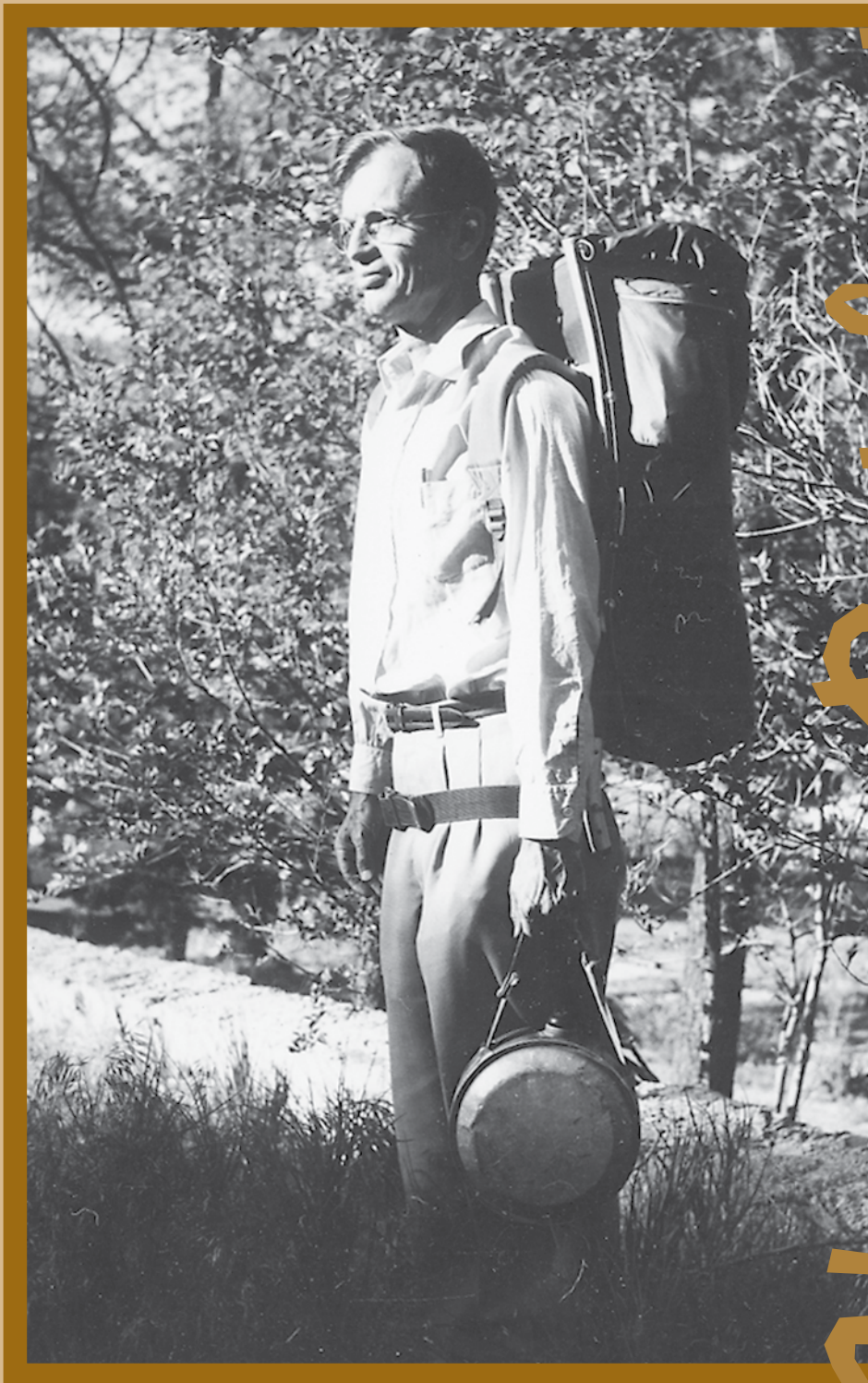


boatman's quarterly review

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Harvey Butchart in hiking gear in Flagstaff, 5/27/61. NAU.PH.97.46.96.12



Harvey Butchart

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posting the CORS on the NPS website; clarifying requirements for reporting gastrointestinal illnesses; making the launch calendar available in hard copy at Lees Ferry; and allowing, instead of barring, emergency swimming training exercises in major rapids to enhance self-rescue abilities in the event of whitewater mishaps.

Do several major issues remain in need of revision? Yep. A most emphatic yep. Will we keep advocating for change? Yep, again.

More murky is GCRG's end-of-January stakeholder role in the continuing process of information gathering for the NPS' Colorado River Management Plan (CRMP). The CRMP revision process was resumed only because the Park was sued by private boaters. Scoping for this process ended months ago. And the draft version of the new CRMP is due out by early summer. But if you have been paying attention to this process you know that it was flawed; it eschewed what many of us consider to be a direct democratic process and instead solicited possibly two million words of comment from 10,000–15,000 persons, a volume inaccessible to the average citizen to analyze and also perhaps inaccessible to those who must write up the CRMP.

These flaws led to an interim information gathering process in the Governor's Protocol Room at the state capitol. The issues consisted of determining appropriate protocols for estimating a recreational carrying capacity for the river corridor, identifying elements of an ideal private boater permit system, and revisiting the extremely thorny issue of allocation of user days on the river between established and contracted commercial outfitters versus the rest of the world of boaters out there.

The first issue, a carrying capacity, was attacked by a "panel of experts" who were not supposed to be stakeholders. This left out yours truly. I have a masters degree in environmental biology and a Ph.D. in biological ecology and thirty years of experience as a commercial river guide, but I represent you, the commercial guide. So I was prohibited from saying a word. Three other scientists who have been paid to work in the Canyon and are still being paid to work in (or "on") the river corridor issues (one of whom sells an excellent guide book whose sales pivot on what the park considers the corridor's carrying capacity) did, however, despite they're also being stakeholders, serve on this panel, on this committee.

A "committee" has been defined as the least efficient organism on Earth. This may or may not be true. But my witnessing of this particular committee's performance was even more painful and frustrating than the words "least efficient" might convey.

The National Park Organic Act dictates that the NPS manage its parks "to conserve the scenery and the natural and historic objects and the wildlife therein" for the enjoyment of its visitors "by such means as will leave them unimpaired for the enjoyment of future generations." This "unimpaired" injunction is the apparently slippery

issue. But it should not be. Instead it should have been the committee's guiding principle, especially in that the immediate river corridor, were it natural, would be difficult to impair. The true, natural river corridor is an ephemeral habitat, one consistently renewed and remodeled by the flooding Colorado. The Park's lack of stance on having lost its natural corridor to Glen Canyon Dam's destructive effects prevents intelligent and meaningful planning. It certainly violates the "unimpaired" injunction of the National Park Organic Act of 1916.

Be as it may, despite the individual intelligence levels of the panel of experts being equal to the task, and despite Steven Carothers' numerous and excellent observations, reminders, and warnings, this committee, unguided by specific principles, specific parameters of use, and some sort of objectifiable goal instead bumped into the extremely vague and subjective concept of what a recreational user might feel in terms of crowding. In short, much of the "carrying capacity" concept for the river is simply the varied answers to the subjective question (often unasked) "Do I feel good down here or do I feel crowded?"

Next, the process of designing a most-desirable private permit system was delayed when I pointed out that the single most important issue of such a system was not on the table for discussion: that the system be fair and equitable to all river users. Once we wobbled back on track it turned out that most stakeholders agreed that a desirable system would be equitable, offer a shorter waiting period before launch dates, and be more flexible than the present system. No surprises there. But we never did get around to discussing alternative permit systems that the Park might adopt.

Finally, another panel of experts considered the thorniest of all issues: allocation of river user days between concessionaire outfitters and the world of private boaters. Again, I was not invited. I am a stakeholder.

If this column has been long and unsatisfying, I apologize. It unfortunately represents the real world.

But to end on a positive note, I'd like to remind you that you too are a stakeholder. And perhaps it is okay for us stakeholders—even if we otherwise, by accident, seem to be intelligent human beings—continue offering what we might consider important insights to the powers that be. When the draft CRMP is disseminated, read it critically. It is, after all, *your* Canyon.

Stakeholders of all bureaucratic decision-making on Grand Canyon unite.

And sharpen your stakes.

Michael Ghiglieri

“Back of the Boat”—Rowing in the Dough: Your Financial Future, One Trip at a Time

ABOUNTIFUL FUTURE will be different for each of us. We all have an idea of what we want our future to look like. How do we achieve it? We will elect officials into office, go to war, and slog through recessions and recoveries. We cannot do much about them, but we can attempt to care for ourselves. As individuals, we must attempt to achieve our financial goals either on our own, or with the help from our employer. Relying on social programs to provide for our basic needs is uncertain at best.

Much like launching your boat at the Ferry, you must take that first step towards a brighter financial future. The first step is determining which type of retirement or savings plan best suits your needs and your ability to save. There are numerous non-retirement savings options. They can range from a savings account at the bank, to a money market or investment portfolio in any investment firm. Retirement plans are equally as numerous and offered through many of the same institutions as a regular savings account. Retirement plans are generally going to be either employer sponsored or individual in nature. The specifics will vary between them, but in general, they will allow you to accumulate assets over time, and those assets will be allowed to grow tax deferred or tax free, depending on the plan specifics.

How much should an individual save? As much as possible! Develop a savings goal based on your ability to save. Write your goal down on paper. Put a dollar figure on it. Tell yourself that you will save a little of your tip money each trip, or tell yourself that you will save a specific amount each summer. Make your starting point simple and easy to achieve. If it is complicated or too high, you will likely become frustrated and will not continue. Pay yourself first and watch the savings add up. Saving becomes a habit and the results can be empowering.

For example, an individual could open an Individual Retirement Account (IRA) and fund it each month with tip money. Let's assume that the individual completes six trips during the season and saves \$100 per trip. If that \$600 were to be saved into an IRA each year, and those savings grew at a hypothetical annual rate of eight percent, the IRA would be worth approximately \$9,387 in ten years. If this were continued for another ten years, the value would be nearly \$29,650. After thirty years the value would be \$73,400. What would that \$600 have bought you back in town? It would have paid down a couple of bills and bought you a few beers, but probably nothing that would have provided a visible benefit in the future.

The rules and regulations for retirement savings are

always changing. Tax legislation over the past few years has increased the amount that individuals can save, created tax credits for lower income savers, and added additional types of retirement plans. These changes may seem daunting, but they aren't. Seek out the help of professionals, buy a basic personal finance book, or go online and see what resources are out there. Any effort that you take now will certainly return a reward in the future. The sooner you start, the more you can accumulate. Why not start today?

The Whale Foundation has established links with financial planning professionals. You may access them online at www.whalefoundation.org or see the listing below:

Andrew Lewis, Senior Financial Advisor
Waddell & Reed Financial Services
500 Northeast Multnomah Street, Suite 278
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alewis41095@wradvisors.com
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Marin Retirement Advisors
101 Larkspur Landing Circle, Suite 227
Larkspur, CA 94939
(415) 925-1212
dshore@mrawebsite.com
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The Whale Foundation cannot be responsible for the advice given or received. All assumed growth rates and investment returns are for illustration purposes only and are not intended to represent the actual future performance or growth of any specific investment or asset. Please remember that you are under no obligation to act on any recommendation set forth in this article.

Andrew Lewis

Post Season Armchair Rantings— More Thoughts on the CRMP

SOME VIGNETTES FROM RECENT TRIPS. *The river's been muddy, muddy since the Little Colorado. It's as brown and filled with debris as I've ever seen it, and we've been after our guests about not using those clear, warm side streams that they (and we) would love to bathe and wash our clothes in. We're hiking up Stone Creek and two women from a private trip are there. One is washing her hair in the creek. With soap. When I mention that using soap in the side streams isn't allowed, she says "it's biodegradable." And then the other woman points out that she's not soaping in the creek, but using a bucket, and pouring the soapy water about fifteen feet away, still in the gravel creek bed. I know she's aware that there is a rule about using soap a hundred yards up or downstream of the mouth of a tributary.*

Below Lava, we've all had great runs and we're enjoying the long afternoon to mile 194. Around Whitmore we come upon another private trip with boats lashed together, celebrating. Buck naked, hammered to the gods, screaming and yelling and trying to climb onto our boats, shaking various body parts at us, pretty rude remarks, a general Party Barge. Later on downstream at mile 220 we pass them again and they are still yelling and screaming and celebrating loudly in our general direction. It was kind of hard for our folks and definitely affected their day.

Lest you think this is a diatribe about private river trips: *Come around the corner at Saddle and there are several women from a commercial river trip peeing up in the trees, not down by the water. Three times, with three different companies, I've seen this in the past couple of years.*

Talked to a passenger from another trip who saw one of our folks carrying our day tripper off to use and asked what it was. When I explained, he said "they just give us a shovel and a roll of toilet paper." When I pressed him, he wasn't kidding.

A friend on a private trip was pulling into the eddy at Bass when a commercial motor rig roared around them and took the camp. When my friend's group went on down to Shinumo to play before heading downstream, the commercial trip loaded up one of their boats with all 25 or so of their people, motored down to Shinumo and offloaded their people into the creek with my friend's group.

Cigarette butts on the beaches, algae-covered pee holes in the sand well above high water line, general trash in camps, new trails where none should be. All these things seem to me to be worse than just five or six years ago.

As I listen to the newly resurrected Colorado River Management Plan (CRMP) gripings and arguments, these and other similar incidents keep coming to mind. And I've come to the conclusion that I don't really give a damn who is down there, and how easily and how often,

as long as they are taking care of the place and safeguarding everyone's experience.

Soap of any kind in the side streams? If the water's muddy, deal with it. Screaming obscenities and barging in on other people's private time on hikes? No one cares if you take a camp because you get there first, no one cares if you're naked and drunk. Just don't make it impossible for other trips to ignore you. Peeing in the trees? You get the point.

Right now the Park is broke. There isn't any money for monitoring and making sure that we are all taking care of the place. All that fee demo money? That goes to building projects, not safeguarding the tributaries, archeological sites or your neighbor's experience. We've got an administration in Washington, DC that is probably more hostile towards environmental protection than any has ever been, and the chances for any help coming from them are pretty slim. That means it's up to us, all of us—private and commercial—to do it. I hear rumors about increasing the number of user-days as a potential solution to access problems and I am worried. I think that until we can prove as a community that we can really take care of not only the place but our neighbors and their experience as well, not one more user day should be added to that pie.

Do we need to increase our educational efforts as guides? Quite possibly. There's a whole new crop of young guides out there that may not have been trained as rigorously as they should have been. Do outfitters need to make it very clear to their guides what the rules and the general polite protocols are, and let them know they will back them up if a passenger complains that some young whippersnapper guide was telling them where to pee? Definitely. It's hard to be a 24 year old second year guide and try to tell a 65 year old CEO or grandmother of seven where he or she can go do their business. What is our recourse if someone just won't listen to us, and keeps doing harmful things to the canyon? Will our outfitters back us up on this? Do people need to remember that whether it's a fifteen year wait or a \$3,500 price tag, no one wants to have someone else's experience thrown loudly in their face? Seems so. Do we need to police each other? Absolutely. We're the only ones who can do it—and while we're arguing about selfish concerns such as how often and when and how much and me, me, me—let's take some time to consider the most important players in all of this: the river and everyone's experience while on it.

Christa Sadler

Dear Eddy

SURELY BY NOW MANY of you have noticed the “scientific vandalism” on the delta at Granite Rapid. If you haven’t yet seen them, there are about a hundred or so boulders of various sizes at the water’s edge, drilled and fitted each with their own numbered shiny metal carriage bolt. The reason for this is of course all in the name of Science, and you probably wouldn’t understand anyway. Suffice to say, it is necessary to know, beyond all doubt, which way rocks will roll downhill. Undoubtedly, some deserving soul will receive a degree for this latest important study of the canyon’s forces of erosion. Unfortunately, you and I only get to see more litter.

But believe it or not, this vandalism was actually approved by the Park Service’s Science Staff. So, before you get really upset about it, remember, it’s been okayed by those who know more than you and I. However, if you still have something to say about it and don’t know who to say it to, please direct your questions, comments, or complaints to any or all of the gentlemen listed below:

- Joe Alston/Superintendent
- Mike McGinnis/River District Ranger
- Jeff Cross/Science Center Director
- Robert Winfree/Park Scientist

Grand Canyon National Park
PO Box 129
Grand Canyon, AZ 86023

Anonymous



Kenton Grua Memorial Scholarship

THANKS TO THE GENEROSITY of some outfitters, guides and guests, The Whale Foundation announces the Kenton Grua Memorial Scholarship. The Whale Foundation is pleased to offer a scholarship to a Grand Canyon river guide this year, and hopes to continue this award for years to come.

So...if you are looking to further your education, apply for the funds. Contact us and request your application right away. Don’t delay—this year’s deadline is April 1.

If you want to support the scholarship fund (for this year or for the future) your donations are not only greatly appreciated, but they will help to create a tradition we can all be proud of. For more information call 800-773-0773.

THE WHALE FOUNDATION KENTON GRUA MEMORIAL SCHOLARSHIP

- *What?*—The Kenton Grua Memorial Scholarship. This scholarship for Grand Canyon river guides who are following their educational goals is inspired by the memory of Kenton and his lifelong pursuit of knowledge, learning, innovation and teaching. (Award amount and number of scholarships still to be determined).
- *Why?*—Established in 2002 by the Whale Foundation, Inc., a 501(c)3 organization, to benefit Grand Canyon guides pursuing post-secondary education, degree or non-degree, at an accredited educational institution.
- *Eligibility?*—Available to Grand Canyon river guides demonstrating financial need and an educational goal.
- *How?*—Write to The Whale Foundation, Inc. at PO Box 855, Flagstaff, AZ 86002-0855 to request an application. Submit your application to the Whale Foundation by the deadline of April 1.

INSTRUCTIONS:

- Application deadline is April 1, 2003
- The application should be completed and accompanied by two letters recommending you for the award.
- Lastly, include a letter that outlines your educational goals. Describe any circumstances (financial or other) that may enhance your eligibility for the award.

Grand Canyon Wilderness With Motors— Not a Contradiction, a Necessity

I'VE PARTICIPATED for thirty years in the various planning and legislative actions that have shaped management at Grand Canyon National Park today. I've worked for leading non-profit conservation advocacy groups (National Park Conservation Association, as Vice President for Policy), conservation public service groups (Student Conservation Association, as Executive Vice-President), a federal agency (National Park Service, as Assistant Director), the recreation professional society (National Recreation and Park Association, as Executive Director), and currently as a parks and outdoor recreation consultant (to the Grand Canyon River Outfitters Association, among others).

I've worked in favor of every piece of proposed national park wilderness legislation since 1972, which is most of the fifty million acres of statutory national park wilderness in America today.

I've run the Colorado River through the Grand Canyon twice, first in the mid-1970s on an oar trip, and most recently in 2000 on a motor rig. I've run a few other wild rivers as well, including the Colorado through Utah's Canyonlands, the New River Gorge in West Virginia (more than twenty times), the Yampa in Colorado and Utah, and the Rogue in Oregon. These special places, set aside for all of us and our children to enjoy, have obvious limitations on the types of uses allowed and how many at a time can use them without adversely impacting either the resources of the area, or other people's experiences in them. Like most wilderness users, when I'm backpacking or otherwise visiting the backcountry, I want to minimize contact with folks not in the group I'm with. I want these special places to have limits, to have high standards, and above all, to be protected forever in an unimpaired condition. As always, proper management of these special places means finding the right balance between preservation and use. This is what the law requires.

WILDERNESS MANAGEMENT IS NOT AN OXYMORON

The job of agency management, and park management plans, is to make the sometimes hard decisions, in public, so that wild places will be there for us to enjoy now and in the future, while leaving the resources unimpaired. Some folks, like Kim Crumbo in his article "A Wilderness River," [BQR 15:4] think that wilderness management is an oxymoron, that management is the opposite of wilderness. Perhaps unfortunately, they are wrong for these times, given the intense and increasing demands for use of wild places. They may be right for the wilderness "idea," but they are incorrect when it

comes to the practicalities of managing areas that meet the statutory definition of wilderness.

Wilderness management is perhaps more difficult than management of regular public lands, or even non-wilderness national parks, simply because the law, and agency regulations and management policies, require the agency in charge to delicately balance access, preservation, and the quality of each person's experience in wilderness. This forces the NPS and other agencies into the position of deciding upon and mandating subjective standards like visitor experience "quality." The overlay of wilderness management on top of national park management does not eliminate the authorities and responsibilities of the NPS under the 1916 Organic Act. It does narrow the range of options that an NPS manager may call upon to provide the visitor experiences for that area while assuring that the resources present are conserved unimpaired. Without such active management, wild places will cease to exist.

