

# Yosemite

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## People Who Chase Bears Feel Better

Carla Neasel

**Imagine that you** have been given a seemingly impossible task. Imagine that you must accomplish it in one of the most beautiful areas in the world. Imagine that you must walk many miles each day, be dirty most of the time, eat boring food, and talk with hundreds of people. Imagine that almost everyone you meet tells you how great they think you are, and how wonderful your job is. Imagine that you are usually able to believe them!

The job you would have is mine, that of a Yosemite backcountry ranger. The impossible task? The same one required by the basic mandate of the National Park Service: to preserve and protect Yosemite's wilderness, and at the same time, provide for the enjoyment of its visitors. The job is far from easy, but this summer I learned that it is not impossible.

As I look back on a season full of beauty and surprises, I realize that it was much more than chasing bears and packing out garbage. It was a complete experience, a dance, in a way, composed of the graceful leaps and bounds of the wildlife, the tranquil movements of meadows, the persistent, sometimes courageous plodding of human feet. It was a season full of wonder.

### The Black Object

It is 6:05 a.m. A solitary back-packer rolls over onto his stomach and sleepily looks out the front door of his tent. A golden gray mist shimmers in long, broad waves over the lake

at the bottom of the ridgetop where he is camped. Although the sun has not yet crested the surrounding higher peaks, the first few bird calls of the day are echoing through the lake basin. The stillness of the air, the newborn quality of the bird songs, and the delicate mist on the water all serve to stir up in the man an incredible desire for . . . coffee.

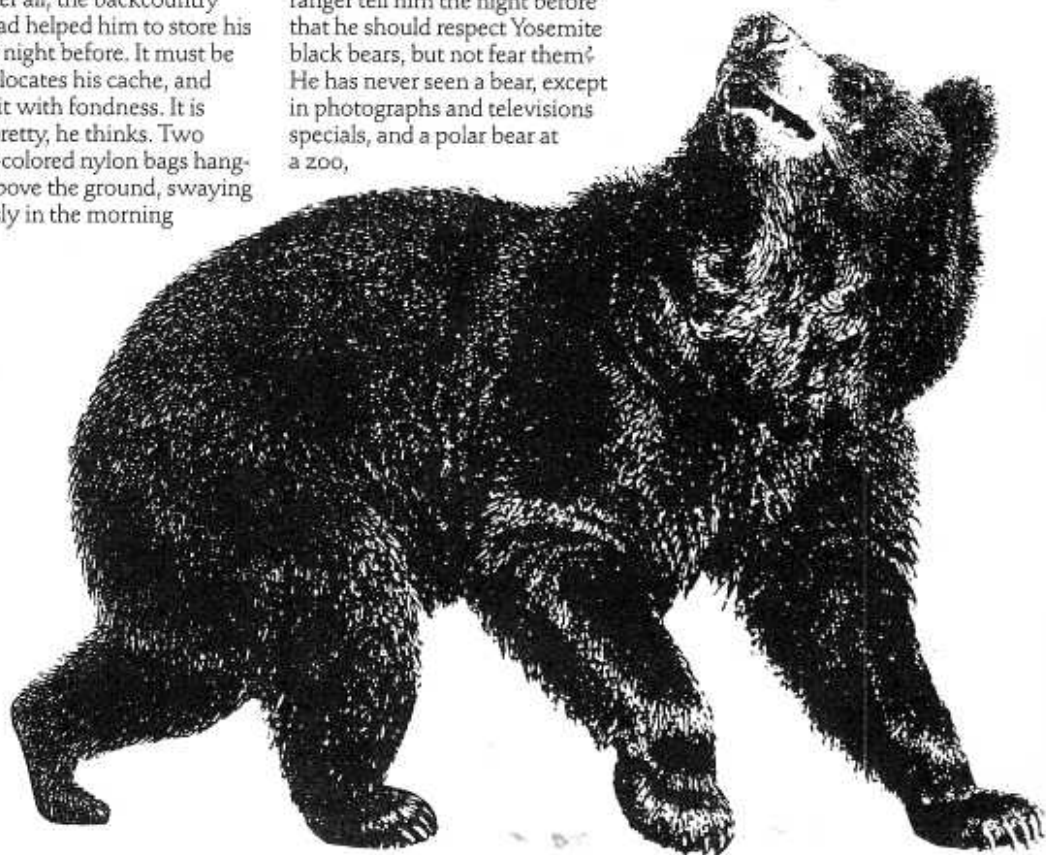
More awake now, he turns his head to look out into the forest where his coffee is hanging from a tree. It does not occur to him that his food might be gone, stolen in the night by a purloining bear. After all, the backcountry ranger had helped him to store his food the night before. It must be safe. He locates his cache, and looks at it with fondness. It is almost pretty, he thinks. Two brightly-colored nylon bags hanging far above the ground, swaying vigorously in the morning breeze.

Swaying vigorously? His vision blurs, refocuses, clears. There is a large black object in the tree. This black object was not in the tree the night before when the ranger and he had stored his food. This black object has a broad furry back planted firmly against the main trunk, and two large paws wrapped around the branch where his food is hung.

The black object is a bear, he thinks, and is the definite cause of his food bouncing around so unnaturally. He considers whether or not he is afraid, and decides that he is not. After all, didn't the ranger tell him the night before that he should respect Yosemite black bears, but not fear them? He has never seen a bear, except in photographs and television specials, and a polar bear at a zoo,

on the. He is intrigued. It doesn't look so big, really.

His reverie is broken by the realization that one of the bags is descending rapidly toward the ground. He wiggles out of his sleeping bag, stuffs on his tennis shoes, and runs to stand beneath the tree. Beneath the bear. The bear looks down, more at the food bags than at the man. It resumes shaking the branch, rotating it methodically. Slowly, one of the bags lowers as the other one rises. (The scales of justice, the man thinks.) As the bear con-





tinues to shake the branch, the bag lowers until the man can reach it. Not knowing what else to do, he takes a firm hold, then gives it a mighty shove. The two bags are once again balanced, hanging side by side.

The bear looks down for a moment, then begins shaking the limb again. The bag descends. The man grabs it, tosses it up. The bear shakes the limb. And so on. The contest continues in near silence for twenty minutes, until the man becomes cold in his cotton long johns, and runs to his tent for another layer.

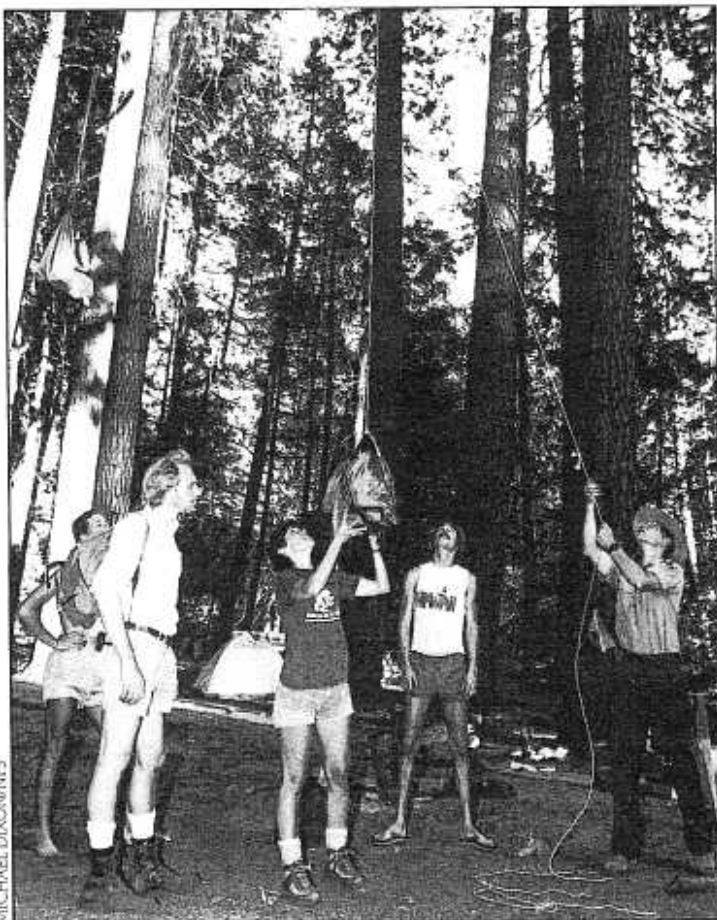
When he returns, the bear has taken up his position beneath the tree, and is standing on its hind legs, arms extended toward the food bag which is dangling only inches from its paws.

And claws. The man notices the claws. Suddenly the man notices many striking similarities between the animal before him now and the polar bear he saw in the zoo, once. He remembers the ranger's instructions about yelling at bears. He hesitates. "Hey," he says softly, and then "Hey!"

The bear snorts, drops to all fours, turns around and leaps at the tree. In seconds, it is back in position, shaking the limb. The man waits below, resigned to spending the rest of his trip staring at the posterior of a bear, when suddenly the rope breaks and both bags plummet to the ground.

Bear and man freeze for an instant, then all is a flurry of motion as the bear maneuvers to descend the tree while the man gathers up the bags, coils the rope, tangles it, drops it, and finally cuts it off, along with the tops of the two bags.

The bear reaches the ground just as the man begins walking quickly to the trail leading to the other side of the lake. Surprisingly, the bear does not follow. Instead it sniffs about on the ground where the bags landed, and then wanders off through the trees. The man watches from behind his tent. Ahead of the bear in the



MICHAEL DIXON/NEP

distance, shining through the trees in the sunlight, are another two brightly-colored nylon stuff sacks, hanging motionless in the still air.

### Backcountry Rangers

I met Ed the night before his bear encounter as I was talking with backpackers in the Ten Lakes Basin during one of my patrols this summer as a Wilderness Interpretive Ranger. Although his experience provided both of us with a hearty laugh (after it was over), many of the encounters between humans and bears in Yosemite's wilderness do not end so happily. A lot of hikers walk out hungry every year, and a lot of bears get the wrong idea about humans. Bears that lose their fear of people sometimes become too bold in their dealings with us, and must be destroyed in order to protect human lives.

Enter the backcountry rangers. Ever since the United States Cavalry began its stewardship of the National Parks prior to the inception of the National Park Service, men, and later, women, have been patrolling the wilderness areas of Yosemite to protect the land from inappropriate human activities, and to assist

A lesson in making a food bag bear-proof.

those visitors who need help. During the past two decades, increased wilderness use and a shrinking budget have made it impossible for the backcountry rangers always to be where the people are. Given the natural intelligence, curiosity and persistence of black bears, the situation has become a Mt. Lyell of a problem.

To protect the bears from food-laden humans, and humans from increasingly innovative and bold bears, wilderness and wildlife managers in Yosemite have tried to reduce the number of contacts between the two species. Most of the encounters center around food. In the frontcountry car campgrounds, the installation of bear-proof trashcans and food lockers has greatly reduced the number of incidents in the last ten years. But in the wilderness, where backpackers camp where they will, and bears often wait until dark to patrol the trees, rocks, bushes, cliffs, streams, etc. (anywhere that humans historically have been known to store food), the problem has remained the same, or increased.

In 1987, the United States Congress passed new fee legislation enabling the parks to increase their gate fees as well as retain most of the profits. Yosemite received a large sum of money this summer to use for resource-related projects. Seizing the opportunity, the Wilderness, Interpretive, and Resource Management Divisions developed a new program called Wilderness Interpretation. Rangers were to spend the summer hiking and camping in the most heavily-used wilderness areas of the park, contacting backpackers about bears and minimum impact camping, and providing assistance and performing maintenance wherever needed.

It was as one of these five Wilderness Interpreters that I was able to motivate Ed to challenge the bear. Countless other visitors received similar encouragement and assistance throughout the summer from the entire wilderness staff. Although it remains to be seen what kind of long-term effect we will have, the number of bear incidents seemed significantly reduced when we were in an area, and many of the most-used wilderness areas are much cleaner because of the increased ranger presence.

I must admit, however, to times when I had my doubts. After coming across several backpackers who did not store their food properly, even after I had helped them, or when packing out yet another huge load of garbage from Lower Cathedral Lake, or while tearing out the same destructive fire ring for the fourth time, I sometimes wondered if we were trying too hard to accomplish the impossible.

### Collecting Garbage

It is three o'clock in the afternoon. The bright Sierran sun burns down through a sharp-edged blue sky. I am glowing. I am perspiring heavily. I might as well say it: I am sweating like a pig.

*People who chase bears eat better, sleep better and feel better knowing that they have helped a bit to restore a wild animal to its natural condition.*

I am also covered with a layer of sooty grime and garbage from a particularly dirty campsite I am cleaning. The previous occupants left a potpourri of filth, including beer bottles, food garbage, dirty diapers, and an illegal fire ring. It has been an unusually grubby day, and I am discouraged.

Scuffling footsteps and low voices tell me that I am being approached. I straighten to my full (but now crooked) height, rub the gray streaks into some semblance of uniform blotchiness, and rearrange my creases. I turn and find myself faced with two backpackers bearing a sack of garbage.

"We're so glad you're still here! We heard you were collecting garbage and wanted to make sure you got ours. We thought..." Mercifully, their voices trail off as they become aware of the monstrosity surrounding us. The older woman's eyes actually fill with tears. "This is awful!" she says. "Does this happen a lot? Are people really this bad all the time, and you folks just pick up after them? I can't imagine..." She shakes her head. I am startled by her emotion.

We talk a bit. I am glad for the respite, but uncomfortable with the heavy-looking bag of garbage the backpackers are hefting. I am about to mention that I am not "collecting" garbage, but rather am cleaning up after departed campers who chose not to fulfill their responsibility to keep the wilderness clean, when the woman surprises me again.

"Say, you know, I shouldn't be asking you to pack out our trash. I'm a little embarrassed I brought it over here. I'd really like to help. Point me to a bad place, and we'll take care of it." They seemed dissatisfied when I tell them it would be fine if they just left their campsite cleaner than when they found it, but they soon wander off with promises to be extra thorough.

One of Yosemite's many inquisitive black bears, and wranglers packing out the garbage.



NIS PHOTO



MICHAEL DIXON/NIS

Later that evening, I visit their camp to tell them about the bears. No one is home, but this time it is I who stand in the middle of a campsite, unexpected emotion tugging at my throat. Piled neatly near the tree where their food is hanging is a large plastic bag full of trash, clearly gathered from an old firepit that I had not yet been able to visit.

"Something's working," I say to myself, and I go off smiling to talk with the other backpackers in the area.

