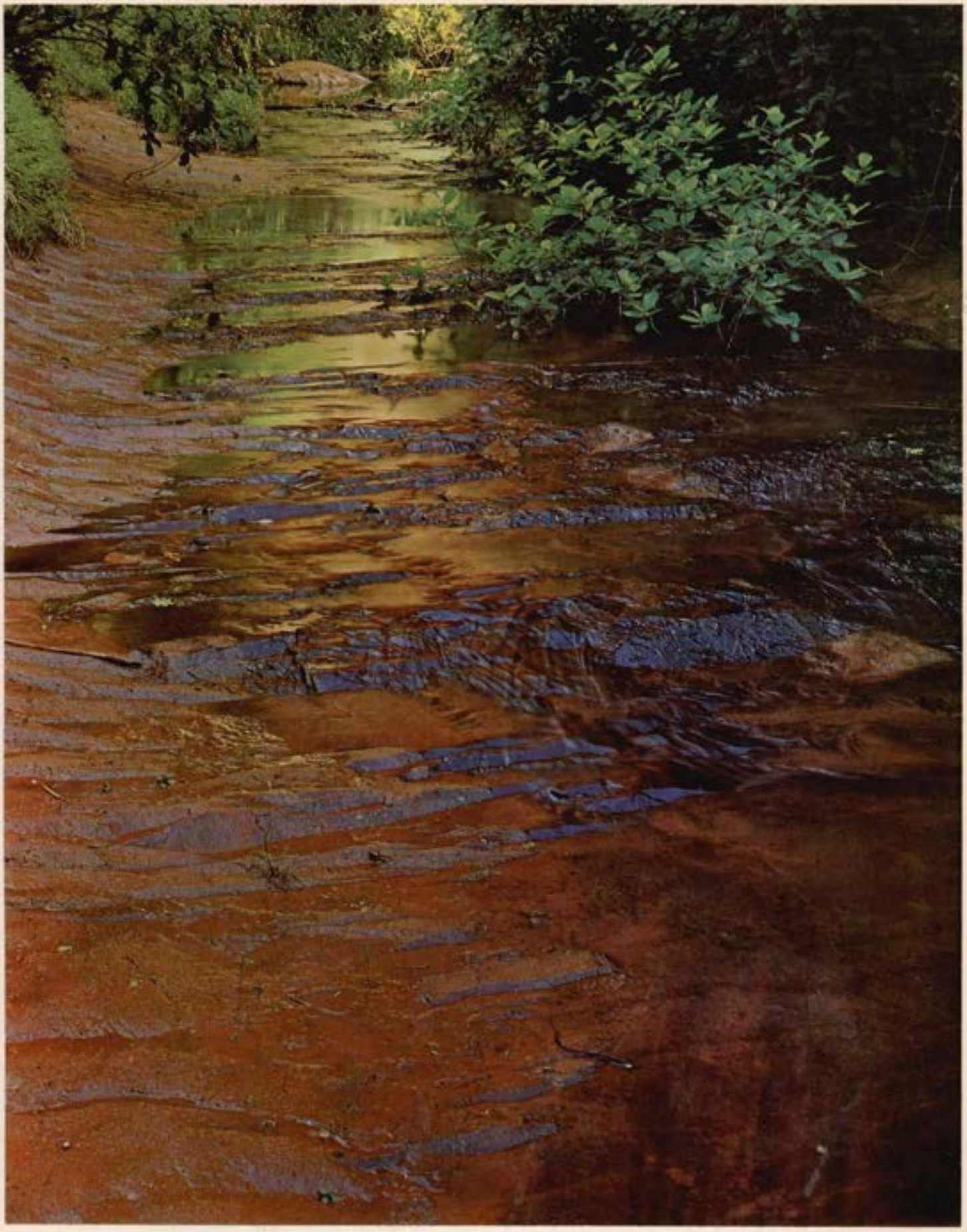

ELIOT PORTER: Clear Creek, Glen Canyon

Sierra Club Bulletin

December 1965

. . . do we not already sing our love for and obligations to the land of the free and the home of the brave? Yes, but just what and whom do we love? Certainly not the soil, which we are sending helter-skelter downriver. Certainly not the rivers, which we assume have no function except to turn turbines, float barges, and carry off sewage. Certainly not the plants, of which we exterminate whole communities without batting an eye. Certainly not the animals, of which we have already extirpated many of the largest and most beautiful species. A land ethic of course cannot prevent the alteration, management, and use of these 'resources,' but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.

The disquieting thing in the modern picture is the trophy-hunter who never grows up, in whom the capacity for isolation, perception, and husbandry is undeveloped, or perhaps lost. . . .

To enjoy he must possess, invade, appropriate. Hence the wilderness that he cannot personally see has no value to him. Hence the universal assumption that an unused hinterland is rendering no service to society. To those devoid of imagination, a blank place on the map is a useless waste; to others, the most valuable part. (Is my share in Alaska worthless to me because I shall never go there? Do I need a road to show me the arctic prairies, the goose pastures of the Yukon, the Kodiak bear, the sheep meadows behind McKinley?)

It would appear, in short, that the rudimentary grades of outdoor recreation consume their resource-base; the higher grades, at least to a degree, create their own satisfactions with little or no attrition of land or life. . . . Recreational development is a job not of building roads into lovely country, but of building receptivity into the still unlovely human mind. — Aldo Leopold

Sierra Club Bulletin

VOLUME 50 DECEMBER 1965 NUMBER 10

To explore, enjoy, and preserve the Sierra Nevada and other scenic resources of the United States and its forests, waters, wildlife, and wilderness; to undertake and to publish scientific, literary, and educational studies concerning them; to educate the people with regard to the national and state forests, parks, monuments, and other natural resources of scenic beauty and to enlist public coöperation in protecting them.

JOHN MUIR, President 1892 to 1914

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Back cover: Yesterday's Redwoods, from *Time* magazine, *by Joern Gerdts*

Edited by DAVID BROWER

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Introduction

Part of the production of this year's annual magazine was interrupted by The Blackout. We were talking transcontinentally with Hugh Barnes, of Barnes Press, when he cut in "The lights have gone out" and faded away. By the time he could call back, Sendor Bindery, downstairs, had bought up the local supply of alternative light and was gathering the Everest book by candlepower. Our principal New York salesman spent the next two and a half hours under the East River in a subway that had little air and less light.

It all scurried us to the Glen Canyon book, where we remembered including a pertinent quotation from Paul B. Sears—one we stole from another book of the club's, *Wilderness: America's Living Heritage*. "As we lengthen and elaborate the chain of technology that intervenes between us and the natural world," Professor Sears said in his summary of the Seventh Biennial Wilderness Conference, "we forget that we become steadily more vulnerable to even the slightest failure in that chain."

So the Sierra Club was vulnerable, too—what with four projects delayed and the near death of a salesman.

What made the *Bulletin* vulnerable was a decision that may have been good and only you will know. This year ends with 35,000 of you, about half of whom have joined in the last three years, all of you together accounting for about one-sixth of the sales of the club's books, few of you owning them all, but all of you supporting the organization that put the people and ideas together who (that) make the books possible.

The decision was to take excerpts from eleven of the club's books and one Outdoor Newsletter—to mobilize the impressive talent you see on the facing page—and to let you see a fair sampling of what all of us have been up to. One-third of this issue is all new. If you have already fully absorbed all the other two-thirds, you should probably write the Controller and start negotiating for a partial rebate.

Perhaps you, too, will be pleased about the variety of voices (all club members) speaking for the wilderness—and to an audience we should never have reached without them.

* * *

Paul Brooks is from the house that publishes John Muir (with whom he is not old enough to have dealt) and, among many others, Rachel Carson, for whom he has dealt with vigor. For his own writings, he goes to other publishers (*Atlantic, Harper's*, Knopf).

He subsequently reworked his "Wilderness and Western Culture" and incorporated it in his book, *Roadless Area*, but we had it first as the paper he delivered to the Wilderness Conference covered in *Wilderness: America's Living Heritage*.

William O. Douglas, Associate Justice of the Supreme Court of the United States, epitomizes the freedom he defends professionally and that he believes is in his marrow. He has attained an office that allows a man to say what he thinks without adding "but don't quote me," a reservation attached to too much of the expert knowledge the club works with. If there were twenty men high in government with Justice Douglas's courage, wilderness would be out of danger.

Harvey Manning, as we said in the acknowledgment in *The Wild Cascades*, from which we quote him and Justice Douglas, has the Cascade River running in his arteries on one side, the Stehekin on the other. He proves that he can be amazingly familiar with a place and yet know how to see it anew.

The late **Theodore Roethke,** through the kindness of his widow, Beatrice Roethke, and his publisher, Doubleday, adds a dimension to the Cascades book that can well be inferred from the two excerpts we publish here. In skilled hands, words can be magic, and his are.

Loren Eiseley, as we said here last year, is an anthropologist, former Provost of the University of Pennsylvania, author of several books we quote in our own books (*The Immense Journey, The Firmament of Time, The Mind As Nature, Darwin's Century*), of the foreword to *Not Man Apart*, reproduced herein, and the future author, we hope, of an extended introduction to a book on the Galapagos Islands that he, Eliot Porter, the Darwin Foundation, the Ecuadorian Government, Bob Golden, and we are mixed up with. We like his mind, and would like to know what "The Judgment of the Birds" does to you.

Our own words about Grand Canyon come for the most part from the foreword to the club's Grand Canyon book.

Hugh Nash is really the Editor of the Bulletin (inertial tendencies—begun when we edited the annuals from 1940 to 1942, then from 1946 and on—carried us into this one). He was coaxed west from *Architectural Forum* when it went into the doldrums, for which we alone can be grateful. What he has done to the Grand Canyon dam proposal is just what it deserves having done to it, and is a textbook for answers to any evasive or temporizing letters out of Washington. Every fiction they contain is answered here. Save it!

John Milton, whom the Conservation Foundation sent to the Cutibireni, was to have led a Sierra Club outing to Labrador instead, but his compass must have got turned around. He is too young to have been to all the places he has been to and that have taught him a great deal about the world's major ecosystems. As you will see, he almost spent the rest of his life learning about Peru.

Wm. Bridge Cooke has written about soil before for *SCB* readers—just as we said here last year. We hope he keeps on. Too little is known about the subsurface forces of renewal that people are willing to spray and pave and flood before they have learned how to ask all the questions they should, answers to which are not certain to survive the spraying, paving, flooding, not to mention the logging.

William E. Colby is why the club is here.

Harold Gilliam did the text to *Island in Time: The Point Reyes Peninsula*, contributed comment to one Wilderness Conference, summarized the latest, has with his pen contributed vastly to the saving of redwoods, Bodega Head, amenity in the Bay Area, and perspective about environment all over. The words here are from the book about the Bay he has done for us and that we hope to have out in spring.

Charles Kuralt, Robert Richter, and **Palmer Williams** were the chief architects of the CBS Report adapted for our pages by Russell D. Butcher, himself formerly with the Save-the-Redwoods League and now still saving redwoods with at least equal vigor, given his head by the National Audubon Society. The program was originally twice as long and we wish it still were, knowing quite a bit about what ended up on the cutting-room floor. For all that, the half hour is potent indeed, far more so than eight pages can suggest, and we urge that you contrive to borrow the film from us and tell CBS what you think. Contributions for more copies (we have 8) are welcome.

Francis Peloubet Farquhar should never need to be introduced in the pages of the *Sierra Club Bulletin*. Let's just say that he is a Harvard man who saw the error of his ways, came to California and the Sierra Club in 1912, started working on the *Bulletin* almost immediately, and has never, in all that half century plus, failed to have an extraordinary influence on what the club publishes. He put us on the crew 30 years ago, and six years later arranged our strong liaison with the University of California Press, then managed by his brother, Samuel T. Farquhar, that has continued until now, with August Frugé directing the Press and serving as chairman of the club's Publications Committee, a liaison that brought about joint publication of *History of the Sierra Nevada*, copyright by the Regents of the University of California, from which we reproduce with permission one chapter, with no approval whatsoever for our run-on sentence describing the relationship.

Margaret Wentworth Owings (Mrs. Nathaniel) is eloquent as an artist, as a defender of wildlife (particularly lions, sea and mountain) and of state parks and of coasts and of redwoods. She lives in the most beautiful house in the world, bar none. She is especially eloquent, as you will see, about that day when, as precursor to The Blackout, 55th Street observed a moment of silence.—D.B.

On perhaps 49 nights out of 50 the cold winds raging over Everest would make such a decision fatal, but the four men who decided to bivouac just beyond the summit lived to tell about it

. . . and Miles to Go

THOMAS F. HORNBEIN

JUST ROCK, a dome of snow, the deep blue sky, and a hunk of orange-painted metal from which a shredded American flag cracked in the wind. Nothing more. Except two tiny figures walking together those last few feet to the top of the earth.

For twenty minutes we stayed there. The last brilliance of the day cast the shadow of our summit on the cloud plain a hundred miles to the east. Valleys were filled with the indistinct purple haze of evening, concealing the dwellings of man we knew were there. The chill roar of wind made speaking difficult, heightening our feeling of remoteness. The flag left there seemed a feeble gesture of man that had no purpose but to accentuate the isolation. The two of us who had dreamed months before of sharing this moment were linked by a thin line of rope, joined in the intensity of companionship to those inaccessibly far below, Al and Barry and Dick—and Jake.

From a pitch of intense emotional and physical drive it was only partly possible to become suddenly, completely the philosopher of a balmy afternoon. The head of steam was too great, and the demands on it still remained. We have a long way to go to get down, I thought. But the prospect of descent of an unknown side of the mountain in the dark caused me less anxiety than many other occasions had. I had a blind, fatalistic faith that, having succeeded in coming this far, we could not fail to get down. The moment became an end in itself.

There were many things savored in this brief time. Even with our oxygen turned off we had no problem performing those summit obeisances, photographing the fading day (it's a wonderful place to be for sunset photographs), smiling behind our masks for the inevitable "I was there" picture. Willi wrapped the kata given him by Ang Dorje about the flag pole and planted Andy Bakewell's crucifix alongside it in the snow; Lhotse and Makalu, below us, were a contrast of sun-blazed snow etched against the darkness of evening shadow. We felt the lonely beauty of the evening, the immense roaring silence of the wind, the tenuousness of our tie to all below. There was a hint of fear, not for our lives, but of a vast unknown which pressed in upon us. A fleeting feeling of disappointment—that after all those dreams and questions this was only a mountaintop—gave way to the suspicion that maybe there was something more, something beyond the three-dimensional form of the moment. If only it could be perceived.