Mr. Crumbo and other wilderness advocates have argued that current NPS management policy that continues to allow motor rafts on the Colorado River through the Grand Canyon is illegal, since, they assert, management of proposed wilderness requires the area to be managed as if it were already statutorily designated. This arm-chair legal interpretation is wrong, and Mr. Crumbo, a former career NPS employee, should know better.

In fact, the correct legal standard for NPS management of proposed wilderness is that the agency must not allow any development or use that would render the area unqualified or unsuitable for possible future designation as wilderness by Congress. The *ephemeral* passage of a motorized raft down a river does not render the area unqualified for future designation as wilderness, even if there were not substantial precedents for leaving pre-existing motorboat use in statutory wilderness, which there are. Those who have argued to the NPS that its present policy of allowing motorized rafts on the river violates the law are just flat wrong.

MOTORS ARE ESSENTIAL

In order for Grand Canyon National Park to be managed by NPS professionals in compliance with applicable law, regulation, and policy, the National Park Service must make many hard decisions, few of which will please every constituency of the park. But the facts are that the continued use of motorized rafts on the Colorado River through the Grand Canyon is necessary for the future good condition of the park and the provi-

sion of high quality visitor river experiences there. The benefits of motorized rafts on the river include:

- 1) having the flexibility to spread visitor use among the limited number of beach campsites, to both reduce resource impacts and off-river visitor contact between groups;
- 2) having the ability of one group to move quickly and quietly past another group on the river, thus reducing the impacts of inter-group contact;
- 3) being able to move from one popular off-river attraction site to another in the river corridor, when one is occupied; and
- 4) being able to provide a significantly higher number of river trip opportunities to a broader range of the public than would be the case without motors.

Without motors, the total user day level allowed on the river would have to be increased significantly in order to allow the same number of people down the river:

- *Oars-only* means that each visitor requires many more nights to complete a trip through the canyon.
- *Oars-only* means that either the total number of visitors able to take a river trip would also have to be reduced, probably quite dramatically, if the current user day carrying capacity remains the same, or the total user day allocation must be increased significantly.
- *Oars-only* means traveling through the canyon in large, multi-group clusters, with groups unable to achieve separation because every raft is traveling at the same speed. Holding one group back to seek separation is not an option because it simply means letting another group that launched the next day catch up.
- *Oars-only* means greater damage to park resources at campsites with more people crowding in, unable to move downriver to another site.
- *Oars-only* means a diminished quality of experience for everyone on the river, unless total use is substantially reduced from the present level.

EXCEPTIONS MAKE THE RULE

As Congress has considered wilderness legislation over the nearly four decades since the 1964 Act was passed, many wilderness advocates, including myself, have expressed concern about exceptions to “normal” or “standard” wilderness management provisions. At times, these concerns are warranted, as anti-wilderness forces have lobbied for language in wilderness bills that would have allowed all sorts of damaging activities, from mining and oil and gas drilling, to private recreational cabins, to new road construction. Some have also objected to motorboats where they are already in

use, arguing that they are a violation of the Wilderness Act. But this is simply not true.

A quick look at the legislative history of numerous national park wilderness statutes, and of the Wilderness Act itself, should answer the question about motorboats in designated wilderness where established prior to an area’s designation. Section 4(d)(1) of the Wilderness Act recognized that pre-existing motorboat use in statutory wilderness would be grandfathered in as an acceptable use. Indeed, in every national park or national forest wilderness designated since 1964 where pre-existing recreational motorboat use was already established, Congress has allowed by law its continuation. For example, this is true in Everglades National Park on the 110-mile Wilderness Waterway (and elsewhere in that park’s wilderness area), on the wilderness waters of Glacier Bay National Park, on the volcanic caldera lake in Crater Lake National Park, and elsewhere.

Aside from the fact that the legislative precedent for continued motorboat use in statutory wilderness is well established in law and practice, the reality is that for a generally linear park like Grand Canyon, and most other popular recreational river parks, the river is analogous in many important respects to such famous parkways as the Skyline Drive through Shenandoah National Park, the Going-to-the-Sun Road in Glacier National Park, and the Tioga Road across the high Sierra in Yosemite National Park. In each of these cases, these popular motor-roads are bordered, at their pavement’s very edge, by statutory wilderness. These routes function as primary access arteries into the backcountry, and this is what should happen in the Grand Canyon.

THE ELITE

In his BQR article, Mr. Crumbo disparages, and dismisses, the outfitters’ clientele as elitist rich folks, and implies that they do not deserve to be in a real wilderness since they haven’t “earned” it through sweat and hard work. He notes that in a recent survey of outfitted river users, some fifty percent claimed an annual household family income of \$100,000 or more. Of course, simple math indicates that the other fifty percent must have an annual household family income of less than \$100,000, and many probably make substantially less than that.

Anti-environmental forces often disparage wilderness as the exclusive domain of the rich elite, so it is ironic that a wilderness advocate such as Mr. Crumbo would criticize users of de facto wilderness for their level of income. Kim, don’t go there. Surely, many members of most national environmental groups, and certainly most of the members of The Wilderness Society Governing Council, are in a substantially higher

income bracket than even the one you criticize.

In my view, income level does not define a wilderness lover, attitude does. When I seek a wilderness experience, I would not choose a river trip with a large group, nor seek the creature comforts that are provided on some trips, both outfitted and private. But I know that many park visitors who do choose these amenities have every right to be there and that they will have, for them, a powerful wilderness experience in the Grand Canyon.

THE COLORADO RIVER MANAGEMENT PLAN

Completing a revised Colorado River Management Plan and separately updating the wilderness recommendation this time around should be a high priority for the NPS.

To do so, I believe there are five basic assumptions that must be adopted.

First, all concerned should come to realize that the river experience is enhanced, and the park's resources are better conserved, with motors, while both the experience and the resource are diminished without. This is true unless you wish to cut the public's access to river trips very dramatically, perhaps by fifty percent or more.

Second, everyone should understand the differences between managing a statutory wilderness, having a wilderness state of mind, and providing the opportunity for a wilderness experience. Each is distinctly different, but too often wilderness advocates confuse their own concept of wilderness philosophy with the specific wilderness management provisions found in the law and regulation.

Some wilderness advocates have even gone so far as to suggest that people who have not sweated enough, or spent enough time to get there, do not deserve to have a wilderness experience. It is ridiculous to impose one concept of a wilderness experience held by a veteran wilderness user upon a novice backpacker or first-time river runner in the Grand Canyon, and to suggest that the latter cannot achieve a true wilderness experience by riding on a motorized raft through the park.

Wilderness management is completely different than wilderness experience. My 90-year old mother can have a perfectly wonderful wilderness experience on the accessible Limberlost Trail in Shenandoah National Park Wilderness that is every bit as significant to her personally as my own experience was to me in the Gates of the Arctic National Park Wilderness in Alaska. Every statutory wilderness is managed to the same standard, under the law, but the experience of them on an individual to individual basis is quite different—terrain is different, degree of difficulty is different, proximity to developed areas is different—but they are all still wilderness under the law.

Third, once you accept the fact that motors, albeit increasingly quiet and clean ones, are a permanent part of the management regime at Grand Canyon National Park, then the other array of issues—carrying capacity, user days and the allocation of them among competing

groups, launch calendar, length of seasons, group size, etc.—can be readily, if not easily, addressed. Conversely, if the debate over motors continues to rage, then I would assert that these other issues cannot be resolved, simply because there are too many possible scenarios and variables to contemplate or forge into a final river plan.

Fourth, all parties must realize that the practical, everyday procedures for running the river, and the equipment needed to do so, have changed radically over the past twenty years. The proper standard of ethical user behavior on the river has vastly improved. Waste removal, cooking fire controls, fresh water usage, beach habitat protection, and Leave No Trace practices in the side canyons and at attraction sites have all rendered the quality of the Canyon's resources better than they were. This trend can certainly continue with the advent and implementation of zero emission, silent electric watercraft.

Finally, it is hopefully as clear to other wilderness lovers as it is to me that the strongest advocates for wild places are those who experience them firsthand. Surely the vast majority of folks who have taken a Grand Canyon river trip, whether a private or professionally-guided trip, either motorized or non-motorized, have come away with a new, or renewed commitment to support the national park system and the critical need to protect our special places across our great country. Surely, many have become members of groups like The Wilderness Society or the National Parks Conservation Association as a result.

It would be wrong for the long-term benefit of the park, and wrong for the growth and effectiveness of the park and wilderness advocacy groups, for the use of the river to be reduced dramatically below today's level. The only way to assure that the national parks will still be available for my grandchildren, and yours, is if there is a strong and growing constituency to speak for them. This constituency derives directly from the ability to enjoy the parks to their fullest in a manner consistent with their unimpaired conservation in perpetuity.

THE BOTTOM LINE

I'm for statutory wilderness designation in Grand Canyon National Park. One million, one-hundred thousand acres of it. But not on the river, which should remain a non-wilderness linear corridor surrounded by the opportunity for solitude and tranquility envisioned by Howard Zahnizer when he wrote the beautiful words of the 1964 Wilderness Act. The resources of the park will be fully protected; the high quality of the visitor experience on the Colorado River through the Grand Canyon will be fully protected. For once, both the resource and the visitor will win.

T. Destry Jarvis

Announcing the GTS 2003

THE GUIDES TRAINING SEMINAR (GTS) land and river sessions are going to be *so great!* The land session (March 29–30, 2003 at Hatch River Expeditions in Marble Canyon) is open to anyone wishing to learn more about the natural, cultural and human history of Grand Canyon along with current river issues and Park programs. The cost is a mere \$25 to cover food for the weekend, or \$20 if we receive it prior to March 1 (unless you're sponsored by an outfitter).

The following list will give you a taste of what the land session may include: Brad Dimock on the river journals of Kolb, Holmstrom & Nevills, Helen Yard on avian studies, Peter Huntoon on the myth of Indian canals in Deer Canyon, Denny Fenn on current Grand Canyon Monitoring and Research Center (GCMRC) research, Chad Olson on wildlife studies, Chuck Higgins on the Norwalk virus and public health river procedures, Steve Gloss on GCMRC biology programs, Bill Vernieu on water quality, Steve Carothers on perspectives from the EIS of the Colorado River Management Plan. And that's not all—tons more on geology, archaeology, fish studies, tamarisk removal, creating a sustainable future for Grand Canyon, and more. We'll also have great slide shows and films along with wonderful food, music and fun. You've gotta join us! When we have it finalized, we will post the agenda on our website, www.gcr.org. You may camp or make a reservation at one of the local lodges: Cliff Dwellers (right next to Hatchland), Lees Ferry Lodge (formerly Vermillion Cliffs), or Marble Canyon Lodge. Mark your calendars!

The GTS river session will also be fabulous with interpretive talks done right on the river so you can actually see, hear, touch the stuff you're learning about. What could be better! It's the only completely cooperative training trip around with guides from multiple companies participating and boats ranging from a motor rig to oar boats and paddle boats. So, sign up early and ensure your spot. The deal with the river session is that you must have work in the canyon in 2003 to be eligible. First priority will be given to guides sponsored by an outfitter, then to all interested guides and trainees who have trips for the 2003 season. Guides may choose from the upper or lower sections (or both if we have room). The cost is \$150 per half of trip, payable when you sign up (except for sponsored guides—we'll bill your outfitter).

The GTS postcard is on its way to all guides in our database so fill it out and send it in ASAP! If you're not sponsored by an outfitter, send in the application, a check (which we'll hold until we determine if you can go), and a letter or resume with your background. Tell us who you are and why you should go. This will help us in our participant selection process. Guides on the upper

half will participate in a clean-up of the GCRG Adopt-a-Highway stretch of road between Marble Canyon and Vermillion Cliffs after the rig on March 31.

So here's the deal – write it down:

- March 28, 2003—10 A.M. to 2 P.M.: Food Handler's Class at Old Marble Canyon Lodge. Call Marlene Gaither of the Coconino County Health Department at (928) 226-2769 to sign up.
- March 28, 2003—3 P.M. to whenever: GCRG Spring Meeting at Old Marble Canyon Lodge. Nomination of officers, conservation issues and other important stuff. Dinner and party at Hatchland afterwards. Come and offer your ideas!
- March 29–30 8 A.M. to whenever: Guides Training Seminar Land Session at Hatch River Expeditions warehouse (Hatchland) in Marble Canyon. Open to anyone and everyone. Food will be provided—three squares on Saturday and breakfast and lunch on Sunday...yummmmm. Loads of interesting interpretive talks and stuff guides need to know.
- April 1–7 (Upper half of Guides Training Seminar river session). Lees Ferry to Phantom Ranch. Open to guides/trainees with work for the 2003 river season.
- April 7–15 (Lower half of Guides Training Seminar river session). Phantom Ranch to Diamond Creek. Same as above.



Creating a Sustainable Future

THE KEY TO MAINTAINING the long-term viability of any activity or condition is the concept of sustainability. Protecting the Grand Canyon river experience and the future of guiding is no exception. To assure that our children and future generations will have the same opportunities and quality of experience is dependent on our ability to create a sustainable management program for the Colorado River. The quality of the experience of the future is fully dependent on maintaining the quality of the place that provides the experience. The way that the Colorado River is currently managed is clearly not sustainable.

Without a doubt the single greatest threat to the future of the Colorado River corridor in the Grand Canyon is the presence of Glen Canyon Dam. If we only look at river protection with a short-term view it is easy to make a case for maintaining the status quo regarding Glen Canyon Dam. The regulated flows from the dam create a degree of certainty upon which to plan and execute commercial river trips. In addition, there is a powerful urge in the human psyche to maintain a status quo that is perceived to be beneficial at the time. Change on the other hand takes effort and involves risk or even personal sacrifice. The status quo is always the path of least resistance but it is not necessarily the best or wisest path. The path of least resistance is to the left at Bedrock, but do you want to go there?

Supporting the continued operation of Glen Canyon Dam is a path that will eventually lead to disaster, just as sure as running left in Crystal at 50,000 cfs. It is becoming very clear that the construction of this dam was a huge mistake because it has created a situation that is not sustainable. The most obvious and unavoidable problem is the accumulation of sediment in the reservoir. It must be clearly understood that the primary natural function of the Colorado River is to transport the easily eroded soft sandstone of the Colorado Plateau to the sea. The forces of erosion and gravity cannot be denied. Within the scope of geologic time, this process is less than half completed. There is still enough sediment to be transported by the river to fill both Powell and Mead reservoirs thousands of times over. Sediment accumulation alone will eventually lead to failure of the dam and subsequent unprecedented damage to the Grand Canyon and other resources downstream.

The huge sediment load carried by the Colorado River has been a known fact since the earliest river explorations. It is a tragedy that in 1954 Congress knowingly failed to adequately consider the serious-

ness of this problem. It is a little understood fact that one of the primary political reasons for building Glen Canyon Dam was to prolong the life of Hoover Dam and Lake Mead. In the years following the construction of Hoover Dam the rate of sediment accumulation in Lake Mead was alarming. It was clear that unless the huge annual sediment load of the Colorado River was trapped somewhere else upstream the life of Hoover Dam was limited. As is often the case, relatively short-term economic needs won the day and Congress authorized Glen Canyon Dam. Some future Congress would have to deal with the consequences.

In addition to serving as a sediment trap, the dam produced power generation revenue that the upper basin states used to construct more dams and diversions on the tributaries of the Colorado. This purpose has been fulfilled. Now society is faced with paying the price. Dealing with sediment accumulation in the reservoir, and paying for the huge losses of water that evaporate in periods of drought, will eventually cost far more than the initial economic benefits provided to the upper basin states. Time will prove that it would have been far less expensive just to have used tax dollars to pay for these upper basin storage projects and let the river run free through Glen and Grand Canyons.

In addition to escalating economic losses as a result of the dam, most boatmen are well aware of the severe ecological damage created both upstream and downstream of this dam. The National Park Service (NPS) is responsible for protecting and managing the resources found within most of the Colorado River system north of Hoover Dam. The NPS has a congressional mandate to protect park resources and natural processes "unimpaired for the enjoyment of future generations." The body of law that creates this mandate is just as relevant to our culture as that which pertains to the management of water and power. The chronic impairment of the aquatic ecosystem of the Colorado River is well documented. In response to growing public concern over the adverse effects of the operation of Glen Canyon Dam on the resources of the Grand Canyon, Congress passed the 1992 Grand Canyon Protection Act. This act directed the Secretary of the Interior to mitigate the negative effects of the dam on downstream resources. An Environmental Impact Study (EIS) was conducted and a Record of Decision (ROD) was signed in 1996. The Glen Canyon Dam Adaptive Management Work Group (AMWG) was established to advise the Secretary on dam operational changes authorized within the ROD and to report on progress made in the mitigation progress.

An impressive amount of research and monitoring has been conducted in support of this effort. Beginning with the Glen Canyon Environmental Studies program which gathered information for the EIS, and continuing with the Grand Canyon Monitoring and Research Center supporting the AMWG, over a decade of research and associated experimental flows has been conducted costing taxpayers over eighty million dollars. Although much has been learned, very little progress, if any, has been made in actually reducing the impacts. The total demise of the natural biodiversity of the Colorado River ecosystem within the Grand Canyon is nearing completion. It is becoming increasingly clear that altering dam operations will not be effective in mitigating ecosystem changes brought about by the presence of the dam.

Although the current damages to Grand Canyon resources are tragic, future catastrophic events brought about by the accumulation of river sediment in the reservoir will be devastating. Since the completion of Glen Canyon Dam in 1964, the Colorado's nearly one hundred million ton average annual sediment load has been collecting in Lake Powell. It is an undisputed fact that unless a very costly annual dredging program is commenced soon, or the dam is decommissioned and a river bypass created, Lake Powell will fill with sediment.

However, well before the entire lake is filled with silt, the advancing sediment toe will first clog the dam's river outlet works, the only openings that can be used to release water in times of low reservoir levels. Located at elevation 3374 (one hundred feet below the generator penstock openings), Bureau of Reclamation (BOR) data estimates that sediment will clog these openings in about another eighty years (E. Shultz, 1961). In times of prolonged drought, if the reservoir level drops to elevation 3490 (within twenty feet of the center of the generator penstock openings), the generators must be shut down. If the existing drought continues, it is possible that this could occur within two years. In this event the outlet works will be used to bypass the generators in order to deliver the minimum flows required by law through the dam. No electric power would be generated until the lake level rose back above the penstock intake openings, which could be several years. This event, in itself, might not be more harmful to the canyon, but the scenario gets worse. Now fast-forward eighty years into the future. The outlet works are now clogged with sediment and the same drought scenario occurs. When the lake level drops below the penstock openings there is no longer any way to release water from the dam. Except for the inflows from the few small tributary streams within the Grand Canyon, the flow of the mighty Colorado will be a reduced to mere trickle.

As the sediment level continues to deepen it will

reach the penstock openings in another fifty years. Unless there is a way to raise these openings higher on the face of the dam, there will no longer be any way to release water at any reservoir level. In wet cycles, because of drastically reduced reservoir storage capacity, the water level could easily reach the spillways. These spillways were not designed for the discharge of water for prolonged periods of time. High volume use of these spillways for more than a week or two would most likely lead to their catastrophic failure.

According to BOR studies, over-topping of the dam would likely lead to the formation of a river channel through the soft sandstone on either side of the dam. Considering the tremendous water pressure created by a reservoir of this size and the easily eroded sandstone that abuts the dam, once the spillways failed, complete breaching of the dam could occur in a matter of hours. Such an event would be devastating to the inner gorge of the Grand Canyon. Following the near failure of the dam in 1983, the Bureau of Reclamation prepared a flood inundation model for the failure of Glen Canyon Dam (S. Latham, BOR 1990). According to this study, in the event of overtopping or breaching of the dam the crest of the flood would be over five hundred feet high when it reached the Grand Canyon and 230 feet high when it reached Lake Mead. The study concludes: "The failure of Glen Canyon Dam due to overtopping would produce catastrophic flooding with unprecedented flood depths and discharges all the way to Lake Mead and Hoover Dam. Even if Hoover Dam did not fail, there would be unprecedented flooding downstream of Lake Mead as well".

Although the recent drought period precludes such an event occurring in the near term, the exposed sediment bed at the upper end of Lake Powell is a vivid reminder that the sedimentation process is well underway. The time to act is now before the situation becomes unmanageable. If dredging is to be the long-term solution, it must start immediately while the advancing sediment toe is still near the road access at Hite. If engineering studies prove that annual dredging will be too costly and impractical in this remote location, the NPS and Congress should aggressively seek the decommissioning of Glen Canyon Dam. With a dam bypass the accumulated sediment can be carried naturally through the Grand Canyon over a period of years where it can be more easily dredged and removed at Lake Mead.

Although the legal and policy ramifications of this issue are complex and politically sensitive, there is compelling evidence that there would be both short and long-term positive economic benefits from restoring a free flowing river through Glen and Grand Canyon. The government could then focus its effort

on managing Lake Mead as a sustainable water storage and hydropower facility. Resolving this critical problem will take courage and strong commitment to creating a sustainable future for the unique aquatic ecosystem of the Grand Canyon, Colorado Rivers water users, and Grand Canyon boatmen yet to be born.