### People Want to do Good

Something is working in Yosemite's wilderness, and it isn't just us backcountry rangers. Many of the hikers visiting the wilderness make a practice of leaving no trace of their activities, and almost everyone agrees that people should carry out everything they carry in. Most of the mistakes made by backpackers which damage the environment or harm the wildlife are the result, not of malice, but of misinformation, myth, and just plain ignorance. As long as an ample force of backcountry rangers is out there chasing down these three elements and eliminating them from the minds of wilderness users, there is hope for Yosemite's wild places.

As an interpretive ranger on the backcountry staff, I was able to spend a lot of time this summer talking with people about their preceptions of the wilderness and the human role in it. Three generalizations have come to me which seem to be true:

1. People want to do good. They may need help, or prodding, but their wilderness hearts are in the right place.

2. The wilderness needs the protection of everyone who goes there. As John Muir said, "... trees cannot defend themselves, neither can they run away." We must be the ones to take care of what we love.

*continued on page 23*

# Slowly Die the Embers



Frank Bonaventura

**"Let there be no more such light!"** Those biblical-sounding words, written by Shirley Sargent in her excellent work, *Yosemite & Its Innkeepers*, reported the order from NPS headquarters to discontinue Yosemite Valley's historic Firefall. Since that momentous mandate of Thursday, January 25, 1968, no such light from Glacier Point (or any other point) has violated the order.

A spate of angry protest from lovers of the Firefall was triggered by that courageous order. One particularly indignant editorial in the Merced Sun-Star of January 29, 1968, charged NPS with "bureaucratic high-handedness in eliminating a tradition which would reduce Yosemite into the also-ran class." Another irate individual lamented, "as well plug Old Faithful as stop the Firefall!" Anyone who had never been to Yosemite might have been led to believe, from the grave tenor of those protests, that there was nothing else in the park worthy of a visit.

History records the first fire falling from Glacier Point either in 1871 or 1872. James McCauley, builder of the Four-Mile Trail and the Mountain House, is credited with its beginning. Whether it was a result of McCauley's flair for the dramatic or purely accidental is not known. Whatever its origin, The Firefall soon became a hit with spectators watching it from the valley. Ensuing experiments with flaming gunny sacks, fireworks, and even bombs thrown over the cliff, gave way to the more subtle and esthetic stream of burning embers pushed slowly over the cliff with a long-handled iron rake. Up to half a cord of red fir bark was consumed for each Firefall. The bark burned for two hours to incandescent, walnut-sized embers, then was pushed over the cliff's edge. The embers fell, harmlessly enough, to a rocky ledge about 1000 feet below Glacier Point.

After the McCauleys left

Glacier Point in 1897, the cliff remained dark until David A. Curry revived the tradition shortly after establishing Camp Curry (first named "Camp Sequoia") June 1, 1899. In 1913, Assistant Secretary of the Interior Adolph C. Miller denied Curry the privilege of presenting any more Firefalls, as punishment for Curry's uncooperative behaviour as a concessionaire. Miller's interdiction lasted until 1917 when Secretary of the Interior Franklin K. Lane

relented and allowed Curry to reinstitute the Firefall as a nightly feature.

## Environmental Impacts

As post World War II visitation to Yosemite increased, so did Firefall-related traffic problems and, of more lasting damage, impact on the valley's fragile meadows,

The Firefall which thrilled millions for fifty years after its reintroduction in 1917, as depicted in a water color by Gunnar Widforss.

caused by trampling spectators every night of summer. Even in winter, on weekends and for special occasions, there were Firefalls, weather permitting. Winter caretakers of the Glacier Point Hotel prepared Firefalls and pushed them over. The late George Mayer and his wife, Dorothy, spent every winter from 1949 to 1965 at Glacier Point.

Mrs. Mayer recalls the enormous supply of bark which had to be gathered before winter set in. By the late 60s collectors of the bark had to travel back down the Glacier Point Road past Badger Pass to find enough dead red fir trees from which to gather sufficient amounts of bark. When the Mayers gave up their positions, Lee Hamilton and his wife were the Hotel caretakers during the last years the buildings stood. Lee had the distinction of pushing the very last embers over on that historic Thursday night in 1968.

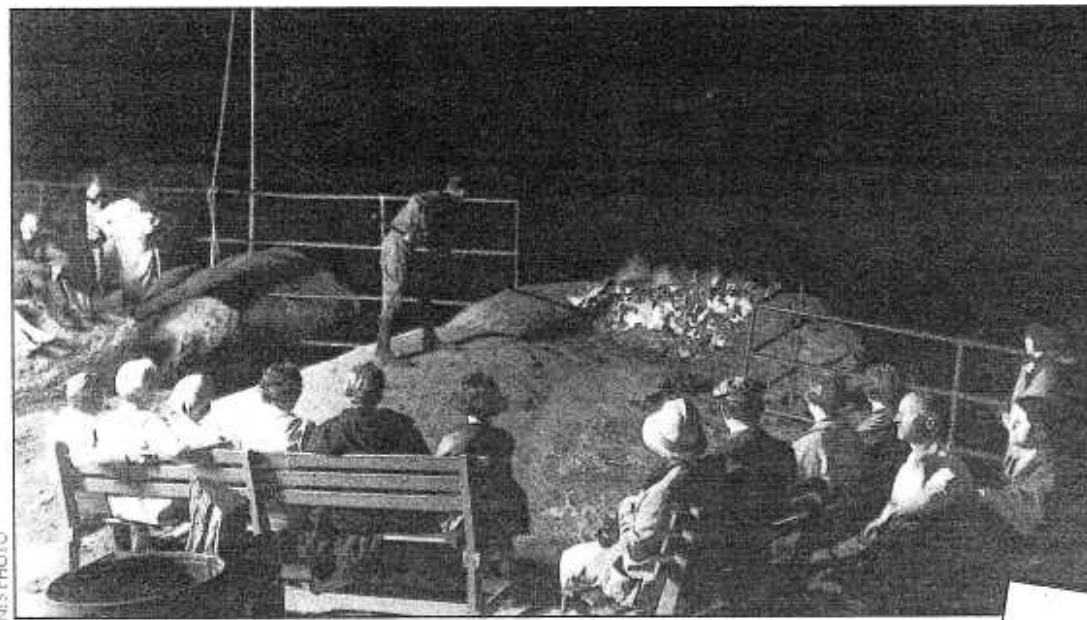
Guests of Yosemite Lodge and Camp 4 had to travel far enough east in the valley to view the nightly show. "Firefall buses" left the Lodge shortly after 8 pm to arrive at Camp Curry in time for the passengers (who had paid 50¢ each) to attend the pre-Firefall entertainment at the amphitheater. Anyone who missed the last bus from the Lodge would have to call a taxi, in hopes of making it to a suitable vantage point before the magical hour of 9 o'clock.

Inevitably, by the mid-60s, traffic jams near Camp Curry at Firefall time made it all but impossible for Firefall buses to get through. Roads were jammed, and meadows became parking lots. Passengers were taken instead to the Ahwahnee, where the view of Glacier Point was excellent, though the entertainment at Camp Curry was denied. They couldn't even hear the exciting exchange of shouts between Camp Curry and Glacier Point which built suspense before the Firefall. Also missed was the mood-setting "Indian Love Call," sung while the fire fell. (Some unkind critics would consider that a



NPS PHOTO

Devotees of the Firefall at its source, Glacier Point, and, below, the impact of the traffic in Stoneman Meadow.

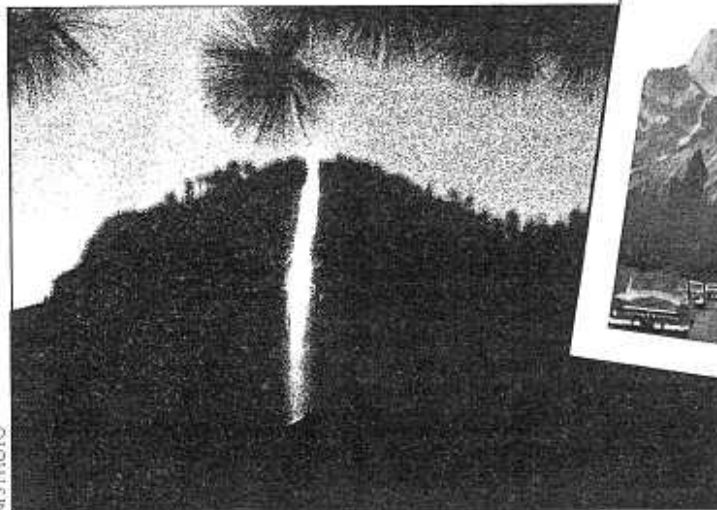


NPS PHOTO

faced with the challenge of giving that explanation. David Balogh, in his 15 seasons as park naturalist at Glacier Point, has had countless opportunities to polish his answer to that regular query. With the park's emphasis now on environmental protection and education of visitors about natural features and processes of the park, rather than entertainment, Balogh suggests a "divide and conquer" approach is necessary. He says that when all of the people in the valley at any given time are interested in only one event, the result is disastrous. Instead, if they are divided into small groups interested in a variety of subjects from archaeology to zoology, and led to different areas of the valley, problems such

definite benefit!) It didn't take long for the manager of the Ahwahnee to object to the heavy foot-traffic through the hotel's lobby and lounges. As an alternative, buses went to the Church Bowl, but ambient light including blinding auto headlights made that viewing-point unsatisfactory. In the last nights of the Firefall, buses delivered viewers to the newly built Visitor Center.

In the Firefall era contact with visitors meant answering the many questions about that much-advertised and much-discussed event. Unless a visitor had heard or read a detailed explanation of the mechanics of the Firefall, it seemed only natural to assume that a waterfall was somehow involved. After all, Yosemite was famous for its waterfalls, was it not? Rangers, especially naturalists on duty at the museum or Glacier Point, were besieged by questions such as, "do rangers climb up to that cliff every night to put on the show?" One morning at the museum a naturalist delivered a lecture on the geology of Yosemite Valley, then invited questions. He soon wished he hadn't—all of the questions were about the Firefall! No wonder its discontinuance was applauded



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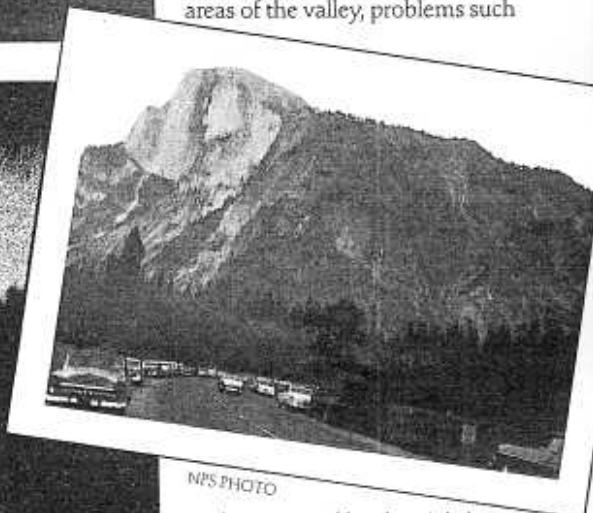
by so many who dared think that the purpose of a great national park should be more than a stage for fireworks. Anyone involved in the nightly Firefall frenzy, especially drivers of the Firefall buses and taxis, often wondered if there really was a tranquil "park experience" to be found in Yosemite Valley.

#### Time to Stop

Perhaps it could be argued, at least in the embryonic days of the park, that the Firefall served the legitimate purpose of attracting

needed visitors, as did tunnels through sequoias or bear-feeding programs. Certainly it helped satisfy the Mather/Albright strategy of stimulating greater visitation to assure appropriations from Congress to support national parks. But by 1968, such strategy was no longer viable.

The power of nostalgia is demonstrated every time an old-time visitor to Yosemite demands an explanation for the Firefall's cessation. Fully 20 years after the last fire fell, naturalists on duty, especially at Glacier Point, are daily



NPS PHOTO

as those caused by the nightly Firefall are conquered.

The Firefall is gone. Twenty years after its last brilliant streaming, the phenomenon remains a fascinating and living element of the park's history. For those who still long for the "good old days" (or are simply curious), you can still catch a view of the Firefall. It's been preserved on celluloid in the movie "The Caine Mutiny."

*Frank Bonaventura is a long-time Yosemite resident and employee of the Yosemite Park & Curry Company. As a driver for the Yosemite Transportation System, he has developed a deep knowledge of the park's history.*

# The Wilderness is not Uninhabited

*The bulk of the plan is a description of the restriction on NPS activity in wilderness.*

Jim Snyder

After many meetings, drafts, revisions, and more meetings, the Wilderness Management Plan for Yosemite National Park is nearing completion. The final draft will shortly be out for public review, after which there will be some last changes before it is implemented.

The Wilderness Management Plan is different than many other park plans because it is required by the California Wilderness Act of 1984 as the last step in the implementation of that law. What the plan does is to define wilderness in Yosemite and to state formally what areas are wilderness, what can and can't be done there, and how management shall be carried out. That unresolved tension in the organic act for the National Park Service between conserving and providing for the public enjoyment of parks is at the heart of the plan and is the reason the plan and the wilderness acts have been necessary.

That tension surfaces quickly in another way when we consider what the plan does. The Park Service is here to protect wilderness, which it does through quotas, patrols, maintenance, information, education, and resource study and monitoring to prevent public use from having major or irreversible effects on the wilderness park. The administrative process, however, also affects wilderness; therefore, the plan not only outlines the ways in which public use is managed but defines the limits of administrative use as well.

## The Conflicts

There is a limit to the detail the plan can or should cover. Flexibility must be written into it if only because the conditions of wilderness use change over time, as does administrative response. The so-called "conflict" between horses and hikers is a case in point. Horses used to be the central mode of high country transportation; pack stations dotted



NPS PHOTO



NPS PHOTO

The use of both livestock and helicopters are impacts that are strictly limited by the new plan.

both sides of the Sierra. Now, with suburban living and revolutionized backpacking techniques, foot traffic is the dominant means of travel, and the use of stock in the high Sierra has dropped sharply since the 1930's. Neither one nor the other form of travel is "better" or has less impact because it is numbers that affect any given place in wilderness. The plan therefore must be able to encompass different kinds of use as well as different perceptions of wilderness over the long haul.

The same is true of administrative use of wilderness and the impacts of management. It may be that the management of wilderness is a function of distance and

funds, that the farther you get from the road, the less actual "management" occurs or is necessary. Without checks, on the other hand, short term management approaches to wilderness problems can often mean more agency impact on wilderness areas. For example, styles of trail work on the Merced Lake Trail and the City of San Francisco trails out of Hetch Hetchy during the 1930's show how wilderness can be heavily impacted by management techniques driven by short term goals, in those cases to put road-style trails up parts of the park's two main river systems to make them more accessible. There has been a periodic tendency for the Park Service to manage things by building more, contracting wilderness perimeters in the process.