But it was late. The memories had to be stored, the meanings taken down. The question of why we had come was not now to be answered, yet something up here must yield an answer, something only dimly felt, comprehended by senses reaching farther yet than the point on which we stood; reaching for understanding, which hovered but a few steps higher. The answers lay not on the summit of Everest, nor in the sky above it, but in the world to which we belonged and must now return.

Footprints in the snow told that Lute and Barrel had been here. We'd have a path to follow as long as light remained.

"Want to go first?" Willi asked. He began to coil the rope.

Looking down the corniced edge, I thought of the added protection of a rope from above. "Doesn't matter, Willi. Either way."

"O.K. Why don't I go first then?" he said, handing me the coil. Paying out the rope as he disappeared below me I wondered, Is Unsoeld tired? It was hard to believe. Still he'd worked hard; he had a right to be weary. Starting sluggishly, I'd felt stronger as we climbed. So now we would reverse roles. Going up had been pretty much Willi's show; going down would be mine. I dropped the last coil and started after him.

Fifty feet from the top we stopped at a patch of exposed rock. Only the summit of Everest, shining pink, remained above the shadow sea. Willi radioed to Maynard Miller at Advance Base that we were headed for the South Col. It was 6:35 P.M.

We almost ran along the crest, trusting Lute and Barrel's track to keep us a safe distance from the cornice edge. Have to reach the South Summit before dark, I thought, or we'll never find the way. The sun dropped below the jagged horizon. We didn't need goggles any more. There was a loud hiss as I banged my oxygen bottle against the ice wall. Damn! Something's broken. I reached back and turned off the valve. Without oxygen, I tried to keep pace with the rope disappearing over the edge ahead. Vision dimmed, the ground began to move. I stopped till things cleared, waved my arms and shouted into the wind for Willi to hold up. The taut rope finally stopped him. I tightened the regulator, then turned the oxygen on. No hiss! To my relief it had only been jarred loose. On oxygen again, I could move rapidly. Up twenty feet, and we were on the South Summit. It was 7:15.

Thank God for the footprints. Without them, we'd have had a tough time deciding which way to go. We hurried on, facing outward, driving our heels into the steep snow. By 7:30 it was dark. We took out the flashlight and resumed the descent. The batteries, dregs of the Expedition,

had not been helped by our session with Emerson's diary the night before; they quickly faded. There was pitiful humor as Willi probed, holding the light a few inches off the snow to catch some sign of tracks. You could order your eyes to see, but nothing in the blackness complied.

We moved slowly now. Willi was only a voice and an occasional faint flicker of light to point the way. No fear, no worry, no strangeness, just complete absorption. The drive which had carried us to a nebulous goal was replaced by simple desire for survival. There was no time to dwell on the uniqueness of our situation. We climbed carefully, from years of habit. At a rock outcrop we paused. Which way? Willi groped to the right along a corniced edge. In my imagination, I filled in the void.

"No tracks over here," Willi called.

"Maybe we should dig in here for the night."

"I don't know. Dave and Girmi should be at 6."

We shouted into the night, and the wind engulfed our call. A lull. Again we shouted. "Helloooo," the wind answered. Or was it the wind?

"Helloooo," we called once more.

"Helloooo," came back faintly. That wasn't the wind!

"To the left, Willi."

"O.K., go ahead."

In the blackness I couldn't see my feet. Each foot groped cautiously, feeling its way down, trusting to the pattern set by its predecessor. Slowly left, right, left, crampons biting into the snow, right, left, . . .

"Willeeee!" I yelled as I somersaulted into space. The rope came taut, and with a soft thud I landed.

"Seems to be a cornice there," I called from beneath the wall. "I'll belay you from here."

Willi sleepwalked down to the edge. The dim outline of his foot wavered until it met my guiding hand. His arrival lacked the flair of my descent. It was well that the one of lighter weight had gone first.

Gusts buffeted from all directions, threatening to dislodge us from the slope. Above a cliff we paused, untied, cut the rope in half, and tied in again. It didn't help; even five feet behind I couldn't see Willi. Sometimes the snow was good, sometimes it was soft, sometimes it lay shallow over rocks so we could only drive our axes in an inch or two. With these psychological belays, we wandered slowly down, closer to the answering shouts. The wind was dying, and so was the flashlight, now no more than an orange glow illuminating nothing. The stars, brilliant above, cast no light on the snow. Willi's oxygen ran out. He slowed, suddenly feeling much wearier.

The voices were close now. Were they coming from those two black shapes on the snow? Or were those rocks?

"Shine your light down here," a voice called.

"Where? Shine yours up here," I answered.

"Don't have one," came the reply.

Then we were with them—not Dave and Girmi, but Lute and Barrel. They were near exhaustion, shivering lumps curled on the snow. Barrel in particular was far gone. Anxious hungering for air through the previous night, and the near catastrophe when their tent caught fire in the morning, had left him tired before they even started. Determination got him to the top, but now he no longer cared. He only wanted to be left alone. Lute was also tired. Because of Barrel's condition he'd had to bear the brunt of the climbing labor. His eyes were painfully burned, perhaps by the fire, perhaps by the sun and wind. From sheer fatigue they had stopped thinking. Their oxygen was gone, except for a bit Lute had saved for Barrel; but they were too weak to make the change.

At 9:30 we were still a thousand feet above Camp 6. Willi sat down on the snow, and I walked over to get Lute's oxygen for Barrel. As I unscrewed Lute's regulator from the bottle, he explained why they were still there. Because of the stove fire that had sent them diving from the tent, they were an hour late in starting. It was 3:30 P.M. when they reached the summit. Seeing no sign of movement down the west side, they figured no one would be any later than they were. At 4:15 they started down. Fatigue slowed their descent. Just after dark they had stopped to rest and were preparing to move when they heard shouts. Dave and Girmi, they thought. No—the sounds seemed to be coming from above. Willi and Tom! So they waited, shivering.

I removed Barrel's regulator from his empty bottle and screwed it into Lute's. We were together now, sharing the support so vigorously debated a week before. Lute would know the way back to their camp, even in the dark. All we had to do was help them down. Fumbling with unfeeling fingers, I tried to attach Barrel's oxygen hose to the regulator. Damn! Can't make the connection. My fingers scraped uncoördinately against the cold metal. Try again. There it goes. Then, quickly, numb fingers clumsy, back into mittens. Feeling slowly returned, and pain. Then, the pain went and the fingers were warm again.

Willi remembered the Dexedrine I had dropped into my shirt pocket the evening before. I fished out two pills —one for Barrel and one for Lute. Barrel was better with oxygen, but why I had balked at his communal use of Lute's regulator, I cannot say. Lack of oxygen? Fatigue? It was fifteen hours since we'd started our climb. Or was it that my thoughts were too busy with another problem? We had to keep moving or freeze.

I led off. Lute followed in my footsteps to point out the route. Lost in the darkness sixty feet back on our ropes, Willi and Barrel followed. The track was more sensed than seen, but it was easier now, not so steep. My eyes watered from searching for the black holes punched in the snow by Lute's and Barrel's axes during their ascent. We walked to the left of the crest, three feet down, ramming our axes into the narrow edge. Thirty feet, and the rope came taut as Barrel collapsed in the snow, bringing the entire caravan to a halt. Lute sat down behind me. Got to keep moving. We'll never get there.

We had almost no contact with the back of the line. When the rope came taut, we stopped, when it loosened we moved on. Somewhere my oxygen ran out, but we were going too slow for me to notice the difference. Ought to dump the empty bottle, I thought, but it was too much trouble to take off my pack.

Heat lightning flashed along the plains to the east, too distant to light our way. Rocks that showed in the snow below seemed to get no closer as the hours passed. Follow the axe holes. Where'd they go? Not sure. There's another.

"Now where, Lute?"

"Can't see, Tom." Lute said. "Can't see a damn thing. We've got to turn down a gully between some rocks."

"Which gully. There's two or three."

"Don't know, Tom."

"Think, Lute. Try to remember. We've got to get to 6."

"I don't know. I just can't see."

Again and again I questioned, badgering, trying to extract some hint. But half blind and weary, Lute had no answer. We plodded on. The rocks came slowly closer.

Once the rope jerked tight, nearly pulling me off balance. Damn! What's going on? I turned and looked at Lute's dim form lying on the snow a few feet further down the Kangshung Face. His fall had been effectively if uncomfortably arrested when his neck snagged the rope between Willi and me.

We turned off the crest, toward the rocks. Tongues of snow pierced the cliffs below. But which one? It was too dangerous to plunge on. After midnight we reached the rocks. It had taken nearly three hours to descend four hundred feet, maybe fifteen minutes' worth by daylight.

Tired. No hope of finding camp in the darkness. No choice but to wait for day. Packs off. Willi and I slipped into our down parkas. In the dark, numb fingers couldn't start the zippers. We settled to the ground, curled as small as possible atop our pack frames. Lute and Barrel were somewhere behind, apart, each alone. Willi and I tried hugging each other to salvage warmth, but my uncontrollable shivering made it impossible.

The oxygen was gone, but the mask helped a little for warmth. Feet, cooling, began to hurt. I withdrew my hands from the warmth of my crotch and loosened crampon bindings and boot laces, but my feet stayed cold. Willi offered to rub them. We removed boots and socks and planted both my feet against his stomach. No sensation returned.

Tired by the awkward position, and frustrated by the result, we gave it up. I slid my feet back into socks and boots, but couldn't tie them. I offered to warm Willi's feet. Thinking that his freedom from pain was due to a high tolerance of cold, he declined. We were too weary to realize the reason for his comfort.

The night was overpoweringly empty. Stars shed cold unshimmering light. The heat lightning dancing along the plains spoke of a world of warmth and flatness. The black silhouette of Lhotse lurked half sensed, half seen, still below. Only the ridge on which we were rose higher, disappearing into the night, a last lonely outpost of the world.

Mostly there was nothing. We hung suspended in a timeless void. The wind died, and there was silence. Even without wind it was cold. I could reach back and touch Lute or Barrel lying head to toe above me. They seemed miles away.

Unsignaled, unembellished, the hours passed. Intense cold penetrated, carrying with it the realization that each of us was completely alone. Nothing Willi could do for me or I for him. No team now, just each of us, imprisoned with his own discomfort, his own thoughts, his own will to survive.

Yet for me, survival was hardly a conscious thought. Nothing to plan, nothing to push for, nothing to do but shiver and wait for the sun to rise. I floated in a dream-like eternity, devoid of plans, fears, regrets. The heat lightning, Lhotse, my companions, discomfort, all were there—yet not there. Death had no meaning, nor, for that matter, did life. Survival was no concern, no issue. Only a dulled impatience for the sun to rise tied my formless thoughts to the future.

About 4:00 the sky began to lighten along the eastern rim, baring the bulk of Kangchenjunga. The sun was slow in following, interminably slow. Not till after 5:00 did it finally come, its light streaming through the South Col, blazing yellow across the Nuptse Wall, then onto the white wave crest of peaks far below. We watched as if our own life was being born gain. Then as the cold yellow light touched us, we rose. There were still miles to go.

Play for more than you can afford to lose, and you will learn the game.

— CHURCHILL

Conservation and the Conventional Wisdom

READING PROOF of an article I once wrote for a national magazine on the Quetico-Superior canoe country, I caught one small printer's error in the final paragraph that would have completely reversed the point I was trying to make. "Every conservation organization in the country," I had written, "is behind the Quetico-Superior program." It came out: "every *conservative* organization." The change of two letters made all the difference. And it pointed up a semantic problem that plagues the whole conservation movement.

To the man in the street, the term "conservation" has a negative, not a positive ring. It is conservative, anti-progress, anti-people, anti-machine, anti-development, anti-this, anti-that. It represents a return to the primitive, a search for the lost Eden. It appeals, he will admit, to the romantic streak in all of us, but *is* wildness in fact going to preserve the world? Can we go forward by looking back?

To conquer this misconception, to substitute for it a positive concept, is the hardest job we have to face. Obviously preservation of wilderness is the base and point of departure for any conservation movement, just as a solid bank account is the *sine qua non* for the conservative business man. But there, we must make clear, the parallel stops. The conservationist challenges many aspects of what J. K. Galbraith has called "the conventional wisdom." He refuses to accept a purely monetary scale of values. He rejects the conventional view that personal profit always comes first, that natural resources are there to be "exploited" in one sense only. Indeed he recognizes that much of wild nature realizes its greatest value to man by virtue of *not* being possessed. He sees much of our unplanned drive toward material progress not as a manifestation of progressive thinking but—on the contrary—as a cultural lag.

Rightly understood, conservation is anything but conservative. Philosophically, it embodies a radical change from the nineteenth century view of man's place in the universe, which accepted without question the Old Testament idea that everything was put on earth specifically for our use. Culturally, it is the opposite of primitive. Like understanding of art and literature, appreciation of wild nature depends on education and itself represents one of the highest achievements of our culture. The conservation movement has many of the characteristics of a true renaissance: a rediscovery of certain basic truths, a period of excitement and exploration, a re-birth of earlier values that lay dormant while we conquered a continent and amassed our material wealth. Five hundred years ago, the Renaissance in Europe brought man's attention back from the promises of the next world to the possibilities of this. Today we are witnessing a rebirth in the effort to understand man's relationship to the natural world.

It is no accident that conservation in this sense has found eloquent literary expression in America, from the days of Henry Thoreau and John Muir to Aldo Leopold and Rachel Carson. The values that modern conservationists are fighting to establish are in fact a major part of our cultural inheritance. This is what Aldous Huxley had in mind when he remarked to his brother Julian, à propos Rachel Carson and the lesson of *Silent Spring*: "We are destroying half the basis of English poetry."

In practical terms the modern conservationist is pursuing a course that—in the conservative view—is so positive as to be practically subversive. He is questioning the assumption that legal possession gives a man complete power over the land. Again he faces a cultural lag. Unlike the Romans, we no longer allow a father to murder his son for disobedience; we do, with a few minor exceptions, allow a landowner to murder his land and become rich and respected on the proceeds. Yet in common speech, if not in law, we recognize land as a living organism: it can be healthy or sick, fertile or sterile; it can be healed and nourished or it can be wounded, tired, worn-out. It is not a commodity but a trust.

More Americans than we perhaps realize share this sense of trusteeship. Take, as a small example, the response to an article I published recently about Rampart Dam, the Army Engineers' scheme to drown Alaska's Yukon Flats. Letters came from professors and from housewives; from native Alaskans who know and love the Yukon, and from Easterners who want to save a wilderness they may never see; and from citizens in other areas where wild rivers are threatened with needless destruction. "Please do not let this thing happen . . . . The thought of this tragic thing happening to Alaska is almost more than I can stand . . . I am a housewife and mother, not someone who could carry a lot of power . . ." "Will enough people wake up and protest?" "Thank you for giving me the courage to speak up." "I am sure that there are thousands of people in this country who would like to do something to help . . . How can we make our small voices heard . . ." "I am just 21. What can persons of my age do about this?"