Dave Haskell

FORMER SCIENCE CENTER DIRECTOR FOR
GRAND CANYON NATIONAL PARK 1994–1999

Before You Met The River

Come prepared to imagine, come prepared to wonder,
Come prepared to touch, admire, and listen to the earth.
Come, embrace the magic of the river and marvel at its stories
as you would a favorite grandfather when very young.

Bring a camera, water colors, and a fresh journal,
Or, unencumbered by film, paint, or written word,
Record and remember all you need to know in your mind
until it overflows, and in your heart until it sings.

Come prepared for change, more passion, and more joy,
Come prepared for renewal of a deep part of yourself,
Come prepared to return home more than you were before,
before you met the river.

Rob Elliott

River Incision in Lake Mead

AT THE FALL GUIDES' meeting, several people expressed concern about possible difficulties created by river incision in the Lake Mead area on the way to South Cove, now that the lake level is so low. The following eyewitness account may help.

In 1963 and '64, I was doing field work in the upper Lake Mead area for my dissertation. This is the time when they were filling Lake Powell, so the level of Lake Mead was very low—what used to be lake in the Grand Wash-Pearce Ferry area was now treacherous mudflats, Grand Wash Bay was a lagoon separated from the river by a bar, and the lake began somewhere near the head of Iceberg Canyon.

In the general Pearce Ferry region, the river had incised into the mudflats of its former delta by many tens of feet—it may even have been something like one hundred feet, if there is any validity to my recollections.

The high banks of the river were extremely unstable, which is not surprising given that they were made up of silt and mud. Consequently, the inset channel was

bordered by a wide zone of slumped material, and the banks were calving into the river constantly.

I did not get to the river channel that often, because of the treacherous mud flats that had to be traversed to get there, and because of the unstable nature of the banks, so I don't have as many observations as I'd like. However, friend Bill Belknap did venture into the channel with some sort of boat, and he reported that the banks were indeed constantly calving, and that the slumping material sometimes went half-way across the channel. Not a healthy place to be traversing with a boat.

The upshot is that, if the level of Lake Mead continues to drop at a good clip, you'll have to negotiate the inset channel with some caution. But if the level stabilizes, the constant slumping of the banks may soon lead to a reasonably stable configuration.

Ivo Lucchitta

The Colorado River Storage Project in the 21st Century

IT SEEMS SUCH A SIMPLE QUESTION: why have dams on the Colorado River? Viewed by some as life-givers; by others as intruders. Some perceive that we can't live without them; others perceive that we have somehow outgrown them, their necessity faded away. The past debated their existence. The present debates their operation, dividing the surplus, traditional water and power benefits and instream flows. Like most societal issues, there can be no segregation of humans, their values, and their surroundings. As the West continues to press the boundaries of population growth, the future will debate our use of limited resources, particularly water. We will have to address the hard questions of why, how, and what's next.

WHY

There can be no getting around it; we live in a desert. It took early settlers just one year to realize that this wasn't Ohio. Streams dried to a trickle. It would take some type of water storage to supply human needs during the parched summers. Early attempts were humorous; buckets, vats and tubs were scripted into service. For a settlement of just a few, small efforts might have worked. But for our current population, we speak in a language of water demands that the early settlers could never have understood. And the demands are still growing.

In the Colorado, Congress provided the Boulder Canyon Project and the Colorado River Storage Project (CRSP) as water resources to satisfy these life demands. About thirty million acre-feet of storage in both the Upper and Lower Basins. For the Lower Basin, the purpose was storage delivered directly to the thirsty states of Arizona, Nevada and California.

But upstream the purpose seems less clear. In truth, CRSP was a giant exchange agreement. Compact and potential treaty requirements would be delivered from the lower end of the Upper Basin, while depletions were allowed to develop upstream. Absent the storage to fulfill our Lower Basin commitments, upstream users would be forced to abandon, as the Anasazi, their water use during cyclic periods of drought. With CRSP, those threats were subdued. The Colorado is a system of extremes, with annual flows varying historically by a factor of five. Reservoirs smooth the extremes and society benefited from this certainty.

So the answer to "why?" is simple; CRSP exists because we have chosen to live in this part of the West. Absent our existence in this basin, there would be no need for reservoir storage. We could point to others and their excessive water demands, but in truth the answer to "why?" will be found in the mirror.

How

Not only was CRSP designed to provide water, but also it was a power generation project. Revenues from the sale of power not only were to repay the construction costs of the project (with interest), but also provided financial assistance for the development of irrigation projects in the basin. The irrigation subsidies designed to support farmers and keep food prices competitive came not from the federal government, but from the basin's power users. Initially, the projected power rates to accomplish all this were higher than the open market, and non-profit public power municipalities took some risk in signing contracts for CRSP power. In recent years this situation has reversed, and public power customers now enjoy CRSP rates lower than the open market.

The development and financing scheme developed during the 1950s has worked flawlessly. Much of the original construction costs have been repaid, and numerous water development projects are providing upstream water supplies. What wasn't completely foreseen was the change in society's expectations or the resource implications of constructing CRSP. River restoration and endangered species are now part of the demands that are placed on the reservoir system, necessitated by human demands on the water resources of the West.

WHAT'S NEXT

The regulating nature of reservoirs reduced sediment load, spring peak flows and river temperatures, while increasing base flows during the summer, fall and winter months. The natural functioning of watersheds and river systems has been altered, declining native species the result.

Seems fair to ask the value of these natural resources; indeed, this question often frames the debate over the Endangered Species Act. What is sometimes lost in the debate is the recognition that there is something about the Intermountain West that either draws us away or keeps us from coastal metropolises. We choose to live here. There is a premium that we place on the quality of life in the Colorado Basin. That premium is the currency that bridges human demands and human surroundings.

It's no surprise that there are a multitude of beliefs and positions on this issue, but perhaps it will be a surprise how we will address these differences of opinion in the future. One emerging technique that may assist in this discussion is adaptive management. Adaptive management can be viewed as an admission of incomplete knowledge, which leads us to experiment to find solutions to current challenges. This incompleteness

results from the extraordinary complexity of both ecosystems and our relationship to them. When CRSP is viewed through this filter, the debates over operational issues can change from polarization to solution-finding. It is inaccurate to assume that solutions only exist which result in winners and losers. Clearly we stand at a point in time when the possible universe of solutions has only been partially explored.

Future exploration depends on commitments to scientific rigor, respect for all needs, and a willingness to try. Litigation seems a failure of all three. The greatest creativity we can muster will be required, nurtured by trust. CRSP and its original purposes will continue to endure, but it will adapt as water use pressures continue

to increase. That adaptation will bear the same marks of ingenuity as the early settlers, who not surprisingly were drawn here by the quality of life. Surely, that deserves our best efforts.

Randall Peterson

MANAGER, ADAPTIVE MANAGEMENT AND ENVIRONMENTAL RESOURCES DIVISION, UPPER COLORADO REGION, BUREAU OF RECLAMATION

(ALSO PROGRAM MANAGER, GLEN CANYON DAM ADAPTIVE MANAGEMENT PROGRAM)

Reading Water

“The study of rivers is not a matter of rivers, but of the human heart.” —Tanaka Shozo

THUS BEGINS Rebecca Lawton’s collection of essays, *Reading Water: Lessons from the River*. These finely crafted stories reflect the wisdom and sharply tuned senses that life on the river can nurture.

Rebecca Lawton, one of Grand Canyon’s pioneer women river guides, began her relationship with rivers in 1973, at age 17, with her first summer guiding on the Stanislaus River. Never one to turn down a challenge and with a passionate love for the river, Becca, over the next decade, forged an impressive guiding career on rivers in California, Utah, Idaho and Grand Canyon.

In Louise Teal’s book, *Breaking into the Current*, profiling the first professional women guides in Grand Canyon, Rebecca Lawton says, “I’ve done a lot, but there’s nothing like putting those oars in my hands and putting my boat exactly where I wanted it. Nothing. I love reading water. It’s intellectually stimulating. People have no idea how much we row with our brains. I remember above some monster rapid a boatman was talking about praying to the river gods to let us through. And I said ‘No, it’s nothing to do with the river gods, you just have to put your boat in the right place.’”

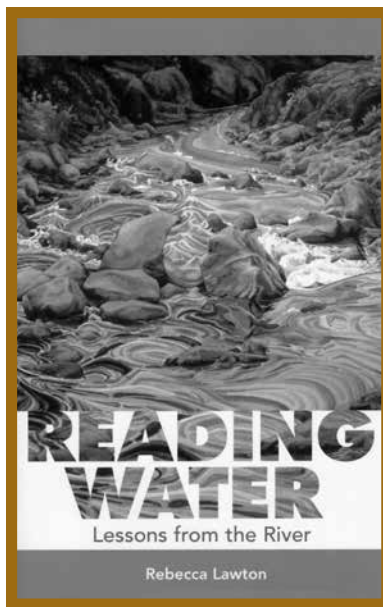
In the preface to *Reading Water*, Becca writes, “Rivers led me to countless unspoiled places, challenged me to be strong, and introduced me to lifelong friends. Moreover, the river taught me to read water—to psyche out where rocks hide in riffles, find safe runs in inscrutable rapids, and keep moving through the flatwater.

Now, years after my life as a guide, I frequently return to the many lessons learned from the river during that time. I may no longer hold a pair of oars in my hands every day, but I’m still steering the craft. Constantly adjusting course. I’m still drawn to wild stream canyons, some of Earth’s greatest places. Because, although I’ve had learned instructors of all ken—in science, literature, art music, philosophy, love—for which I’m deeply grateful, moving water remains the wisest teacher of all.”

These stories of life on the river and off, love, death, marriage, friendship, divorce, careers, and motherhood, are woven together with adventures, insights, and lessons learned. They view river life through

various lenses, including the hydrological, spiritual, and personal.

Reading Water (ISBN: 1-931868-09-3, \$18.95) is currently available in bookstores and online through www.becca.lawton.net.



Major Powell Rides Again— (But, this time, accurately)

IN MAY OF 1869, eleven men in Wyoming stood beside four moored boats on the Green River where, weeks earlier, the Union Pacific Railroad had bridged it. These men's mission, their goal, and their fates hung on their intent to navigate those four boats down the Green River and through the unexplored canyons of the Colorado a thousand miles to, through, and beyond Grand Canyon. As fortune would have it, 98 days later, only six of those eleven men and only two of those four boats would ride the Colorado past the Grand Wash Cliffs at the foot of Grand Canyon. The story of these brave—maybe too brave—men and their harrowing accomplishments forms one of the most astonishing epics in the exploration history of North America. Here for the first time this gripping saga of extreme adventure, optimism, courage, fear, heroism, humor, triumph, and tragedy is told in full by the men themselves via their newly transcribed, unabridged journals and letters written during the expedition.

"Hang on, we're going for the Big One." Michael Ghiglieri's *First Through Grand Canyon* takes us on a wild run through one of the most exciting explorations of the West, the fateful 1869 expedition down the Colorado River. Accurate transcriptions, long overdue, of the letters and diaries written during the expedition form the core of this book, but it goes well beyond a mere compilation of documents. In it, the crew members emerge from the shadows to tell their stories, often differing from the account published by expedition leader John Wesley Powell. This book also contains a newly-discovered letter by Jack Sumner which casts doubt on the accepted version of how the three men who left the expedition met their fates. In a detailed introduction and series of biographical sketches, Ghigli-

eri presents a scathing reappraisal of Powell and the historians who have glossed over his failings of 1869.

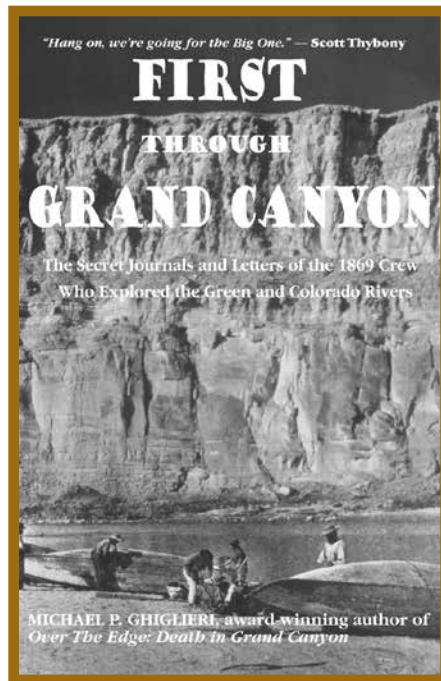
With a feisty, combative style, Ghiglieri lays into Powell, a man often revered by river historians. Powell comes across as an incompetent leader whose desire for self-aggrandizement drove him to fabricate reports of his expedition and to monopolize credit for it to the exclu-

sion of the extraordinary crew who made it possible. Before reading this book, I saw Powell as someone you might enjoy talking with at the Cosmos Club over brandy and cigars—though admittedly not someone you'd want to float with down a dangerous river. He was too driven, autocratic, moody. Now, however, I'd avoid that polite conversation and instead hit him with the hard questions, the ones raised by Ghiglieri again and again. Those questions need to be asked. While Ghiglieri's effort to right the record minimizes Powell's accomplishments after 1869, what's more important is the accurate and engaging way *First Through Grand Canyon* reanimates this classic tale of exploration during 1869, bringing it alive for a new generation of river runners and for all those drawn to the history of the West.

First Through Grand Canyon is destined to become the definitive history of this amazing journey. *First*

Through Grand Canyon will be available this March from Puma Press (Box 30998, Flagstaff, AZ 86003) in a limited, 1,000 copy first edition hardcover printing (ISBN: 0-9700973-3-6, \$29.95) and a simultaneous trade soft-cover edition (ISBN: 0-9700973-2-8, \$19.95)

Scott Thybony



Chronicles of the Colorado

FRETWATER PRESS is publishing a series of historic river journals this spring. The first two volumes of *Chronicles of the Colorado* will be debuted by their respective editors at Cline Library Auditorium, Northern Arizona University, at 7:30 P.M. on March 26.

Bill Suran will present the first volume: *The Brave Ones; The Journals and Letters of the 1911–1912 Expedition Down the Green and Colorado Rivers by Ellsworth L. Kolb and Emery C. Kolb*. This volume contains the Kolbs' complete journals and letters pertaining to the 1911–12 trip, as well as the journal of their stalwart helper, Bert Lauzon.

Brad Dimock will introduce Volume Two: *Every Rapid Speaks Plainly: The Salmon, Green, and Colorado River Journals of Buzz Holmstrom*. This contains Holmstrom's journals from his 1936 Salmon trip, his 1937 solo trip down the Green and Colorado, and his repeat of

that voyage in 1938. Included are the 1938 accounts of Amos Burg, Philip Lundstrom, and Willis Johnson, who accompanied Holmstrom.

Historic film clips will accompany the talks. Attendance is free and open to the public, although Southwest Rivers will accept donations. If you can't make it, Dimock will be at the GTS that weekend for a similar presentation. The books will be available individually in the softbound edition. For libraries and book fanatics, two hundred boxed hardbound slip-cased signed and numbered sets will be printed as well—they can be purchased at the debut, at the GTS, or ahead of time at www.fretwater.com.

An excerpt from each volume, suitable for campfire reading, follows. Remember, you saw it first in the BQR.



IN 1911 EMERY AND ELLSWORTH KOLB launched their photographic expedition down the Green and Colorado. They were starting from scratch, and had some amazing wrecks as they learned, painfully, their white-water skills. They worried little about themselves, however, fishing each other from the river when necessary, all the while trying to get saleable images for their rimside studio. In this excerpt we share the chaos they endured at Waltenburg Rapid.

CHRISTMAS EVE AT WALTENBURG—IN WHICH EMERY AND ELLSWORTH (“ED”) KOLB HAVE BAD RUNS, AND BERT LAUZON LEARNS TO ROW.

EMERY KOLB—

No. 3 was easy, then we had a fine stretch from the asbestoes until a side canyon formed an ugly rapid. We sent Bert below. Ed led and was hurled out of his course all most instantly and being carried for the big drop below. Seeing this I put extra effort to the N. side and got mixed in a nest of rocks which held my boat. I watched Ed as he disappeared over the dip. He did not pass but was held by the recoil waters. In another instant the boat went over and still held by the waters but Ed did not come up for quite a while. When he did he was about 50 ft below the boat which also floated out and righted itself. The rapid was long and I had fear that Ed may drown as the water being ice cold and freezing some along the edges of the river.

I strained every muscle to get my boat off the rocks which I finally did and pulled for the big waves though I

knew it may mean my life, but Ed was fast going toward another rapid.

I went over dip, hit rock smashed side of boat and filled to the gunwales.

Ed's boat got in a whirlpool and Bert swam out and rowed her in. I landed on the N. side just above Ed who just crawled out in time. We were landed on a bunch of rocks with hardly room to stand. Though inexperienced our nerry Bert rowed Ed's boat over to us. Ed could hardly speak but said I want to shake your hand. There was but little wood but we soon had dry clothes out and some hot drink. Ed's narrow escape from drowning kept him awake.

Ice hung on the rocks.

ELLSWORTH KOLB—

#4 is full of bad rocks all over. I go first, go over big rock and the water churning in from all sides holds me there. I see Emery is hung up on rock at head of rapid. My boat is filled and thrown from side to side finally turns over with me under. I lose hold on gunwale as the boat is turned completely over. Long time under water in the swift current. Come up only to be carried under time and again by the big waves. Waves finally dwindle. I see Bert running opposite on shore (South) boat near him. I try to go that way but current takes me across. Have rubber coat on, high boots, two preservers. Almost exhausted. More choppy waves then I get to side in still water and just manage to paddle to shore (North shore) before going over another rapid. Bert swims out and catches boat in whirlpool. I can hardly drag myself out.

Motion to Bert asking for Emery. E climbs on rock above me and says his boat is smashed. Bert crosses my boat to where I am at a little cove in rocks Emery brings his boat down. Smashed in center on right side about two feet. All four boards broken two ribs. Camp. 5 minutes later clothes frozen.

BERT LAUZON—

Ran 3 rapids and came to a bad one at 4 pm. I went to the lower end with a long rope to throw out if the boys were upset and came my way. Ed went over a big dip and was swept down the River for 1500 ft. Just got out at the head

of another rapid in time. He was all in and nearly froze. Emery was hung up on a rock at the head of rapid, got loose, went over a big rock hit another rock just below and smashed the central compartment of his boat. Ed's boat hung up in a whirlpool on my side of the river 100 ft. out. Most of our grub and repair outfit was in this boat. I had to swim for it—got the boat—baled it out with my hat and crossed to where Ed was. About this time Emery came in with the crippled boat. After we got a fire and dry clothes on and a good supper we felt good and lucky that we were all together. Camped on a big pile of boulders.

In 1937, Buzz Holmstrom soloed the river and wrote his prose alone on the banks at night. The following year he returned with Amos Burg (rowing Charlie, the first inflatable on the Colorado) and a helper, Willis Johnson. In this excerpt, we run Hance and Sockdolager, and still, way late in the day, are able to snag Grapevine camp.

IT'S A CINCH EVERY TIME—IN WHICH BUZZ, AMOS, AND WILLIS CAREEN INTO THE UPPER GRANITE GORGE.

BUZZ HOLMSTROM—

Line Chas [Burg's raft, Charlie] down L side Hance & I run it with full load—but am not proud of the job—start on R pull into hole at head & duck around & among submerged rocks working back to L at foot hit angling wave sideways & it knocks me back & I go stern-first over a buried rock—the bottom of the bow strikes 4 in back of stern knocking a hole & crushing board—head for a large rock with bad hole but get to L of it & go on thru ok landing in quiet water on L—bad wind blowing to R all the way makes it harder to pull over—

Now I could have gone to the R between two buried rocks or turned & went thru sideways wave bow 1st & missed rock I hit but anyhow I didn't & the buried ones are awfully hard to see from above—Rowed harder in Hance than I ever did before—If I had unloaded would have been ok—Oh—well—must patch boat at BA as a little water in front hold—go into granite lower end Hance & Amos runs Sock 1st taking on quite a bit of water but ok—& Bill & I get pict from above—then he lands on L & gets ours—dark but upstream cliffs lighted very pretty—Amos nearly upsets about a mile below Sock—small one but deep troughs & reverse angling waves—we don't look & he goes first—Bill & I got a little in it but ok—we took on about 1 gal in Sock—but its a cinch every time—start L of center & go to L then back to center at foot—biggest wave at head on R—find fair camp on L just above Grapevine—wet & cold—get here just before dark—

AMOS BURG—

Below Buzz made skilful & daring conquest of Hance Rapids with full load. Line Charlie around head on left. A few miles above Red Canyon, river enters granite. The granite at Sockdolager Rapids rises with sheer walls 1300 ft. high. Here the river becomes a narrow trough between vertical walls with huge waves, some 20 ft. high. I run first & Buzz follows. Charlie & Julius F. stand on end. We know we'll get thru but why? I'm confident. A few rapids down 3 curling waves in quick succession fall on Charlie & he staggers thru loaded with water. I'm drenched. We are all cold. Camp above Grapevine Rapids 6:PM.