## The Conditions

The 1984 law defined wilderness perimeters in Yosemite for the first time. The boundary of the roughly 681,000 acres of wilderness and potential wilderness additions in Yosemite is generally 200 feet from the centerlines of public access roads and 100 feet from development existing now or specifically proposed in the General Management Plan. Section 35 (Wawona) is excluded; the boundary in Yosemite Valley follows the 4,200 foot contour except for a corridor along the trails to Nevada Falls; and the boundary at Hetch Hetchy is at the reservoir's high water line. The boundary takes the guesswork out of wilderness by drawing a specific line, eliminating that convenient idea of "threshold" or half-way wilderness used a decade ago to set wilderness perimeters further back from the road.

The plan also describes the condition in which wilderness lands are to be kept:

*In the Yosemite wilderness the Service seeks to preserve an environment in which the natural world along with the processes and events that shape it are largely untouched by human interference. Visitor use and enjoyment of wilderness are encouraged as long as such use does not result in levels of human impact which seriously compromise the wilderness values the National Park Service is mandated to protect. Specifically, ecosystems including plant and animal species and populations along with unpolluted air and water will be protected in a natural state free from human structure, disturbances, and technology.*

This condition of wilderness is to be sustained by specific directives. "The Service will impose limits on human-induced change," states the plan, "and will manage impacts to insure that intrusions from civilized and technological society will not be allowed to slowly but steadily erode wilderness values." Those limits have been established for the most part through the use of trailhead quota system, restric-

North



Boundaries of the two areas of Designated Wilderness.

tions on group sizes, and designated campgrounds in heavily used wilderness and potential wilderness areas.

### The Usages

At the same time the plan recognizes that different people use wilderness in different ways, with different expectations. "Visitors can select the degree of crowding, solitude, or human impact they wish to experience from the spectrum of opportunities and impact levels deemed acceptable and permitted in Yosemite wilderness." This process is furthered through the dissemination of wilderness information on heavy use, trail and weather conditions, regular stock use areas, bears and food storage, and other subjects. Educational and interpretive exhibits, programs, and information, especially on minimum impact and what wilderness is, support the goal of sustaining wilderness in Yosemite.

There are other restrictions on public use of wilderness, notably the new law prohibiting aircraft flights less than 2,000 feet over the surface of Yosemite National Park. Motorized or mechanized vehicles, such as bicycles or motorcycles, are not permitted on park trails or in wilderness. Commercial permits are tied to the conditions of the wilderness plan to insure that commercial impacts are not greater than normal private use of wilderness.

### The Tools

There are administrative exceptions to the wilderness plan. These exceptions for emergency and administration are governed by another principle: "The Service will use the minimum tool necessary to successfully, safely and economically accomplish its management objectives." Of those criteria, economics should be the least important, and "the chosen tool or equipment should be the one that least degrades wilderness values temporarily or permanently." Exceptions to allow use of motorized or mechanized

equipment in wilderness are scrutinized carefully through a long process. This helps to minimize aircraft use for non-emergency purposes, for example, and to emphasize primitive and nonmechanized approaches to wilderness problems when possible.

The "minimum tool" directive can produce contrasting results; the directive can be inhibiting, or it can be energizing. By removing wilderness operations from an easy reliance on modern technologies, wilderness status in effect opens the door to imaginative, innovative approaches to problems in wilderness. To work successfully and safely to sustain the integrity of Yosemite's wilderness can often mean a heavy reliance on the past when similar operations were carried out without the technologies of the present.

In wilderness maintenance, for instance, a combination of modern imagination with hand labor and tools, traditional skills, and use of native materials can work to sustain a balance between wilderness facilities and the environments of which they are a part.

Skills, techniques, and practices developed in wilderness areas can provide solutions to many front-country problems as well. The principle of using the minimum tool can support innovation in work, production for the long term, and environmentally oriented labor and management.

It is no accident that cavalry patrol schedules of the 1890's for Yosemite were used as the model for current ranger patrols. Rangers patrol the wilderness to provide information and to enforce regulations. Rangers and other wilderness workers also repair facilities in wilderness, from patrol cabins to trails and signs. But their work is pretty much limited to facilities. There is no hazard tree removal except at designated campgrounds; trees can be expected to fall occasionally in wilderness. There will be no environmental modification in wilderness to minimize rockslides, avalanches, or other natural phenomena except as approved at Olmsted Point and Spring Hill on the Tioga Road. Naturally ignited fires in wilderness, furthermore, will not be suppressed unless they pose a danger to life or property or they threaten to leave the natural fire area.

## Visitation Exceeds 3 Million!

Visits to Yosemite National Park hit a record high number in 1987 when 3.24 million visitors traveled to the park. That figure exceeds the 1984 mark by over 200,000.

### The Base Data

Limits on human induced change, administrative facilities, and tools help perpetuate a wilderness condition with minimized permanent impact and change. Research and resource studies measure natural and cultural resource impacts to insure that natural processes continue unimpaired. A base of wilderness information developed through such study helps determine trends and insure appropriate management of impacts.

At the last Yosemite Association Members Meeting, Gary Snyder noted that "wilderness is not uninhabited." It cannot be treated as a forested vacuum devoid of people. That is perhaps the ultimate purpose and cause of this wilderness management plan. It is an effort to make a statement of our place—as members of the public or as administrators—in this group of environments we call Yosemite National Park. The plan is recognition of the need for such a statement; the plan outlines locally, for a specific place, how we all will treat wilderness, however we each may come to relate to it.

The plan will be sent for review to many organizations concerned with wilderness and Yosemite. The draft plan will also be available for review at the Superintendent's Office and in the Research Library in Yosemite National Park, at county libraries in Mariposa, Tuolumne, Merced, Madera, and Fresno counties, and at the office of your Yosemite Association. Comments on the plan may be mailed to:

Superintendent John Morehead  
National Park Service  
P.O. Box 577  
Yosemite National Park  
California, 95389.

*Jim Snyder, Yosemite trail-builder, historian, and aficionado, worked closely with the drafters of Yosemite's new wilderness management plan.*

# Yosemite in a Day



Jim Snyder

**Visitors for the day** to Yosemite account for nearly 40% of the people who visit this place. Being able to come here for a day with a picnic basket and to return home for the night is something many people take for granted.

But it was not always so. On his whirlwind tour in 1859, Horace Greeley came as close as anyone to being the very first visitor for the day. He travelled sixty miles, arriving at his "hotel" in the Valley at 1 a.m. "I am told that none ever travelled from Bear Valley to the Yosemite in one day," he wrote: "I am confident no greenhorn ever did." Greeley toured the Valley the next morning, climbed back on his horse, and headed for Clark's. After a quick visit to the Mariposa Grove the following morning, Horace headed back down the mountain. His views of the place were compromised by "boils, caused immediately by horseback exercise."

Many visitors made short trips to Yosemite using the good sense to take the trip more leisurely than Greeley had. The Valley and Mariposa Grove were far enough removed that rush trips simply were not worthwhile.

That changed sharply when the Yosemite Valley Railroad made it possible to visit the park in a more relaxed way, without boils. The first real day trip to Yosemite Valley was recorded in D. J. Foley's *Yosemite Tourist* for Sunday, May 26, 1907, this way:

## A New Record

*A party of Merced people have established a new record for visiting the Yosemite. They left Merced early this morning on one of the motor cars of the Yosemite Valley Railroad and arrived here at noon. They took lunch at the Sentinel and left here at 3 pm, for Merced and expect to arrive there by 9 pm, making the round trip of about 190 miles, 30 being by stage, in a day. That's going some.*

*The members of the party are the Misses Jennie, Kathryn and Stella Garibaldi, Florence and Julia Dixon, Messers F. L. Higgins, C. H. Wright, H. B. Stoddard, L. E. Schulz and J. B. Garibaldi.*

The railroad reduced the time and the pain of a visit to Yosemite. The Yosemite Valley Railroad also made it possible to visit the park through all the seasons, as they advertised with their slogan, "Yosemite National Park, Open All The Year Around." Not long after the railroad came new and paved roads, automobiles, and "stage" or bus transportation. Such changes altered forever the character of Yosemite Valley as well as the ways people saw the place. The 1907 day visitation record is particularly remarkable now in light of the numbers of people each year who appreciate Yosemite the same way.

The horse drawn stages, below, were eclipsed first by the railroad (El Portal Terminus shown above) and then by the auto stages as "day" trips became common.



NPS PHOTO



NPS PHOTO



NPS PHOTO



# Yosemite Viewpoints

## An Open Letter to John Muir

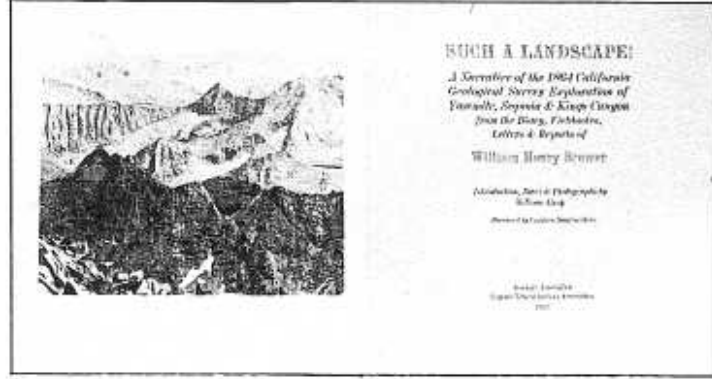
Dear Mr. Muir:

My first summer in the Sierra is over, just as yours was 118 years ago. But the Sierra I have come to know is, I suspect, quite different from the one you knew and which was so inspirational for you.

My first experience with these mountains came last year when I made a January trip to Lake Tahoe for skiing. It rained the entire weekend until the day we had to return to San Francisco. That day gave us crystal blue skies and a wonderful view of a majestic snow-capped range as we drove westward. Three months later I was back in the Sierra, but this time at Pincrest. We spent four days roaming through Stanislaus National Forest, clambering over rocks and through streams swollen with spring melt-water racing down the mountainside.

A weekend plus four days was enough to awaken in me a desire to experience what the Sierra might have to offer. When an opportunity came to spend my summer in Yosemite National Park, interpreting some of its many wonders for park visitors, I jumped at the chance. Not only would I be able to live and work in the park, I would also be able to see it through the eyes of others as well as my own. My first summer in the Sierra has been spent predominantly in the Mariposa Grove of Giant Sequoias helping visitors to appreciate the uniqueness of the area and the giant trees, *Sequoiadendron giganteum*.

I suppose I have taken your advice when you wrote, "Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop off like autumn leaves." Despite the odd trying moments this has been one of my most relaxing and enjoyable summers. How can one remain angry with individuals or the world when



surrounded by such beauty as found in the Sierra? How can one not feel rejuvenated?

This year it is anticipated that three million people will visit Yosemite. With numbers so high it is unreasonable to expect that Yosemite's frontcountry, and even parts of the backcountry, can seem as tranquil and pristine as they must have seemed to you. And yet, one can still find places and moments when the demands of the world seem miles and eons away: stargazing from Glacier Point, resting atop domes at Tuolumne Meadows, drinking in the solace beneath the sequoias.

Just as the Sierra and Yosemite I know are quite different from the Sierra and Yosemite you knew, a visitor to this area 100 years from today will not find what I have found. There will probably be more visitors than today, their demands being reflected in still more numerous and diversified visitor services. The changes of the past 100 years have been dramatic and those of the next 100 years may be even more so. But Mr. Muir, remember that the more things change the more they stay the same.—The conflicts over Hetch Hetchy continue. This time the question is whether or not to drain the reservoir and dismantle the O'Shaughnessy Dam, thereby opening Hetch Hetchy Valley once more.

Through your words and actions you have given others the inspiration to continue to champion your cause for the preserva-

## YA's New Book a Treat for Collectors

*Such A Landscape!*, Yosemite Association's fine, new publication is now available. A cooperative undertaking with the Sequoia Natural History Association, *Such A Landscape!* is a richly produced volume in a limited edition of 500 copies, numbered and signed by the author.

This handsome book compiles the writings of William Brewer from the summer of 1864. During that period Brewer led a California Geological Survey party on the first exploration of many areas of the Sierra Nevada including what would later be Yosemite, Sequoia and Kings Canyon National Parks. A good quantity of Brewer's narrative has never be-

tion and perpetuation of significant wild areas. For this I thank you. Despite the many changes in the Yosemite you knew, it is still a beautiful treasure to be shared with all the populations of the world. I am glad to have been part of those who have experienced its wonders first hand.

Gina Bernabei  
Yosemite Association Intern,  
Summer 1987.

## Small Donations Welcomed

As a high school teacher (geography and earth science) with an extremely limited income, I am so delighted and, indeed, grateful

## 1988 Grants from YA

The Yosemite Association will be considering and funding grant requests for 1988. Grant proposals for undertakings that are interpretive, educational, environmental, historical, cultural, scientific or artistic in nature and relative to Yosemite National Park will be accepted through April 1st, 1988. Awards will be announced by May 1st, 1988. For further information contact the Association (see back cover).

fore been published. Complementing the text are 40 remarkable, large format, black and white photographs by William Alsup, a San Francisco attorney who edited Brewer's writings and prepared the introduction. The book features end paper maps of the Brewer party route.

*Such A Landscape!* is truly an elegant production in the handmade tradition of the Private Press. Designed and produced by Susan Acker, it was printed letterpress on archive quality paper at The Feathered Serpent Press in San Rafael. The casebound, 124 page book measures 10½ by 11½ and features the masterful duotone printing of Phelps-Schaefer Litho-Graphics, Inc.

While over half of the edition was sold by pre-publication subscription, copies of *Such A Landscape!* are still available. Members of the Yosemite Association are entitled to a 15% discount off the \$125.00 price. If you'd like your own copy, use the form on p. 22.

that the Yosemite Fund decided to solicit donations in amounts small enough for me to afford. I am also pleased that even such a small donation will be acknowledged with an aesthetically and artistically interesting and tasteful poster which can be placed in view of hundreds of students.

Thank you for considering those of us who want desperately to help but lack the economic resources of wealthy individuals and corporate sponsors. I wish there were other ways in which I could be additionally helpful.