As I read such letters, I question the pessimistic, often-heard refrain that the forces of conservation are "fighting a rear-guard action"—i.e., that they are in retreat. On the contrary, more people are finding joy in the outdoors than ever before in history. They are ready to fight for it and vote for it. They look to the conservationists for direction and definition of their ultimate goals.

A guest editorial (facing) and article by Executive Editor of Houghton Mifflin, traveler of roadless areas, contributor to wilderness conferences, whose articles have exposed Rampart Dam and Project Plowshare

Wilderness in Western Culture

→»» Paul Brooks

The value of wilderness to people and their culture is a vast and complicated subject. Even if we restrict it to Western civilization we are faced with a time span from the Book of Genesis to the Wilderness Bill. And to be of any practical use, such a discussion must include the converse: that is, the effects of our culture on wilderness. Perhaps the best way to attack it is to concentrate on the changing attitudes of man toward wild nature, in other words, on our evolving sense of values. This is of more than purely historical interest. Attitudes are important in direct relation to power. Our power over our remaining wilderness is now virtually absolute; our attitude has therefore become all-important. I should like to give you a quick historical survey, showing how man's relationship to the wild areas of the earth has evolved through stages of fear, of identification, of patronizing and romanticizing, of conquest and exploitation, of scientific understanding, and finally of alarmed realization that there are few such areas left on the globe. I shall then consider briefly how the values shared by all of us in this room can be made articulate and effective.

Living next door to Walden Pond, and working in Boston, I have chosen an example from each to indicate the opposite poles in the approach to the subject. The first is inevitably the quotation from Thoreau used as the title for that most beautiful of books: *"In Wildness Is the Preservation of the World."* John Muir, incidentally, used almost the same words: "In God's wildness lies the hope of the world" and went on to say—this was before the great days of Los Angeles—"there is not a perfectly sane man in San Francisco." My second quotation, which Dave Brower might consider for a future volume, is a remark by the Boston wit and scholar, Helen Bell, to a friend who was going out of town for a walk in the woods. "Well," said Mrs. Bell sourly, "kick a tree for me." These are two extremes. What lies between?

Going back to the beginning, our Western culture, unlike that of the East, is not based on a close identification of man with wild nature. To the contrary, we find in the Old Testament, for all its magnificent descriptions of natural phenomena, that the purpose of nature is to glorify the Lord Jehovah and to provide materials for the use of man—a concept that endures to this day in the attitude that something not immediately useful in the material sense is worthless and probably sinful. The philosophy of classical Greece—the other main source of Western culture—was very different: The beauty of the external world was appreciated for its own sake. Yet even in Homer wild nature, though deeply felt, is never more than the framework for human action. The Romans' appreciation of nature, which became a part of their poetic tradition, did not extend to wilderness; one thinks rather of the pastoral scenes in Virgil, or Horace's Sabine Farm. In the Middle Ages the attractions of wild landscape were generally considered the lure of the Devil; the dryads and wood nymphs of the Greeks became demons to plague holy men in the forests—and, as one scholar put it, "For a thousand years wilderness became a kind of symbol of the sinful and the unholy." With the Renaissance came a re-birth of the scientific spirit and a fresh awareness of the natural world; in writers like Petrarch one sees the first faint foreshadowings of what we might call the modern attitude toward wilderness.

This attitude was not to be generally accepted, however, for another four hundred years. I have no time to follow the ups and downs of appreciation of nature among, for example, the English poets, from the breath of spring that blows through Chaucer to the hothouse artificiality of the early eighteenth century, when the outdoors was intolerable until it was domesticated and tidied up. Even the night sky was criticized for the way in which the stars "lie carelessly scattered . . . by handfuls, and not by a skilful hand either . . . What a beautiful hemisphere they would have made if they had been placed in rank and order . . . according to the rules of art and symmetry!" You can't go much further than that.

Not surprisingly, a reaction soon set in. Quite suddenly, in terms of history, there arose a whole new attitude toward wilderness during the second half of the eighteenth century, at about the time that America was becoming a nation. One can see it occurring almost within a single generation. For example, in 1754 Oliver Goldsmith is comparing the "dismal landscape" of the Scottish highlands with the elegance of the well-cultivated plains of Holland, while the young historian Edward Gibbon makes a tour of Switzerland without paying any attention whatever to the scenery. Yet only thirty years later Gibbon himself, referring to this trip in his autobiography, remarks on how fashions have been changed meanwhile "by foreign travellers who seek the sublime beauties of nature." Only a few years after Gibbon's death Wordsworth began to write some of the greatest nature poetry in English literature. What had happened?

One thing that had happened was the publication, in 1759, of Rousseau's *La Nouvelle Héloïse*. Jean Jacques Rousseau is generally given the chief credit for the shift

in attitude toward wild nature—which more or less corresponded, in terms of literature and art, to the shift from neo-classicism to romanticism. By Sierra Club standards he was scarcely an outdoorsman. If I were a park ranger, I should hestitate to turn him loose in a wilderness area. He was not a mountaineer; he liked a good road with a parapet to prevent accidents. He nevertheless performed an immense service in breaking the old patterns of thought, in bringing about a new sensibility and awareness of the out-of-doors.

This fresh point of view becomes most evident in the work of the English Romantic poets. As the philosopher Alfred North Whitehead says, "nature-poetry of the romantic revival was a protest on behalf of the organic view of nature . . . a protest on behalf of value." The theological view of the Puritans, which is still dominant in Milton; the mechanistic, anthropocentric view of the eighteenth century is at last replaced—in Wordsworth's "Prelude" and "Tintern Abbey," in Shelley's "Mont Blanc"—by a sense of identification with the rest of nature, a willingness to value it for its own sake, on its own terms. Though the English poets may have had little first hand knowledge of wilderness as such, they were the spiritual ancestors of today's conservationists who are trying to get across the idea that wild nature, like the artistic creations of man, is important not just for some specific purpose, but for itself.

There is, of course, a direct connection between the shift in values in Europe and the American experience. To the early settlers the so-called "howling wilderness" was something to be driven back and subdued; the symbol of the pioneer is the axe. Yet by the late eighteenth century both the scientific and cultural values of wilderness had begun to be appreciated in America. While the Minutemen were fighting at Concord and Lexington, while Jefferson was drafting the Declaration of Independence, naturalist William Bartram was traveling through the wilderness of our South. When the account of his travels was published some years later, it had an immediate impact on European writers. For instance, as Professor John Livingston Lowes demonstrated in that classic study of the literary imagination, *The Road to Xanadu*, Coleridge was steeped in Bartram when he wrote *Kubla Khan*. The "caverns measureless to man" through which Alph, the sacred river, ran are the limestone rocks of Florida. In fact, Coleridge's Note Book contains a pretty good description of the sort of thing that the Wilderness [Act] is designed to preserve: ". . . Some wilderness-plot, green and fountainous and unviolated by Man."

From the early nineteenth century onwards the American wilderness had an increasing impact on our culture, both in literature and in art. James Fenimore Cooper found in it the inspiration for his romances. Washington Irving, though still writing in the European tradition, waxed eloquent over the American scene: "her mighty lakes, like oceans of liquid silver; her mountains, with their bright aerial tints; her valleys, teeming with wild fertility . . . her trackless forests, where vegetation puts forth all its magnificence . . ." William Cullen Bryant, for all his worship of Wordsworth, preferred American scenery to anything he saw abroad. So with the artists: Thomas Cole and the Hudson River School; George Catlin, the first painter of the American West; Charles Bodmer, who travelled up the Yellowstone in 1833, one year after Catlin, in company with the German naturalist Prince Maximilian; Alfred Miller, whose recently discovered watercolors are our freshest on-the-spot record of the frontier; John James Audubon, whose work has become a part of our cultural tradition. Artists and writers together—Audubon was both—had by mid-century established a new attitude toward wild nature which found its classic expression, of course, in the works of Henry D. Thoreau, whose *Walden* was published in 1854. It is an interesting coincidence that Thoreau's *Maine Woods*, with its brilliant statement of the conservation ethic, should have been published in the year (1864) President Lincoln signed that epoch-making bill preserving Yosemite and the Mariposa Big Trees. It is less happy to recall that wholesale destruction of our wilderness and wildlife was getting into high gear just when its value was at last beginning to be recognized. I should like to devote the time remaining to me to a brief consideration of this paradox: specifically, of how we can make these cultural values, so slowly and painfully acquired over the centuries, immediately effective in saving the wilderness that remains.

Let us assume that the case for wilderness has been established, and consider for a moment the presentation of the case. In a democratic society this is crucial. The day of royal forest preserves, established by the few for use of the few, is happily over. Our wilderness will survive only if the man in the street is convinced of its value to him and his children. He will not be preached at; he must be persuaded. He must be made aware of the value of unspoiled nature, not as a refuge for those who can't face the world, but as a return to reality. He must to some degree recapture the excitement felt by the early explorers of this continent; in a period of material progress he must renew his sense of wonder. He must be made to realize that wild nature is not an anachronism in an age of science, but that science has given a fresh meaning to the study of wild nature. And once persuaded, he must be willing to fight for what he believes.

Literature and art have, I think, a place in the front line of this battle. The magnificent publications of the Sierra Club show how directly wilderness values may be translated into pictorial art. They educate on the highest level; they help to preserve what they portray. Every age, it has been said, has its own "landscape eye"; our eye is being trained by men like Ansel Adams and Eliot Porter. In a different manner, artist-writers like Roger Tory Peterson have immense influence on our natural environment. Interest in nature frequently proceeds from

the particular to the general. The dweller in the suburbs who learns to recognize a redwing will soon be fighting to preserve the cattail swamp where it nests. A man who delights in watching shorebirds will not readily allow our last bits of wild beach to be developed for summer cottages. Literary interpretation of a landscape is also of immediate practical value to wilderness conservation. Who can deny that preservation of the Border Lakes country has been furthered by the writings of Sig Olson, and of the Alaskan wilderness by the books of Sally Carrighar, Lois Crisler, or the Murie brothers; that writer-naturalists like Edwin Way Teale and mountain-climbing jurists like Justice Douglas are helping to save our landscape, or that Rachel Carson has given Americans everywhere a new sense of responsibility to the natural world around us?

Perhaps the most dramatic example of the power of words in the battle for wilderness was the late Bernard DeVoto. Benny DeVoto was a fighter and he was supremely articulate. Being a scholar, he applied his sense of history to every situation, thus giving it depth and perspective. He knew the West of Lewis and Clark and he knew the lobbies on Capitol Hill; his concern reached from the great Bob Marshall Wilderness Area in Montana to "Hell's Half-acre" on the banks of the Charles in Cambridge, Massachusetts. As Arthur Schlesinger, Jr. has said, DeVoto was the first conservationist in nearly half a century to command a national audience.

In an age of mass communication and mass culture we cannot depend on appreciation by the few to save wilderness or anything else. In an age of unlimited power we unfortunately cannot rely on the wielders of this power to use restraint: we cannot depend on the great chemical manufacturers to think of our land as well as their balance sheets, or the power companies to consider the effects of their dams upon the landscape, or on the god-like custodians of atomic energy to think twice before they implement their dreams of quite literally moving mountains. However, we can trust all these groups to make their case heard. They know that the only curb on their activities is aroused public opinion. Therefore they spend vast sums of money and employ the finest talent on Madison Avenue to condition the American public to accept poisoning of the earth, pollution of the air and water, and rape of the landscape. While our national symbol, the bald eagle, is apparently dying of DDT poisoning, the older symbol of the pioneer—the axe—has been replaced by more efficient devices. If Walt Whitman were alive today, he would be singing not "The Song of the Broad-Ax" but "The Song of the Broad-bladed Bulldozer."

We are altering the earth, of course, in the sacred name of science. The implication is that science and technology are synonymous. As one young physicist put it, nature is "hard to push around" but—said he with a gleam in his eye—we are reaching the point where we can do it. The point of no return.

Those of us who would rather understand and live at peace with nature are lumped together as "bird-watchers." This epithet just might backfire. I remember E. B. White's reply when someone asked him whether he watched birds. "Yes," he replied solemnly, "and they watch me." Some of the groups who plan to push nature around, to strip-mine the southern Appalachians, to desecrate the remaining Indiana dunes, to kill the Wilderness Bill by delaying maneuvers in Congress, might do well to watch the bird-watchers. And to listen. We are no longer in a minority; we have the votes and we intend to be heard.

After centuries of changing attitudes toward wilderness, it has now been accepted as part of our American culture. The rising tide of interest in wild nature is reflected in almost every book publisher's list, in our magazines and our most powerful newspapers, in our motion pictures and on the air. It is reflected in the halls of Congress and in the top executive offices of the present administration. Those special interests who want to exploit the remaining American wilderness for their private profit rely on the old cliché that he who pays the piper calls the tune. I think we can prove that it is they, not we, who are out of step with the times. As Henry Thoreau could have told them, we are marching to a different drum.

Where will the chance to know wildness be a generation from now?
How much of the magic of this, the American earth,
will have been dozed and paved into oblivion
by the great feats of engineering
that seem to come so much more readily to hand
than the knack of saving something for what it is? . . .
Too often the challenge to explore is met, handled, and relished
by one generation—and precluded for any other.

The most distinguished resident of the North Cascades speaks in their behalf, and for a new national park

The North Cascades: National Resource of the Future

WILLIAM O. DOUGLAS

SEVERAL YEARS AGO, while sitting atop Plummer Mountain and looking to the whiteness of Glacier Peak and to the greenness of the Suiattle forests, I wondered whether the next generation would ever have the chance to experience the same feeling of serenity and composure that was mine at that moment. Would enough people learn of the beauties of this mountain wilderness, and soon enough, to preserve it from civilization pressing in from all sides? Or would the miners and loggers and others turn all this glory to the utilitarian appetites of man, leaving mere remnants to satisfy no less important human needs?

The questions remain unanswered; and in this book they are restated with the pressing urgency that the situation demands. While not minimizing the continuing danger, I am, however, much more optimistic now than I was at the time of my Plummer ascent. The North Cascades, then almost unknown beyond the immediate environs, have since become familiar to thousands of hill-walkers throughout the nation. *Almost* enough people—and I stress the *almost*—have now joined their efforts in a concerted campaign to establish a North Cascades National Park. But the time is not yet. [Mr. Manning's] purpose is to assemble the reinforcements needed to complete the campaign successfully.