WILLIS JOHNSON—

This afternoon the canyon narrows up again and the rim is about 5,000 feet above us. The lowest layer of rock along here is mostly pink & black granite.

The biggest thrill we have had so far happened to-day. It was when we went thru the Sockdolager Rapids. The Waves are at least 20 ft above the trough and are about 35 or 40 ft. from wave crest to wave crest.

We got thoroughly wet of course.

In the rapids just above, the wooden boat hit a submerged rock but didn't make much of a hole. We patched it immediately and in the rapid just below the big one, Amos in the rubber boat hit a wave sideways and almost overturned. He was completely out of sight except for his head.

At the foot of a rapid this morning, the boat Buzz & I were in took on some water over the side because the water boiled up on one side of us so strongly that the opposite side was forced or else sucked down into the water for a moment.

We camped to-night at the head of Grapevine Rapids about 6 miles above the suspension bridge.

Brad Dimock

The Changing Rapids of Grand Canyon: Hydraulic Features of Rapids

RIVER RUNNERS HAVE developed a distinct terminology to describe water moving through rapids. The unfortunate thing is that some words mean different things within the river-running community and to scientists trained in fluid mechanics. Making matters more complicated, features change continuously with water level or shifts in the bed topography. To start what could be a long and entertaining discussion, here are some brief definitions of the terms we use to refer to water movement in the Colorado River. We invite anyone within the river-running community to comment on these definitions and to send us their revised definitions. These definitions are important for describing rapids, both mathematically as well as telling someone where the goldurned run is.

In river terms, a *rapid* is a steep drop in the river, in which breaking waves appear on the surface and downstream navigation is potentially impeded by emergent rocks or hydraulic features. A *pool* is any section of river where water-surface slope is nearly flat, velocities are slow, and the water surface is smooth and unbroken; most rapids begin and end in pools. Midway in the hydraulic spectrum of pool to rapid, a *riffle* is a distinct drop with small waves that presents no significant obstacle to navigation. We don't know exactly how to quantitatively differentiate a riffle from a rapid, but if it looks like a rapid and sounds like a rapid it probably is a rapid. "Son of..." or *secondary rapids* form downstream from the main drop because boulders reworked from the primary debris fan are deposited in debris bars downstream, usually in an alternating fashion (e.g., Son of Hance, Son of Lava).

Within Grand Canyon, debris fans constrict the river, creating riffles or rapids, sometimes in association with steep bedrock walls that constrain the lateral movement of the river away from the tributary. The long section of unbroken water accelerating from the upper pool into the top of the rapid is known as the *tongue* (Figure 1); rapids can have multiple tongues if an obstruction is at

the top of a rapid (e.g., Horn Creek, Crystal, and Lava Falls Rapids). Tongues sometimes are called *glassy water* owing to their smooth, unbroken surfaces in comparison with the surrounding whitewater. A *hydraulic* refers to a wave, hole, or singular feature that forces water into some manner of interesting kinetics. *Outwash* is the main flow out from any given hydraulic, and a *lip* is the typically horizontal line that marks the entry to a rapid.

A *wave* is any local undulation in the otherwise flat surface of flowing water. Many waves in rapids are *breaking waves*, in which the upstream face of the wave steepens sufficiently so that water falls upstream, and entrains air bubbles, thus creating *whitewater*. A *crashing wave* breaks in a periodic fashion. At about 10,000 cfs, the crashing wave in the hole in 209-Mile Rapid resonates with an intriguing cacophony (Figure 2). An exception-

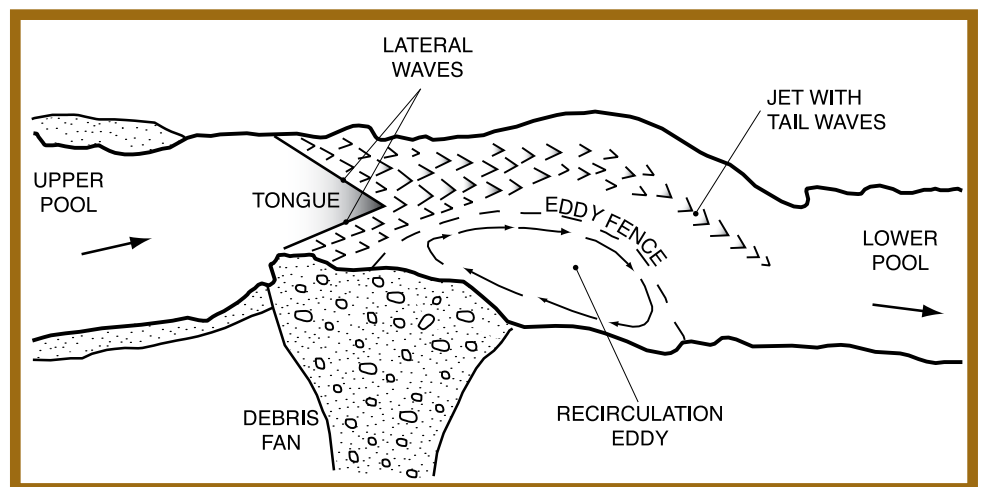


Figure 1. Schematic showing primary features of typical rapid

ally energetic crashing wave can be called an *explosion wave*. *Compressional waves*, also known as *tail waves*, form at the bottom of rapids. They are caused by the deceleration of water into the lower pool, particularly when secondary rapids are present. The fifth wave in Hermit is a compressional wave, although the pool is actually backed up by Boucher Rapid. A *curler*, similar to its ocean cousins and sometimes called a *Hawaii 5-0* wave, is a large wave, usually at the bottom of a drop, with a crest that curls onto itself. The narrow core of fast water shooting from the rapid into the lower pool is termed the *jet*, which creates *tail waves* at the bottom of a rapid.

A *lateral*, or *diagonal wave*, is a long oblique wave originating from water's edge or from a rock in the rapid. A *reaction wave* is a lateral that rebounds back into the channel from some obstruction on shore. *Folding waves* form when two curling lateral waves meet (e.g., the Vee Wave in Lava Falls). A *haystack* is a large compression wave shaped like a pyramid at the bottom of a rapid. Haystacks will assume one of four forms: (1) glassy, smooth faced, (2) exploding, with periodic building and breaking of the haystack, (3) consistently breaking, and (4) breaking asymmetrically as lateral waves come in. A haystack elongated in the downstream direction is called a *rooster comb*; in contrast, a *rooster tail* is a sharply focused wave that is propelled vertically by an obstruction on the bed of the river, typically a shallowly submerged rock. Finally, *rollers* are the smooth, unbroken, and stationary waves, perpendicular to flow, found in either the tail waves or tongue.

A *hole* is any stationary feature where the water surface dips below the surrounding river surface and a breaking wave defines the downstream boundary (Figure 3). Holes by definition have significant downward flow velocity. At lower water, many holes are *pourovers*, revealing the rock that creates the feature. The downstream breaking wave tends to push buoyant material back into the hole, causing *recirculation*, and the *kick* is the primary surface-flow direction of the recirculation wave. The kick indicates the direction that captured, floating objects will move over time. If the kick is back into the hydraulic, the hole is known as a *keeper hole* and is one the most dangerous features on the river. The first option for a swimmer trapped in a keeper hole is to dive deep, attempting to get entrained in the main flow and pushed under the breaking wave. In some cases, the only way out of a keeper hole is for the trapped person to get out of their lifejacket and trust their fate to the river. The recirculation waves in a keeper hole are concave toward hole, and to a boater approaching the keeper from above, the bounding wave appears unhappy, hence the alternative term, *frowning hole*. In contrast, a *smiling hole*, also known as *flushing hole*, has a bounding wave convex to the hole and with a kick to one side. *Corkscrewing holes* are some of the most awesome, and potentially dangerous, features on the river because swimmers may be recirculated above and below water over a long, downstream trending line. Some colorful terms refer to the movement of boats trapped in holes, including *Maytagging* and *window shading*. A *ledge hole* is a pourover falling from a ledge, or collection of boulders. The Ledge Hole in Lava Falls is formed by four large boulders aligned perpendicular to flow. A word of warning: inexperienced boaters should avoid



Figure 2. Large crashing wave below hole in the middle of 209-Mile Rapid.
(Tom Brownold, stake 4216).

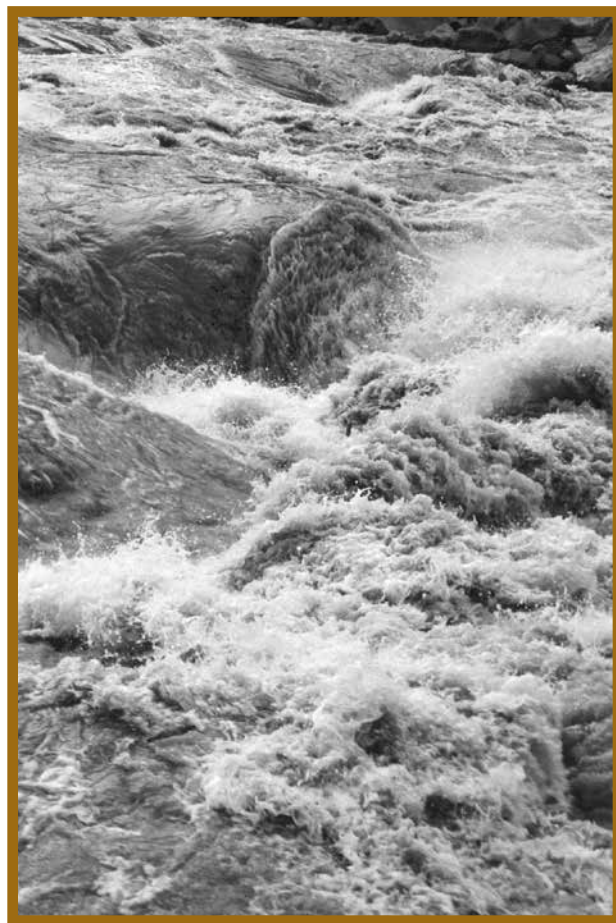


Figure 3. The deep, turbulent keeper hole below Niagara Rock in Cataract Canyon. This frowning hole should be avoided. (C.S. Magirl)

deliberate interaction with features described by the terms used in this paragraph.

Here are a couple of terms we've heard used locally in Grand Canyon. A *chub hole* is any hole that looks like the profile of a humpback chub, nose to tail, and a *dog hole* is a snotty little hole that gets in the way of otherwise perfect run. The dog hole is no major navigational hazard; it is simply an irritant that inspires occasional cursing. *Aeration* refers the relative volume of entrained air bubbles in the flow; highly aerated water is occasionally called *seriously squirrelly water* or *froth* and it affects the floatation and movement of rafts or kayaks. If you've been on the downstream side of a pourover or in a hole, you know these terms, at least by the effect they have on your craft or ability to swim.

Finally, an *eddy* forms adjacent to a bank or behind an obstruction where the stream's flow is forced into a circular pattern. The standard terminology of features in eddies, and the sand bars those features create, are given in Schmidt and Graf (1990) and are not repeated here. The force of the river drives the eddy's circulation, with downstream flow near the main current and upstream flow near the shore; the stronger the main current, the stronger the eddy. An *eddy line* represents the trace of the eddy fence on the surface. An *eddy fence* is a turbulent shear boundary that creates an abrupt rise in water surface from the jet to the eddy. An *eddy wall* is an eddy fence when discharge is exceptionally high. Smaller boats passing over an eddy fence can be flipped, and swimmers trying to move through an eddy fence can be either repelled or pulled underwater. Sometimes, eddies occur in the middle of the rapid (e.g., Helicopter Eddy, the Slate Creek eddy), but most boaters wouldn't want to camp in these places. Likewise, *forever eddies* are particularly energetic ones with large eddy fences that at certain stages can trap oar boats for extended periods.

Below a rapid, where large volumes of water plunge deeply into the lower scour pool, *whirlpools* form along the eddy line. A related feature is a *boil*, which is a turbulent column of rising water that collides with the surface, then spreads laterally outward; where two adjacent boils rise and meet, the water dives downward along a sinuous line termed a seam. Governed by the same physics that form the cool little vortex in your bathtub when the plug is pulled, whirlpools exist to quickly and efficiently transport water molecules from the surface to the bed. Swimmers, surrounded by those multitudes of water molecules, will sometimes feel like a bathtub toy sucked down by the vortex. In 1872, when John Wesley Powell was thrown from the Emma Dean somewhere in the Jewels, he and his cork lifejacket were sucked beneath the surface in a whirlpool. After a moment or two, Powell shot up like a rocket (Dellenbaugh, 1902). Frederick Dellenbaugh wrote that Powell "had tried to make a geological investigation of the bed of the river, and this was not advisable." This just goes to show that scientists and hydraulics don't always go well together.

Bob Webb and
Chris Magirl

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Transform me, Oh River

Transform me, Oh River, to a painter of hues.
Transform me, Oh River, on a canvas of blue.

Transform me, Oh River, with a palette so true
With the colors of canyons so vibrant and new.

Transform me, Oh River, from sorrow and grief
To endings that point to power and peace.

Transform me, Oh River, to the fullness of now;
To the essence of being that joy will allow.

Transform me, Oh River, before I wither and die
And flow with the silt to the ocean of time.

Transform me, Oh River, on currents of grace
And the wonders of living when spirit awakes.

Rick Obermiller

At Boucher Creek

O lover, I have seen in you that blush
that paints the Arizona sky pastels
of pink and turquoise sunsets, hovering,
reflected in your eye. Such quietness
of soul in you I feel as near a spring
deep in the canyon to whose belly cling
young sycamores and cypress-racing roots
to suckle at the breast of mother earth.

Your voice, it is as if the canyon wren
for joy will but its plaintive song begin
accompanied by ancient cottonwood
and breeze; whose autumn leaves bestirred become
her rustling choir; embraced within whose arms
she late, amid the ebbing snow of spring,
did weave a tiny nest to warm her young.
Most glad her voice, she sings of them all gone.

I feel such sadness in your soul as of
the cabin walls, now broken down, where once
Boucher had wished a wife to greet and keep
him warm. His figs and pomegranates there
she gracefully would prune, be glad to see
them bloom and feel their ripened juices flow
in ribbons down her longing neck whom he
would sweetness taste upon the harvest moon.
Such ecstasy of living in this time
and place when we, of all who've gone before,
of they who after us will come adore,
reveling in the revelation of
what now is good and all that nourishes
in beauty, joy and love; such ecstasy
that you and I, O lover, were,
if but for a moment,
in this sweet world together.

Tim Whitworth

Letters From Grand Canyon—Piracy and Capture

Carve the Grand Canyon: Part B

TWO ISSUES AGO, IN BQR Volume 15 Number 3, we ran the first part of this article. Here continues the geological story of the area of northern Arizona and the age and formation of the Grand Canyon. This is a complicated story with many theories and countertheories.

CONFLICT RESOLUTION II: ANOTHER NEW CONCEPT

At this point, we seemed to be back to square one—an ancestral river more or less traceable to near the east side of the Kaibab Plateau, but no further. A way out of the dilemma was suggested to me by work in northern Arizona, especially on the Shivwits Plateau. The key was the presence of lava remnants as old as nine million years that protected details of the ancient landscape over which they flowed. This made it possible to describe what the landscape of northern Arizona looked like at various times in the past nine million years, and to work out how the erosional processes through the landscape evolved with time. Both are important parts of the Grand Canyon story.

THE LAVA STORY: ANCIENT VALLEYS

The southernmost part of the Shivwits Plateau is a long finger that points south and is surrounded on three sides by the western Grand Canyon. The finger is capped by basalt lavas eight to six million years old. Today, you can stand at the eroded edge of these lavas and look dizzily down onto the precipices, fretted buttes and cascading drainages that are part of the western Grand Canyon, but when they were emplaced, the lavas flowed over smooth terrain with no trace of dissection; what's more, there is no evidence that the lavas cascaded into the canyon, as do the famous younger ones near Toroweap, and the older ones on the Grand Wash Cliffs. The conclusion is clear: the western Grand Canyon did not exist eight to six million years ago when the lavas flowed over the land.

Lava remnants scattered over northern Arizona, including the Shivwits Plateau, tell us a great deal more. Most of this region is underlain by the Kaibab Limestone of Permian age, the rimrock of the Grand Canyon. The lavas, however, do not rest on this formation, except for the very youngest ones. Instead, they rest on the Moenkopi Formation, the next geologic unit above the Kaibab. The Moenkopi is soft and easily eroded, but lavas are hard. Therefore, areas where lavas once flowed over the land have been protected, showing us what the surface of the land was like at the time.

What we learn is this: first, northern Arizona was

floored until quite recently by the red Moenkopi Formation, not the gray Kaibab Limestone; think of the country near Wupatki to get a mental picture of this landscape. What is more, the land surface was considerably higher than it is today. In any given area, the older the lava, the higher it is above the present surface, and the greater the thickness of Moenkopi—as much as about 1000 feet—beneath it. There is another curious fact: for lavas of the same age, those farther northeast are highest and have more Moenkopi beneath them. The shape and position of the lava remnants leads us to an explanation of this fact.

Molten lava flows much like water, seeking the lowest spot and eventually making its way down valleys, as river water would. Lavas that flow down valleys should have an elongated shape; this is just what many lava remnants in northwest Arizona show. The elongation is in a generally northwest-southeast direction, and many of the vents from which the lava flows issued are at the southeast end of the remnants. We can conclude that a common landscape feature of northern Arizona several million years ago were valleys that trended northwest and sloped in that direction. The floors of these valleys are now preserved under the lava remnants well above the present surface of the land. Lavas that flowed into the valleys from vents on the valley sides are the ones that show us what the valley sides looked like.

SCARPS AND CLIFFS MOVE ACROSS THE LAND

Was there a particular set of geologic circumstances that controlled the location of these ancient valleys, perhaps a particularly soft layer into which valleys could easily be carved? Indeed there was. But to understand this, we must first think a little about how the landscape of northern Arizona has evolved. The controlling factors here are two: the composition of the sedimentary rocks, and the slope of the rocks.

Much of northern Arizona is underlain by Mesozoic rocks, the colorful strata typical of the Colorado Plateau, the ones that, in the geological layer cake, are above those forming the Grand Canyon. Not long ago such rocks formed the surface of nearly all the Plateau, including the Grand Canyon region. These strata consist mostly of soft sandstone and shale, interrupted in places by more resistant layers such as the Shinarump Conglomerate, the cream-colored pebbly layer so prominent near the boat-launching ramp at Lees Ferry. The resistant layers protect the softer ones underneath from erosion, forming a cliff or scarp. The maroon cliff north of the road to Lees Ferry is an excellent example of such a scarp.

Do these cliffs remain in place once formed, merely getting fretted and worn down with time? They do if the strata are flat-lying. The results of this process are well displayed by buttes and mesas of Monument Valley. But if the strata are not flat-lying—if they have a *dip*—a very different process takes place, a process that is typical in northern Arizona, where the beds have a very gentle dip to the northeast.

To begin with, it is an observational fact that the cliffs face up-dip, that is, up the slope of the beds. In northern Arizona, this means the cliffs face south or south-southwest; think of the Vermillion Cliffs or the Grand Staircase of Utah. But it also happens where the strata are disturbed by a more local feature such as a fold. The Kaibab Plateau is a big dome-like fold, and the cliffs face up the dip created by this fold. You can see this along House Rock Valley and at the circle cliffs cut by US 89 at the north end of the Kaibab.

The second component of the process is that the cliffs and scarps slowly and majestically retreat down-dip with time, because the cliff faces are attacked by especially intense erosion whereas the mesa behind the face is not. If you could make a movie of the landscape that shows what happened over the last nine million years or so, you would see just that—cliffs and scarps retreating slowly northeast over wide areas, and off a fold like the Kaibab at the more local scale. Not even Hollywood can make such a movie, but our friends the lavas have done it for us—if you learn to look at them with a geologist's patient eye.

It so happens that the favorite place for valleys to form during the eight million-year interval documented by the lavas is at the foot of the Moenkopi-Shinarump scarp. Earlier lavas, had there been any, probably would have documented valleys formed higher in the geologic section, for example in the weak Chinle Formation at the foot of the Vermillion Cliffs. The lavas that did flow over the land show that the ancient valley at the foot of the Moenkopi scarp was wide and gentle—and this is just what the modern valleys in this geologic position look like today. You can see one at the north end of the Kaibab as you drive toward Kanab. For the modern valleys in this region, we know that the Shinarump-capped scarp that forms the north side of the valley is at most a few miles from the valley floor. The same holds for the ancient valleys.