Enid Burgess  
Payson, Arizona

# How Much is a Yosemite Meadow Worth?

Richard Hadley

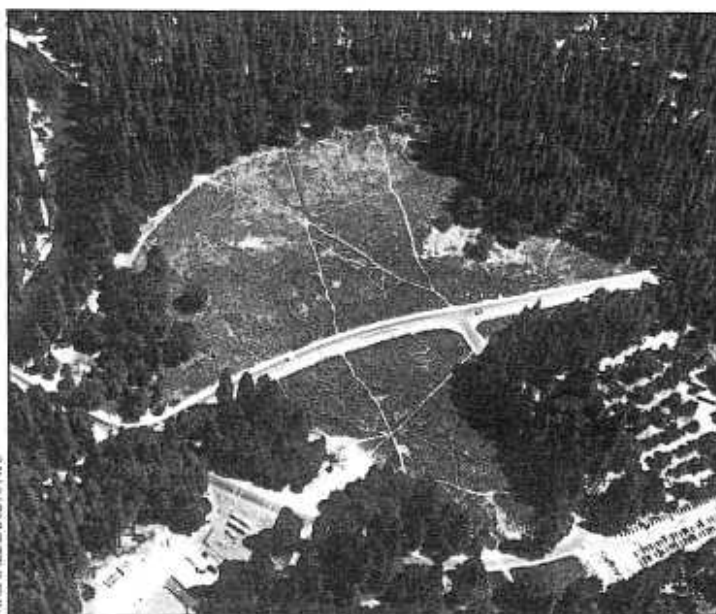
**Atop a black oak** a Red-tailed Hawk sits in the morning sun just up over the shoulder of Half Dome. Meadow Larks who have recently migrated over the Sierra Nevada crest from the eastern deserts feed nervously on grass seeds in the meadow below the oak. A few deer climb to their feet from the frosty fall grasses to gorge on acorns. Out of the pine forest bursts a Cooper's Hawk—swooping low at the Meadow Larks until they flush, then with a rush of speed and a puff of falling feathers it snatches a sluggish Lark and vanishes into the forest with breakfast, leaving behind an intertwined web of questions?

Where had the Cooper's Hawk come from? How many more live in the valley's forest? How often do they hunt these meadows? How many other animals depend on these meadows? Have we humans affected these animals and their ways of life?

In the next few weeks I watched the Cooper's Hawk return twice to hunt in Stoneman Meadow in the eastern end of Yosemite Valley. I saw the Red-tailed Hawk gracefully kill a mouse there. During a warm afternoon I watched a Black Bear sow with two cubs use the meadow to stretch their legs and romp amongst several gaping, camera-clicking park visitors.

Such wildlife activity is a welcome sight in Yosemite Valley, which, by park managers is better known for its wild human activity. But this wildlife should be viewed in light of the fact that Stoneman Meadow is the most abused and least pristine of Yosemite's meadows. Though still productive in an ecological sense, much of its integrity as a functioning meadow habitat has been lost.

By day the animals retreat from its openness as humans by the hundreds, perhaps thousands, utilize it for picture-taking, for walks, for picnics, as a thoroughfare from the valley's largest



MICHAEL DIXON/ANP

campground to concession facilities, and, most recently, as a mountain-bikers fun track. Historically Stoneman Meadow was the site of Stoneman House (an early hotel since burned) a plowed pasture, a camping and parking area, a grandstand for viewing the Glacier Point firefall, and in July of 1970 the only setting in a National Park for a riot.

By July of 1987 aerial photographs revealed Stoneman Meadow to be bisected by twenty seven substantial trails totaling 1.5 miles of tread. A close-up look revealed extensive de-vegetation and soils compacted to the density of cement. These compacted soils had lost their ability to hold water and nutrients, and possibly restricted the natural pulse of water through the meadow. The meadow's productivity had been reduced and the composition of plant species altered. The encroachment of adjacent forests had been accelerated due to the drying of the meadow and the exclusion of natural fires. In short, the meadow was getting smaller and native meadow species were diminishing.

Since 1866 the meadows of Yosemite Valley have been reduced

from 750 acres to less than 400. Behind these numbers is the reality that valuable wildlife habitat and scenic vistas have been and may continue to be lost. While some of this loss is due to natural processes, much can be attributed to human manipulation of Yosemite Valley's environment.

In an attempt to allay the tragedy of the meadows, a meadow restoration project was initiated in October of 1987. Funded by a grant from Chevron USA, through the Yosemite Fund, and implemented by the San Francisco Conservation Corps under direction of National Park Service staff, the meadow restoration project was a pilot. It was designed to evaluate and produce methods for montane meadow restoration through trail construction and definition, visitor education and assisted revegetation.

Step one was to divert excessive pedestrian use out of the meadow by constructing a temporary two foot tall redwood post/rope fence around the meadow's periphery and along one major trail which bisects the meadow's eastern margin. This later route has been selected as a compromise to allow concentrated access across the meadow

The network of trails that has developed in the meadow.

so as not to infringe entirely upon the park visitors' opportunities to enjoy Stoneman Meadow.

This bisecting trail will be closely monitored through measurements of its dimensions and photo-documentation to determine the environmental effects of concentrated use on a meadow trail. Should the present trail result in unacceptable damage to the meadow, other surfacing options may be implemented on an experimental basis. Other surfaces considered for this route are rock causeway, asphalt and an elevated boardwalk.

Maintained periphery trails were further delineated by placement of boulders along the trail margins and construction of rock-faced culverts in wet areas. Interpretive signs were installed on fence posts at critical points to protect revegetated trails and alert visitors to the most direct routes to major destinations. Immediately following installation of these diversion measures, use of closed trails greatly declined. Less than ten individuals were observed traversing the meadow on closed trails during a three-week period, while maintained trails were utilized extensively during this same period.

Step two was assisted revegetation of excess trails. The trails of Stoneman Meadow would revegetate themselves if given rest, however studies indicate that this is a slow process requiring perhaps 25 to 50 years for complete restoration. Soils in the major treads were so compacted, that their capacity for holding organic matter, nutrients and moisture had been severely reduced, producing a hostile environment for encroaching plants and naturally dispersed seeds.

To improve soil conditions for plants, soils within the barren treads were scarified or turned over. Where meadow sod had been compacted but not destroyed, no treatment was

*Richard Hadley is a revegetation specialist who worked in the Tuolumne Meadows area for the N.P.S. during the summer of 1987. The Stoneman Meadow project benefitted greatly from his expertise and guidance.*

San Francisco Conservation Corps crew member surveying his work.



CHRIS JENSEN

Loosening compacted soils on trails to allow transplantings.



CHRIS JENSEN

applied. Given rest, these areas should respond with the on-set of snowmelt and spring rains. Several inches of new growth, a result of autumn rains, has already been observed.

To speed the revegetation process, aerated trail treads were planted with plugs collected from adjacent undisturbed meadow areas. Holes created from digging the plugs were back-filled with excess decompacted soils from the excavated trails. Grass litter was raked over the back-filled holes which should revegetate within a few years.

Collected plugs were placed in the treads at a level even with the surrounding meadow, watered, and their rootballs firmly planted in place. Finally the entire tread was rewatered and covered with raked grass mulch. Seeds incorporated in the mulch should contribute to the recolonization process. As with the surrounding compacted sod, plugs have produced new vegetative growth as a result of recent rains.

In the effort to protect native plant species of our National Parks, often the only cost-effective and feasible method is to avoid introduction. For Stoneman Meadow the case was lost one

hundred years ago behind the plowing of natives and the planting of non-natives. Except in the case of a few alien species, naturalized non-natives are here until the glaciers round Washington Column and Half Dome again.

Native plants were not entirely ignored in planting prescriptions. Where, by happenstance, a trail bisected a relatively pure stand of native plants, natives were targeted. At the mouth of the largest trails thorny western raspberry (*Rubus leucodermis*) was transplanted as an additional deterrent to human use. In addition to its hiker-repellent thorns, western raspberry, a native to Yosemite Valley found in abundance near the meadow, offers an attractive hedgerow important to passerine birds and other wildlife.

The cumulative impact of the restoration work completed this October has been a long-awaited reprieve from years of meadow abuse. Moreover the meadow restoration project is a productive, positive step in management of Yosemite Valley's resources. It represents a step toward what might be called "resources-first management." In a park with 3 million visitors annually, this is, indeed, radical and progressive.



MICHAEL DIXON/INPS

SFCC crew portrait with their Awards of Merit in appreciation of the hard work.

But this is only the beginning of the Stoneman Meadow project. We have given the meadow the chance to restore itself. The ultimate success of the restoration will depend upon the effectiveness of the signs, the temporary fence, the maintained trails and the park staff in keeping visitors off this winter and particularly next spring.

An additional, unexpected benefit of the Stoneman Meadow project was the experience which the members of the San Francisco Conservation Corps took away from their work in Yosemite. Some had come from troubled backgrounds. For all, the trip to Yosemite was an opportunity to escape the inner city and gain a perspective and a new direction. For several, it may have permanently changed their lives.

For the National Park Service staff, the project provided a unique opportunity to bring many divisions together while enthusiastically working toward a noble goal. While it would be impossible to thank everyone involved, special credit should be

given to the interpretation division, trails and roads maintenance, the sign and carpentry shops, and the forestry crew.

At most, we have preserved a part of the meadow's ecological and aesthetic integrity. At very least, we have invested \$75,000 to evaluate the management actions taken this fall and to develop recommendations for a more comprehensive meadow management plan in the future. This may seem an expensive experiment, but how much is a Yosemite Valley meadow worth?

## YA Open House

**The second annual "Yosemite Spring Open House"** for members of the Yosemite Association is scheduled for Saturday, April 16, 1988. Once again a full schedule of talks and programs will be presented providing a "behind the scenes" look at park operations for Y.A. members only. Accommodations have been set aside for participants, and members will be receiving more information and reservation forms in the mail soon.

# A Place We Never Knew

Stephen J. Botti

**We will never know** what the Indians thought about the valley. For centuries it was a part of their lives, their legends, their imaginations. It was a home, the focal point of a world that radiated up into the high peaks and meadows of the Sierra, and down into the low canyons and woodlands. Under their guardianship it remained mostly as nature had created it, only lightly touched by human modifications.

Cliffs rose several thousand feet on each side of the valley and also plunged several hundred feet almost vertically beneath the deep, rich sediments deposited first by glaciers and later by the river. Beneath the cliffs, open meadows and black oak woodlands stretched along the entire six mile length of the valley and from wall to wall. Deer were abundant, feeding on acorns and shrubs along the warm north side of the valley.

The oak woodlands attracted black bears and provided a staple food for the Indians who hunted the deer. Mountain lions also hunted the deer by hiding in the oaks and occasional conifer woodlands. Sometimes grizzly bears would wander into the valley from the Sierra foothills following the river canyon. Whether hiding among the willows or foraging in the meadows, the presence of the great bear was part of the mystery of this narrow glaciated cleft in the granite range.

There were also predators in the air, launching from the cliffs and riding thermals along the canyonsides. Golden eagles nested along the valley rim, and peregrine falcons engaged in aerial attacks above the meadows. During the dry summer months towering columns of smoke from forest fires rose above the cliffs and drifted eastward toward the Sierra crest. Sometimes lightning fires would race up canyon from the chaparral and sweep across the valley, pruning the oaks and driving the conif-

ers back from the meadows. Indians set many more fires to aid in hunting game animals and in foraging for acorns and meadow plants.

## 700 Species of Flora

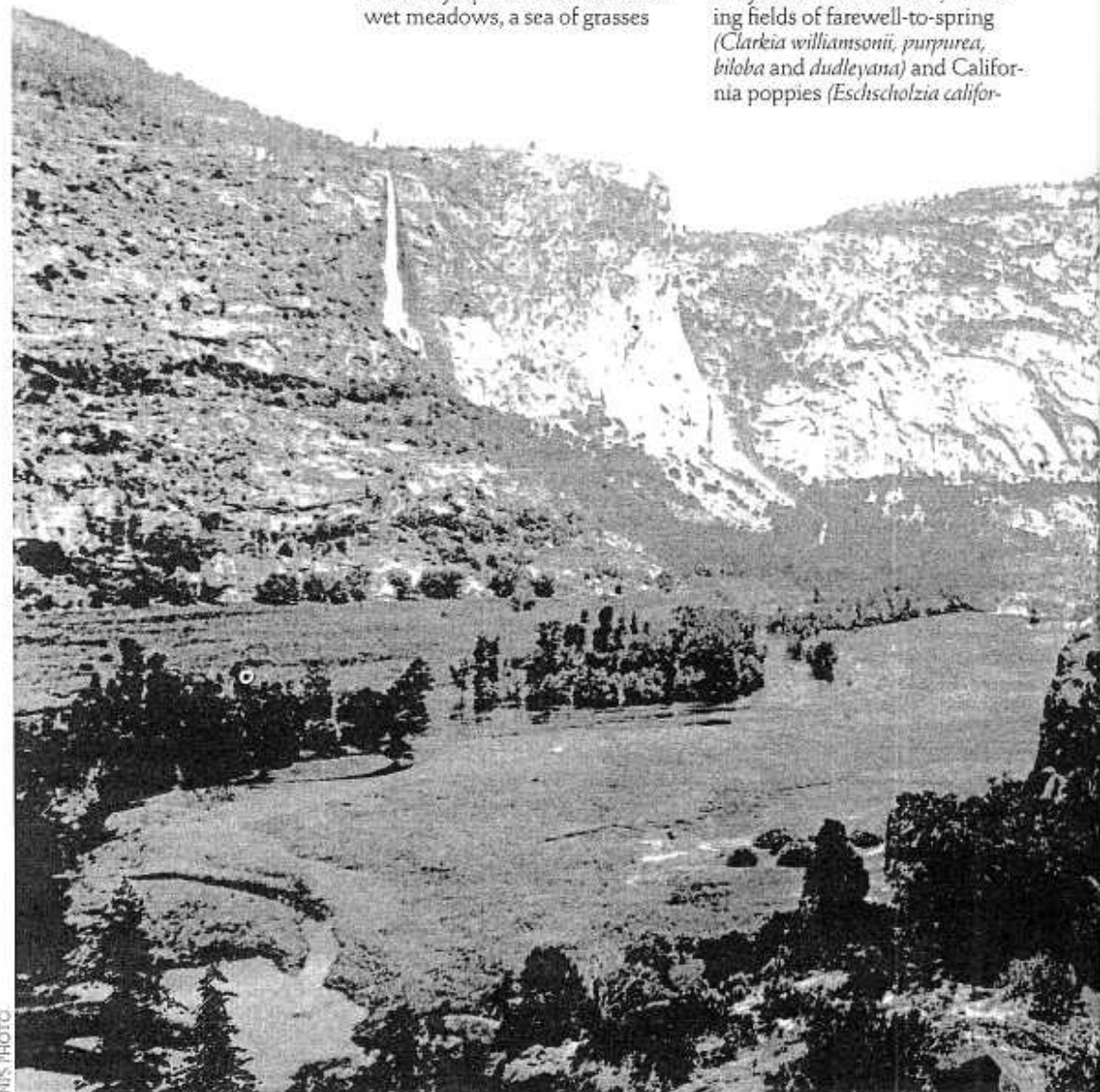
But there were more wonders in this valley. Almost 700 species of plants inhabited the five square mile valley, by far one of the richest assemblages of plants in California and half the number of species found in the soon-to-be 1,200 square-mile national park

surrounding the valley. Within its compact confines it offered a plethora of habitats including dry foothill woodland, wet and dry meadows, ephemeral lakes, marshes, black oak and conifer woodlands, springs, seeps, rocky outcrops, grassy benches, cliff crevices, and high montane forests.