As a people, our present attitude toward wilderness is ambivalent. Our nation was born in wilderness and was shaped in character by the interaction of civilization and wilderness. And for all time the great American epic is that of the frontier. It would be hard to find an adult American who does not feel nostalgia for the good old days, yet these are of two kinds. On the one hand are those who value wilderness for its own sake, as a place where a man can learn about his world and his place in it. On the other hand are the few who value wilderness as a place where nature can be converted into riches, preferably without the hindrance of regulatory laws. Here, then, is the basic confrontation—between those who wish to preserve the remaining islands of American wilderness so that the frontier experience will continue to be available to future generations, and those few who want to exploit the wild lands in the uncontrolled manner of their grandfathers.

Our time, in America, is pivotal in regard to wilderness. Pockets of wilderness remain—bypassed and surrounded by the waves of civilization. But those islands are now in the mopping up stage. Roads are moving inward on these surrounding pockets, up a valley here, over a mountain there, along rivers. Yet though these pockets of wilderness are small by comparison with the frontier days when most of the continent was wild, until very recently—and strongly in the memory of many of us—they seemed very large and indestructible by virtue of their size and because they were rugged and forbidding.

Two alarming things are happening. First, the pockets of wilderness have been eroded at an increasing rate, with the help of our new technology. Second, as the population rises and the crowding intensifies, the need for wilderness grows. And looking forward into the years of the yet-uncontained population explosion, we can see that before control devices become operative (as they must become, or the whole question of wilderness becomes moot, and all our heirs will live in tall apartment houses and Central Park will be the wilderness prototype) the population will reach a point where far more wilderness is needed than is now planned to be saved.

Today we look backward to a time when there was more wilderness than the people of America needed. Today we look forward (and only a matter of a few years) to a time when *all* the wilderness now existing will not be enough.

It would, I think, be wise right now to stop all new roadbuilding into wild lands, all damming of wild rivers, all logging of virgin forests. The Americans of 2000 A.D. will thank us if we take that course.

If we do not preserve the remaining samples of primitive America, we will sacrifice traditional American values, the values of frontier America. Not every citizen goes to the wilderness—and they did not even 300 years ago. But so long as there is the presence of wilderness and the option of going to see it, a certain number of citizens do go there and bring back a message for their fellows. As long as that continues we will retain a historic connection with the past of our nation—and our race.

To repeat, what wilderness we decide to save within the next critical decade or two of decision-making will be all we will ever have. Probably it will not be enough. Probably it will be necessary, during the next century, to institute a program of reconstructing wilderness—that is to say, of setting areas aside and leaving them absolutely alone, after first removing such evidences of human "culture" as can be removed. We can evacuate the sheep and people and let the grass grow. But only nature can rebuild the ecological community proper to that individual area, and this takes many, many years—in some places, centuries. It will not happen at all if man has removed and destroyed building blocks without which there can be no complete restoration. For all our science and technology,

there is undoubtedly far more that we do not know about critical elements of ecosystems than we have yet learned.

The Northern Cascades happen to include a number of pockets of wilderness that for one reason or another have been bypassed, but are now under threat. Some say there is too much wilderness in the state of Washington. Parochial people say that Washington has so much that saving a certain percentage is enough. The wilderness of the North Cascades is a national resource of the future, not merely a local commodity, and we need it all, as a nation.

We need a number of protected wildernesses along the Cascade range—the Cougar Lakes Wilderness to help take care of the overflow from the Rainier Park, the Alpine Lakes Wilderness, the North Cascades Wilderness.

But we also need—and most of all—a North Cascades National Park.

A Cascades explorer, writer, and editor in whom the country lives provides a new insight into its living things

Green World

»» Harvey Manning

Perhaps the best introduction to the vegetable world begins in the mineral world of lifeless ice and rock; though no trip starts on a mountain top, many a traveler gains his passion for things that grow during the descent from such a summit as that of Glacier Peak. There is a fine simplicity in the functional architecture of the glaciers and cliffs two miles above the sea, yet after a long day amid the elemental purity of a line drawing, Appolonian man yields totally to Dionysian man at the first bright flower on the crest of a moraine, the first green moss in a creek below a snowfield. On the ascent there was the classicist's joy in rising from confusion into clarity; now on the descent there is the romantic's exuberance in diving into the clutter of meadow and tangle of forest, the rich seeming-chaos of life abundant.

Some North Cascades students specialize in trees and flowers, mosses and lichens and fungi, and find as much satisfaction in encountering species new to them as climbers do in attaining a summit, and are as excited by discovering a species new to the body of botanical knowledge as climbers are in making a first ascent.

Most students, though, are less systematic; through the years they come to recognize trees and flowers, and know them well, but it is a case of "I remember the face but not the name"—surely no bar to friendship. The dilettante's memories are not organized by species and family and measured dimensions, but are a grab-bag of moments in time when a tree (or a forest) or a flower (or a meadow) was intensely experienced.

Every traveler will sometime turn a corner in a trail and pass from trees merely large into a grove of Douglas fir absolutely huge, and at the hugest of all pause to circle the girth by eye, and look far up the straight trunk to the distant crown, and wonder whether this specimen is contemporary with Shakespeare, or perhaps Chaucer.

For many there will be *two*—and both times startled—discoveries of larch, the paradoxical "evergreen" that is not—first coming upon the tree in the spring, perhaps in dawn, when new-sprouting needles are a light, fresh green, and then in the autumn, perhaps in sunset, when the entire tree is a radiant yellow glow.

From west-side valleys one will have memories of individual hemlocks, with a delicacy of needles and cones and a limp softness of branches that seem inappropriate for a tree that grows so large, and from east-side valleys memories of Ponderosa pine, with a cinnamon gaudiness of bark pattern somehow suggestive of a great snake.

There may be a springtime evening, descending from a long climb, plunge-stepping and skating down the snow of a silver fir forest, when the trees pass by so swiftly that out of weariness comes a hypnotized awareness of more than individual whitish-barked trees, an awareness of all the trees merging together in a forest illuminated not from the sky but by a soft inner light.

And one will question the prejudice against wild fire for the sake of the bleached snags of a silver forest, perhaps killed a century ago by a bolt of lightning and a sudden eruption of flame, but still standing upright as a reminder that wilderness—genuine wilderness—is the sum of many processes of life and death, growth and decay.

On a day of blue sky and cool wind, one may walk the narrow crest from Red Pass to White Mountain—the trench of the Sauk North Fork on the right, the headwaters of the White Chuck to the left—and with feet invisible under knee-high, wind-whipped flowers, feel the body gradually lose connection with solid ground and float weightlessly on a sea of color—color of forests below, color of flowers and sky all around.

On another bright and windy day one may climb Miner's Ridge through red heather, white heather, and yellow heather, all in fresh bloom, all mixed together, and the slope so steep that the red bells, the white bells, the yellow bells are only inches away from eyes and nose, and at length one seems not to be climbing upward on feet but swimming upward with hands and knees and elbows, affecting a butterfly stroke through a multi-colored froth of silent bells.

Or on a day of dense fog in the cirque of Pumice Creek,

with no view except underfoot, one may on a single hillside count twenty-seven different flowers in bloom—most unknown by name but recognized from meadows of past years, some never before separated out as individual components of mountain color.

For personal reasons that may or may not be known to the individual, each traveler develops favorites among flowers. The skunk cabbage with its garish yellow blossom and gross shiny leaves may come to have a poignance because it symbolizes the black ooze and green luxuriance of a subalpine meadow-marsh, remembered many a time as the prelude to higher meadows, and to glaciers and summits. Or perhaps one has a feeling for phlox because it is an understated flower, a simple white sometimes tending into subtle blueness but never going all the way. Or moss campion because it grows in arid sands above the snow, the round clumps of tiny red blossoms dotting tiny green leaves startling against brown soil and gray rock. Or yellow stonecrop on a cliff, or fields of glacier lilies at the margin of a melting snowfield, or a smear of orange lichen on a frost-wedged flake of summit rock.

Even those who are color-blind learn by another sense to delight in one particular plant. Mountain thirst may be quenched with swallows of cold mountain water, and the quick ecstasy justifies thirst-building hours. There is a better way, though, a slower way, to quench a thirst—that of the alpine gourmet grazing on hands and knees in a field of blueberries, savoring tart squirts of juice from individual berries, then gathering a handful of fruit, letting anticipation build, and stuffing all into the mouth at once. When it is necessary to break off grazing, hoist pack, and continue on to camp or summit, the flavor lingers for hours and miles, and the stain on fingers, lips, and tongue remains for days, almost beyond memory of the berries.

The Manifestation

Many arrivals make us live: the tree becoming
Green, a bird tipping the topmost bough,
A seed pushing itself beyond itself,
The mole making its way through darkest ground,
The worm, intrepid scholar of the soil—
Do these analogies perplex? A sky with clouds,
The motion of the moon, and waves at play,
A sea-wind pausing in a summer tree.

What does what it should do needs nothing more.
The body moves, though slowly, toward desire.
We come to something without knowing why.

Other Creatures

STUFFED IN MUSEUMS, caged in zoos, roasted in ovens, surrounded by whirring and clicking cameras on national park highways, trapped in the crosshairs of rifles during hunting season, the other creatures of earth are the constant object of man's lively interest. No matter how jaded one may be with the bathos of Bambiism, meeting an animal in its wilderness home—any animal, however commonplace—gives perspective on the place of man in the wilderness, and in the civilized world.

Sad to say, it is not easy anymore to gain a wide acquaintance among the original residents of the North Cascades. The wolf apparently is extinct, or next to it, and the cougar so rare that many a lifelong traveler of the range has never heard a scream or seen a track. The bear, also legally classified as a bad citizen, has virtually disappeared from some areas, and the coyote survives only because man has not yet devised a practical method of total extermination. It is claimed that the mountain goat population is being held constant (for its own good), only the "surplus" harvested, and this may be true, but surely the new generations of goats have learned to be distrustful since trophy hunting resumed in 1948. Though protected by law, not even the marmot is safe, since many hunters consider him an alpine fink, warning away deer with his whistle. And the annual potshooters' toll of chipmunks and squirrels (and trail signs) is beyond estimation.

More often than not, one encounters animals as unseen presences—finding tracks or sign along a trail, or an abandoned nest of dry grass under a rock, or tooth marks in a riverside willow, or tufts of goat wool caught in the heather—or perhaps lying in a sleeping bag in the total black of a cedar grove at Nightmare Camp on Lightning Creek, listening to thuds out beyond flashlight range, and reciting the old Scottish prayer that asks deliverance "from ghosties and ghoulies, long-leggitty beasties, and things that go bump in the night."

Occasionally a traveler observes creatures of the wilderness, other than the omnipresent deer and chipmunk, in

their natural condition, and is even accepted by them as a fellow citizen, or at least as part of the landscape.

One may sit quietly for an hour or more in the uppermost meadow of Mixup Arm, until the large family of marmots living in the frost-wedged castle a few yards below poke their noses out from various caves, one by one, the oldsters pretending not to see the visitor so long as he stays put, the youngsters, only half-grown and still baby-faced, crowding and shoving and climbing over each other to get a better look.

Or in a springtime forest on the slopes of Mount Pugh one may hear a scratching noise above, and look up to a pair of bear cubs clinging to a tree trunk—and glance quickly around to see if their mother is in sight, feeling eerily certain of being within *her* sight.

Or on a rockslide near Lake Anne one may chance upon a silent life-and-death drama, a single pika closely pursued by two weasels, all three dodging swiftly in and out among granite boulders below the hiker's feet, unaware of the human presence, the pursuers solely concerned with catching supper, the pursued with avoiding that particular supper.

Or one may lie in a sleeping bag at Many Waterfalls Camp, snatching packs and boots and food supplies to safety within the human circle, daring to take no offensive action against the porcupine which is determined to find the meal that somewhere here is to be had.

With birds as with flowers a traveler may learn only a few names and still know many individuals, and some among them special favorites. The dipper *is* the river, as the long trilling call of the varied thrush *is* the loneliness and deep repose of the dawn forest. In meadows one may remember ptarmigan chicks ignoring their mother's clucks and wandering in and out of camp, periodically exploding underfoot; in cliffs, a hummingbird nearly scaring a climber from his handholds by darting at his red stocking cap, mistaken for the Promised Blossom; on a summit, a distant hawk or eagle whose point of motion stresses how much air there is in the valley and sky.

And other things than birds have wings; into every North Cascades lifetime comes, more than once, a trial by mosquitoes, with moments of despair, as when trapped in a tangle of slide alder, and moments of restrained fury when one sits in a meadow and kills, and kills, and kills, and perhaps even interludes of maniac sadism when one does not kill but grasps individual mosquitoes gently, pulls off their hypodermics, and releases them to fly again but nevermore drink blood.

Mosquitoes seem an impersonal force of nature, relentless as sunshine on a south slope but equally unaware of themselves and their victims. Not so flies, for flies have sharp eyes and hyperactive brains, and the obscene malice of their ugly faces and arrogant buzzing is intensely personal. Now and then will come a summer week of hot, humid, airless days that breed flies by the million and stir them to lunatic fits, days when wives weep and children learn their fathers are not omnipotent, and when a hiker may come to a river and in desperation plunge his head under the surface for respite, and once within the cold biteless water seriously consider never coming out again.

However, most North Cascades bugs are good neighbors, and interesting to students who learn to focus small. Crossing a snowfield, one may suddenly observe it's not all sterile ice, but is crowded with beetles and other creeping creatures. And perhaps one will discover with nausea, taking a second look at a half-eaten snowball, that ice worms are not a droll legend.

Sometimes one may glimpse a cobweb high in the sky, caught momentarily in the sun, airship of a most improbable flier, a spider become for some reason restless and thus building a web, cutting it loose in the wind, and trusting chance to find him a new home—a reckless way to travel, but not beyond the admiration of those who walk high hills.

The Rose (excerpt)

. . . I came upon the true ease of myself,
As if another man appeared out of the depths of my being,
And I stood outside myself,
Beyond becoming and perishing,
A something wholly other,
As if I swayed out on the wildest wave alive,
And yet was still.
And I rejoiced in being what I was . . .

The Lines are by Theodore Roethke, from Words for the Wind *and* The Far Field, *copyright by Doubleday & Company, as quoted in the club's* The Wild Cascades: Forgotten Parkland.