Remarkably, lavas of different ages always occupy a valley in this geologic position—the foot of the Shinarump scarp—but in different geographic locations, depending on the lava's age. About eight million years ago, the valley was near Mt. Dellenbaugh; about four million years ago, near Poverty Mountain; 1.4 million years ago, a few miles northeast of Wolf Hole; about one million years ago, near Clayhole Wash. This tells us that the Moenkopi-Shinarump scarp has been retreating

northeastward at the considerable rate of two to three miles per million years—faster than some people walk. So, hills are not eternal, landscape is anything but immutable, and we cannot use the landscape of today to make guesses about what might have been going on even a short time in the past if we don't have information like that provided by the lavas. You grasp what this means quite vividly when you realize that the Vermillion Cliffs, today near Kanab, most likely were near the Grand Canyon (in the area of the present Whitmore Wash) some six million years ago. Furthermore, the rocks of the Vermillion Cliffs extended right over the Kaibab Plateau until just a few million years ago. How did this happen?

CROSSING THE KAIBAB PLATEAU

Having created a mental movie showing the evolution of landscape in the Grand Canyon region, we can return to the ancient Colorado River, which we had left stranded on the east side of the Kaibab Plateau, with no obvious continuation. Now we can take a stab at figuring out what the landscape that the ancestral river flowed through might have looked like.

First, we know that the characteristic feature was valleys trending northwest and bordered by scarps on their northeast side. Many of the valleys drained northwest. Do we have valleys suggestive of this pattern now? Yes: those of the Little Colorado, Cataract Creek, and Kanab Creek. Near their confluence with the Colorado River in the Grand Canyon, these valleys are as narrow and rugged as other tributary canyons. This is the young part of the valleys, modified by rapid downcutting by the Colorado River. Away from the River, however, the valleys are long, well developed, and “mature”, contrasting greatly with all other washes tributary to the Grand Canyon, which are short and precipitous. The valleys are left-overs from the time before the Grand Canyon was formed.

Second, we must restore the land surface to its former higher position, maybe even thousands of feet higher than it is today. We do this by mentally putting back in place the Mesozoic formations, some softer, some harder, that were still present at the time of the ancestral river but have been eroded since.

Having done these mind experiments, we discover something quite remarkable: it is very likely that the top of the Kaibab Plateau, which corresponds to the axis of an up-arched fold and which seemed such a formidable barrier for the river, may have been topographically lower than the sides of the fold at various times in the past. Today the Kaibab Plateau is a huge whale whose back towers thousands of feet above the surrounding terrain, so you may wonder how anyone could suggest the absurd reversal of topography that I am proposing. To see that the proposal actually makes sense we have to play the erosion movie backwards. An excellent place

to do so is at House Rock Valley north of US 89A. The valley has a northerly trend. Its east flank is a continuation of the Vermillion Cliffs; the west side is the Kaibab Plateau, whose strata slope down toward the valley. Let us now remember the movie that shows how cliffs retreat with time down the slope (dip) of the rock layers. If we play the movie backwards, we can bring the cliffs gradually up the slope of the Kaibab to the very top of the Plateau. Here, the cliffs moving upslope from the east meet those that have similarly come up from the west. These are the cliffs that now form part of the Grand Staircase near Kanab. Clearly, these rocks used to extend smooth and unbroken right over the Kaibab Plateau. There were no Vermillion Cliffs here at the time. However, hard-over-soft couplets of strata higher in the geologic section formed other cliffs east and west of the axis of the Kaibab Plateau. This particular frame of the geologic movie bears close scrutiny because it has much to say about the doings of the ancient Colorado River.

On the crest of a fold, rocks are fractured by the bending that formed the fold. The fractures make the rock more susceptible to erosion. The consequence is that any stratum that is at the topographic surface because erosion has removed overlying strata will be subjected to accelerated erosion along the crest of the fold, and will be cut through there first, forming a depression bounded by slopes or cliffs on each side. The crest of the fold is now lower topographically than the sides. Where a fold plunges (you can see this along the north side of the Kaibab Plateau), cliffs formed by resistant layers, and valleys formed by the soft ones describe curving patterns abundant on the Colorado Plateau, where they are commonly called Circle Cliffs or “race-tracks.” Streams follow the curved valleys, which they leave eventually through a gorge.

The great fold that forms the Kaibab Plateau plunges down at both the north and south ends, so you would expect to see the curving pattern at each end. At the north end, the pattern is preserved and clearly visible from US 89. At the south end, the rocks have been eroded away, but the former curved pattern is revealed by the great bend of the Grand Canyon as it swings from a southerly to a northwesterly course around the nose of the Kaibab Plateau.

The Kaibab Plateau is higher than its surroundings today for one reason only: the Kaibab Limestone, which now is at the surface, is so much more resistant than overlying Mesozoic strata that these were completely eroded from the crest and flanks of the fold, whereas the Kaibab Limestone was essentially unaffected. The consequence is that, today, the Kaibab Limestone on the fold is high topographically, whereas the Mesozoic rocks away from the fold are low. On the other hand, streams flowing across the fold in the ancient curved valleys were stuck once they started sawing into the limestone: the

sides of the valleys were completely eroded away, but the streams could not escape their limestone channel.

The concept for the carving of the Grand Canyon that I have been proposing for many years makes use of the elements of landscape evolution discussed above: the ancestral Colorado River flowed southwest toward the then-low-lying Kaibab Plateau, and crossed it along a racetrack valley near the Plateau’s south end. Once across the Plateau, the Colorado flowed northwest along one of the subdued valleys characteristic of the time and indicated to us by the lavas. The rocks into which this valley was carved were higher than present topography, so both rocks and valley have been eroded away.

We do not know where the river may have gone to once it left the Colorado Plateau. The topography of that country has been modified completely by the faulting that produced the modern basins and ranges of Nevada, and by volcanism that produced the Cascade Range. What’s more, the faulting has extended this region, making the modern coastline substantially farther away than it was when the ancestral river flowed toward it. Nevertheless, it is there that one needs to seek evidence by which to prove or disprove the concepts presented above, even if the changes that this region has endured make it unlikely that such evidence will ever be found.

The concept presented here provides a means for bringing the ancestral river across the Kaibab Plateau, which had been such an obstacle for previous researchers. The rest of the story is pretty much like that proposed long ago by McKee and colleagues: the Gulf of California opens, a new upstart river develops that starts worming its way into the Colorado Plateau, then taps into the ancient river, pirating its waters. In our case, however, the capture happens west of the Kaibab Plateau, not east. The old course of the river from the capture point to the west coast is abandoned suddenly and replaced by a new and shorter course through the western Grand Canyon to an arm of the Gulf of California only some 100 miles from the Plateau. The new river, steep of gradient and invigorated by the pirated waters of the old one, carves most of the Grand Canyon within the past 5.5 million years, and probably substantially less. The capture event is recorded in sand layers deposited by the Colorado River in the Imperial Valley of California, where fossils found only in rocks of the Colorado Plateau suddenly appear at a distinct level in the sand layers; none are found below that level.

NOW WHAT?

Rivers are shady characters that, like Chronus, devour their own children, the sand, gravel and cobbles they had once deposited. In doing so, they cover up their own tracks, making life difficult for the geologist bent on reconstructing the river’s history: there is plenty of slop and plenty of room for argument. Since it is not

possible to prove geologic history the way it is possible to prove mathematical arguments, we geologists are forced to advance propositions, or hypotheses, as we call them, that we recognize as being provisional. However much we might dislike the idea, it is entirely possible that tomorrow someone might discover evidence that would force us to modify or even abandon our own beloved hypothesis. "Provisional," however, is not the same as sloppy: the game has to be played according to well-defined rules. To begin with, a hypothesis must be based on observed facts, and must be in agreement with these facts. A hypothesis pulled out of thin air or—worse—not in agreement with known facts is not worth the paper it is written on. Second, a hypothesis that aims to supplant an earlier one cannot do so by simply ignoring it. What needs to be done is to show that the facts on which the earlier hypothesis is based are wrong, or that they were interpreted incorrectly, or that the new hypothesis is based on new facts or interprets the old ones in a more satisfactory manner. Since science is a collective effort that progresses through hypotheses, refinements, or refutations, ignoring what came before just doesn't cut it.

Today, there has been an explosion of interest in the history of the Grand Canyon, and everyone seems to have a novel idea to set forth. Unfortunately, more than a few fail to conform to the scientific rules outlined above, and the proliferation makes it difficult to set down the main lines of thought in a lucid manner.

One of the most important arguments has to do with age of uplift of the Colorado Plateau. The reason is simple: no deep canyon can be carved in low-lying terrain, so the time when the Plateau was uplifted tells us when the Grand Canyon may have formed. Unfortunately, reliable evidence by which to time the uplift is hard to come by. Years ago I hoped to make a useful contribution to the problem by pointing out that we could use a five million-year deposit found along the course of the lower Colorado River. The deposit was universally regarded as marine or near-marine on the basis of its fossils, so it originated at or near sea level. Now, it is as high as 3000 feet, which can be taken as the approximate uplift of the region over the last five million years or so. So much young uplift agrees well with the youthful character of the Grand Canyon and with the information that there was no western Grand Canyon before about six million years ago, as explained earlier. Recently, however, people have argued that the deposit originated in salty lakes along the course of the lower Colorado, in which case it would not necessarily have been at sea level originally, and could not be used to determine uplift. This argument is based on isotopic data from the deposit, which indicate a fresh-water origin rather than marine. On the opposing side of the argument, fossils of many kinds uniformly indicate a marine or near-marine environment for the deposit, and

the youthfulness of the canyons points to young uplift. The isotopic data themselves are more likely to reflect contamination than an actual environment. All things considered, I am of the opinion that a marine environment and young uplift remain the best interpretation.

Another notion that has gained attention recently is that the Grand Canyon was carved by the spilling over of a large lake. This Hopi Lake once occupied a good part of the Hopi Buttes country and was fed by the ancestral Colorado River flowing into it. The lake suddenly overflowed westward when its level rose above a topographic lip. This event realigned the ancient Colorado River into its present course and carved the Grand Canyon.

There are several problems with this idea. Those who have studied the lake most carefully believe it was not one large lake, but many small ones, and they also point out that a Colorado River emptying into these lakes over tens of millions of years would have filled them up entirely with sediment in short order. This issue can be attacked by studying the deposits of the lake to see if they contain material brought from the north by the ancient Colorado River. Another serious problem is that the present topography is used to identify a possible spillover point. But, as we saw earlier, the topographic surface was much higher even a short while ago than it is today, so any present-day lip has little application to past events. Even if water had spilled from the lake, its course westward from the spillover point could only be along a pre-existing drainage system, because land devoid of a drainage system is exceedingly rare. In other words, the spillover would have accentuated a pre-existing drainage system rather than creating a new one. Finally, ponding usually is an ephemeral event in a river's history. Where did the ancestral Colorado go before the time of Hopi Lake?

Given these issues, the spillover hypothesis does not seem to fit in well with what we know about the ancient river system and the topography of the time, so I find it more reasonable to (provisionally) stand by the hypothesis presented earlier that the ancient river crossed the Kaibab Plateau when the Plateau was topographically low, then continued northwestward to a distant sea. This ill-defined continuation has been of concern to a number of researchers. The river would have flowed through that country now broken up by basin-range faulting. Are remnants of the old channel preserved on top of ranges there? Do the basins contain material brought in by the river? Was the region much wetter then than now, when the creation of the Sierra Nevada and the Cascade Range have shut off the supply of moisture from the west? Have ice-age floods and other events so modified the drainage pattern of the region that the old channels would not be recognizable even in areas not broken up by faulting? We simply don't know. These are subjects well worthy of further study.

Finally, several people, starting with Charlie Hunt long ago, have suggested that underground water flow in Grand Canyon's cavernous limestone layers such as the Redwall, may have been part of the river's course in places. Such hypotheses are being tested by current work that is beginning to tell us when water flow through the caverns was taking place. Hunt's idea that the ancestral Colorado River flowed south through Peach Springs Canyon has been disproved by more recent work.

By now you will have the feeling that pinning down the history of that old rogue, the Colorado River, is no easy thing: our ignorance is great and there is plenty of room for argument, which often is the more heated the less the evidence. What do I think? Well, it seems to me that my hypothesis still provides the best fit to the data on hand today, while being contradicted by

none, so I'll stick with it until someone shows that my data are wrong, or wrongly used, or comes up with new information that points to a better way. When and if this happens, I'd like to drink some good wine with the person who has made the discovery as a way to celebrate the progress made in working out this endlessly fascinating story.

Ivo Lucchitta

This is the seventh in a series of "Letters from Grand Canyon" by Ivo Lucchitta that will appear in future issues of the BQR. This particular "Letter" was divided into two parts.

Put me in, Coach—I'm Ready to Play the Game

IF YOU ARE A PROFESSIONAL river guide and you have been one for more than a half dozen years, then the life of guiding has very likely exerted a profound influence on you. Indeed, if we were foolish enough to attempt to list here in this issue of the BQR every influence that guiding has created in us, then this issue would have no room whatsoever for any other articles. So, in lieu of an exhaustive list of what we have gotten out of guiding, I want to focus on an overall gestalt that defines the "Grand Canyon River Guide," one that can lead any of us into a fantasy land populated by all too real man-eating tigers.

What the hell is this supposed to mean? Well, please let me try to explain. First, most of us on our very first river trip get hooked by the Canyon's natural beauty, by the challenges of mastering whitewater or difficult hiking terrain, by the freedom from telephones, malls, mailboxes, email, the banal, insipid values promulgated by television, and from the overall tyranny of the clock. We're free down there on that river, maybe free for the first time ever. And as the full moon paints the soaring Canyon walls with impossible pinks and tans, we recline naked on our Paco pads and we thank that one visible lucky star that we managed to bungle our way in life at least well enough to stumble onto a Grand Canyon river trip.

Then we come back to the Canyon, maybe as a passenger, but more likely as unpaid crew. We marvel again at everything in that incredible world down there. Sure, this trip is not as amazing as our first one, but what the hey, everyone's first trip holds the most

lasting impact, and this second one is one hell of a lot better than *everything* out there in the world of commercial America.

Years pass. We put boats in a Lees Ferry, then we take them out out at Diamond or below. In between we have become the shepherds, interpreters, and guardians of a slow parade of naive specimens of *Homo sapiens* fleeing America's cities in the expectation of experiencing America's number one-rated outdoor adventure. These people trust us with their lives. They admire us for our abilities and our knowledge. They envy our sleek, tanned bodies, our optimism, our no-worry, can-do attitudes, and our apparent freedom. They secretly tell themselves that they too could be river guides—after they lose forty pounds and learn to walk on uneven terrain. And after they decide that they're willing to exist at poverty level and not know for sure where they will be living this winter. And after they convince themselves that it really is okay that they might be losing that relationship with that significant other whom they left back in town.

Some of these clients develop serious cases of hero worship. Of us. Of you. A few even decide that we should fulfill their sexual fantasies. And some—yes, this does happen—decide that we should father their children. A few even decide to buy the company and make us its manager. Hell, they might even make us part owners. All of this has happened.

And all of this conspires to convince us that we are some *very* special, very lucky people. We are living the best lives that anyone could. And, in so doing, we ourselves become transmuted from normal, everyday people to a special breed apart. We not only refine our

leadership abilities, our communicative skills, our cooking talents, and our outdoor educations, we confront, analyze, and outwit lethal dangers daily. Our bodies respond smoothly on demand with exactly the right moves, much as might a ballet dancer, professional wrestler, or an NBA starter.

We are conditioned athletes who play a very difficult and complicated game of psychology and physical challenge—and play it well.

We not only do all of this; we *become* all of this. And our identities incorporate all of this to define who and what we are. We are Grand Canyon River Guides.

Who among us has not, at least at one time or another, said: “I am a Grand Canyon river guide,” and not felt at least a flush of pride—however secretly?

As the years pass, we become ever more deeply a Grand Canyon river guide. That job of running boats down there is no longer merely the best job we ever had; it has become who and what we are. Again, it defines us. It is our life. Any other sort of life would be a poor substitute for this life.

Working out our launch schedule for the next season becomes a ritual of ever increasing importance, even though our outfitter may quickly pencil us in with a smile, accommodating our every request. We do a good job and he knows it.

The future remains wide open.

All we have to say during the winter is something like, “Put me in, Coach, I’m ready to play the game,” and then add for him or her the specific start dates we want to work.

Of course we do know that our profession demands that we maintain ourselves in reasonably good physical condition. This is so we can handle—and survive unscathed—the stresses of executing a last second pivot or of yanking a four-stroke motor in slightly more than a heartbeat before we destroy yet another lower unit. Our job means lifting heavy gear many times a day, every day. It means wrestling with emergencies in whitewater. It means hiking on torturous terrain while carrying extra water. And it sometimes means physically supporting clients who, if the truth were to be told, *never* should have been allowed to board a boat at Lees Ferry.

So we work out with weights or machines or yoga or whatever. This is because, after all is said and done and despite our knowledge, our skills, our hard-won wisdom, our really funny jokes, and our ability to produce first class meals, we are athletes. Like Joe Montana, our body is our weakest link.

And though we may vehemently deny it, there will come a day when we ask our outfitter, “Put me in, Coach, I’m ready to play the game,” and that outfitter will tell us, “Sorry, you were great during your heyday, but that last injury (or mistake in judge-

ment on the job) makes you a very bad risk. We have decided that you can’t do the job any more.”

We may be crushed by this—or merely feel indignant that anyone could say such a stupid thing.

So we polish up our resumé and trot on over to Company “X”, whom we have heard through the grapevine is hiring.

To our astonishment, this next outfitter, once she learns that our former outfitter did not offer us yet another “at-will” contract, tells us—tells you—the same thing: “Thanks, but no thanks.” So does the next, and yet the next.

All of us, someday, will not be able to wiggle or limp or fake our way back onto anyone’s commercial schedule as crew. This is not a maybe. This is a foregone certainty.

Ah, you may say, but I’m healthy and strong and smart and do one hell of a job down there. The year when I can’t get onto an outfitter’s schedule is decades away. By then I’ll have something else that I’ll be doing.

If your thoughts run in this direction, then my response is: “Fair enough, that sounds vaguely like a plan. Or at least like healthy wishful thinking. Or is it really nothing more than an idle thought?”

Our denial of the future is that man-eating tiger.

Why is this issue of longevity important? Because none of us can control all that may happen to us in that future. One bad injury on or off the job, one auto accident that was not even our fault, one failed drug test, one negligence suit by one of those rare but all-too-real evil passengers (America now boasts one million lawyers) and our career vanishes like monsoon rain into a beach.

Then what?

Michael Ghiglieri

Dr. Harvey Buchart

HARVEY BUTCHART *was considered to be the most prolific hiker in modern day Grand Canyon history. He published three excellent guide-books—“Grand Canyon Treks I, II, and III”—that generously shared his experiences with thousands of others.*

In “Grand Canyon Treks III,” Dr. Butchart’s publisher, Walt Wheelock, describes meeting him for the first time on the NAU campus in 1961 and making an offhand comment that resulted in Dr. Butchart scaling the building which housed the Math Department in his business suit and street shoes, just to see if it really was possible. He was that kind of a guy.

On March 26, 1995 we interviewed Dr. Butchart at the spring river guides meeting held at the Hatch warehouse near Cliff Dwellers Lodge. He was meticulous, honest to a fault, and brutal with himself when it came to setting the record straight.

BUCHART: I went to Eureka College—Eureka, Illinois, a little college, about the smallest they ever come—then went to the University of Illinois for my *B.S.* in mathematics for four years. After that I taught for twelve years in the Middle West in four colleges—Indianapolis; Enid, Oklahoma; Fulton, Missouri; and Grinnell, Iowa—before coming to Flagstaff, Arizona for thirty-one years of teaching there. I was Chairman of the [Math] Department for 22 years, and then was a professor teaching there until 1976 when I retired and went to Sun City with my wife.

I kept on hiking. I started hiking rather soon after coming to Arizona, since I had already begun to climb mountains from the middle west going to Colorado for vacations. And then when I saw the Grand Canyon, I thought, “What a place for a real hike!” I began taking on hikes in the Grand Canyon, first as sponsor of the hiking club in the college, and then, after twelve years of that, I was replaced by another person and I began hiking on my own, to explore the remote areas especially. Anything that I heard about and could easily see, I would enjoy finding out more. I would hike alone and with other people, specifically Allyn Curaton, a student. He and I hiked a great many places together. Then I did about fifty percent of my hiking solo.

LEW STEIGER: It’s said that you’ve hiked more miles down there than anybody.

BUCHART: Well, that’s possible, because although there are three people now that I know: Tim Oldman, Bob Packard, and Ken Walters [phonetic spellings], who have climbed many more peaks than I have, and they’ve been over a good deal of the Grand Canyon on foot... they perhaps haven’t spent as many days in the Canyon, and I have hiked some places several times,

and they may have done it all when they took one hike to the area. So I think I’m still ahead of them in mileage, as well as time spent hiking. The estimate I give is an average of twelve miles a day, which comes out to about 12,000 miles in the Canyon.