Although the wildflower display was not as spectacular as in the lower foothills, the diversity was so remarkable that it was possible to walk for hours across the valley and see new species with almost every step. In places the valley opened into extensive wet meadows, a sea of grasses

and sedges waist deep. Showy flowers were scarce here, but giant tussocks of deergrass (*Muhlenbergia rigens*) and rough sedge (*Carex senta*) needed no color to announce their presence.

In between the tussocks were towering culms of blue-joint grass (*Calamagrostis canadensis*) and the delicate tall manna-grass (*Glyceria elata*). The meadow edges were carpeted purple with lupine fields (*Lupinus grayi*, *confertus* and *vallicola*). Rocky and sandy areas and grassy benches along the north side of the valley were filled with a myriad of wildflowers, including fields of farewell-to-spring (*Clarkia williamsonii*, *purpurea*, *biloba* and *dudleyana*) and California poppies (*Eschscholzia califor-*



NIS PHOTO



*nica*). Despite the lupine and Clarkia fields, and the waving sea of grasses and sedges, a different group of less obvious plants were actually preeminent here.

Monkeyflowers reached their greatest development in this valley, with at least 20 different species spreading their bright purple or red faces across grassy benches, filling seeps and lining rock crevices. The rare *Mimulus pulchellus* covered dried vernal pools, and dry gravel flats were home to the most remarkable of all, *Mimulus filicaulis*.

Indians, cliffs, meadows, and bears were all part of the valley's grandeur, but the river dominated the landscape. During spring floods the river would spill over

its banks onto the meadows cutting new channels through them and transforming them into lakes. About half way along the north side of the valley a waterfall roared over the cliff, throwing spray across the valley to the south cliff. Somewhat farther east along the north wall another stream descended on a more gentle gradient, providing a convenient path for Indians to ascend into the high meadows above the valley. Along the river were low willows and groves of tall cottonwoods and big-leaf maples.

In the fall the maples, cottonwoods, willows, and especially

the oaks would blaze with yellow, rising out of the golden sedges and meadow grasses. What a valley of contrasts it was then; white cliffs, green river pools, blue sky, golden maples, meadows and oaks punctuated by green conifer spikers in sharp relief against the dark talus slopes.

### The Other Valley

This was not Yosemite, now suffering under the adulation of three million visitors each year. This was the other valley; the one we never knew, the one that now lives only in our imaginations. We know it only from a few photographs and brief descriptions. The Indians are gone from the valley now. So are the meadows, bears, oaks and wildflower gardens. Only the cliffs and waterfalls remain, and when the reservoir is drawn down, we see a brutal landscape of stumps, mud flats and clouds of dust rising above a bleached line of death at the high water mark.

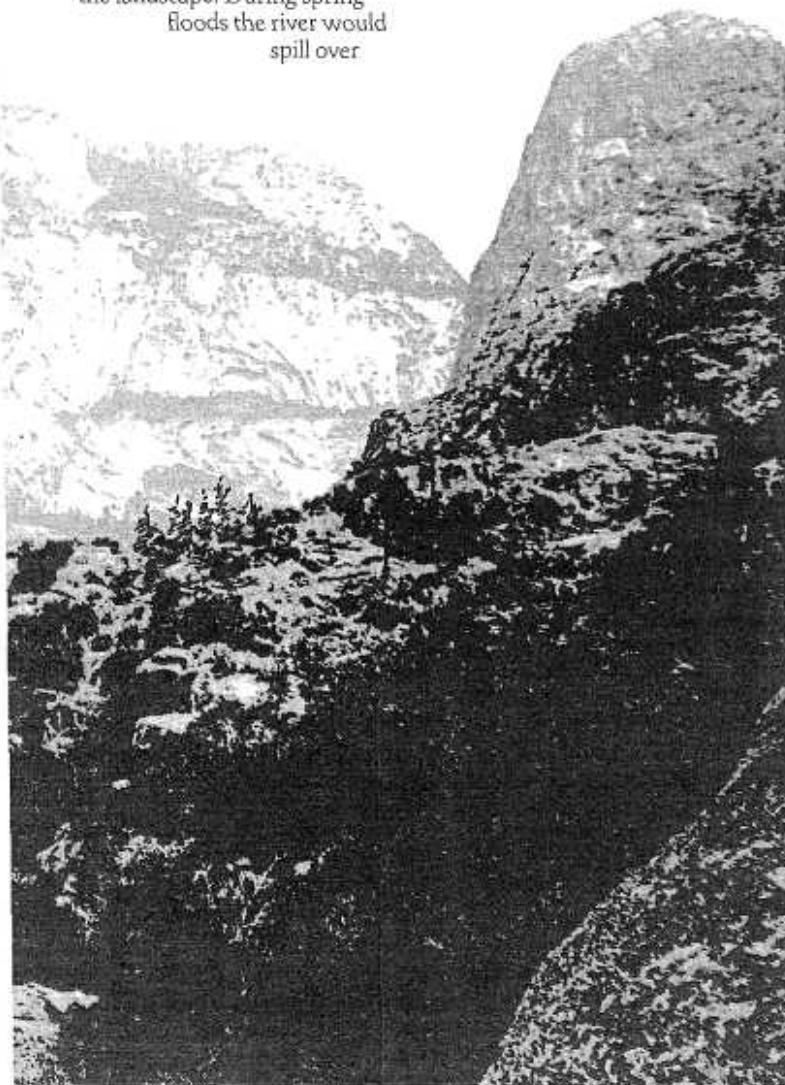
Before it was destroyed Hetch Hetchy was visited by only 300-400 people each year. Detailed accounts of its flora and fauna are sadly lacking. There are no scientific studies, no environmental impact statements to tell us what was lost when the valley was flooded. We can now only look to similar habitats in nearby valleys along the Tuolumne River and its tributaries or step into the early photographs with hand lenses ready to explore every crevice and shadow. Many photographs of Hetch Hetchy offer tantalizing glimpses of plant communities, but the true nature of the hidden wonders contained within them is now lost forever.

Or are they? Could Hetch Hetchy live again?

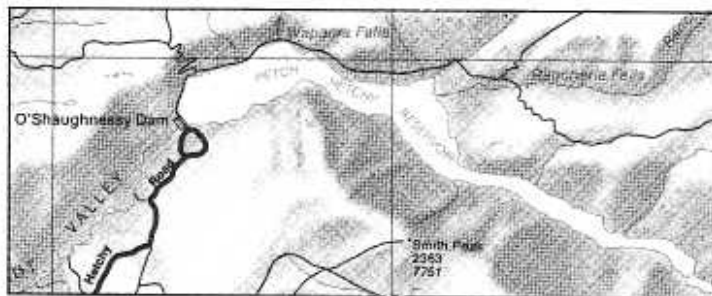
If the dams were removed would we ever again walk through wildflower fields and feel the spray of Wapama drifting

through the oak woodlands? No, we would never see it as the Indians saw it. But our children's children would see it. The restoration would be long and difficult, and would require as much dedication as the construction of the dam. The removal of the dam would be only the beginning. Perhaps the dam could be breached only at the base or in the center, but to truly restore the valley would require the complete removal of the dam down to the original level of the river bed. At that point the first major problem would be encountered.

The dam site was excavated 118 feet below the river bed to



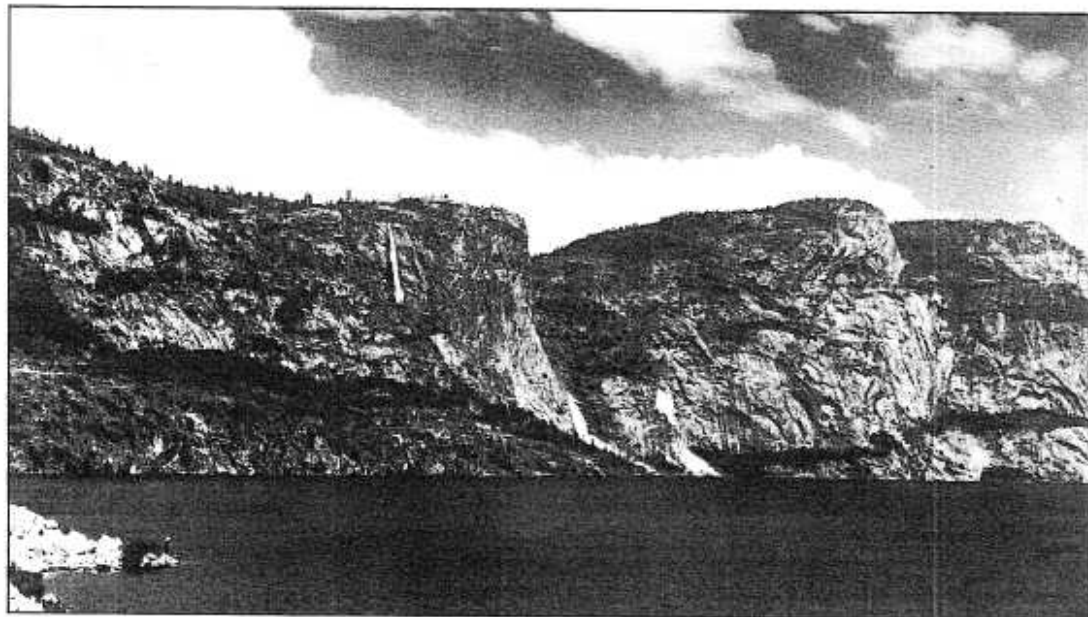
Hetch Hetchy reservoir before its inundation. Evidence of its existence would remain in the form of water stains for decades.



prepare a suitable footing for the dam (the river was diverted through a tunnel on the south side of the valley while this excavation was in progress). The removal of the lower 118 feet of the dam would vastly change the river gradient at the narrow lower end of the valley and would probably lead to rapid erosion of the meadows in the lower chamber of Hetch Hetchy. Some vestige of the dam would have to remain in order to allow restoration of the valley as it originally appeared.

Then there is the problem of mitigating the mechanical destruction in the valley. A half-mile long swath of material excavated from the dam site was laid across the lower meadow and much of this rock and debris undoubtedly remains on what was rich meadow alluvium along the river banks. A rock crusher plant was built on the north side of the valley to provide material for the concrete work on the dam. A railroad skirted the north side of the immense rock and debris pile to service a gravel pit near the base of Wapama Falls and a sand pit on the valley floor near the confluence of Rancheria Creek. The banks of the sand excavation rose 30 feet for a considerable distance along the Tuolumne River. To simply drain the reservoir would expose these and other highly visible scars.

During the 1977 drought I walked the dry upper valley above LeConte Point. It was easy to imagine the valley in its primeval grandeur. Open areas that had been meadows were still clearly visible, bordered by immense stumps of fallen oaks. Axe cuts were still evident, and some of the axes and wedges were still laying where they had been left 55 years earlier. The river ran in its original channel, bordered by many more oak stumps. The oaks, grasses and sedges along the high water mark seemed only in mild retreat, ready to quickly reclaim their lost habitats on the valley floor. Very little sedimentation had occurred in the 54 years



MPS PHOTO

since the valley was flooded.

Although the fluctuating reservoir level would have inhibited the formation of a delta at the upper end of the reservoir, it was surprising to see only a few banks of sand and sediment through the upper three miles of exposed valley. The sediment load of the Tuolumne River, descending from a watershed comprised largely of thin soils and exposed glaciated rock, is quite low. If the valley were exposed today we would find that the stumps left throughout the valley from the pre-dam construction clearing would not be buried by sediments.

### The Early Restoration Years

Immediately after draining the reservoir the valley would present a ghostly, desolate appearance, but some of the shallow scars would be hidden by sediments and the river would still be mostly within its original channel. The first phase of restoration would require removal of much of the rock and debris left behind from the dam construction. Equipment would have to be driven into the valley to restore the original contours in sand and rock borrow pit areas. Finally all traces of railroads, buildings, con-

struction equipment and other historical artifacts would be removed (or perhaps preserved for historical interpretation) and the road grades obliterated.

Early vegetation succession would be rapid. Within the first two years most of the valley would be covered by grasses, sedges and other herbaceous plants. Some sediments would be eroded from the higher rocky areas, but most would become just another layer of alluvium similar to that deposited by ancient floods. Unfortunately, many of the early successional plants would not be native to Hetch Hetchy.

Annual Mediterranean grasses so common throughout California would quickly invade the valley. Among the most prominent would be soft cheat (*Bromus mollis*), rippgut (*Bromus diandrus*), downy brome (*Bromus tectorum*), Kentucky bluegrass (*Poa pratensis*), redtop (*Agrostis alba*), and wild oats (*Avena barbata*). Other non-native forbs such as filaree (*Erodium spp.*), mullein (*Verbascum thapsus*), and star thistle (*Centaurea spp.*) would also quickly become established. But almost all the species native to the valley are still present along the canyonsides

above the valley or in nearby areas from which they could easily reinvade former habitat.

Vast amounts of seeds would be blown into Hetch Hetchy from surrounding higher areas, and many more would wash downstream along the river and its tributaries. The reappearance of the Hetch Hetchy monkey-flower, *Mimulus filicaulis*, would signal the beginning of one of the most ambitious restoration projects in the history of conservation. And appropriately, it would be one the pioneers leading the procession of hundreds of species driven from the valley in 1923.

The native grasses would never regain their previous status in Hetch Hetchy, but the sedges would be able to achieve dominance over most of the non-natives in all the wet meadows. The history of the Yosemite Valley meadows provides strong support to this theory. Most of the Yosemite Valley meadows were plowed and farmed in the 1800s and early 1900s. Many non-native grasses were deliberately planted and harvested as hay for livestock. Despite this great disturbance and the deliberate effort to suppress native sedges, the sedges have reclaimed their previous

*The grand oak woodlands visible in the old photographs were probably somewhat of an artifact of indian cultural practices such as prescribed burning. . . .*



NPS PHOTO

habitat almost to the exclusion of the non-natives.