Grand Canyon: Department of Amplification

AT CONGRESSIONAL HEARINGS on H.R. 4671, which provides for the construction of Bridge Canyon and Marble Gorge dams in Grand Canyon, Representative Morris Udall of Arizona publicly charged that the Sierra Club book *Time and the River Flowing* was "misleading." The error of his charge was demonstrated in general in the ensuing colloquy. To point out more specifically that his charges were based on a misconception and were also inaccurate, the club wrote Mr. Udall September 13 suggesting that he correct his testimony for the record. Three months later the letter had not been acknowledged and the hearings had been published, complete with the inaccurate charges. Therefore we find it necessary to set the record straight here by publishing, in slightly abbreviated form, the letter that corrects the errors in the material presented by Mr. Udall.

The Sierra Club testimony will be found in the published record of the 1965 Lower Colorado River Basin Project hearings, pages 767–818. The analysis presented by Mr. Udall occupies 5 pages of fine print, pages 803–807, followed by four pages of colloquy.

For the first time we know of, permission was granted to publish photographs in a hearing record—16 in all by the Bureau of Reclamation, half of them touched-up in an attempt to indicate that Bridge Canyon dam would not harm Grand Canyon. They were taken by Reclamation Commissioner Floyd Dominy from a helicopter and cover the reach of the river from 67.0 to 92.5 miles above the damsite. They miss the point.

Our photographs, which follow, try to make the point made so well by Theodore Roosevelt in 1903: "Leave it as it is. You cannot improve on it. The ages have been at work on it, and man can only mar it."

The cover shows what Clear Creek used to be like. You could walk up its Eden to the Cathedral in the Desert—which some people thought was the most beautiful natural architecture anywhere. Clear Creek went under this year when Lake Powell rose to 3533.9 feet, just invading the floor of the cathedral, then dropped four feet. The reservoir is to rise 177 feet higher still, destroying the Cathedral. The cover and the next twelve color photographs remind us of what is already lost; the final four are a small sample of what the Bureau would destroy.

In Glen, some parts of what we show will be exhumed from time to time, but they will not live again in this civilization's time. By the late 'forties man had developed the technology that could have spared this place rather than let it be lost to adamant engineering.

We regret that our letter to Morris Udall was not acknowledged and that the errors were allowed to stand and go to press. At the same time, we appreciate what he, like his brother, has done for conservation when the counterpressures of local interests were not so devastatingly severe. It is unlikely that Arizonans who fight the Reclamation Bureau's Central Arizona Project could remain alive in the political arena where Grand Canyon's fate will be decided. Enlightened Arizonans will increase in number in due course. We expect that when they prevail there will still be Udalls to help them in the political and administrative world; we hope that there will also still be an unspoiled Grand Canyon—far more important to Arizona and the world, we think, than the Bureau's obsolete expedient for financing needed water development.

Dear Mr. Udall:

At the hearings on H.R. 4671, you made certain comments about the book *Time and the River Flowing: Grand Canyon.* We believe we can demonstrate to your satisfaction that some of these comments were based on misunderstanding or misinformation, and we think you may wish to modify your statements accordingly in the record of the hearings.

Your statement that the book is misleading because it describes and pictures portions of the Grand Canyon that would not be directly affected by construction of Bridge Canyon and Marble Gorge dams reflects misunderstanding of the book's purpose. That purpose is to show that Canyon *as a whole and as it is,* and to make people want to keep it—all of it—as it is. We are confident you will not find anything in the book, explicit or implied, to justify the contention that the book purports to show only how the Canyon would be damaged.

The Grand Canyon is a geological and topographical unit, and the whole suffers whenever any part is damaged. On this basis, we feel that a book whose avowed purpose was simply to survey potential damage would be warranted in extending its scope beyond the immediate environs of the dam and reservoir sites. But this is hypothetical; our book's purpose is not merely to survey potential damage but to treat the entire Canyon as it is today and the range of experiences that are available in it today.

It is apparent that you had a misconception about the book, but unless you can point to evidence that the book encourages such misconceptions, it hardly seems fair to call the book misleading. We know of no one else who was misled.

With your permission, we would like to discuss some of the specific language in your statement, " 'Time and the River Flowing,' An analysis by Representative Morris K. Udall of François Leydet's book on the Grand Canyon of the Colorado."

On page 1, you say that *Time and the River Flowing* was published by the Sierra Club "in support of its legislative interests." It is true that all Sierra Club publications serve a conservation purpose, directly or indirectly, otherwise we would not publish them. Conservation is the club's "business." But the conservation purposes of the club and its publications are sought primarily through education, and to describe them as "legislative interests" seems to us a prejudicial oversimplification.

Having accused the book of making a case "against a 'straw man' project that doesn't exist," you then say that the "book contains 79 pictures which purport to show scenes in the Grand Canyon which will be altered or destroyed by the construction

of these dams." This is a straw man with a vengeance. We do not believe you can find language in the book to justify an assertion that the pictures "purport to show scenes . . . which will be altered or destroyed."

You state that "in this entire volume one finds only 12 pictures of areas which would be inundated by these new lakes—six at Marble and six at Bridge." But your own analysis of the pictures does not bear out this contention. You list ten pictures that would be radically affected by Marble Gorge dam and 16 that would be affected by Bridge Canyon dam.

We do not feel that the number of pictures portraying potentially damaged scenes is relevant to the book's purpose, which is to depict the Canyon as a whole and as it is. We should like to point out, however, in the interests of accuracy, that the number of such scenes is considerably greater than was indicated by your statement at the committee hearings.

You said you hoped readers of the book "will understand that the truly magnificent scenes shown here are in no way endangered by this Project." In view of the foregoing, surely this statement should be qualified in some way. Many of the scenes would not be endangered, many other scenes would.

On page 3 you say that "the implication is that this scene would be flooded out by the reservoir." Where do you find such an implication? No adversary of the dams, to the best of our knowledge, has ever suggested that the Canyon (or even the inner gorge) would be flooded from rim to rim by the proposed reservoirs. This preposterous idea is attributed to adversaries of the dams by their proponents, who seem to take pleasure in demolishing an argument that no one ever made. We should have thought you would credit the Sierra Club with enough honesty and common sense not to charge the Bureau of Reclamation with planning a desecration on a scale we know to be physically impossible. The planned destruction, in our opinion, is bad enough; we need not exaggerate.

Commenting on photograph 10, you minimize the importance of the scene at river level and talk instead about the view from the rim. (The same rim-versus-river bias occurs in many of your other comments also.) We believe that a river-level traverse is the supreme experience that the Canyon affords, and that this experience should not be foreclosed to all men for all time. We therefore believe that the inundation or alteration of the river-level environment is of paramount importance.

Referring to photograph 11, you say that "exactly the same kind of photograph could be taken along the edge of the reservoir once the project was constructed." We beg to differ. Bridge reservoir's shoreline, about 200 feet higher, would lap against sheer rock walls and talus slopes—until the talus slumped into the reservoir as it is doing at Lake Powell. Even if its fluctuations were held to a minimum, a reservoir would not create a sandbar hospitable to flora, fauna, and campers "exactly the same" as the living river's natural riverbank.

Of picture 20, you said that "the increased water level would alter this low-angle scene but not obliterate it." The camera position is about 300 feet below the surface of Marble Gorge reservoir. This particular scene would not be merely altered, but would be obliterated.

Commenting on a number of pictures taken below Marble Gorge damsite and above Bridge Canyon reservoir site, you say the scenes would not be affected. We dispute this statement. It is true that the scenes would not be inundated, but we believe it is totally untenable to argue that these scenes would not be radically altered. The streamside environment was created, is altered, and is constantly renewed by the ebb and flow of the living river. Along an even more regulated river, the forces of rebuilding could not keep pace with the forces of wind and water erosion. Sandbars, benches, dunes and other riverside phenomena would be seriously impaired or disappear entirely in areas of the Grand Canyon supposedly protected by national park status.

In a number of cases you did not know the exact location but assumed correctly that the scenes would be inundated. We wish that your staff (or the Bureau of Reclamation?) had felt free to apply to us for any information they lacked. We would have been glad to cooperate.

As for photograph 53, you say the location is not known and you make no assumption one way or the other. The location is known to us. It is at Mile 166.5, where, according to our information, Bridge Canyon reservoir would be more than 120 feet deep. The scene would be submerged.

You say of the Fern Glen photograph that "it is possible that this portion of the canyon wall would be inundated." According to our information, the scene would be inundated.

Of picture after picture, you note correctly that it is far removed from the dam and reservoir sites. Very true, and for that very reason we find it hard to see how you could sincerely believe that the book's purpose was to show only areas of potential damage. Surely you credit us with knowing that the Kaibab Plateau, at least, would not be flooded? If you do credit us with reasonable knowledge of the Canyon but persist in saying our book is misleading, then there would seem to be only one conclusion that we can draw: that you are accusing us of trying to perpetrate a gigantic and stupidly transparent hoax. We don't like to think that you consider the Sierra Club either ignorant or dishonest, but there doesn't seem to be any other inference that can reasonably be drawn from your statement.

We believe it likely that you were too pressed for time to consider all the implications of the statement you submitted regarding *Time and the River Flowing*. And it is our hope that when these implications are called to your attention, you will see fit to modify your statement for the record. We realize too, of course, that you were much too busy to check all of the facts that were presented to you. Factual errors (as we see them) have been called to your attention so that they may be corrected (if they require correction in your judgment). Our letter is not written in an angry or argumentative spirit, but in a friendly attempt to spare you the embarrassment of going on record with statements that, in some cases, we believe to be demonstrably untrue.

Your service to the cause of conservation is well known to us, and it is with deep regret that we find ourselves adversaries instead of allies in this particular instance. We trust that we will be allies much more often than adversaries in the future, as we have in the past, and anticipate with confidence your valuable leadership and support of conservation causes.

Sincerely,

DAVID BROWER, *Executive Director*
HUGH NASH, *Publications Manager*

THE ARCHITECT, the life-giver, and the moderator of Glen Canyon is the Colorado River. It slips along serenely, riffled only in the few places where boulder-filled narrows confine it, for nearly two hundred miles. For all the serenity, the first canyon experience is too overwhelming to let you take in more than the broadest features and boldest strokes. The eye is numbed by vastness and magnificence, and passes over the fine details, ignoring them in a defense against surfeit. The big features, the massive walls and towers, the shimmering vistas, the enveloping light, are all hypnotizing, shutting out awareness of the particular.

Later you begin to focus on the smaller, more familiar, more comprehensible objects which, when finally seen in the context of the whole, are endowed with a wonder no less than the total. . . .

The tributaries of Glen Canyon are a unique natural museum exhibiting examples of erosion found nowhere else in the world. The walls of the canyon as a whole are like worm-eaten wood, riddled with tunnels on an enormous scale. The smooth bores of their unroofed, twisting holes converge on the common river channel. Most of them are quite short, no more than a mile in length, the shortest snaking back only two or three turns before ending abruptly in a circular chamber surrounding a pool into which a trickle may descend. . . .

Most side canyons, even those carrying no permanent stream, are rich with plant life. For all the havoc the floods work against lifeless structures, they are ineffective against the frailest living things which, like the sea algae of a surf-bound coast, bend to the irresistible force and spring back after the torrent has passed; and the power of fertility soon reseeds the plants that are uprooted. Grasses, flowers, canes, and vines cover the sand banks at the bends. Oaks grow almost impenetrably in the sunniest spots and redbud fills the shady corners. . . .

Down all the tributaries pour intermittent floods burdened with sand, each grain a chisel able to liberate imprisoned grains from the ancient walls. The streams batter the canyonsides, tearing away all loose material, and gouging out deep troughs. The narrowness of some canyons—their sides may be hundreds of feet high and less than six feet apart at the bottom—is dramatic evidence of the rapidity of erosion. A few evidently started as tight meanders in the surface rock, in which fast corrasion deepened the channels into wide passages beneath interlocking walls. At the sharpest bends the pounding waters have scooped out deep caves, the girding walls of which envelope an opposite rounded peninsula of rock. These gigantic structures are like loosely articulated elements of an immobile ball and socket joint. If you stand facing outward in the stream bed in one of these caves and look up at the top of the dome-shaped inner wall, you see the sky as a crescent of blue, bounded above by the overhanging dark surface of the cave rising behind you. The magnitude of these awesome shapes expanding over your head out of the confines of the canyon floor is a test of credulity.

Of all the phenomena of the side canyons, it is the light, even in the farthest depths of the narrowest canyon, that evokes the ultimate in awe. In somber, rocky caverns of purple and ocher stone into which the sun rarely strikes, shallow pools glitter brassily from sunlit cliffs high overhead. Wherever there is a damp cleft, maidenhair fern and scarlet lobelia and white columbine grow. Their drooping leaves turn a dusky cyan-green in the blue shadows, creating a subdued, almost funereal atmosphere.