STEIGER: Why is it that you spent so much time down there?

BUCHART: Well, I just like the place. An assistant editor of the *Appalachian Mountain Club Journal* asked me that, and I began to think it over. I thought, “Well, I could be more specific if I wanted to be more academic about thinking the thing through. I would put it this way: I hike anywhere for physical fitness and then in the Grand Canyon as well as [other] national parks, I enjoy the scenery and, in the Grand Canyon, especially, not everything is known. I hike for scientific curiosity about what’s over the next ridge and whether there’s any waterfalls or Indian ruins or anything that might be a bit unusual; fossil footprints, for instance. I look for things like that. So that’s the scientific part of it, scientific curiosity.

Then I usually say, “Well, I get a kick out of it. It’s an adventure, there’s always a certain amount of hazard to it—spraining an ankle in a loose slip on a rock, and you could be in serious trouble.” I was hiking with other people that could help me out or go for help about fifty percent of the time. But in the other fifty percent, when I was by myself, I figure I was a little more conscious of danger and more careful than I was when I was with other people. It turned out that I hurt myself just once when I was solo. I fell on my canteen and broke a rib. Other times I also broke ribs when I was hiking with other people, three times. Then the two worst accidents I had were with other people, one of them I was jumping and landing on my heels incorrectly, not on the balls of my feet. I broke my heel bones and tore cartilages and was inconvenienced by the pain for about three or four months. Well, the other time I was with somebody, I took a long step to try to get up to a rock that was under an overhang, and my Kelty pack, which I shouldn’t have been carrying, I should have had a small day pack, caught on the rock above me and threw me backwards off my balance. I had a cliff only about fifteen feet downslope away from me where I would really take the fatal fall. Naturally, with a reflex action I threw out my arms to keep from rolling, and when my left hand went between two rocks and the weight came on it, it broke my left wrist pretty badly. It was stiff for more than a year. So I had some danger. So that was...the fact that I could overcome them most of the time and keep on going was adventure.

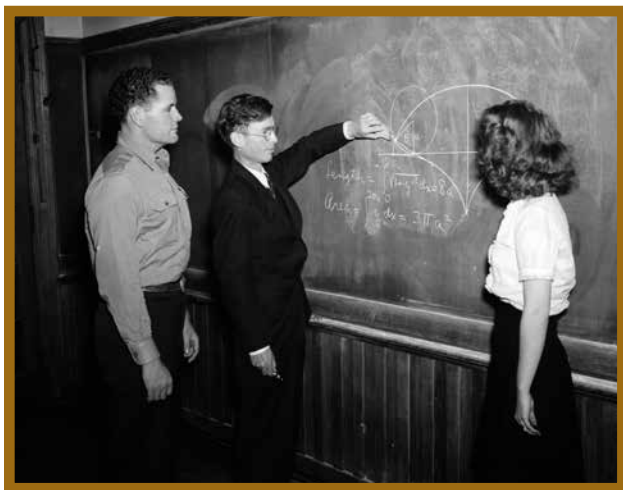
And then I enjoyed other people’s company, that

being the sixth, I guess the sixth category. Maybe the seventh was just the contrary of that, it was to keep ahead of the competition and know more about the Canyon than anybody else. (chuckles) Build up my self-esteem a little bit, I guess. Anyway, that would be the analysis of why I wanted to go to the Canyon.

STEIGER: I've heard a couple of stories. I guess you've had a lot of pretty close calls down there too.

BUCHART: Well, the closest call, I guess, maybe wasn't even an accident. It was getting upside down with Jumar ascenders around my ankles and being suspended upside down in cold weather and facing the chance of hypothermia and death before the next morning in the middle of December. That time, it was just darned foolishness on my part. I'd rappelled down successfully, only I had a rope that was gold line and not the braided sort. Anyway, it twisted me and spun me as I was going down. There was 25 feet of the cliff I would be against the wall, but the other 55 feet was out from the wall, it was an overhang. And I began to spin and began to feel a little bit groggy, almost nauseated, from the spinning and being dizzy. So I closed my eyes and put my rope through the carabiners that I was using for the rappel and got down there safely. Then I did my project for the day of walking down Saddle Canyon to the rim of the Redwall and looking down at Marble Canyon. Then I came back up to the rope—it was in the Coconino—I started up the rope, and I began to twist. I thought, "Gee, I'll be slow getting up, and I'll be sick maybe before I get to that place where the rope will be against the wall." So I thought I could work faster if I didn't have this belly strap on that keeps the Jumar slings up against your body. I took it off and got up about nine feet, and then my feet got away from me, whipped up by my chin, the height of my face, and I was hanging by the handle grips as

long as I could, but my fingers gave out, and I flipped upside down, backwards. And if I'd been a little lower, I probably would have hit my head on a rock that was sticking out of the ground down there. Might have been killed by that blow, or at least sent into a coma. But if I'd been just another foot higher, I would have been helpless, because I couldn't touch the ground and do anything for myself. But I was at the right height to get my fingers in the soil and pull my way.... Likewise, if the lines had been flat right there, I couldn't have done anything except stayed there until I died. But as it was, the bank was fairly steep, like a 45 degree angle, and dirt, and I could get my fingers in the dirt and bring myself up to a little tree, that—if I hadn't found any tree or bush that I could get my left arm around, I would have been helpless. There were about four or five things that, if they hadn't been just as they were, I could have been dead by morning, and nobody knew where I was going. My wife knew I was going to be on the north side of the river, and that was the closest I had told anybody where I was going. So as it was, though, I got my left arm around this little tree and rolled over, stomach up, and lunged up towards my shoes. If I had tied them in a double knot, I would have been helpless, but I hadn't tied them in a double knot, it was just a plain bow knot, and I could just barely reach the shoe string and jerk and it didn't always come through right, but after about forty minutes of trying, I got my one shoe off, first untying the knot by a jerk, and then loosing the shoe around where it was laced. Finally I got it off and got one foot on the ground. Then after that it was fairly easy to get the other foot out of the sling and put on my shoes and start walking. The only way I knew for sure of getting back to the car north of Saddle Mountain was to go south to the Nankoweap Trail along the rim of the Redwall. So I first had to go down towards the river where I'd been early in the day and walk towards Little Nankoweap, and then by the time I got to the river the second time that day, it was getting dark. I had to walk in the dark. Let's see, I had a moon until about 11:30 that night. And I got into Little Nankoweap and walked up the Redwall rim there. If I'd known what I knew later on, I would have saved myself about five hours, but as it was, I kept on the rim of the Redwall and had to change routes a couple of times at the head wall of that arm of Little Nankoweap, but finally got over to Nankoweap Trail on Tilted Mesa, where the sun rose. I had been walking all night with water until I drank my last about midnight. And then I was short of water. But it was cold, I could take quite a little time without water. I lay down in the sun and took a nap, maybe a half-hour or so, started walking on the trail. As luck would have it, when I came to Marion Point, or even with it—when you're on the trail, you're above Marion Point—I found three plastic water bottles



Math Department: Dr. J. Harvey Butchart, 1947.
NAUARC.1947-5-17

partially full. So I had plenty of water. Then I could eat the rest of the lunch that I had left over from the day before. I had to use just a little bit of my lunch that I hadn't needed at noon. I think I passed up dinnertime at night and went 'til the next morning until about ten o'clock I finished some sandwiches that I had there, and maybe some cookies, and kept on plodding away, very slow, because of my exhaustion, and got back to the car about 2:25 the second day when I'd started about seven-fifteen the first day. So I had had a narrow squeak that time, although I wasn't hurt, except for the binding of the Jumar slings around my insteps. It was paining me to walk for a while, but nothing was broken, and it just took a little bit of breaking in, to get walking alright again. And so I survived that one, but that was the nearest one, one that I don't ever want to repeat.

STEIGER: You couldn't get back out of Saddle, so you decided.... you couldn't reach the Jumars?

BUCHART: I could have reached the Jumars, but I thought, "Well, if I am still alive after having that kind of fiasco..." I didn't have much taste for trying again on the rope. I was just sort of semi-panicked about using that rope anymore. Thinking it over, "Monday morning quarterbacking," I could have tied the rope to a bush so it wouldn't twist. If it wouldn't have twisted, I believe I would have gone up the rope with the Jumar ascenders. I didn't think that thing through very well. And then I was pretty exhausted after getting to the car after about 28 hours or so of walking. I went to Cliff Dwellers Lodge here and tried to phone my wife, saying I was okay, and would come back after I'd taken a good long nap. We got in touch, and that's what we did. I was really sleepy. I was sort of hallucinating as I drove north out of House Rock Valley. I saw something ahead, and I thought it was a hitchhiker. When I got there, it was only one of these little warnings that there's a culvert on that side. So that's the way I was, pretty well shot.

STEIGER: Was there a reason that you didn't tell her specifically where you were going?

BUCHART: No, I guess I was just always cocky about playing it safe enough. I always thought I could manage myself and didn't need any rescues.

STEIGER: Had you made up your mind that where you were going was Saddle Canyon?

BUCHART: Yeah, I knew I was going there, I'd been there, let's see, two or three times before. One time I was there with a rope with the intention of going down and my partner, a student, talked me out of it. He said he didn't want any. And it was a long rappel and rather challenging-looking. It took a little bit of daring to go

down there. But later on I wanted to fill in the route from Lees Ferry to—well, eventually, to Grand Wash Cliffs, but mainly to Kanab Canyon. I just needed a piece here and a piece there. I got a friend to go out with me, down to a place I tied the rope before, and I rappelled down that 85 foot rappel and then went from there upstream on the level of, let's see, I guess I got down to the Redwall that time. Anyway, I filled in and



Lee Dexter, Shoshone Point Route, September 16, 1972.
Photo by Harvey Butchart, NAU.PH.70.3.4812

came out the place that we'd already noticed in Buck Farm Canyon from Saddle Canyon. So I went down that rappel twice. The second time I didn't need to come up it, I came out a different way. And if I had known what I knew later, I wouldn't have needed to come up the rope at all, I would have been up on the level and been back to the car before it got dark if I'd had as much knowledge of the area as I learned later. I would have been much better off. But I did this when I was 61 years old, in that jam with the Jumar ascenders, and I found the other things out later on. So you see, I did keep on learning things about the Canyon until I was about 75 years old, and especially in that area, before I quit and went to the west end of the Grand Canyon.

STEIGER: Do you have a favorite route, a favorite hike that you've ever done?

BUCHART: Well, I think the hike that I would call my favorite would be the one that took me the longest to find. That was the Enfilade Point route [described in *Grand Canyon Treks III*]. It involved several things, and...discovered a little here and a little there, and finally all put it together. It took me about ten years of trying, off and on, of course—I didn't do it to the exclusion of anything else. But I went at it several times, including breaking the heels and having to get well again from that. It was about ten years after I first tried

it, until I found it altogether.

STEIGER: Where does that come from, the fascination to find a new route, to find a place that hasn't been before? What drives you there?

BUCHART: Oh, I don't know, it's just innate in some people, I guess—get a kick out of seeing something new. The researchers in mathematics get a kick out of what they say is new, and so do practically all scientists, looking for something new. And many other people too—kayaking. I call some of it, though, that's really dangerous—like Mt. Everest, that they say has cost about one-third of all the people that have made a serious try for the top have been killed or died of exposure—I don't call that good clean fun. I think they could let that alone and be happier, and so on. There are other things that are more work than they should... just because they give you a charge of being ahead of somebody else, I guess. But I like to see something like, oh, rattlesnakes... anything that is surprising a little bit. And so I enjoy the scenery, maybe not as much as I did at first. I remember a little anecdote that—I was carrying a fairly large looking pack up from Bright Angel campgrounds up the South Kaibab Trail and a woman on a horse in a horse party came by and said the usual thing, "Well, was it worth it?" And I said, "Oh, I guess so." But I thought it over later, what my answer should have been to give a little bit more charge to my reply would be, "Oh, I guess it was better the first 25 times." (chuckles)

* * *

BUCHART: Practically every route I've found, I would find that the Indians knew about it. I don't know if you count mesquite pits where if you're in the neighborhood of a route and you come on an Indian ruin or a mesquite pit, you're pretty sure that the Indians knew about that route. I don't think there was much that they left out in 150 years of occupation in the Grand Canyon—they knew everything that was possible.

STEIGER: What's that say about— here's an entirely different culture that came and went? Do you think that'll happen with this culture here?

BUCHART: Well, that's hard to say. I doubt if the present population of the USA will be extinct.... I think it probably came as close to disaster with the atom bomb and the Cold War twenty years ago as it ever will come. I don't think that the atom bomb will ever extinguish all mammal life—probably leave the cockroaches alone, but it might hurt the rest of mammal life if they had an atomic war, for instance. But that may be the only thing that could make a real disaster of wiping out this culture that we're in now.

STEIGER: Do you have any notions on what it was that did the Indians in?

BUCHART: No, just that life got harder for them. They weren't getting as good crops as they had, and I don't know now if they were suffering from malnutrition and hunger and starvation, how far would they get? Usually the scientists tell you that they went to places like the Verde Valley or the Rio Grande Valley and so on and got to farming better places. But those places were already occupied by other Indians. Well, I don't know the answer to why the Indians left, but some people say it was hostile tribes coming in and taking their lands away by killing them.

STEIGER: I don't know if I buy that, just because—you know, you see all these high places and people say those were defensive. But what doesn't make sense to me is there's such good views, and also, it'd be so easy to just wait you out if you were out there holed up where you couldn't get water.

BUCHART: I think they figured that maybe they had a few pots of water, and the attackers didn't know where the next water was, and had to give up the siege after a day or two. But I think there are places that are definitely explained only for defensive purposes and not for continuous living. For instance, right down here by Cliff Dwellers Lodge there's a promontory that sticks out and widens out at the end, but there's a neck that's only about twenty feet wide, and there's a rock wall on that neck, crossing the neck. The only thing I can see, it wouldn't be a corral for their domestic stock or anything, I think it was probably defensive from Indian attack. There isn't any good way to get up on that promontory except for at that neck. And I can think of ruins in the Grand Canyon too that are on isolated sort of sky islands. And they have ramparts facing the mainland, but nothing on the outside, nothing on the side toward the canyon. So I think they were preparing to hold off attackers from shooting arrows from behind the wall.

* * *

STEIGER: Did you know Emery Kolb?

BUCHART: Yeah, I visited with Emery about four or five times, and maybe 45 minutes of conversation each time. At least once I was in to ask for his help. He gave it to me quickly, and easily as well. I was reading a passage in G.W. James' book about a certain panel of Indian pictographs under an overhang. I had looked for them. He used landmarks that are no longer there, about a camp at some point, kind of a Fred Harvey facility that they've torn down since then. The location didn't give me much help. And I went in there and used oh, several, two, three, four attempts at finding this panel of pictographs. Then I went in to Emery Kolb. As luck would have it, I talked to his Supai Indian janitor first, and the janitor told me about a place where there were

pictographs above the Bright Angel Trail, down near the first water station, which was right, I found them later. But I talked to Emery about it, and I said that didn't seem right for what James was talking about, because it was supposed to be close under the rim. Emery told me right away where to look for them. And they were there alright. Emery Kolb hadn't visited them for a long time. He thought they would probably be wiped out by vandals, but they weren't, they were in pretty good shape.

STEIGER: So he knew what he was talking about.

BUTCHART: Yeah, he did that time. A couple of other times, he wasn't so sure of his information. For instance, he didn't remember the exact people who went with him up on top of Shiva Temple to beat the scientific party from New York City to the top. And he gave me the wrong list of his companions. I was sure that they were wrong in the end, because this Grand Canyon Pioneer Society that likes these old pictures turned up a picture of the group that had gone up Shiva Temple, and it wasn't the same. It had Emery in it, but it didn't have the right people that Emery had told me were with him. So I knew then that Emery didn't get everything straight in his mind, because it was forty, at least 39 years or so since he had done it. And he could be forgiven for expecting a little bit of shaky memory after that long a time.

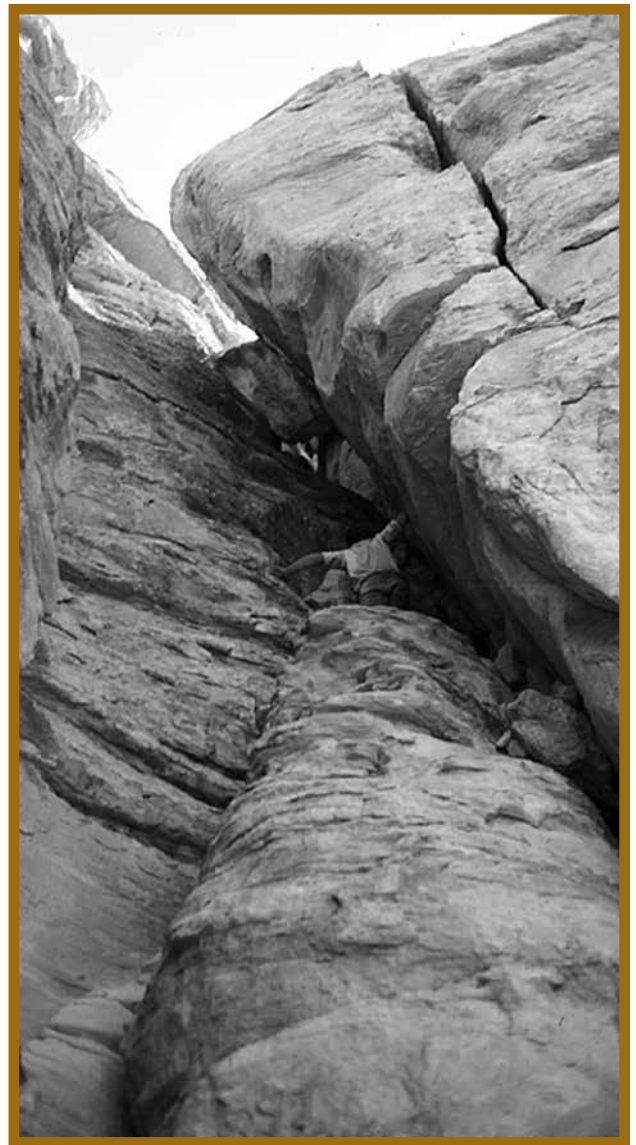
STEIGER: Sometimes I kind of envy the Kolb brothers.

BUCHART: Yeah. Sure, I used to think that too, and then it turned out that there were more places that hadn't been found yet in the Grand Canyon...I mean, I had a chance to do more than Emery had done in his time. Of course he had a health breakdown shortly before I went to Arizona in 1945, so he was busy hiking not longer than from 1902 or 1903, up until about 1940. And then that span of time didn't beat the amount of time I had in the Canyon, and I had more vacation periods and freedom to hike than Emery did. So I figured on the basis of that, I'd probably done more than Emery in the hiking line. He had done some other things that I hadn't done, like going to Alaska and photographing in the Valley of Ten Thousand Smokes after the big eruption. And he'd gone East and had a lecture series about the Grand Canyon, also about Alaska, I believe. So he and I didn't exactly try to outdo each other, because we weren't doing the same thing.

STEIGER: Do you think the opportunity is still...do you think there's a bunch of stuff still out there that nobody's been to?

BUCHART: Yes, I believe there is. I don't know for sure how much more there is, but there's quite a little bit, I'm pretty sure. For instance, the place in the Bridge of Sighs, up at Mile 35.5 or so in Marble Canyon, just in the last few years a young man, Bob Dawson, was looking for condor bones with a companion. They had found some more besides those in Stanton's Cave, and

they were looking for more, then when they came to this area, Bridge of Sighs—the name was given by the Kolb brothers after their 1911 trip—they saw Steck's, maybe you read this in George Steck's second guide book... they found poles sticking out of the wall, some actual rock construction in the wall there, and poles sticking through. And so they figured there was something worth doing. They came back from above, where another man had told me there was a route down off the rim, and I had passed it on to some other people, and they came in from above like that, and they came down and entered a cave that was higher than the bridge itself. They got into a chamber and in the middle of this chamber—now I'm just talking this from what I read, and I may be getting it a little bit wrong myself—maybe you'd better look in



S. Thybony in route, Montezuma Point, October 4, 1975
Photo by Harvey Butchart, NAU.PH.70.3.5717

the *Loop Hikes #2* by George Steck for this account. They found a place where there's a hole in the middle of the floor, and it was such a tight squeeze that they had to hold their arms above their heads to get through. It went down a little bit of a curve, sort of a spiral, and then they had to sort of drop down onto the floor below them. That business, dropping down, maybe they had dropped a pebble and found out how far down it was. But two or three of them went down there, and they got out to see daylight through this wall that they had seen, and they found a crack in the rocks that led down to the water's edge. I released two or three of them, and I don't know how many now have climbed down through that area and gone down to the river. And there's an Indian ruin on the other side of the river, although the river isn't easily crossed there; it's fairly swift. Well, for instance, that wasn't known until just three or four years ago, and I'm sure there are places, especially in the west part of the Grand Canyon, that haven't been climbed, certainly, and probably haven't even been walked around in—valleys that nobody has entered, or at least not recently. Indians have been there, I believe...in 150 years of occupation, they got everywhere. But I don't think the Indians climbed all the summits. There are some that have cairns on them before my time, but I counted up my first ascents a few days ago, and listed them and I got 26 that had no cairns on them. So I would consider them as first ascents.