Fortunately many of the Hetch Hetchy meadows were quite wet and probably subject to almost annual flooding. Once the natural hydrology was reestablished the meadows would soon resemble the appearance recorded by early photographers.

Trees would become established throughout Hetch Hetchy more slowly than herbaceous plants due to slower seed dispersal from surrounding areas. Dense stands of conifer seedlings would invade the valley edges within two years if precipitation was at least average. Conifer thickets would continue to invade deeper into the valley in subsequent years due to the open sunny conditions. These thickets would persist for many years unless reduced by the Park Service. Black oak acorns would be washed into Hetch Hetchy from Tiltill Valley and the canyonsides and many would be cached by animals. Many black oaks would soon become established along the river banks and in rocky areas. Canyon live oaks would easily descend from the canyonsides and reinvade rocky areas along the valley edges. Willow and cotton-

Hetch Hetchy Valley as it appears today, contained by the sheer face of the O'Shaughnessy Dam which is anchored 80 feet below grade. Below, the aerial view of a drained Lake Eleanor shown how Hetch Hetchy would look at the beginning of any restoration.

wood seeds are easily dispersed by the wind and would soon sprout along the river banks.

Within ten years the general pattern of vegetation communities would become evident. Trees would grow rapidly and

some would be 15 feet high. Meadows would be as verdant as they were before the valley was flooded. Stumps would still be visible, and the vegetation would appear similar to an early successional stage following a catastrophic wildfire. The high water mark on the cliffs from the former reservoirs would still be much in evidence.

**One Century Later . . .**

In one hundred years ponderosa pines and incense cedars would stand 150 feet high, and the oak woodlands would be starting to mature. There would still be far more conifers in Hetch Hetchy than during Indian times, but by this time either lightning fires or prescribed burns could play a major role in restoring the pristine forest composition.

The grand oak woodlands visible in the old photographs were probably somewhat an artifact of Indian cultural practices such as prescribed burning, and to reestablish and maintain them would require a systematic program to duplicate those cultural practices. Conifer forests would resemble those now occurring on the floodplains in Yosemite Valley. Many dense, even-aged clusters would stand in contrast to the more varied mixed-conifer forests outside Hetch Hetchy.

Additional waves of conifer invasion would continue to occur unless checked by fire. By this time the plant communities would support animal populations similar to those of Indian times, except of course the grizzly bear. All signs of the reservoir would have disappeared.

In two hundred years Hetch Hetchy would again be the grand valley it once was. Great oaks would spread over the meadows, and ponderosa pines six feet in diameter would occasionally punctuate the oak woodlands. The base of the dam would remain as the only lasting monument to the destruction of Hetch Hetchy. A few people would continue to wonder, just as we do now, whether some plant species may have been lost forever in the holocaust of flooding the valley. For them there would be a feeling that something might be missing in the grandeur of Hetch Hetchy. But all people would look with amazement at photographs of the valley as we see it today. The reservoir-filled valley would be a place they never knew.

*Stephen J. Botti is a Resource Management Specialist for the National Park Service in Yosemite. He has recently accepted a position as director of an inter-agency fire center in Boise, Idaho.*



NPS PHOTO

# The Plaque on Top of Mount Lewis

O.L. "Wally" Wallis

"... Oh, yes, and there was Washington B. Lewis. He was the first superintendent of the park and a good man he was," reminisced Dr. Carl Sharsmith during one of his daily walks in Tuolumne Meadows.

He continued: "A mighty mountain peak was named in his honor—but it was determined later that it was located just outside the park rather than just inside. A few years later, a group of admirers had a plaque prepared to be placed on the peak to properly identify the spot.

"They presented it to the park superintendent who assigned the job to a pair of old time rangers, Henry Skelton and Billy Nelson. Well, early in the morning, the two saddled their horses and took off with the thing. When the day was well spent, they returned with glowing reports that they'd completed the task. Later they even showed us a photograph of the plaque in place.

"A few years later, however, a couple of climbers reported to the park superintendent that the marker was located in the wrong place—at the base rather than on the summit of the peak! I was instructed to investigate the report.

"Sure enough, I found the marker alright at the foot of the

mountain. As I had suspected, it was located at the limit to which one could ride a horse! In those days, you see," Carl chuckled, "rangers never went anywhere they couldn't ride! So I retrieved the plaque and brought it back to headquarters," Carl concluded.

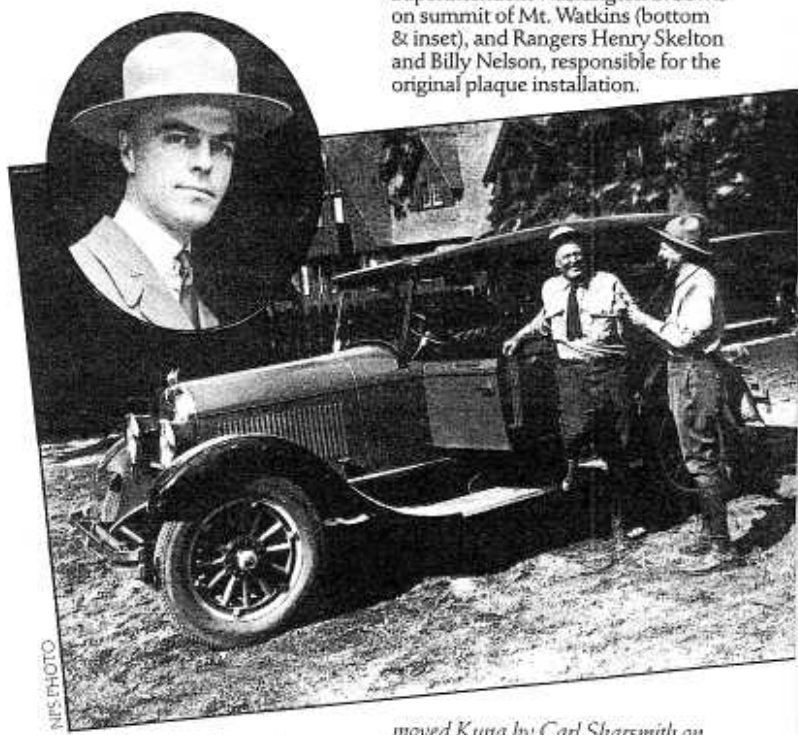
As a participant on his walk, I asked: "Carl, did the plaque ever get placed on top of the peak?"

"I don't rightly remember, Wally," Carl responded but added: "Why don't you go up and see!"

Taking up the challenge in late August, I hiked to Mono Pass, past the silver mine cabins, went over the ridge, contoured around to the east to a wide draw and ascended the slope to the peak of Mount Lewis.

Finally on top, I found the plaque mounted on a four-foot high rock cairn located on the edge of the rim. Circular in shape, the 12-inch bronze plaque bears the inscription:

MT.  
LEWIS  
12,500 FEET  
NAMED IN MEMORY OF  
W. B. LEWIS  
SUPERINTENDENT  
YOSEMITE  
NATIONAL PARK  
1916-1927



Superintendent Washington B. Lewis on summit of Mt. Watkins (bottom & inset), and Rangers Henry Skelton and Billy Nelson, responsible for the original plaque installation.

After photographing the site, I investigated the contents of a white coffee can secreted amongst the rocks of the cairn. Included in the notes that dated back only to 1983, I found a message that revealed the story of the replacement of the plaque. It read:

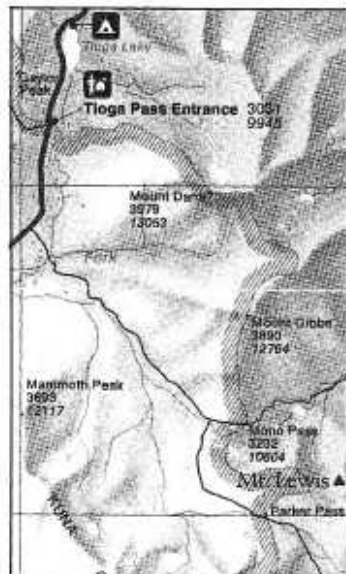
7/14/84 Bob & Dot Lingley, Oakdale

*Lingleys have seen the plaque before but on Kuna Peak (1952); some one had made a slight error! Nice to see it in right place at last. Note: Plaque re-*

*moved Kuna by Carl Sharsmith on ranger hike 1952.*

Upon my return, I phoned Carl at the hospital in Modesto to report my "discovery." With humor in his voice, he retorted: "Ha, so they gave me the credit for putting the marker in its rightful place up there!"

Wally Wallis is a retired NPS employee who held jobs ranging from ranger naturalist in Yosemite to Chief Aquatic Scientist for the park system. For the past four summers he has worked as a volunteer at Tuolumne Meadows.





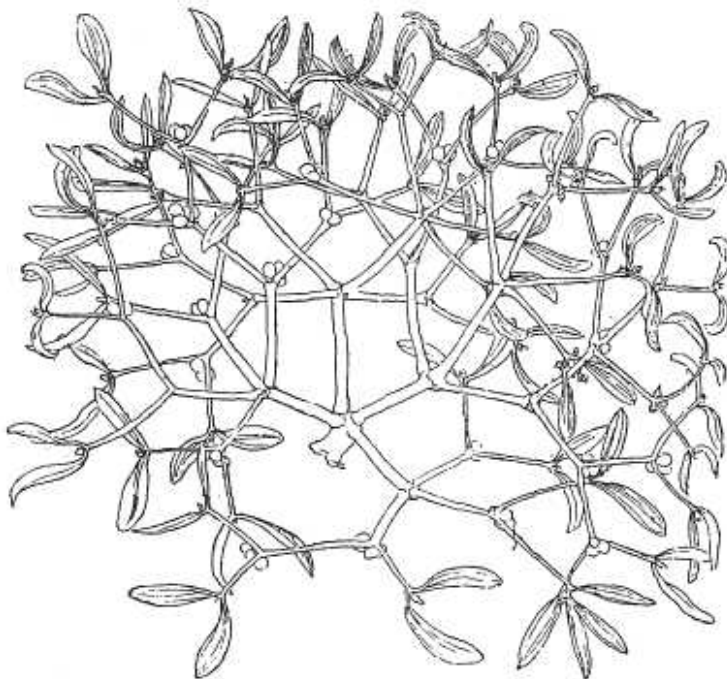
# The Relationship Between Mistletoe and Fire

Kim Hamilton

**Mistletoe tends to kindle** a few flames during the holiday season, but mistletoe abounds in Yosemite and the park hasn't burned down yet. The mistletoe we associate with winter holidays (*Phoradendron*, or "true mistletoe") grows mostly on hardwoods and photosynthesizes for itself, sucking water and some nutrients from its host. However, another genus of mistletoe (*Arceuthobium*, or "dwarf mistletoe") parasitizes only conifers and photosynthesizes very little. Thus the small aerial shoots of *Arceuthobium* function mainly for reproduction, and the major indication of mistletoe infection on pine trees is the large, dense "witches' broom." Responding to the parasitic plant inside its tissues, branches form sprays of twigs radiating from a swollen limb. Over the years they begin to look like the long, droopy twigs of a broom.

Fire can either encourage or discourage mistletoe growth depending on the scope and intensity of the burn, and the mistletoe itself promotes forest fires. An incomplete burn can leave islands of infected trees throughout the forest. Young trees of pioneer species (such as lodgepole) are often more susceptible to dwarf mistletoe infection than climax community trees. Thus frequent low to medium heat fires may actually be good for mistletoe because some infected trees remain nearby to infect invading species. A climax tree species more resistant to mistletoe would be unlikely to develop in an area swept by frequent low intensity fires.

Fire halts mistletoe growth when relatively complete burns remove all the mistletoe. The heavy seeds of the mistletoe can spread 100 feet from a tall tree, and birds also disperse seeds, but dwarf mistletoe progress through stands is limited to a rate of one to two feet per year (due to the low rate of infection of seeds deposited on trees). Fire is the major controlling factor of dwarf mistletoe.



major controlling factor of dwarf mistletoe.

While fire influences mistletoe growth, mistletoe affects fire behavior. The large witches' brooms are full of resin and have a large amount of dense compression wood, which makes them slow to decompose on the forest floor. A stand of trees heavily infected by mistletoe will include: dead brooms knocked down by snow lying below trees, dead trees, resin-infiltrated stem cankers, stunted trees, spike tops, and witches' brooms on live trees. Brooms on live trees trap fallen needles that add fine kindling to the vertical ladder of fuel, thus increasing the chance of a ground fire rising and burning out individual tree crowns.

One man reported spot fires caused predominantly by large witches' brooms in a mistletoe infected stand of Douglas fir: "Flaming witches' brooms two to three feet in diameter were carried aloft in the convection column, fell, and caused spot fires from six to eight chains outside the control lines. The dense, heavy witches' brooms 'exploded' on impact with the ground and almost instantly spread flames over a 12 to 15 foot circular area. In addition, some burning brooms rolled down hillsides after landing, caus-

ing further fire spread."

Once mistletoe is present in a species of tree, it is unlikely that such tree will develop a genetic resistance to the parasite. This hypothesis explains why Ponderosa Pines apparently have not developed a natural resistance to dwarf mistletoe. Ponderosa Pine forests historically have frequent low to medium heat fires. These fires, if they come across a site of heavy mistletoe infection, burn much more intensely than usual because of the increased fuel. These hot conflagrations destroy not only trees infected by mistletoe but also the healthier trees in the same stand which might have experienced selection pressure for some genetic resistance to mistletoe. Trees outside mistletoe infection centers are usually healthy but have not experienced selection pressure against mistletoe. Seeds coming from these trees are established in the burned-out section, and the young trees will be susceptible to mistletoe.

Kim Hamilton worked at Glacier Point as an interpretive intern for the Yosemite Association during the summer of 1987.

## Results of YA Board Election

**In the annual election** this December, incumbent Anne Schneider and Richard Reitnauer were both elected to the Yosemite Association board for six-year terms. Long time board member Dr. Harvey "Dusty" Rhodes was defeated. The final vote totals were Schneider, 622; Reitnauer, 455; and Rhodes, 435.

Anne Schneider was named to the board in 1986 and has contributed her legal expertise to Association Affairs since that time. A member of the "Grants and NPS Support Committee," Mrs. Schneider is married to building contractor Bob, has two children, lives in Davis, and practices law in Sacramento. Her strongest interests are in water and natural resources law and in YA's publishing program.

Formerly Sales Manager for the Association, Richard Reitnauer is presently pursuing private business interests. His twelve years of YA employment have given Mr. Reitnauer a good understanding of how the organization functions. Residents of Mariposa, Reitnauer and his wife Chris are the parents of two children. His experience in the sales operation should prove beneficial to the Association.