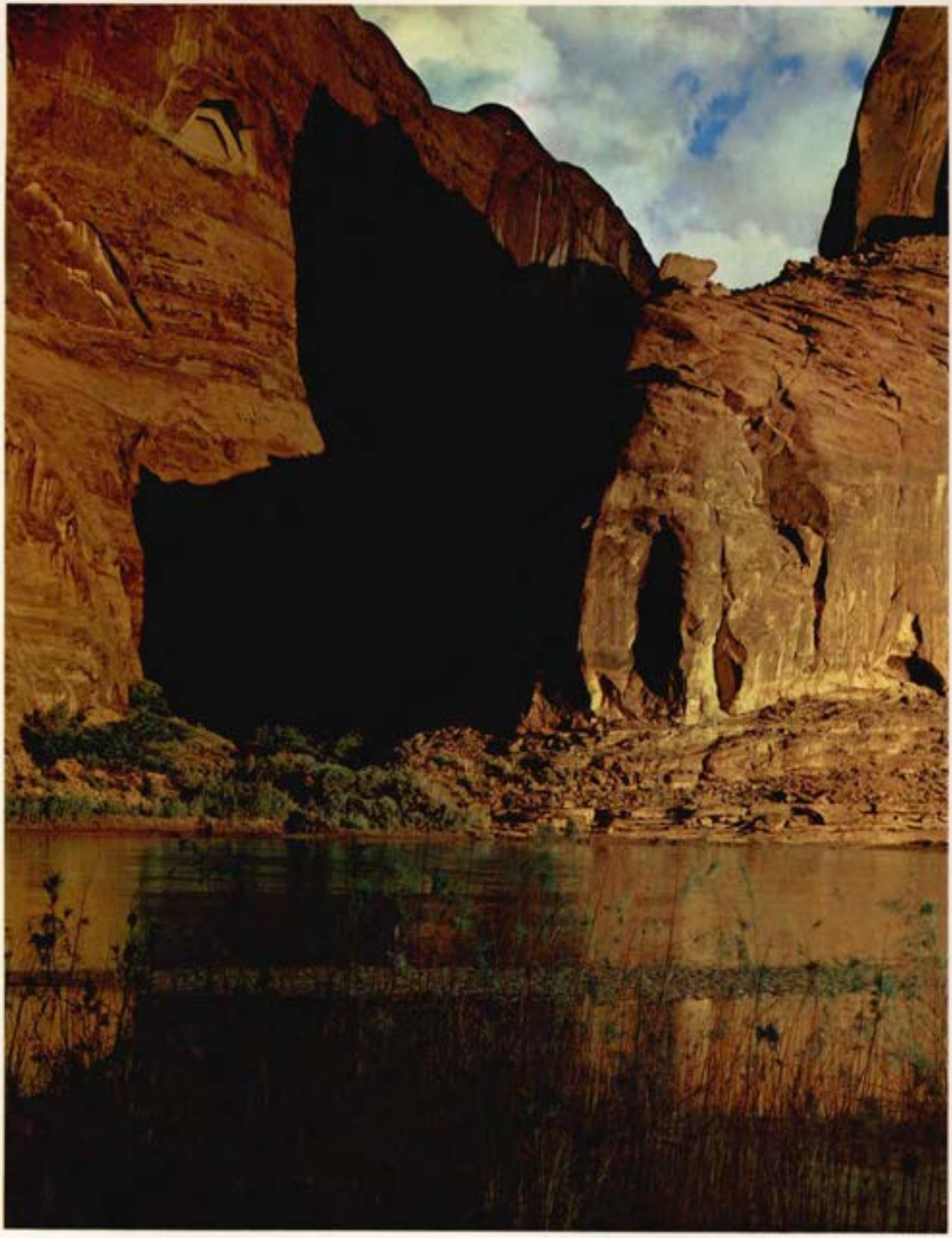
It is reflection that imparts magic to the waters of the Glen Canyon and its tributaries. Every pool and rill, every sheet of flowing water, every wet rock and seep—these mirror with enameled luster the world about. In narrow chasms streams of melted gems flow over purple sand past banks of verdant willow. Small puddles, like shining eyes, fuse the colors of pink rocks and cerulean sky, and wet ripples of mud may do the same thing. In the changing light nothing remains the same from year to year or hour to hour. Flood and drouth, heat and cold, life and death alter the finer details incessantly, but they leave unchanged the grand plan and the enchanting quality of the Colorado's masterwork. . . .

But now another kind of invasion is taking place—one that will obliterate all the places that bear the nostalgic names, wipe them out for all foreseeable time. Thus, with nothing tangible to invoke the past, even the memory of the river's history will be destroyed. This final act of destruction is, as it was with Colorado River goldseekers fifty years ago, materially motivated. The wealth of the Colorado this time is its power, ostensibly at least, although there are those who see a less forthright purpose—the ambition of a federal bureau to build an empire out of river development, with sincere regard, no doubt, for one kind of public welfare, but with disregard of many less tangible aspects of human well-being. Glen Canyon dam may appear to exemplify this ambition. But neither does its imposing magnitude alone justify it, nor can the dam serve all the beneficial functions attributed to it in the process of obtaining legislative support or as a subsequent apology.

The waters impounded by this plug of artificial stone spread back through Glen Canyon and for one hundred eighty-six miles in all, inundating the sparkling river, swallowing its luminous cliffs and tapestried walls, and extinguishing far into the long, dim, distant future everything that gave it life. As the waters creep into the side canyons, enveloping one by one their mirroring pools, drowning their bright flowers, backing up their clear, sweet springs with stale flood water, a fine opaque silt settles over all, covering rocks and trees alike with a gray slimy ooze. Darkness pervades the canyons. Death and the thickening, umbrageous gloom take over where life and shimmering light were the glory of the river.

ELIOT PORTER

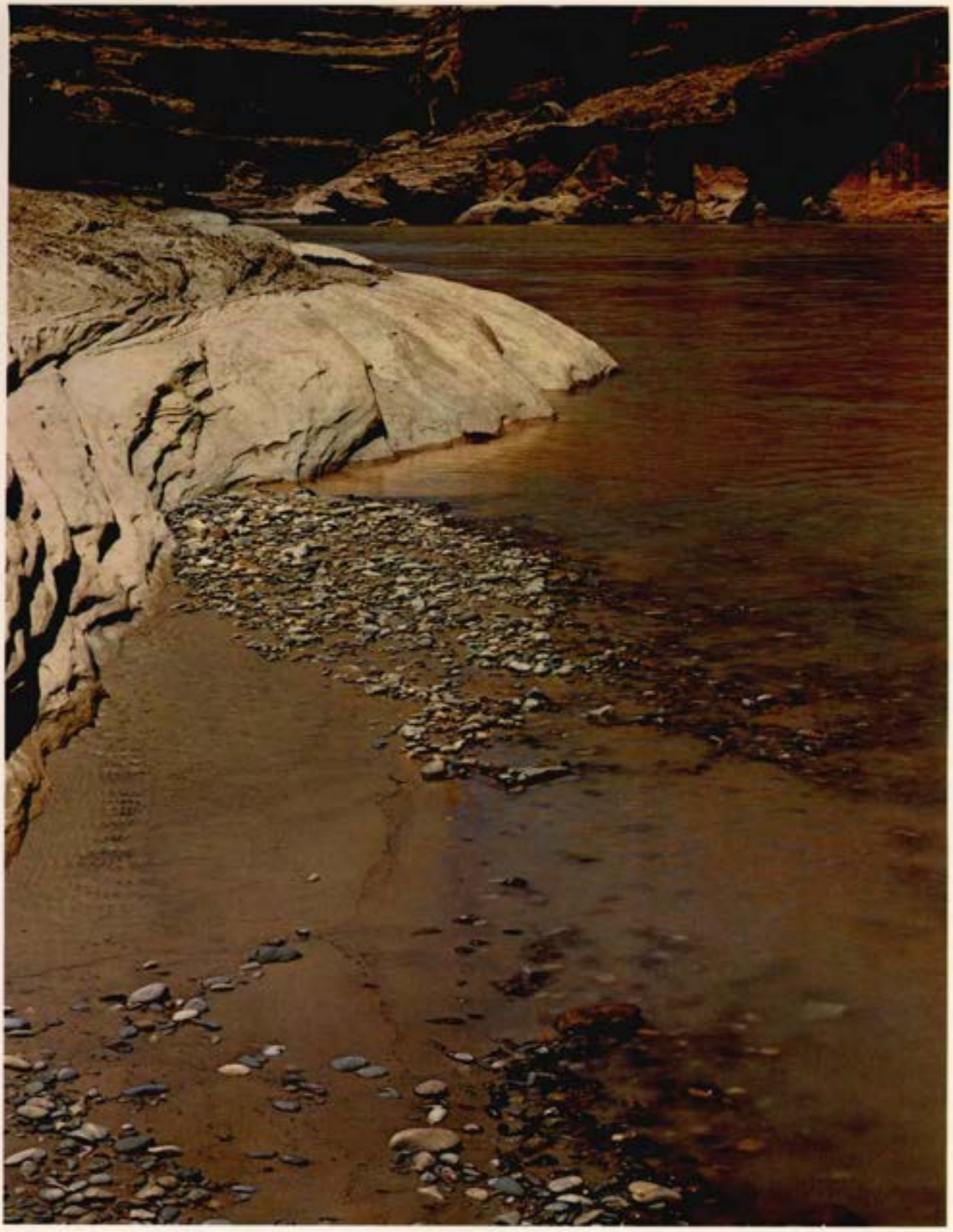
The following twelve photographs are reproduced from color separations made for the club book, printed on Kromekote and lacquered, as is the cover of this Bulletin. *Plates and lithography are by Barnes Press. The quotations are also from the book, selected from various sources.* *See also page 95.*



Past these towering monuments, past these mounded billows of orange sandstone, past these oak-set glens, past these fern-decked alcoves, past these mural curves, we glide hour after hour, stopping now and then, as our attention is arrested by some new wonder.—JOHN WESLEY POWELL, 1869

THE PLACE NO ONE KNEW

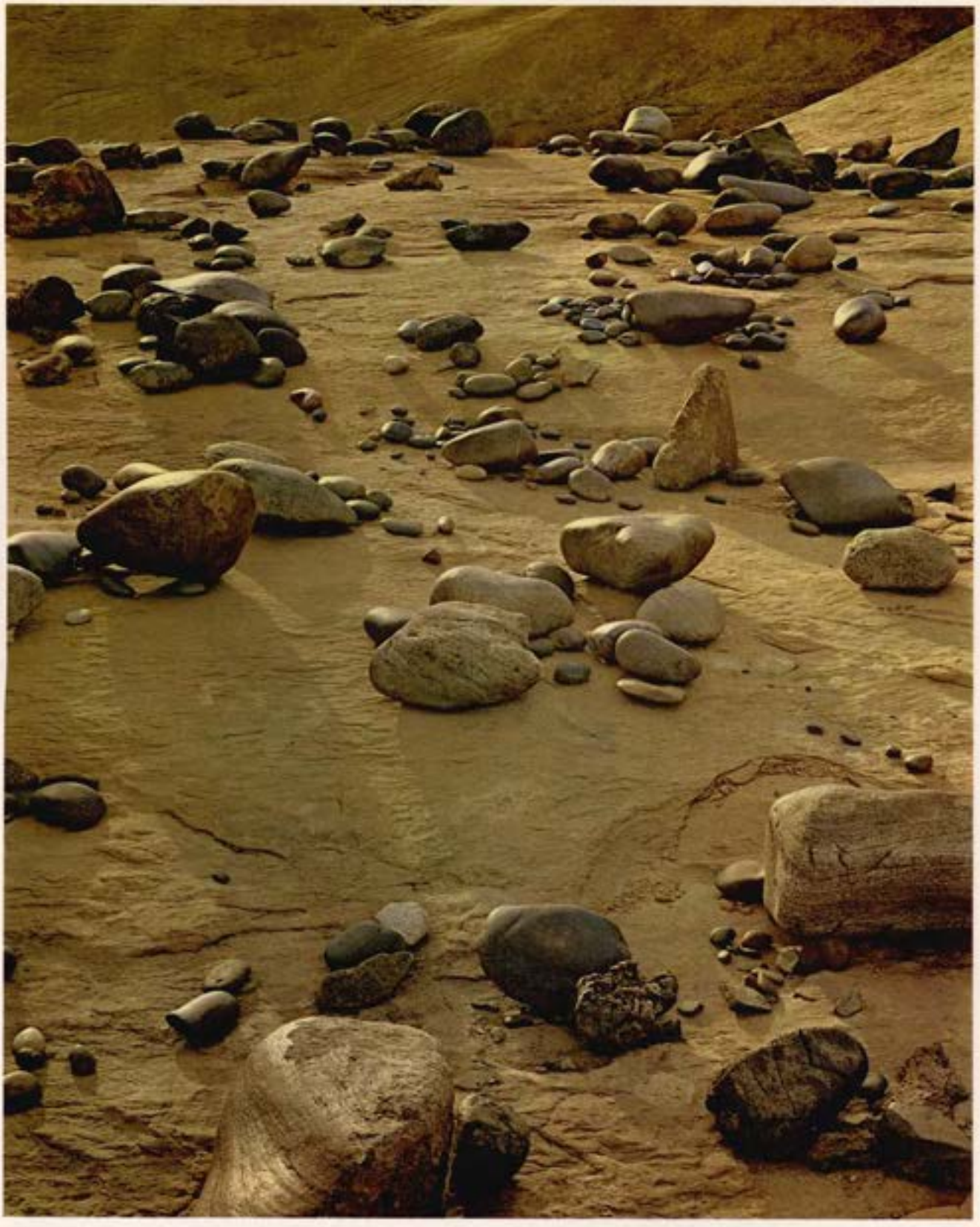
by ELIOT PORTER



. . . nothing is static,
nothing is still. Not even the great pyramid of the Colorado.
Everything is alive, dynamic with constant change. Even the stones
breathe; water is electric; the air is luminous . . .

We measure minutes. The river ignores millenniums.

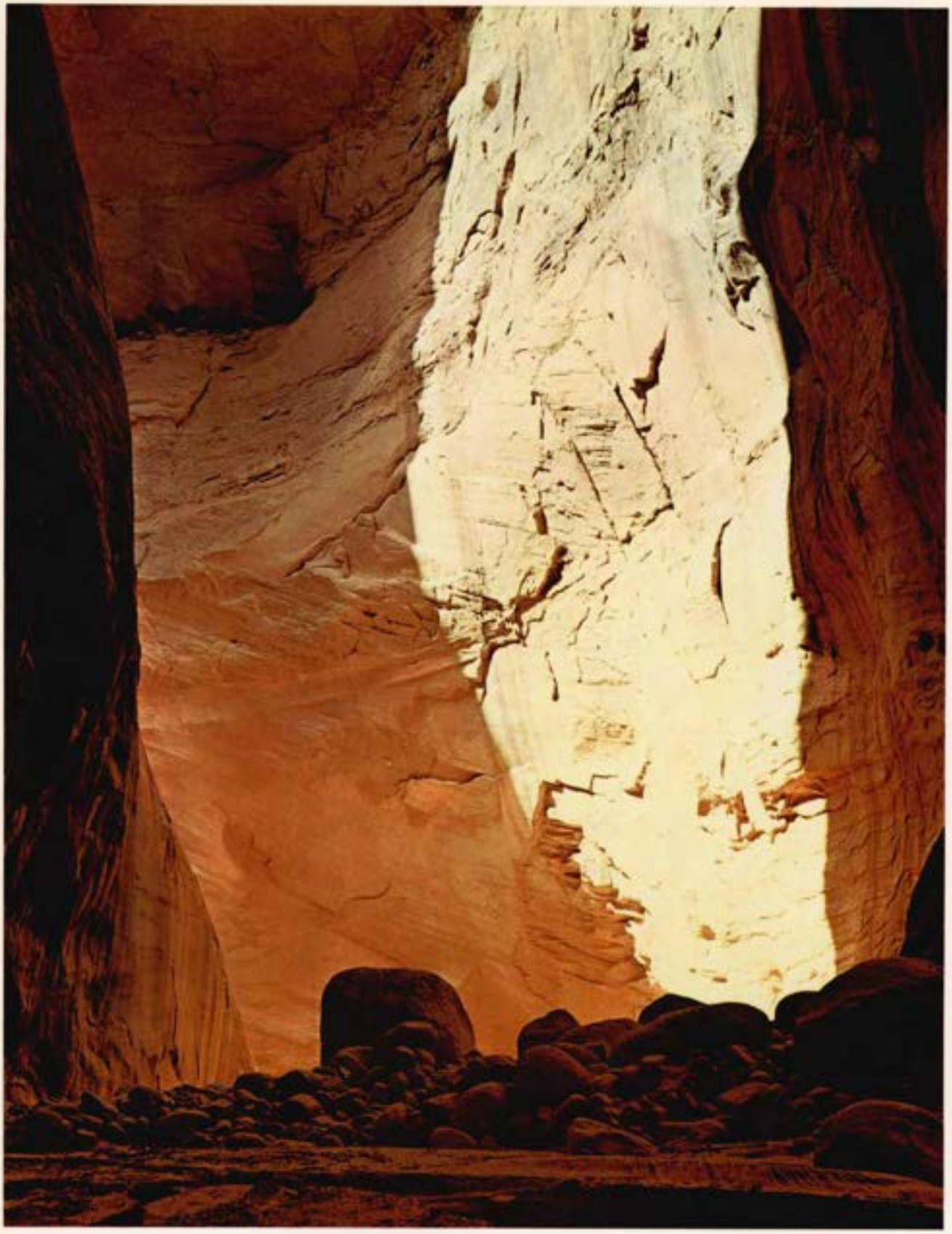
— Frank Waters



. . . The earth [Hutton] says, like the body of an animal, is wasted at the same time that it is repaired. It has a state of growth and augmentation. . .