STEIGER: 26! You said earlier you'd walked probably about 12,000 miles. If you could just give a brief summary of your...

BUCHART: There were two other things that I kept track of.... One of the lists I've kept track of was the number of summits climbed, named high points in the Canyon. I climbed 83 before I gave out. Of course Oldman, Packard, and Walters have climbed over 130. Well anyway, there are two other lists that I kept track of—kept track of the number of places I've been through the Redwall formation, which is usually regarded as tough, and not very many ways through, but I've found 164 before I quit. Then also I kept track of the number of places that I reached the river bank independent of each other, and it came to 116. So those three things: 83 summits, 164 Redwall routes, and 116 ways down to the river.

STEIGER: Boy, that's something!

BUCHART: Counting ways that I left the rim, it would be over 140. But they converge and make one place down to the water.

STEIGER: And that's over how many years?

BUCHART: I kept busy for about 41 years.

STEIGER: And that's over 12,000 miles?

BUCHART: Yeah, I had written up my logs, accounts of the trips soon after I came home, since 1959. Before that I tried to remember what I'd done and wrote some

little summaries about mostly just where and how many days it took and so on, and then added up the number of days that I'd really put into my logs, into the records, and it was over a thousand—about 1,025. Then I thought over trying to get a fair estimate of my mileage per day, and I think I probably averaged about twelve miles a day, making 12,000 miles of hiking in the Canyon.

STEIGER: How many total trips?

BUCHART: Well, my longest trips were about six-and-a-half days, and typically a Grand Canyon hike for me about would be a weekender, say leave home Friday afternoon and come back Sunday evening. Of those 1,025 days, then I think would account for about half that many separate trips. Many trips were just over-nighters, and quite a few just one-day trips. So if you wanted a number on the number of trips, that's something I haven't kept track of, but I would estimate it to be maybe five hundred separate trips.

STEIGER: Richard Quartaroli told me that you've been all the way from Badger to Bass Camp on an air mattress.

BUCHART: That's right. Also, you must remember, I get out above the rapid and walk the boulder bars and get in below the rapid and paddle away. But once in a while I was upset. If I was upset, I would get my arms over the middle of the air mattress and put it under my chest, going out sideways, and I was very stable that way, and my head would be a foot above water. I went through Sockdolager and Grapevine with that technique.

STEIGER: You're kidding! On an air mattress?!

BUCHART: Yeah. I had only a day pack on those two. I went down to Hance Rapid and came out at the Suspension Bridge. And that time I had a companion too, who did it very well, no panic or nothing unusual except that we were about an hour later than we had estimated. We got in a snafu about car service to get home that night. But that was about the first really serious floating I did in the Canyon, was from Hance Rapid down to the Suspension Bridge at the Kaibab Trail.

STEIGER: My God! Now wait a minute, did you have a life jacket on?

BUCHART: No life jacket.

STEIGER: You just did it on an air mattress.

BUCHART: Yeah, that's right.

STEIGER: And a day pack.

BUCHART: Yeah. I had clothes in the day pack and lunch. That's all.

STEIGER: So did everything in the day pack get wet?

BUCHART: No, I had a system of putting a plastic sheet inside a backpack and folding it over on top, and if it got off my shoulder and into the water, it'd just float along. The pack itself would get wet, but the contents wouldn't.

STEIGER: That's amazing! Now, was that before the dam, before the water was cold?

BUCHART: Yeah, before the water was cold, that's true. And not in spring, like Daggett and Beer in April. The Grand Canyon water was darned cold where they went. But ours was comfortable after ten o'clock in the morning and before four o'clock in the evening. But when I went from Badger Creek to the Tanner Trail, that was the longest one stretch for six days out. So that time I had a spare mattress with me, and blew it up and lay on top of two air mattresses, keeping a pretty good balance, that's a little hard to keep from turning over with two mattresses under you.

STEIGER: Okay, wait a minute, I gotta get this straight. So you went for a six-day trip, hiked in at Badger, you went to Tanner. So you had your bed and all your food.

BUCHART: Yeah, in fact, I was loaded for more than that. I was loaded for twelve days. I abandoned some of my food before I came out, because it was weighing me down.

STEIGER: So you just floated down, and you'd get out at the rapids and walk around.

BUCHART: Yeah. Get a good campsite for the night, and it worked out real well.

STEIGER: Did you use flippers or anything?

BUCHART: No, no flippers. I was keeping my feet pretty well up on the mattress and pointing my toes to save any drag, and using my hands to paddle.

STEIGER: And how old were you when you were doing that?

BUCHART: Let's see, that was in 1956, so I was 59 years old, and the next year I would have been sixty.

STEIGER: That's just unbelievable. Now 1956, wasn't that pretty high water? Or was it? Was it about average water?

BUCHART: It was late in the summer, end of August and early September. No, let's see, the longest trip was in late July, and it was fairly warm water, although I did appreciate keeping a little drier, out of the water, before ten o'clock in the morning and after four in the evening. And so I spent Monday on that trip walking up Kwagunt Canyon, and I chafed my ankles. I would have gone further, I guess, if I hadn't gotten some raw spots on my feet and legs.

STEIGER: That just blows me away. And nobody else was down there, either. Did you see any other boat parties or anything?

BUCHART: No boat parties...

Here Dr. Butchart paused for a long moment, then went on.

And by the way...my wife doesn't like me to bring this up, but I guess it's only fair. In 1954 I experimented with the air mattress. That was when I was going

through Sockdolager, in 1954. Then in 1955, a young man who had hiked with me more than anyone else for four years, reacted to my [adventures]. I kept in correspondence with him. He was excited about going through the Canyon with me on an air mattress. I didn't realize that he was conditioned to panic in water. It's kind of a long story, probably longer than I ought to take time for.... If you have five more minutes of time...

STEIGER: Yeah, we've got time. We've got all the time we need.

BUCHART: I'll tell you about this trip that resulted in.... This had to do with Boyd Moore, who was my companion in hiking, mostly around Sedona and also a lot in the Grand Canyon. He and I were closer friends than I've ever been with anyone else, I guess. When we heard about Goldwater's discovery of the bridge now called Kolb Bridge, we wanted to go down and see it. We also wanted to use our air mattress idea and see the Canyon from the water. He was enthusiastic in thinking about it ahead of time, but when it came down to it, it wasn't a bit smart. Well anyway, we went up to Point Imperial and got hiking away from there with a third man that wanted to photograph Kolb Bridge. This was before.... Let's see, it was after the trip that Goldwater went in there by helicopter and took some pictures that got published in *Arizona Highways*. Well, we went in from above and went down the Nankoweap Trail. We missed the Nankoweap Trail and the place where it goes off to the saddle. In fact, I can't imagine how poor we were at trying to find that place, although we had found the way off the higher country down to the saddle alright. We went on the Hermit's Trail out to the east end of Saddle Mountain and had to spend the night without any water—we'd run out. We got down the next morning by finding a way we could help each other with passing the packs and got down to the Tilted Mesa and then down to Nankoweap Creek. It was that same day, I believe, that we got down to Nankoweap Creek. The second day we went up to the Kolb Bridge and took pictures and even measured it with a string that I had carried along for that purpose. Then we headed for the river. We got down near the river and spent that night camping there. The next day we were planning to go down the Colorado and cross before we got to the place where the National Park was on both sides of the river. And we thought we were avoiding violation of rules by doing that, if we got across the river before we got to the Little Colorado. Well, we tried out our air mattress idea in the water above Kwagunt Creek and he seemed to get along pretty well and I did alright, although this was a different situation from how we had done Sockdolager before, because that was in low water and this was in high water in the end of May with 35,000 cubic feet per second, so there's a



Gr. Billingsley, B. Mitchell: Redwall Route, December 4, 1966
Photo by Harvey Butchart, NAV.PH.70.3.269B

lot of current. It was running at ten to fifteen miles an hour, I guess. We came to a place where I said, "Well, I can see a current that will carry me pretty well past the middle of the river. I'll go in here and you wait 'til you see that I'm across before you come." And so we did that. I carried some of his weight in my pack too, so that he would have a lighter load, because he wasn't as experienced in water as I was. So I went down and I couldn't get across. The current changed its course and carried me back near the side on the right bank, where I'd come from, but out of sight of Boyd, and I was deflating my air mattress and going to carry it back and we'd do something else besides cross the river. But just as I was about ready to walk, here I saw him in the middle of the river, coming downstream lickety-split. And so I got ready to go as soon as I could, and I went

after him. I might not have ever seen him again, but he got caught in a big eddy and was swirling around slowly when I caught up with him, below the mouth of the Little Colorado. He had panicked and he had grabbed the air mattress with his arms around one end of the mattress, and locked his ankles around the other end in a hammer lock, and he was lying on the underside of the mattress with his nose about an inch above water. But before I caught up with him in that eddy on the left side of the river, the current swirled him across into a still *bigger* eddy on the right side. Incidentally, it was very close to where the TWA plane crashed after colliding with the United plane the next year, in 1956. This was in 1955. I got over to where he was circulating in the eddy across on the right bank, in a place about as big as three tennis courts, and I got to him, and we couldn't get him right-side up on top of his mattress without disengaging the knapsack that he had on his back. We slipped it off and let it go and he got up on top of his mattress with my help, then we tried to get to the bank. And for some reason, the water was coming up from underneath the bank at both ends and the side of the big eddy. We tried and tried, over an hour I think, and couldn't make it to shore. He had hung on my feet for a while, but I couldn't paddle for both of us very well. He outweighed me quite a lot. He was about 170 and I was about 130. And so I couldn't make much progress. He let go and I thought, "Well, if I could get to shore, maybe I could throw him a line and get him to shore." But I couldn't get ashore by myself. We proceeded that way. I was not panicked exactly, but I was sort of stalled in thinking the situation over. And I could have

come to better decisions than I made, but while I was trying to get to shore, keeping on trying, he was caught by the middle of the river current and taken on downstream, and I was separated from him quite a little way at that time. As soon as I came around to the middle of the river, I paddled away and got out of that eddy and followed him down. The last thing I saw of him, he had tipped over again, and he had done the same thing, without holding onto the middle of the mattress and letting it go out to the sides, as I had been instructing him and trying to train him in that, he reacted...just absolutely panicked. So I followed him down, but it got to be clear dark and I couldn't see nearly as far as he was away from me, and I figured it wouldn't do me much good to try to follow him down. When the noise of the Lava Creek Rapid began to sound, I worked

my way over to the left bank, and where there was a quiet stretch of water there, there wasn't a troublesome eddy the way the others were. I had no trouble at all in making my landing. I can reproach myself, blame myself for not staying with him within touching distance all the time. If I had stayed there, I might have pulled us both over towards that shore in the distance we travelled down the river before we got to Lava Creek. But I had to spend a night of eating what I could to make up my strength for the next day, and felt pretty sick on the climb out. I watched along the bank to see if I could see anything that would be significant, and I didn't. I went out and gave the alarm. The Park Service started a search along the banks for about a week, but they didn't find anything. So he was gone.

STEIGER: Never found him?

BUCHART: Never found him, even a trace, except for one thing: the knapsack that he slipped off and dropped into the deep water of this eddy turned up on shore at Unkar Rapid. And P.T. Reilly, he found it. He didn't think much of it. He didn't want to bother with it, and so he threw it away. And Georgie White came along and she brought it up to the Park Service Visitors Center and donated it to anybody that wanted it, and she got credit for having found his knapsack. But there was no trace of a body. I was sick for a week in bed over that, emotionally, and depressed for six months about that experience.... Yeah, it's one of the tragedies of the Grand Canyon. And it was all because he was so panicked. I didn't realize how important that was. He had a scare with water when he was three years old and had never recovered. Although he had learned to swim, he didn't swim very well.

STEIGER: Now you guys put in above the Little Colorado?

BUCHART: Yes, quite a little way, about a mile upstream from the Little Colorado mouth.

STEIGER: So below Sixty Mile.

BUCHART: Yeah, that was about right.

STEIGER: And probably that next little riffle, and then just below that.

BUCHART: Yeah, we thought we could get across before we got to the Little Colorado. And we did make it, both of us, alive, to about a mile-and-a-half below the Little Colorado.

STEIGER: Yeah, those eddies down there are something. I know that beach. I bet I know the big eddy that you're talking about, right where the crash was. Yeah, that's a hell of an eddy in high water.

BUCHART: Yeah, that's the truth.

STEIGER: You said, "when we swam Sockdolager." That was you and somebody else?

BUCHART: Somebody else, yeah. Yeah, I don't know whether he would have accepted the chance to go down there; I don't think he would have. And he shouldn't

have agreed to go with me, and I shouldn't have invited him. We had trips with each other on Lake Mead, for instance; I had a homemade boat that I took along there and we had a camping trip on Lake Mead. [Boyd] told me before the last day that he had a tendency to panic in water. He said, "Remember, when we were on Lake Mead you went swimming in the evening and I didn't. I didn't like it."

STEIGER: Oh boy.

BUCHART: Yeah, he said something else that really kind of burns into my consciousness every now and then, that when we were short of water, in getting down to Nankoweap Creek the wrong day, we missed our trail and didn't get there that night for camping. He said, "Well, we're in this thing together," and he shared his last drink with me. I think of that remark, "We're in this together," and it turned out that I didn't stay with him, and take whatever was coming to him. I didn't share. That is something on my conscience.

STEIGER: Well, I don't know that it should be.

BUCHART: They had said when they came out in the paper that the Park Service and authorities said, "There's no crime committed," but that doesn't mean exactly everything was honorable. That's true.

STEIGER: I think it's a lot easier to.... I think when these things are going on, I think sometimes things happen so fast that you don't...

BUCHART: A lot of people have gotten into jams have made the wrong decisions. I've read about people in the desert where their car breaks down, and they make the wrong decision about which way to walk and all that.

STEIGER: Well, I think it's real easy to see it all clearly after the fact. After time to reflect you can make up your mind, but when things are happening, a lot of times you don't have time.... I don't think you should blame yourself for something like that.

BUCHART: Well, I don't blame myself completely, but I can certainly wish that things were different.

STEIGER: Well, I've got a bunch of things like that too. Thanks for telling that, that's an amazing story.

BUCHART: Well, let's see, if you have any questions, I'll keep still for a while while you think 'em up.

STEIGER: This trip down to Sockdolager, that was low water and that was fine?

BUCHART: Yeah, that was low water.

STEIGER: Well, now, did you swim all those other rapids too?

BUCHART: No, not exactly. I think Sockdolager and Grapevine were about the only ones.

STEIGER: You can't hardly walk around those, can you?

BUCHART: That's right. We tried to walk a little way, and wet tennis shoes were really bad on the polished-water-schist and granite. We were safer in the water. But there was one other place that my companion—I

was going ahead and sort of giving the orders, and I landed with the expectation of walking past this rapid, and probably he saw that he was going to disobey—he wasn't going to be the second mate and let me be the captain. He went down the middle of the river and took on a thing that was a drop about the size of this reflector here, pretty steep, about a 45 degree angle, and went over there with only about two feet of water to cushion him, and I don't think he scraped, and he went over in good shape. He gave me a cheerful yell when he was going over. So he was safe in the water, he felt at home, and he did it in fine shape. But he walked out so badly. He gave me the impression that he was in good hiking condition too, when I took him on, and he was slow getting up the Kaibab Trail, practically six hours. I thought four hours, four-and-a-half, should be enough for us to get out on.

STEIGER: What did you walk the Kaibab Trail in, in your best shape?

BUCHART: When I was in my best shape, I had two trips that I count. One time was only with a canteen and lunch, and I did it in two hours and fifty minutes, not fifteen, but fifty. And another time with a pack weighing about eighteen or nineteen pounds, I came up from the campground to the head of the Kaibab in three hours and eight minutes. That was my best, and many times slower, and in my last ten years of my hiking, I was taking a *long* time.

STEIGER: Boy. Well, I wonder what we're forgetting? I feel like I'm not doing a very good job here. Usually when I do these things I'll pack up all this stuff and then be driving away and something will come, "Gee, maybe we should have covered this or that."

BUCHART: That's what they always say. You do a speech three times: one time when you're thinking about what you're going to say, one time when you say it, and the next day you think what you *should* have said.

STEIGER: Yeah, that's about it.... How many river trips did you do?

BUCHART: Oh, two. I was just ready to pay my money and go, but Buzz Belknap put me in the *River Runner's Guide*, and a little paragraph and picture, so Ken Sleight thought that—he liked to take a guest along each year, and he decided I would be his guest that year. I was quite willing to agree, and in 1970 I went through the Grand Canyon down to Diamond Creek with Ken Sleight. And then in, let's see, about four years ago now, it would be about 1991, I'm not sure, particularly, why Cam Staveley invited me to go, but he and George Bain apparently were pretty good friends, and George Bain sort of sponsored me, and Cam Staveley invited me to go along as his guest down the same way, so two times through the Grand Canyon to Diamond Creek. Then I've boated in my own boat up from Lake Mead up to

about, well, within about four miles of Diamond Creek.

STEIGER: How do you compare the experience of going in a boat [to] hiking? And this is just for the river runners collection.

BUCHART: Well, I figured that I'm not too proud to accept airplane service, boating service, and then I figured that hiking is really what I look back on as more credit, more satisfaction. And when I found places in Lake Powell that you get into hinterlands and you work your way around, and if you get smart enough, you can find the way the Indians formed their route by cutting steps in the rock. I was fascinated by that kind of thing too.

STEIGER: By tracing the old Indian routes.

BUCHART: Yeah, that's right.

STEIGER: Do you think they had...? Sometimes I look at them and I think they must have had a better time than we do.

BUCHART: (chuckles) I don't know, over the coffee hour at the college, we sometimes broach the question, "Do you think there was a golden age, or is it now?" One of the men I was talking to over coffee was saying he thought it was his grandparents' days (laughs); they were better than ours, for some reason. I guess mainly the crime situation wasn't as bad.

STEIGER: What do *you* think?

BUCHART: Well, I imagine that I would probably just as soon live now as any other time in the world's history.

STEIGER: How come?

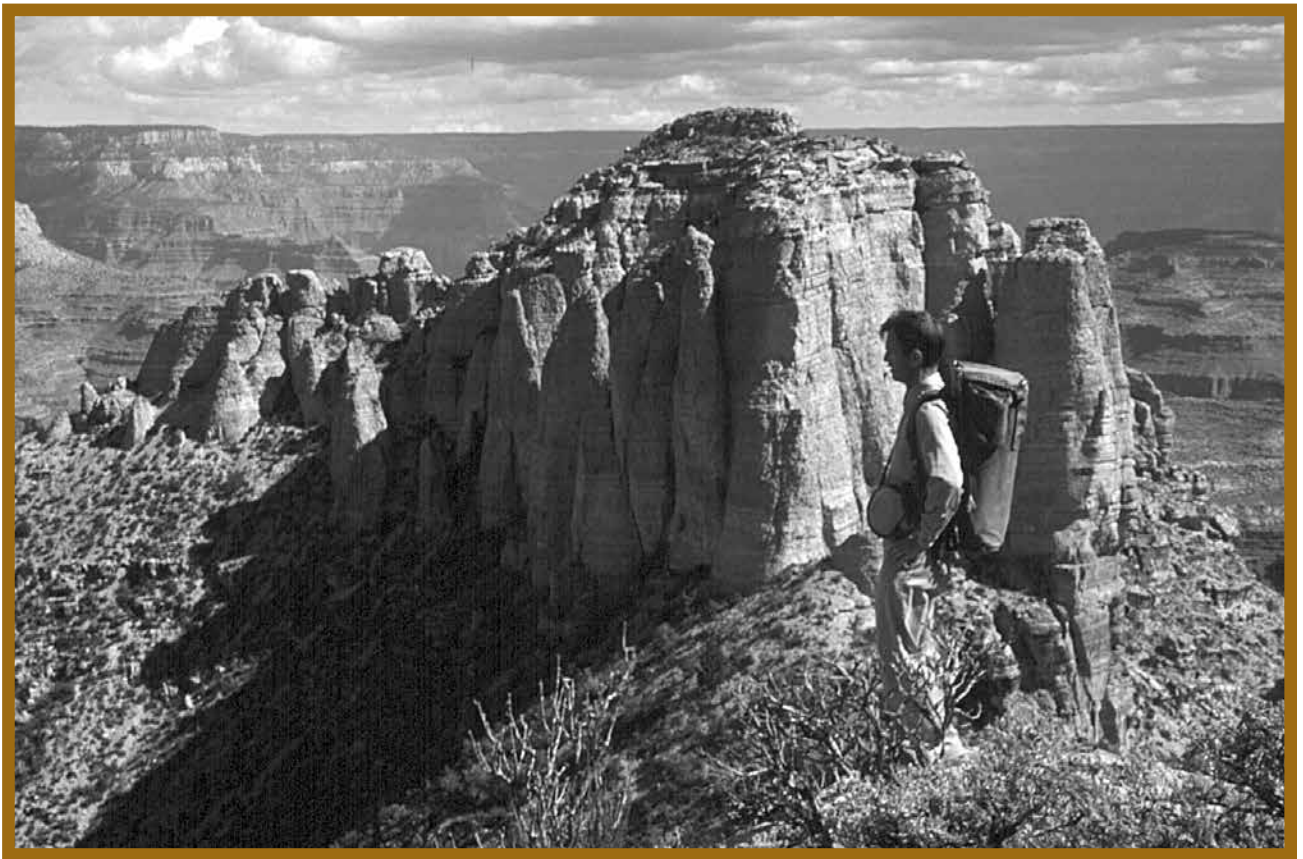
BUCHART: Well, the neat things you can do for vacations and sharing with other people and so on, and tennis courts and TVs. (laughs) I play a lot of chess and of course you've had chess for maybe two thousand years. It's still going strong.

