us?

If you're not a member yet and would like to be, or if your membership has lapsed, get with the program! Your membership dues help fund many of the worthwhile projects we are pursuing. And you get this fine journal to boot. Do it today. **We are a 501(c)(3) tax deductible non-profit organization, so send lots of money!**

<p><b>General Member</b>                  Must love the Grand Canyon                  Been on a trip? _____                  With whom? _____</p> <p><b>Guide Member</b>                  Must have worked in the River Industry                  Company? _____                  Year Began? _____                  Number of trips? _____</p> <p>Name _____                  Address _____                  City _____ State _____ Zip _____                  Phone _____</p>	<p>\$25 1-year membership                  \$100 5-year membership                  \$277 Life membership (A buck a mile)                  \$500 Benefactor*                  \$1000 Patron (A <i>grand</i>, get it!)*                  *benefactors and patrons get a life membership, a silver split twig figurine pendant, and our undying gratitude.                  \$100 Adopt your very own Beach: _____                  \$_____ donation, for all the stuff you do.</p> <p>\$16 Short sleeved T-shirt      Size _____                  \$18 Long sleeved T-shirt      Size _____                  \$24 Wallace Beery shirt      Size _____                  \$10 Baseball Cap                  \$10 Kent Frost Poster (Dugald Bremner photo)</p> <p><b>Total enclosed</b> _____</p>
---	---

We don't exchange mailing lists with anyone. Period.



Colorado River Boy Boatmen, by John L Cowan  
Copyright 1932. From the collection of Brad Dimock

...Back in Larry's home, a modest cottage not far from the brink of Grand Cañon, Mrs. Dennison and Larry's sister Alice were reading and rereading Larry's letter from Green River. It was not long, for he had been too busy to write in full. It ran:

"Dear Mother and Flaxy:

"You were worried, I know, about my leaving dick behind. I was afraid, from the way he insisted on the steel boat, that we would be quarreling all the time down the river, and a quarrel with an obstreperous river like the Colorado is enough to have in the program at one time.

"I want you to know how llucky I have been in finding a Hawaiian boatman who is like a cork in the water, who is glad to go with me, and we'll soon be shoving off now, for out first day's journey.

"Don't worry; everything is all right, all right: I am better equipped than ever father was. I may not get a chance to send another message, but if I don't, then keep looking out for me in about five or six months. And believe me, Keola and I will come sprinting along with a stunning collection of film photos and others that will make our fortunes.

"Remember me to Dick and Betty and all the rest, and believe me,

Your Loving Son and Brother,  
Larry Dennison."

He had blushed a little as he had added Betty's name to the letter, as he could not feel that he had been quite on the square with his mother, in making it appear as if that were his only message to Betty....

---

Thanks to all you poets, photographers, writers, artists, and to all of you who send us stuff. Don't ever stop. Special thanks to the Brown Foundation and Newman's Own Organics for their generous and much appreciated support of this publication. Printed on recycled paper with soy bean ink by really nice guys.

---

Box 1934  
Flagstaff, az 86002

## boatman's quarterly review

ADDRESS SERVICE REQUESTED



NON-PROFIT ORGANIZATION U.S. POSTAGE PAID FLAGSTAFF, AZ PERMIT NO. 10
--