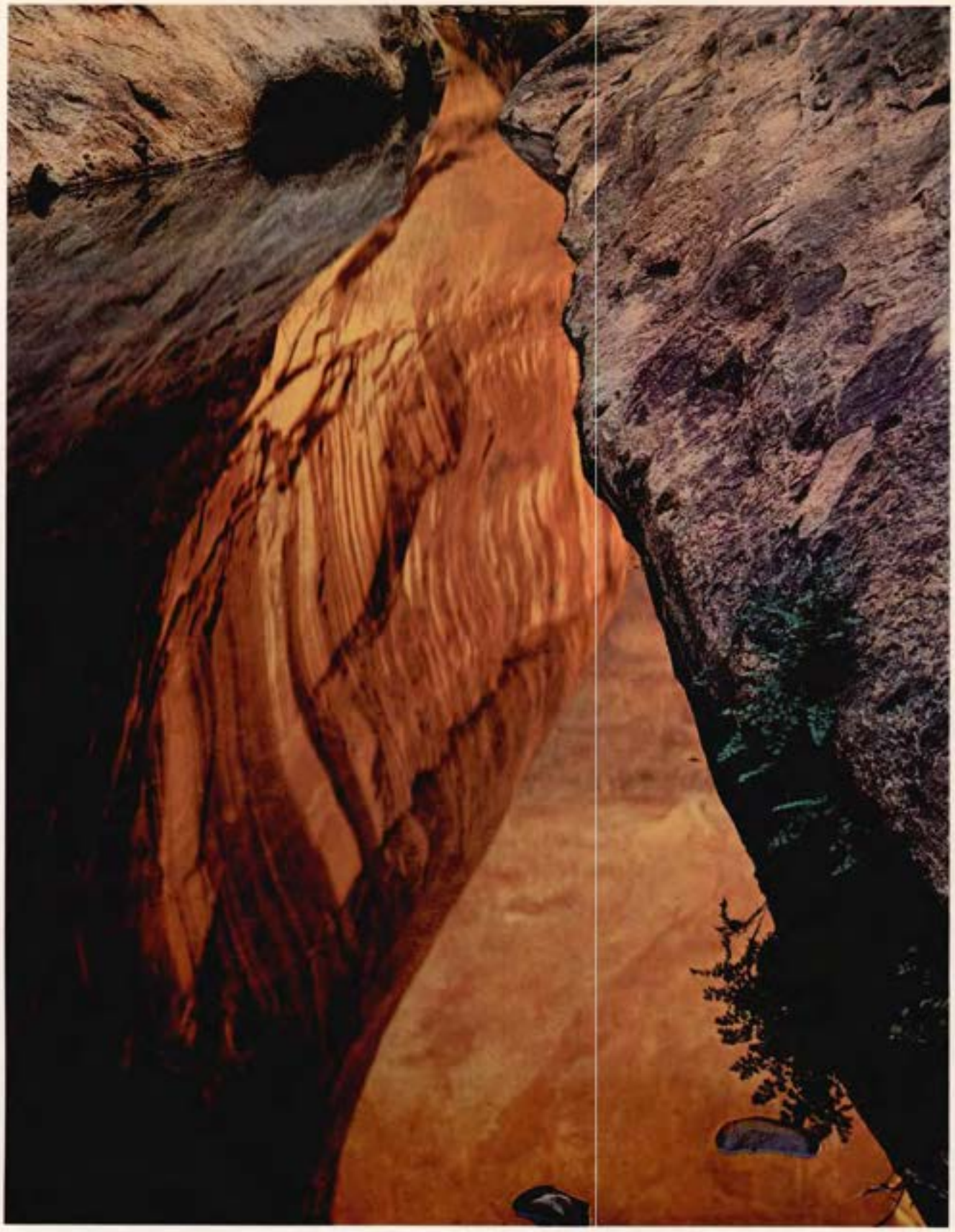
He saw the bit of soil carried away by a mountain brook or a spring freshet lodge in and nourish a lower valley; he saw the wind endlessly polishing and eroding stones on the high flanks of the world.

— Loren Eiseley

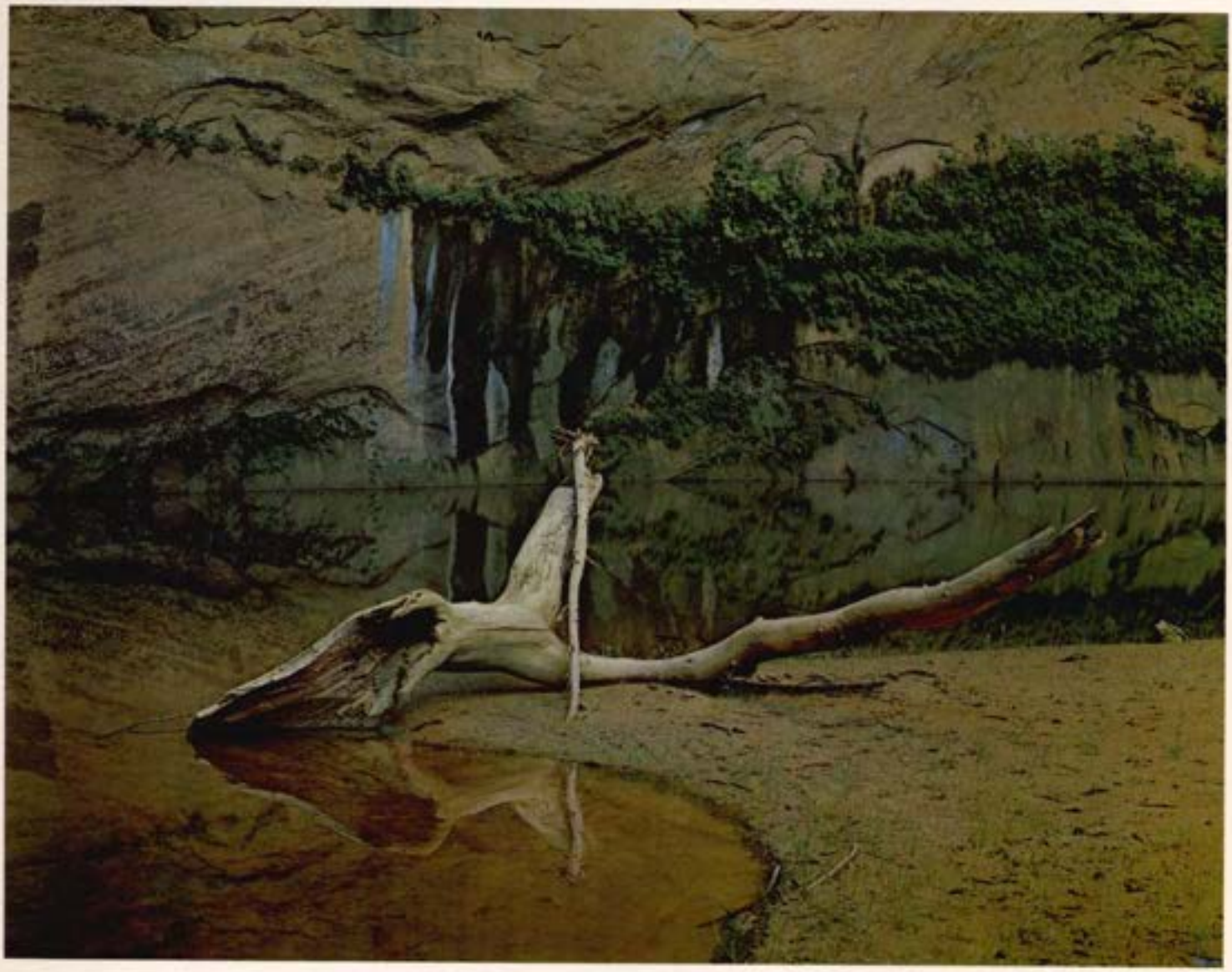


This place exerts a magnetic spell. The sky is there above it but not of it.
Its being is apart; its climate, its light, its own. The beams of the sun
come into it like visitors... Above stand its walls, rising
through space upon space of silence. They glow, they gloom, they shine.

—Owen Wister

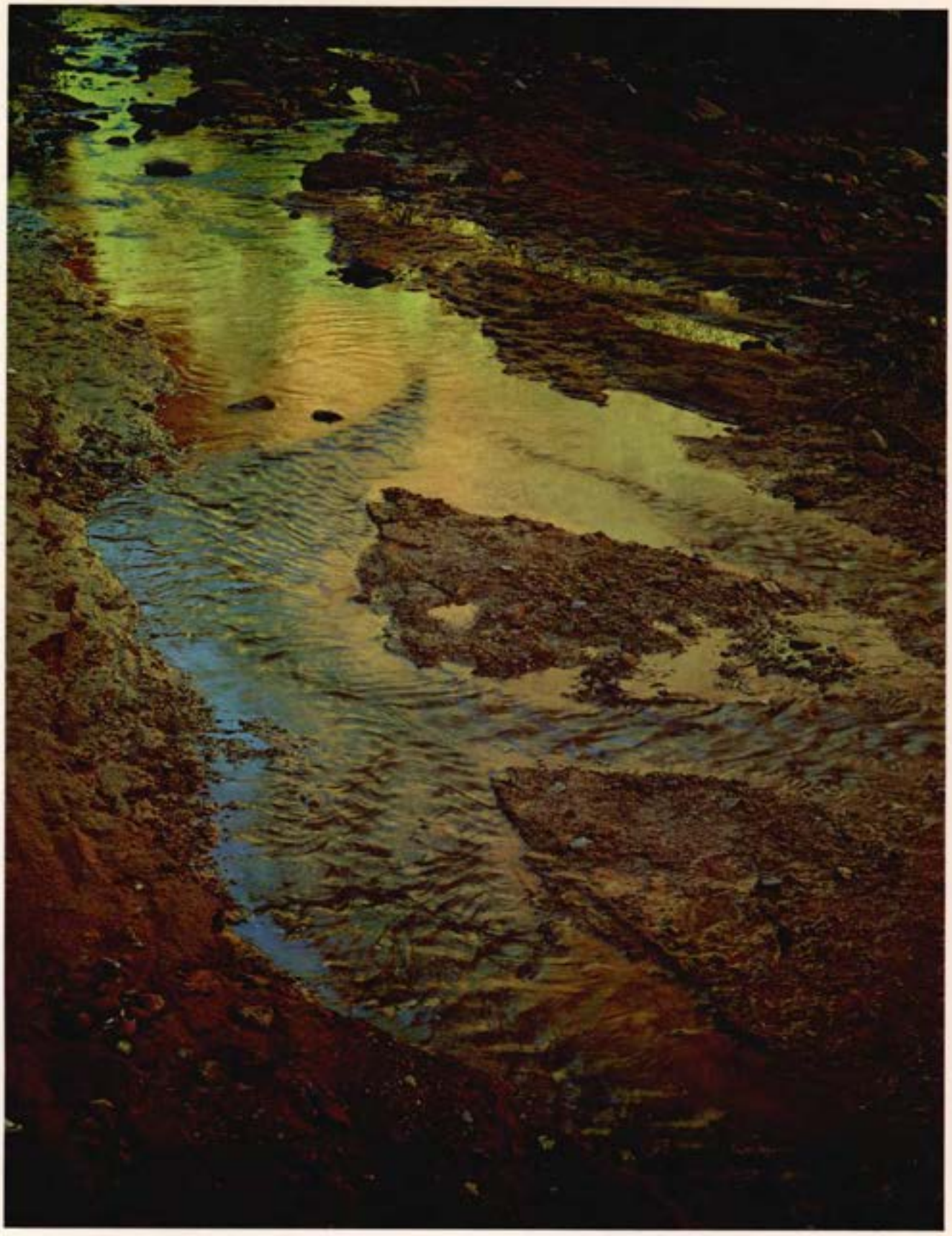


To Hidden Canyon come with reverence.
It is a holy place, this nautilus,
This mighty, spiral-chambered carven shell...