STEIGER: Well, it's funny, you know, you look at geologic time and it's hard to think of how many different.... I don't know. I guess there weren't that many people around here before the Indians and stuff.

BUCHART: You know, the Indians had a day when there were a lot more of them than there were when the white men came. They'd reached a peak and then something got them way down. The Museum of Northern Arizona had places where they estimated the number of population in the area of the Salt River Valley or whatever, and the Indians around 1400 or 1200 were much more numerous than they were when the white man showed up in this country.

STEIGER: That's what makes me wonder, I guess, just about us. I guess we're pretty...more fixed. I don't know what we'd do with all the numbers—for sure a lot more people now.... Has that bothered you to see all these people coming, to see the extra population in the Canyon?

BUCHART: Actually, that's another thing. Some



Harvey - Apache Plume background 10-18-69.
Photo by P.T. Reilly, NAU.PA.97.46.165.23

people don't like to look at a piece of scenery, like looking at the Grand Canyon, with anyone else around. But I'm not bothered that way, I'm tolerant (chuckles) of other people. I like to have other people enjoy it with me, as well as by myself. Although it is a little thrill to being out by yourself.

I was writing a letter to Joe Hall who is the expert on the Kaibab squirrel, and I used the phrase, "the grand lonesome feeling," or something like that. But I was thinking about a young hiker, Jim Sears [phonetic spelling], who, by the way, was the steady boyfriend of Ellen Tibbetts who lives in Flagstaff now, for four years of college. He was approached by, indirectly from me, a man in California, Phil Porter wanted to write a detailed tote book for the Sierra Club of hiking routes. And it's going to be much more detailed than anything I've written. Anyway, he said he had a card file of these possible hikes, and said do I know any hikers that could give me their favorite hikes? So I gave him a list of about five people, including George Billingsley and this Jim Sears and Jorgen Visback [phonetic spelling] and maybe a couple of others, and Jim Sears' response to him was rather interesting. The others sent him some help, but Jim Sears says, "I don't like to see

people in the Canyon when I'm hiking, and I don't even like to see their footprints, so I'm not going to tell you anything." (laughs) So there are different viewpoints about that question that you just raised about the number of people in the Canyon.

STEIGER: Well, I don't know what we're going to do about it. That's a tough one.

BUCHART: Well, it's true that I have switched, after it became very annoying in the main part of the Grand Canyon that everybody visits—they had so many rules and regulations. You had to have a permit on your backpack or you get really jumped on, and fined maybe. And so I transferred my interest to the western end where there aren't any rangers looking out for you... or jumping *at* you. I sometimes think—and I don't want to take it literally—but Kipling wrote one time, "Ship me somewhere east of Suez where the best is like the worst, and there ain't no ten commandments and a man can raise a thirst." I didn't go for the last part, but—I guess you might say I got thirsty and drank my canteen water; but Kipling wasn't exactly talking about that.

Lew Steiger

Hidden Until Now

Something about the river, in reflection, stirs, comforts and awakens.
Answers hide beneath the ripples, we sense, are distracted, and sense again.
Drifting, crashing, slapping questions on the surface ask and we go deeper.

What is real? What is forever? What is important and relevant in our lives?
Who are we, and what do we do, that makes any kind of difference?
Transform, evolve, or remain the same. How often do we get to choose?

Like a guru, the river carries the answers while asking only questions.
Prompting, prodding and provoking, teasing, testing and suggesting.
As ever, the answers lie within: you, me, and everyone.

We are a people born to beauty, born to fortune, borne inevitably to test and trial.
We are a people who care for each other, care for the earth, and care for what is real.
We are more than we once thought ... hidden until now beneath the ripples.

Rob Elliott



Pale Remnant

EA VI

S Brantley '03

S. Brantley

Faces In The Stone

Down in the canyon where the river runs,
Under the gaze of an ancient sun,
Are faces in the stone.

With skin of Kaibab and Coconino,
Muav lips and eyes like eagles,
Are faces in the stone.

Above raging rapids and river roaring,
Below falcon dives and osprey soaring,
Are faces in the stone.

From kwagunt to hermit,
from grapevine they span it.
Their smiles are frozen in schist and granite,
Those faces in the stone.

Spirits of hopi and anasasi,
Frozen in tombs from time forgotten,
Are faces in the stone.
Give them thanks as you pause and ponder,
What lies behind their awesome wonder,
Those faces in the stone

Rick Obermiller

A River Guide's Ride

There's the o'le western cowboy
with his horses and such,
but I just can't relate
to those fellows so much.

See, I don't own a ranch
a horse, or a gun;
my ride is a boat,
weighs 'bout a ton.

Through the waves my raft turns
it bucks and it dips.
my oars are my weapons,
no guns at these hips.

I push and I pull
I grunt and I groan.
Seems sometimes these rafts
have minds of their own!

So, when my ride gets ornery
and throws me out yonder
I don't land in the dirt
I land in the water.

My ride is low maintenance;
don't need hoofin' or brushin'.
My ride just needs air
and an occasional scrubbin'!

I guess both types o' cowboys
are pretty alike.
We got the same mantra
we use in this life.

The world's an adventure;
Our "rides" by our side,
to take us through canyons,
we travel with pride.

An when this journey's over
as all cowboys must die,
we'll fondly look back and say,
"loved my Ride."

Denise Hart

Calling All Recipes

I'M COMPILING RECIPES and cooking techniques for a Grand Canyon river guides' cookbook. I invite all G.C. river runners, private and commercial, to send in your favorite recipes from the Canyon and the kitchen. Appetizers, breakfasts, lunches, dinners, desserts, and snack recipes are welcome. Send submissions to:

Johnny Janssen
P.O. Box 1415
Flagstaff, AZ 86002-1415

Many Thanks to All the Contributors in 2002

HAPPY NEWS. This fiscal year has framed a very different picture for funding—especially where the *boatman's quarterly review* is concerned. In fact, the funding level for the BQR is at an all time high! This means that not only will we be able to maintain the quality and frequency of the BQR, but we will also be able to post more issues on GCRG's website for wider public access. We'd like to take this opportunity to sincerely thank our wonderful funders who have helped this year to make our publication possible.

- The Ruth H. Brown Foundation
- The Chehalis Fund of the Tides Foundation (on the recommendation of Mr. Drummond Pike)
- The Louise H. & David S. Ingalls Foundation
- The Norcross Wildlife Foundation
- Teva
- Anonymous

And of course, we always appreciate the support we've received over the years from the Grand Canyon Conservation Fund (GCCF) (a non-profit grant-making program established and managed by the Grand Canyon River Outfitters). The GCCF assists with funding for our annual Guides Training Seminar, our Adopt-a-Beach program and our participation in the Adaptive Management Program of Glen Canyon Dam. We also receive significant support from the Grand Canyon Monitoring & Research Center for the Adopt-a-Beach program. The ongoing support we've received from these two funders has endured the success of these important programs.

GCRG members are the other key component to this equation. Without your steadfast support through membership dues and general contributions, we would not be able to accomplish what we do. *You* make the BQR happen as well and we're forever grateful. Many of our members responded to our year-end fundraising letter with generous contributions totaling over \$7,700! We were also extremely honored to receive another \$3,200 or so in unsolicited contributions within the December/January period. The list below reflects all year-end contributors as well as those unsolicited donations of more than \$100 during the last two months. We apologize that we don't have space to list everyone, although we'd like to!

Barbara & Phil Albright
Betsey Arnett
Bruce Andrews
Steve Asadorian
Frank Bender
Mari Carlos
Ceres Foundation
Marion & Charles Classen
Pat & Owen Connell
Jim Cuthbertson
Lois Jotter Cutter
Pat & Roger Essick
Edward Foss
Steve Jellinek
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RJ Johnson
Jane & Robert Katz Foundation
Irene Kosinski (in memory of Chet Kosinski, Jr.)
Gary Ladd
Livingry Fund of the Tides Foundation
Kiyomi Masatani & Gary Yamahara
Joanne Nissen (to honor Don Poulson)
Jerry & Judy Overfelt
Wayne Peterson
Margaret Pratley
Steve Savage
Walt Taylor, MD
Ellen Voorhees
Gretchen & Daniel Walsh

Many more of you gave earlier in 2002 as well. We are so appreciative of every bit of your support—it all helps tremendously. Truly, we extend our thanks to each and every one of our members and all of our funders for standing behind us and believing in our organization. As far as we're concerned, you are the best!



Food Handler's Courses At Home

ARE YOU IN NEED of a Food Handler's Course? Well, the Backcountry Environmental Health home-study course is now available!

This certification course was developed specifically for Backcountry Operators who deal with environmental health issues, such as food safety, water purification, human excreta and solid waste handling and disposal. The information provided in each section is based on current federal regulations. This is an approved certification course for Backcountry Operators for all federal parks. It was developed with the help of Grand Canyon National Park, University of Arizona Soil and Water Department and Coconino County Environmental Health. Throughout this process, Grand Canyon river guides provided comments and suggestions that were incorporated into the course.

To take this course and become certified, please contact Coconino County Environmental Health at (928) 226-2710 or e-mail mgaither@co.coconino.az.us.

Marlene Gaither

Big News from Grand Canyon Youth!

GRAND CANYON YOUTH is in the process of hiring an Executive Director, (thanks to an anonymous grant), and we are getting ready for another great season with youth from all over Arizona.

Right now we are planning four trips in western Grand Canyon, one full Grand Canyon trip, and two San Juan trips. We have kids from Navajo, Hopi, Ashfork, Williams, Seligman, and Flagstaff, and the trips are coming together beautifully.

Also, our annual auction is coming soon so look for flyers and ticket sales at the Orpheum and GCY office!!!

Be sure to check out our new web site too, at www.gcyouth.org. As always, we need volunteers.

Thanks to all for your continued support!

Grand Canyon Youth

WMI WFR Recert

WHAT ARE ALL those acronyms? Pete Walka, a Wilderness First Responder (WFR) instructor for Wilderness Medicine Institute (WMI) of NOLS, is sponsoring a Wilderness First Aid course in Flagstaff on April 12-13. Anyone with a WFR certification from WMI, Wilderness Medical Associates (WMA), NOLS, Prescott College, or WPT can use the course to recertify their WFR cards and WEMTS.

If you are interested contact Pete at (928)779-0061 or email pete_walka@nols.edu.

Pete Walka

Calling All Musicians

HEY YOU MUSICIANS, singers, and songwriters of the Colorado River...we're putting together a CD compilation of Grand Canyon river songs for the listening public. The aim is to gather as many Grand Canyon or Colorado River inspired songs as possible from as many different people in Grand Canyon as are willing. A local studio here in Flagstaff will be providing the recording technology. We're hoping to do most of the recording in the 2003 season, the sooner the better. A big chunk of the profits will be going to Grand Canyon Youth.

Do you have river related or river inspired songs you'd like to contribute? We'd love to hear your songs, poems, instrumentals, or general feedback. If you are interested in contributing, contact Zander Brown at (928) 525-1143.

Zander Brown

Mailing Mix Up

IF YOU DIDN'T RECEIVE Volume 15 No. 4 and think you should have, please give the GCRG office a call at (928) 773-1075. There was a slight mailing mix up on the part of the bulk mail company we use. Most of you should have received it just fine, but a slightly older version of the mail list was used by mistake. Anyway, we apologize for the error and have talked to our bulk mail company to ensure that this won't happen again. We know how important it is for you to see the BQR sitting in your mailbox! Thanks for your understanding.

Wilderness First Aid Courses 2003:

Sponsored by GCRG & Desert Mountain Medicine

WILDERNESS REVIEW (RECERT) COURSE—March 25–27, 2003 [FULL], April 11 13, 2003 (two and a half days)

Prerequisite: Desert Mountain Medicine (DMM) will accept anyone who has had and kept current a Wilderness First Responder (WFR) certification (80 hour course) through Wilderness Medical Associates, WMI, SOLO, NOLS, DMM and other Wilderness medicine providers.

Location: Flagstaff, AZ.

Lodging & Meals: On your own.

Certification: Renews your certification for three years plus two-year CPR certification.

Cost: \$165

BRIDGE COURSE—March 31–April 4, 2003 (five days)

Purpose: to upgrade from a Wilderness Advanced First Aid (WAFA) certification to a WFR certification.

Prerequisite: WFR graduate. Same reciprocity with the wilderness medicine providers indicated above.

Location: Canyonville, Flagstaff, AZ.

Lodging & Meals: On your own.

Certification: three-year WFR certification and two-year CPR certification.

Cost: \$235 (for those of you who got a letter from us, please note reduced price).

WILDERNESS FIRST RESPONDER—March 16–24, 2003 (nine day course)

Prerequisite: None.

Location: Northern Arizona University, Flagstaff, AZ.

Lodging & Meals: On your own.

Certification: three-year WFR certification and two-year CPR certification

Cost: \$400

Class size is strictly limited. Send your \$50 non-refundable deposit with the application below to us at PO Box 1934, Flagstaff, AZ 86002 to hold a space. Checks can be made payable to GCRG. If you work for an outfitter who pays a percentage of course costs, just let us know that you'll be attending and we'll take care of the rest. The courses are already filling, so act now! GCRG reserves the right to cancel any classes due to insufficient enrollment. Call the GCRG office at (928) 773-1075 with any questions.

FIRST AID COURSE REGISTRATION

Circle one: Review Course Bridge Course Wilderness First Responder

Name _____

Address _____

City _____ State _____ Zip _____

Phone (important!) _____ Email _____

Outfitter _____

Type of current 1st aid _____

Businesses Offering Support

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

- Canyon Supply**—Boating gear 928/779-0624
The Summit—Boating equipment 928/774-0724
Chums—Chums 800/323-3707
Mountain Sports 928/779-5156
Aspen Sports—Outdoor gear 928/779-1935
Teva 928/779-5938
Sunrise Leather—Birkenstock sandals 800/999-2575
River Rat Raft and Bike—Bikes and boats 916/966-6777
Professional River Outfitters—Equip. rentals 928/779-1512
Canyon R.E.O.—River equipment rental 928/774-3377
The Dory Connection—Dory rental 928/773-1008
Winter Sun—Indian art & herbal medicine 928/774-2884
Mountain Angels Trading Co.—River jewelry 800/808-9787
Terri Merz, MFT—Counselling 702/892-0511
Dr. Jim Marzolf, DDS—Dentist 928/779-2393
Snook's Chiropractic 928/779-4344
Fran Sarena, NCMT—Body work 928/773-1072
Five Quail Books—Canyon and River books 928/776-9955
Canyon Books—Canyon and River books 928/779-0105
River Gardens Rare Books—First editions 435/648-2688
Patrick Conley—Realtor 928/779-4596
Design and Sales Publishing Company 520/774-2147
River Art & Mud Gallery—River folk art 435/648-2688
Fretwater Press—Holmstrom and Hyde books 928/774-8853
Marble Canyon Lodge 928/355-2225
Cliff Dwellers Lodge, AZ 928/355-2228
Mary Ellen Arndorfer, CPA—Taxes 928/525-2585
Trebon & Fine—Attorneys at law 928/779-1713
Laughing Bird Adventures—Sea kayak tours 503/621-1167
North Star Adventures—Alaska & Baja trips 800/258-8434
Chimneys Southwest—Chimney sweeping 801/644-5705
Rescue Specialists—Rescue & 1st Aid 509/548-7875
Wilderness Medical Associates 888/945-3633
Rubicon Adventures—Mobile CPR & 1st Aid 707/887-2452
Vertical Relief Climbing Center 928/556-9909
Randy Rohrig—Rocky Point Casitas rentals 928/522-9064
Dr. Mark Falcon—Chiropractor 928/779-2742
Willow Creek Books—Coffee & Outdoor gear 435/644-8884
KC Publications—Books on National Parks 800/626-9673
Roberta Motter, CPA 928/774-8078
Flagstaff Native Plant & Seed 928/773-9406
High Desert Boatworks—Dories & Repairs 970/259-5595
Hell's Backbone Grill—Restaurant & catering 435/335-7464
Boulder Mountain Lodge 800/556-3446
Marble Canyon Metal Works 928/355-2253
Cañonita Dories—Dory kits, hulls, oars, etc. 970/259-0809
Tele Choice—Phone rates 877/548-3413
Kristen Tinning, NCMT—Rolfing & massage 928/525-3958
Inner Gorge Trail Guides—Backpacking 877/787-4453
Sam Walton—Photography 928/214-0687
Plateau Restoration/Conservation Adventures 435/259-7733
EPF Classic & European Motorcycles 928/778-7910
Asolo Productions—Film and Video Productions 801/705-7033
Funhog Press—AZ Hiking Guides 928/779-9788
Man of Rubber, Inc. 800/437-9224
Capitol Hill Neighborhood Acupuncture 206/323-3277
CC Lockwood—Photography books 225/769-4766

The River: A Journal Entry

It takes you deep into time and yourself,
this river that flows through Earth's history.
Here powerful currents sculpt out canyons;
here gentle drips nourish mosses, ferns, and flowers,
bringing green life to the arid landscape.
The river speaks in thunders and booms, splashes and gurgles.
The tinkles and murmurs of side canyons become hymns to Mother Earth.

The river gives freely of itself.
Sand and wetness cling to us like a second skin.
In the peace of quiet stretches, in the exuberance of white water,
in the tirelessness of sand becoming rock and rock becoming sand,
I find happiness.
It bursts forth as whoops of delight and as quiet awe.

On this journey I have been nurtured by good comrades
and by boatmen sensitive, knowledgeable, and skillful.

I leave the river tomorrow, but it has poured into my soul,
Leaving me satiated with feelings of love, health, and joy.

Lorna Mason

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!**

General Member

Must love the Grand Canyon

Been on a trip? _____

With whom? _____

Guide Member

Must have worked in the River Industry

Company? _____

Year Began? _____

Number of trips? _____

Name _____

Address _____

City _____ State ____ Zip _____

Phone _____

\$30 1-year membership

\$125 5-year membership

\$277 Life membership (A buck a mile)

\$500 Benefactor*

\$1000 Patron (A *grand*, 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.

\$24 Henley long sleeved shirt Size ____ Color ____

\$16 Short sleeved T-shirt Size ____ Color ____

\$18 Long sleeved T-shirt Size ____ Color ____

\$12 Baseball Cap

\$10 Kent Frost Poster (Dugald Bremner photo)

\$13 Paul Winter CD

\$17 Lava Falls / Upset posters (circle one or both)

Total enclosed _____

Olo-oqlace

OLO-OQLACE MEANS, in Havasupai, little horse. Olo-o means horse. Both derive from the Spanish caballo, and the name Olo was given to a canyon a few miles east of Supai village. In the 1930s rumors began to spread of a race of miniature horses living in Grand Canyon. An ancient landslide had trapped them in a side canyon, went the story, and they evolved into tiny horselets. At least one sideshow touring the states claimed to exhibit these adorable tiny creatures.

In 1938 Park Naturalist Eddie McKee, accompanied by Park Ranger Bert Lauzon and Assistant Chief Ranger Warren Hamilton descended into Havasu Canyon to find the midget horses. Their Havasupai guides showed them three captive horses, one measuring a mere four feet tall and weighing just three hundred pounds. Out on the Esplanade they found more, though none quite as small as the captives. McKee and party found the tale of the sealed-off canyon to be

a myth, and the horses quite normal—merely stunted from malnutrition. The sideshow horses turned out to be Shetland ponies. Once again, a little curiosity and footwork ruined a perfectly good story. No reason you can't still tell it though.



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 Ruth H. Brown Foundation, Teva, Chehalis Fund of the Tides Foundation, Norcross Wildlife Foundation, The Louise H. and David S. Ingalls Foundation, and innumerable GCRG members for their generous and much appreciated support of this publication.

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boatman's quarterly review

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