Leaving the board after some 14 years of service is Dusty Rhodes. As the board's Vice-Chairman and Chairman of YA's Publications Committee, Dr. Rhodes contributed significantly to many activities and programs of the Association. His strong leadership and experienced perspective will be missed. The Yosemite Association is indebted to Dusty Rhodes for his exemplary service and extends its deep appreciation and sincere thanks to him and his wife, Pat.

# Bolts from the Blue

David Balogh

**What natural phenomenon** produces nitrogen fixed ( $\text{NO}_x$ ) fertilizer from "thin air," occurs continuously over 1,000 times per second in the earth's atmosphere, generates more energy than a power plant, and kills more people in a year than any other atmospheric event? It's lightning.

Second only to tornadoes as a source of amazing eye-witness accounts, lightning has long fascinated primitive man. Most people know about Ben Franklin's famous kite and key experiment, yet at least one person has died trying to reproduce Franklin's work. Bad luck? Fate? Who knows. In medieval Europe, an approaching thunderstorm was announced to the village by ringing the church bell, until doing so was made illegal because lightning would hit the high steeple bell, and find the fastest path to ground via the bell rope and, alas, the hapless bell ringer. Later and occasionally, the basement of the church was used to house the village's black powder. You can guess the rest of that story (remember that Ben Franklin invented the lightning rod much later in the 1700's).

Lightning is produced in the atmosphere by rapidly moving up and down drafts of air, and enhanced by the freezing process within cumulo-nimbus clouds. Although the exact processes are not clearly understood, measurements which have been made of the resultant discharges are quite impressive. Dry air is a good insulator (non-conductor of electricity), but if the electrical pressure (voltage) is sufficient—30,000 volts/centimeter in dry air, 10,000 volts/centimeter in moist air—the air molecules can be ionized and produce an electrically conductive path. The result is a discharge of direct current electrical energy averaging about 30 million volts/100,000 amperes for a fraction of a second. In comparison, household service (typical) is 110V/20 amperes in one circuit.



NPS PHOTO

A cloud which produces lightning is made of potentially extremely unstable air—air which is humid and has a lot of latent heat. As the cloud grows the top seems to "boil" upward and may do so until it "tops out" in the troposphere (approximately 40,000 ft at Yosemite's latitude in the summer). The cloud top then spreads out into the familiar "anvil" of cirrus. The center top of the cloud may "overshoot" the anvil, but this phenomenon is difficult to see from the earth's surface.

A separation of charges occurs as the cloud grows and seems to be enhanced as the cloud reaches "maturity" when both updrafts and downdrafts occur. The top of the cloud becomes more positively charged, the bottom more negative. The earth's surface is

The view from Glacier Point during a lightning storm is impressive, but the handrails are extremely hazardous.

more positive, in relation to the cloud base. Whether or not a discharge will be found within a cloud, between clouds, or from cloud to ground is determined by the ease of air ionization.

## Ground Strikes

Most (about 70%) of lightning discharges are within a cloud (sheet lightning) or between clouds, but the other 30% strike the earth's surface. These ground strikes are the subject of this article.

As a park ranger, with 15 summers of experience at Glacier Point in Yosemite, I have had numerous experiences with lightning. Unfortunately so have some

of the park visitors, sometimes with fatal results. Many summer afternoons provide a light show vying with the best July 4th fireworks display. Most of these discharges are far enough away from Glacier Point to be safely viewed. (Rule of thumb—see the lightning, count the number of seconds until you *hear* the thunder which is the sound produced by expansion of the super heated air. Sound travels about 1/5 mile/second. Therefore for every 5 seconds between shock and thunder, the storm is 1 mile from the observer).

As the time difference decreases, the naturalist's anxiety increases. By the time peoples' hair stands on end, and the metal railing starts to buzz we have cleared Glacier Point of visitors for their own safety. Doing so is *not* easy. The safest place to be is in a car or bus, where the visitors are shielded by the metal of the vehicle. Many visitors, some of whom have come a great distance, are reluctant to leave for the parking lot. One visitor (6'5", 250 lb) did not heed the ranger's (5'6", 135 lb) request to stay away from the railing, as it buzzed its warning. As he reached for the charged railing, a 2-inch spark jumped to his outstretched hand. He alighted on the ground on his backside about 10 feet behind the railing, uninjured, save for his pride. He insisted that he had been "struck by lightning" (not true), but the 20 or so visitors behind the barricade who witnessed the exchange did not test the ranger's judgement again.

During the last 15 summers lightning has not struck at the Glacier Point railing, but it has hit numerous trees in the area. For obvious reasons lightning and trees have an affinity for one another. What happens when tree is hit? There are three scenarios:

**1. Living tree—wet from rain.** Usually, there is *no* damage done to the tree since the lightning can find its way to ground via the wet surface of the bark. No

penetration into the tree and no damage occurs.

**2. Living tree—dry** (no rain or too little). The path to ground is through the liquid in the cambium layer of the tree *i.e.* the "living" portion of the tree sandwiched between the sap wood and the bark. Result: the liquid is vaporized, the bark is explosively blown away from the tree along the path of least resistance to ground. This leaves a twisted, barkless, furrow from the place (usually the top) where the lightning hit down to the ground, and you can see exposed sap wood. In extreme cases the heat may split the tree in half down the middle and branches may be blown several yards away from the tree. This is not a safe place to be. If the top of the tree is "dead" it may catch fire.

There are numerous examples of such trees in the Sentinel Dome, Taft Point area. Cars have been damaged by falling branches in the Taft-Sentinel Dome parking lot.

**3. Dead tree—snag** (dry, no rain). Due to the extreme resistance to the flow of electricity, much heat is generated. Usually this results in fire in the tree. Some trees smoulder for days or weeks. Many fires die out. Others may drop burning debris days later and start a forest fire.

(Occasionally dry duff below a tree may burn even if the tree does not since the duff is near the tree and lightning may try to reach ground in more than one path.)

### The Benefits of Lightning

Lightning benefits us in several ways. Most plants cannot "fix" nitrogen if the air is molecular nitrogen but about 80%. The legumes are an exception. The nitrogen needs to be "fixed" (or in a water soluble form) as is in the case of fertilizer. Much nitrogen is "fixed" by soil bacteria, but lightning produces oxides of nitrogen ( $\text{NO}_x$ ) which are soluble in rainwater:  $\text{H}_2\text{O} + \text{NO}_x = \text{H}_2\text{NO}_x$  and in that form it helps

to fertilize plants. The amount is small (estimates at 5 kg/acre), but helpful. Lightning's greatest benefit to natural ecosystems comes from the fire it causes.

"Nature" can only start fires in three ways:

- lightning
- volcanic eruptions
- spontaneous combustion.

"Naturally," lightning is the single greatest cause of forest fires in the Sierra Nevada. Before man came, nature recycled nutrients rapidly back into the soil by lightning fires. This changed the soil P.H. from more acidic to basic, cleared the trash on the forest floor, "thinned" out the young trees and diseased plants, opened the views and vistas, and made the forest a healthier and more livable place for wild life. Native peoples could not easily, and did not usually try to stop the fires. It was started (lightning) and stopped (lack of fuel, onset of winter, etc.) mainly by nature.

The benefits of lightning outweigh its liabilities unless, of course, you are hit. Some people lead a charmed life. Park Ranger Roy C. Sullivan of Virginia holds the world's record. He was struck seven times: in 1977 (while fishing), 1976 (chest and stomach burns), 1973 (hair burned), 1972 (set hair on fire), 1970 (left shoulder scarred), 1969 (lost eyebrows) and 1942 (lost toe nail). Sullivan died in 1982 of non-lightning related causes.

## David Gaines Killed in Auto Accident

**David Gaines, 40**, the founder and spiritual leader of the Mono Lake Committee, died January 12 in a serious auto accident near Mammoth Lakes. Gaines had devoted his full-time efforts for many years to the plight of Mono Lake, and his work, more than

### How not to get struck

Most people do not get second chances. Yosemite has many thunderstorms every summer. Warning signs (often unheeded) are found in places (like the metal Half Dome cables) where the greatest danger can occur.

Here are a few tips if you are ever in a lightning storm:

**1. Lightning does not** always strike the biggest/tallest/most exposed thing (tree, etc.) It does find the shortest route to ground, and you cannot be sure where that place may be.

**2. Lightning can strike** the same place twice, but probably not in rapid succession since the ground is temporarily discharged relative to the cloud for a while, until the difference in charge can build up.

**3. Stay away** from deeply rooted trees *i.e.* those with long deep tap roots like an oak—these may be a better route to ground water than trees which have shallow roots.

**4. If a car or metal building** is at hand, get inside and *do not* touch metal. This may shield you.

**5. Lightning does not seek** out people in caves to destroy them, contrary to some stories. People usually seek shelter during a thunderstorm, and often stay in the mouth of the cave to "see the show." To test the "cave attracts lightning hypothesis" one would have to disperse people at random or by grid lines and see if

people get hit more often in caves than in the open! This is an illogical, impractical, and foolish experiment even to consider. Maybe someone will do it one day with short metal poles.

Once you attain shelter, get back as far as possible, and do not touch the walls of the shelter.

**6. If you are in a boat**, stay away from metal masts, etc.

**7. If you are swimming**, leave the water.

**8. In a house** stay away from plumbing, and wiring. Unplug electric devices. If it's your house, you should have already put lightning rods up *before* the storm and installed them correctly.

**9. Leave the area** *well before* the storm arrives is the best advice. One can see them developing. Just leave—don't try to finish the hike to Cloud's Rest and "beat the storm." It might be a tie—in which case, you lose!

**10. When a person is hit** by lightning, he/she may not be biologically dead. You should know CPR. Your brain sends electrical impulses to your heart and diaphragm. These impulses may be overridden in an electrical shock or lightning victim. If you can temporarily keep a victim's blood oxygenated and moving for awhile you may save a life.

**11. Don't try to surpass** Ranger Sullivan's record.

*David Balogh has worked as a seasonal interpreter for the N.P.S. at Glacier Point for 15 years.*

that of anyone else, had brought national attention and growing relief to the situation.

Yosemite Association members will remember David Gaines as a popular seminar instructor and gifted naturalist with a rich knowledge of the park's birdlife. He passed on his learning to beginners, experts and bird-banders alike. Gaines also authored *Birds of the Yosemite Sierra*, a classic for park birders, and *Mono Lake Guide Book*.

The passing of David Gaines

represents an enormous loss to the environmental community—particularly in the Mono Lake and Yosemite areas. But the work that he started and the level of consciousness and commitment he demonstrated will be sustained by his friends and fellow environmentalists. Long live Mono Lake and long live David Gaines!

# The Anatomy of an Avalanche

Ginger Burley

**Glacier Canyon** is a deep narrow canyon just east of Yosemite National Park. It separates Mount Dana from the Dana Plateau and contains a small "living" glacier. The stream from this area flows northwest into Tioga Lake at the top of Lee Vining Canyon.

On occasion we take all-day hikes to this area to see the glacier, and last year (1986) I became interested in a small avalanche which seemed to have come from no where but carried large trees into a small meadow. In July of 1987 I hiked to Glacier Canyon with a group of eleven visitors and some simple measuring equipment to play detective and try to understand how this avalanche behaved. None of us had any previous experience but it was a fascinating exercise and we found out a great deal about this avalanche.

Our avalanche probably occurred between February 12 and 20 in 1986. A series of wet storms dropped 12½ feet of snow which represented 28 inches of water. This amount of heavy wet snow caused avalanches throughout the Sierra. Backcountry Ranger Mary Beth Hennessey counted 83 new avalanches as she walked Yosemite's trails in 1986.

On our all-day hike we mapped the area and direction of tree fall, recorded numbers and sizes of trees affected, and measured the distance trees were transported from the place they had grown. We also recorded the height above ground where trees snapped off and did core samples on three trees to try to determine the age of the largest affected.

On closer inspection of the area and the information we collected many things became clear.

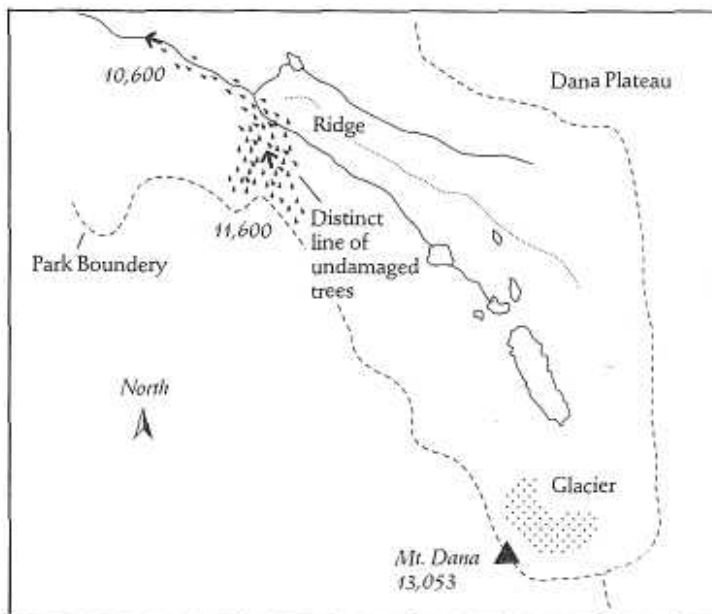
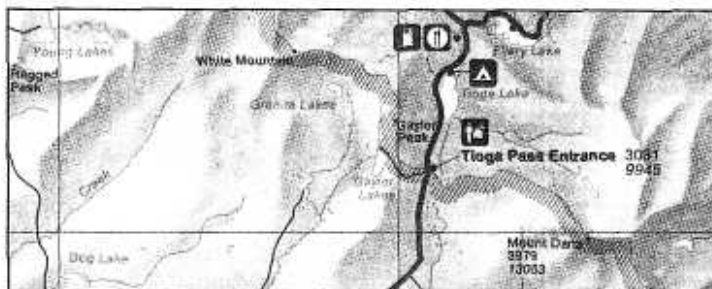
This small avalanche came from the north side of Mount Dana probably at least 1000 feet above the meadow. The path was diverted in a counter clockwise direction by a low ridge in the middle of the canyon and then the force either of snow or wind



HIS PHOTO

cut a very narrow path down the stream bed for another 1/4 mile. About 300 trees were impacted. The path was 200 to 300 yards wide and then funneled into a tiny 10 yards below the meadow.

Trees of different sizes were affected differently. At this elevation (10,600 feet) there is an open forest of Lodge Pole Pines and White Bark Pines growing in very rocky soil with wet meadows in the flat bottom lands. We found trees 6 inches in diameter breast high and smaller were barely harmed. Apparently they were flexible enough to escape damage. Trees of 6 to 18 inches in diameter breast high snapped off near the top of the snow pack 6 to 12 feet above the ground. Large trees (up to 35 inches in diameter breast high) were uprooted and carried as much as 170 feet. Mul-



The path of the 1986 Glacier Canyon avalanche, one of many that regularly sweep down backcountry slopes.

tistemmed trees seemed to be carried the longest distance.

Core bores on three Lodge Pole Pines gave some indication of the age of these trees. A 7 inch diameter breast high Lodge Pole was 30 years old. The largest trees (diameter breast high 28 inches and 35 inches) were rotten in the center and only the outer few inches could be counted. The birch tree had 74 rings, the 3½ inch had 54. Later a Lodge Pole Pine at 10,000 feet with a similar size was bored and it was 219 years old. This data would indicate avalanches happen here less than every 200 years.

The 1986 avalanche season provided an excellent opportunity

to study and understand the forces involved when snow comes smashing down the slope. With simple equipment such as string for taking circumferences, compass for direction of fall, and paces for distance we were able to get a good idea how this small avalanche moved and a feeling for the power of moving snow.

*Ginger Burley is a supervisory ranger/naturalist at Tuolumne Meadows where she has worked for many years.*

# Some Books of Interest



This first selection of books for 1988 chronicles the wide and varied scope of Yosemite and the High Sierra region, or the national parks generally. All can be purchased from the Association at the Yosemite Valley Visitor Bookstore, or by mail order, using the order form on page 22 of this issue. Members of the Association are entitled to a 15% discount off retail prices.

## The Audubon Society Encyclopedia of Animal Life

John Farrand Jr., editor.  
Portland House, 1987.  
#5645 (cloth) \$24.95

All those who take joy in discovering the wonders of nature will welcome this comprehensive, educational and entertaining one-volume reference book. The text was written by a group of distinguished scientists who are leading authorities in their respective fields.

Photographic coverage is rich and diverse, with more than 1,000 full color and black-and-white photographs representing the work of the world's most outstanding wildlife photographers.

Every group of animals is covered in depth. All the fascinating aspects of life in the animal world are depicted: physical characteristics, courtship, mating, birth, growth, habitat, defense mechanisms, feeding, and ecological adaptations.

## The Nature Observer's Handbook

(Learning to Appreciate our Natural World)

John W. Brainerd  
Globe Pequot Press, 1986  
#14205 (paper) \$9.95

The author gently invites you to put aside your busy life for a moment and experience a different kind of excitement. This book will sharpen your awareness of—and deepen your appreciation for—the infinite patterns in the great outdoors. Learn how to prepare for your nature tour, whether it be six states away or in your back yard. The author tells you

what to wear, what to bring along, and how to record your observations. He also gives you extensive reading lists so you can follow up on your findings.

## The Geologic Story of Yosemite National Park

N. King Huber  
U.S. Geological Survey Bulletin  
1595, 1987.  
#10315 (paper) \$5.00

This new book is a comprehensive geologic view of the natural processes that have created—and are still creating—the stunning terrain we know as Yosemite. The book illustrates geologic features with numerous colored photographs and includes a generalized multi-colored geologic map of the park and a larger-scale geologic map of Yosemite Valley. Written in layman's terms with a minimum of technical jargon, this book is designed for anyone with a casual or intense desire to learn more of what made Yosemite National Park the great wonder it is today.

## On Nature

Essays on Nature, Landscape, and Natural History  
Edited by Daniel Halpern  
Northpoint Press, 1987.  
#14427 (paper) \$9.95

This remarkable and exciting anthology proves without doubt that some of the finest writing in America today is being done by writers concerned with nature and natural history. These

twenty-four essays exhibit the broad range and style of writers for whom nature is more than a passive subject of contemplation. Nature is both the place of our lives and the very ground of our imagination and psyche. Includes the writings of Annie Dillard, Gretel Ehrlich, Robert Finch, John Hay, Edward Hoagland, and Barry Lopez.

## To Find the Biggest Tree

Wendell Flint  
Sequoia Natural History  
Association, 1987.  
#17207 (paper) \$4.95

It is the enormity of the giant sequoias that has led to their preservation in three national parks, in national forests, and in state parks. In this volume, the author tells of his journey of 40 years in which he searched the snow forests of the southern Sierra Nevada to find the biggest tree of the species. He leads the reader down many a trail with the elusive "big one" just around the next bend. Whether you yearn to know the statistics of the biggest of the big trees or simply want to learn more about the amazing giant sequoia, *To Find the Biggest Tree* will satisfy.

## Poems of a Yosemite Packer

William "Billy" Fouts  
Spurs Publishing, 1987.  
#14923 (paper) \$6.95

This collection of cowboy poetry was written and assembled by long-time Yosemite packer, Billy

## Archeological Publications

The Archeology Office of the NPS Yosemite Research Center has recently published the first two volumes of their Anthropology series. Report number one, *The 1984 Yosemite Archeological Surveys* by Kathleen L. Hull and W. Joseph Mundy summarizes information from archeological surveys at the South Entrance, Mariposa Grove, Tioga Road, Crane Flat, and Glacier Point Road areas. Although this report is directed towards professional archeologists as well as land and resource management staff, it does contain a wealth of interesting information on the prehistoric and historic populations of Yosemite.

Report 2, titled *The 1984 Archeological Monitoring at the Historic Wawona Hotel Complex*, by W. Joseph Mundy, presents information about the history and development of the Wawona Hotel along with historical archeological information of the area.

The reports are the results of a major effort of archeological research and site management begun in 1981 for the implementation of Yosemite's General Management Plan. Copies are available through Yosemite Association for a price of \$11.50 each. Please use the order form on page 22 for your order.

Fouts. Known for his trademark silk scarves and dusters, Fouts brings a different perspective to his interpretations of the Yosemite experience. The book is illustrated with various photographs and drawings by other Sierra packers. Full of references to horses, mules, and the packer's life, this compilation is an entertaining work from the emerging cowboy poetry tradition.



# THE Yosemite CATALOG

**G** Yosemite Association Cap. Complete your outdoor wardrobe with this trendy item from the Association collection! It's the perfect hat for a hot, sunny day in the great outdoors—mesh fabric to keep a cool head, a generous bill to shade your face, and adjustable strap in the back to insure a good fit for everyone. All of this plus the Yosemite Association patch to let everyone know what your favorite organization is! Brown with white accent. #1600, \$6.00.



**H** Yosemite Association Mug. This distinctive and functional white ceramic mug has our logo and name imprinted in brown. Holds eight ounces of your favorite beverage. #1625, \$5.00.

**I** Yosemite Fund Mug. This mug is decorated with the newly-designed scratchboard logo for use in conjunction with Yosemite Association's fundraising effort. White with black design, eight ounce capacity. #1626, \$5.00.



# Yosemite Association



**J** Yosemite Enamel Pin. Designed especially for the Association, our enameled metal pin is a work of art. Each of the 10 different glazes is hand placed and separately fired. The result, from William Spear Design, is an eye-catching and colorful piece. The metal enamel pins are relief engraved in a 1/8" x 2" size. #1695, \$11.95.

dark brown and white Yosemite Association patch, the Pelican Pouch measures 8 x 5 x 2 1/2 inches. #1690, \$11.95.

**L** Yosemite Association Decals and Patches. Our association logo, depicting Half Dome is offered to our members in these two useful forms. Help announce your affiliation with our organization to others by purchasing and using Yosemite Association patches and decals. Patch #1635, \$1.50; Decal #1636, \$1.00.

**K** Pelican Pouch, Wilderness Belt Bag. The Pelican Pouch is not only perfect for carrying field guides, but also offers instant access to all the small items that are usually buried in your pack—pocket camera, lenses, maps, or your favorite trail mix! The Pouch is designed with front snap fasteners on the straps. This allows comfortable positioning on your belt—even between belt loops; no need to take your belt off first. The material is high quality Cordura pack cloth with a waterproof coating on one side. Beige with the

**M** Yosemite Association T-Shirts. Comfortable, 100% cotton, light tan colored Hanes "Beefy-T" shirts are printed with the Association's Half Dome logo in brown.

*Child sizes (short sleeve):* small, #1650, medium #1651, and large #1652, \$7.05.

*Adult sizes (short sleeve):* small #1653, medium #1654, large #1655 and extra-large #1656, \$9.40; *(long sleeve):* small #1657, medium #1658, large #1659 and extra-large #1660, \$11.75.



**Order Form** Credit card orders call: (209) 379 2648 Monday-Friday, 8:30am-4:30pm

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## Chase Bears

*continued from page 3*

3. People who chase Yosemite bears eat better, sleep better, and feel better, knowing they have helped a bit to restore a wild animal to its natural condition.

It is eleven-thirty p.m. I am nearly asleep, but not quite, for the full moon is casting incredible shadows through the trees and across my sleeping bag. The light is so intense that it fairly obliterates the stars, and I could easily read if I wanted to stop looking at the glistening meadow and far-away reflections in the lake. Sleepiness finally begins to win the battle of the falling eyelids, and I doze off.

Suddenly I feel a definite presence. I don't move. Then I hear the unmistakable snuffling, whuffing, plodding noises of a curious bear, and I sit straight up, eyes still closed, but yelling as loudly as I can. "HEYGETOUT-TAHEREYOURFATHERS-BOAR!!!" By this time my eyes have opened, just in time to see a

rather small figure scuttling off into the trees.

For some reason, perhaps the brightness of the moon, or the echoing of my voice across the lake, I remain motionless and upright. In a moment, a roundish shadow breaks away from a nearby tree and seems to float into the meadow. It is a young bear, a yearling, perhaps, and it seems to have forgotten my rude interruption of its investigations. My ears ring in the silence, and my breath comes slow and deep as I watch the little bear wander in and out of the tree shadows. When it is about thirty feet from where I sit, the bear whirls and rears. I clear my throat for another battle cry, when I realize that the bear is only playing in the moonlight. For nearly a minute, I suppose, the little bear dances in the strange light, twirling and rearing up, and batting its paws at its shadow. Then, as suddenly as it began, it stops, and looks in my direction.

"Hey," I begin to yell, but it doesn't seem necessary. It is wandering away from my camp, away from the other human beings wrapped in their nylon

and their shadows, back to its bear life in the woods and mountains.

My mind, my sight, my dreams-to-be are full of the little bear as I lay back down to sleep. "Go away, bear, far from here," I think as the moon once again sets its shadows across my eyes.

"But thanks for the dance," I

remember to say, just before I fall into sleep.

And to everyone I met, everyone I worked with, everyone who touched me, everyone who did even a little bit toward helping Yosemite's wilderness this season — thanks for the summer. Thanks for the dance.

*Carla Neasel worked during the summer of 1987 as one of Yosemite's five Wilderness Interpreters. Her enthusiasm for and commitment to the job were endearing.*

## Yosemite Exhibit

### The Sacramento History

Center has just opened a new exhibit entitled "California Vacation" which highlights favorite California vacation spots as they have been portrayed in photographs, postcards, lithographs, paintings and other media. Yosemite figures prominently in the display. Included are a canvas tent cabin with walls made from 4,000 Yosemite postcards, paintings by Thomas Hill and a collection of orange crate labels. The show runs through July 25, 1988 at the Center, 101 "I" Street, Sacramento. For more information call 916/449-2057.

## Yosemite Collectibles

**Louis Lanzer**, a life member of the Yosemite Association, collects and sells books, prints, photographs, postcards and other ephemera about Yosemite and the Sierra Nevada. If you would like to receive a free catalog of available materials, please contact Mr. Lanzer directly at P.O. Box 10436, Torrance, CA 90505-1436, phone 213/378-5136.

## New Members

We would like to welcome to the Yosemite Association the following fine persons who became members within the past three months. Your support is greatly appreciated.

### Regular Members

Frank Alandt, Ernie Ale, JoAnn Alexander, Alan Aoki, Tracy Archipley, Damaris Atwater, Katherine August, Jonathan Azalrad, Gary T Baier, Larry Ballard, Jim & Chloe Barrett, Deborah Bedeson, Beth Beisecker, Troy & Marie Bellomy, Walter Bennet, Ray Bensch, Bill Bertanneau, M L Beyrer, Brett Bigelow, Stephen & Terry Bindman, Patrick Blake, Storie Blake, Tom Bockes, Fred & Dolly Boucher, Marianne & Bryan Boulet, Rosamond & Derer Bray, Marjorie Brooks, Lloyd & Monika Broome, Dr Peter Brucker, Elizabeth Brusnahan, Wm Bryan, Leo Burkley, William Burr, Delores Burton, Aleta Cannon, Barbara Carriker, Calvin Carter, John H Cash, Diane Champion, Andrew M Cohen, James Cone Jr, Myron Cotta, Stacy Couture, Joanie & Paul Craig, Mary Lou Crocker, Gerald Croop, J R Crumpler, Bill Cutler, Don Cyphers, Judy Delp, Dr John Derdivanis, Andrea Frande & Walter Deutsh, Mrs Betty Cooley

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## Join the Yosemite Association

**You can help support** the work of the Yosemite Association by becoming a member. Revenues generated by the Association's activities are used to fund a variety of National Park Service programs in Yosemite. Not only does the Yosemite Association publish and sell literature and maps, it sponsors field seminars, the park's Art Activity Center, and the Ostrander Lake Ski Hut.

A critical element in the success of the Association is its membership. Individuals and families throughout the country have long supported the Yosemite Association through their dues and their personal commitments. Won't

you join us in our effort to make Yosemite an even better place?

### Member Benefits

As a member of the Yosemite Association, you will enjoy the following benefits:

- ☆ *Yosemite*, the Association bulletin, published on a quarterly basis;
- ☆ A 15% discount on all books, maps, posters, calendars and publications stocked for sale by the Association;
- ☆ A 10% discount on most of the field seminars conducted by the Association in Yosemite National Park;
- ☆ The opportunity to participate in the annual Members' Meeting held in the park each fall, along with other Association activities;

☆ A Yosemite Association decal; and

☆ Special membership gifts as follows:

*Supporting Members:* Matted print from an illustration by Jane Gyer in "Discovering Sierra Trees";

*Contributing Members:* Full color poster of Yosemite's wildflowers by Walter Sydorik;

*Sustaining Members:* A colorful enameled pin depicting a Yosemite waterfall by William Spear;

*Life Member:* Matted color photograph by Howard Weamer of a Yosemite scene; and

*Participating Life Member:* Ansel Adams Special Edition print, achivally mounted.

Membership dues are tax-deductible as provided by law.

## Yosemite Association

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## Moving?

If you are moving, or have recently moved, don't forget to notify us. You are a valued member of the Association, and we'd like to keep in touch with you.

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