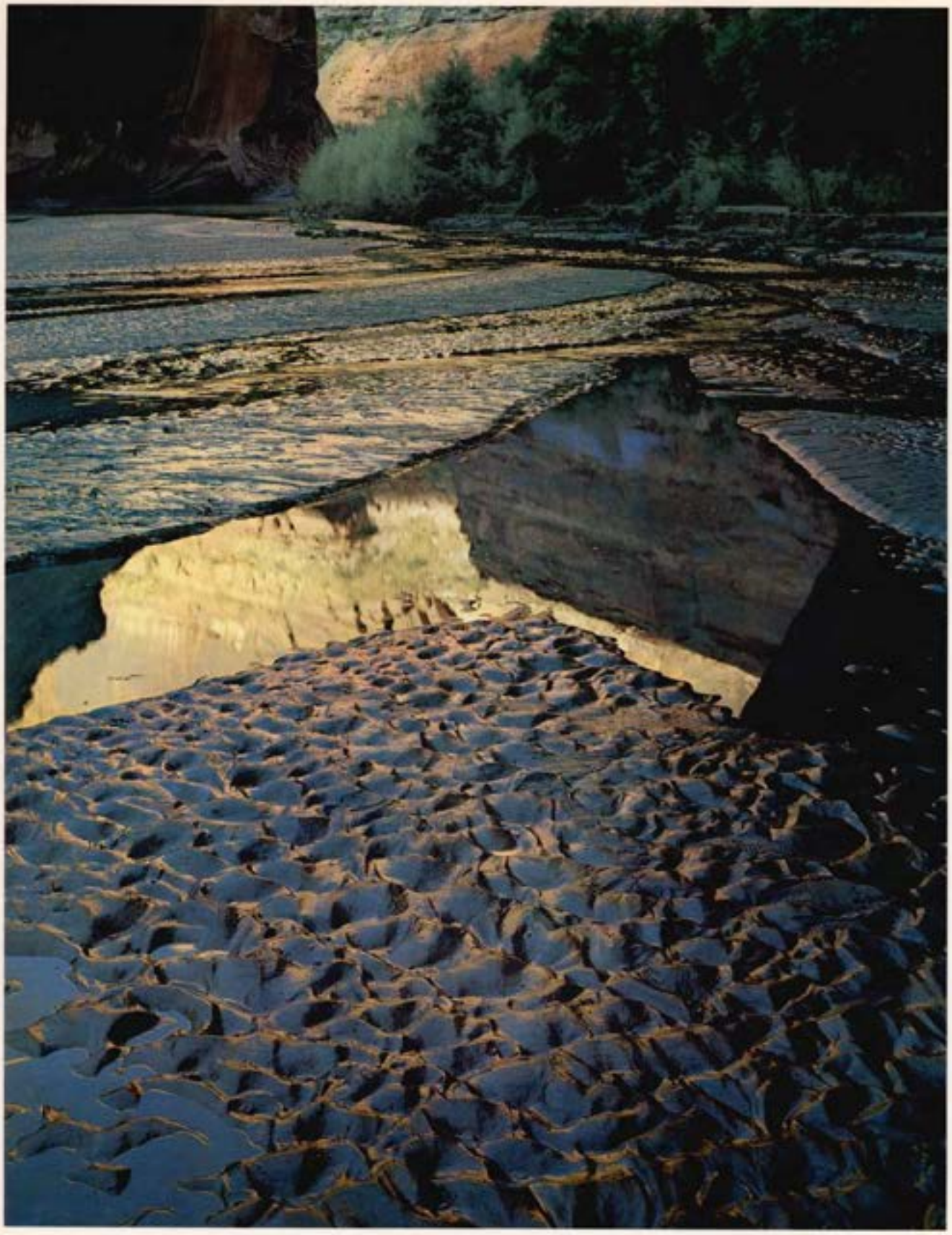


...Step softly here where seldom man has trod—
So Adam walked in Eden's virgin dell
That lay still dewy from the hand of God.

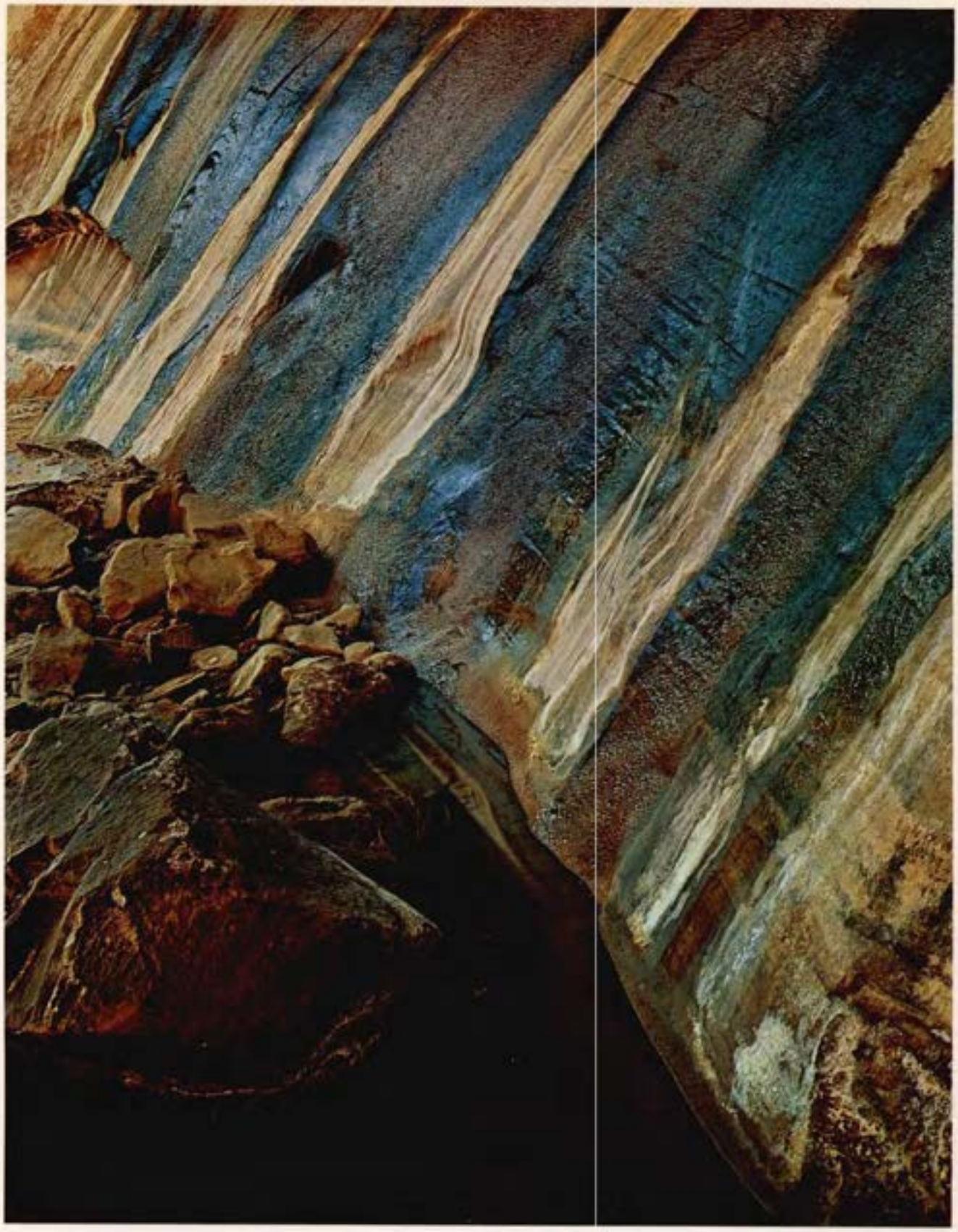
— Cid Ricketts Sumner



If there is magic on this planet,
it is contained in water. — Loren Eiseley

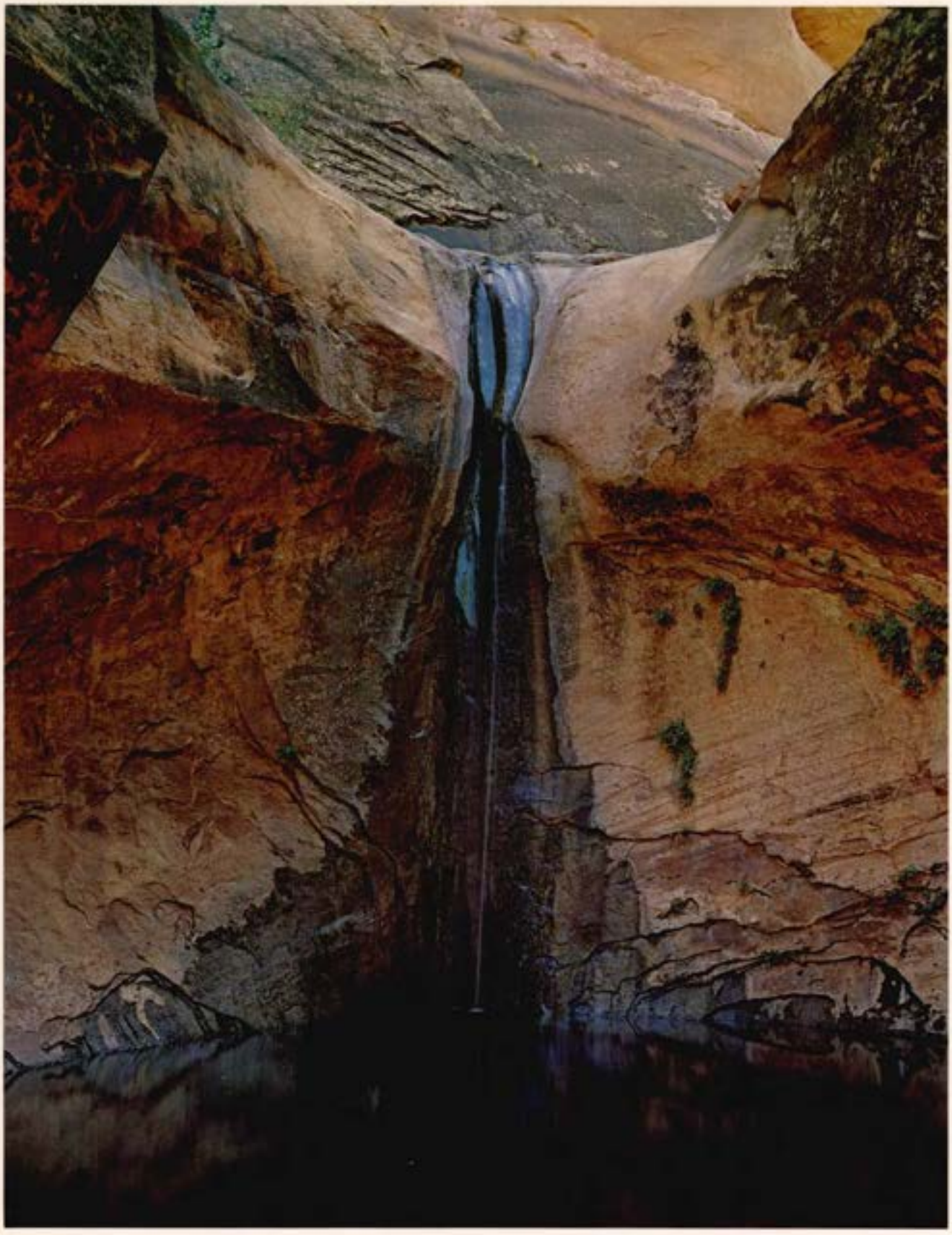


None but Indians have ever lived in this country, and they exist only as a part of it. They have never attempted to assert themselves, but have grown up in it like the trees. It is their food, their drink, their religion, and their life...They pass through it silently, leaving as little trace as sunlight through wind. — Donald John Hall



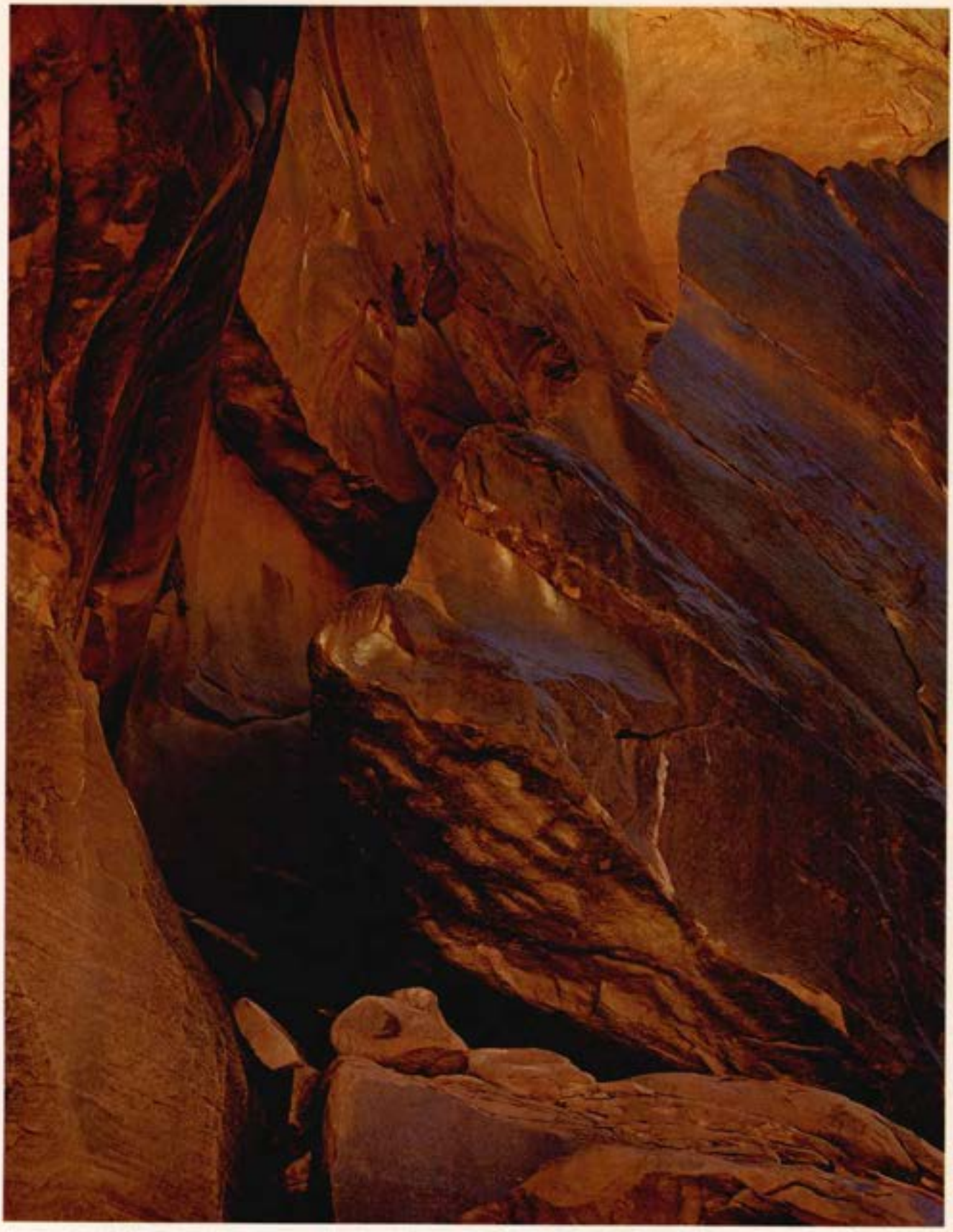
Creation is here and now. So near is man to the creative pageant, so much a part is he of the endless and incredible experiment, that any glimpse he may have will be but the revelation of a moment, a solitary note heard in a symphony thundering through debatable existences of time. Poetry is as necessary to comprehension as science.

— Henry Beston



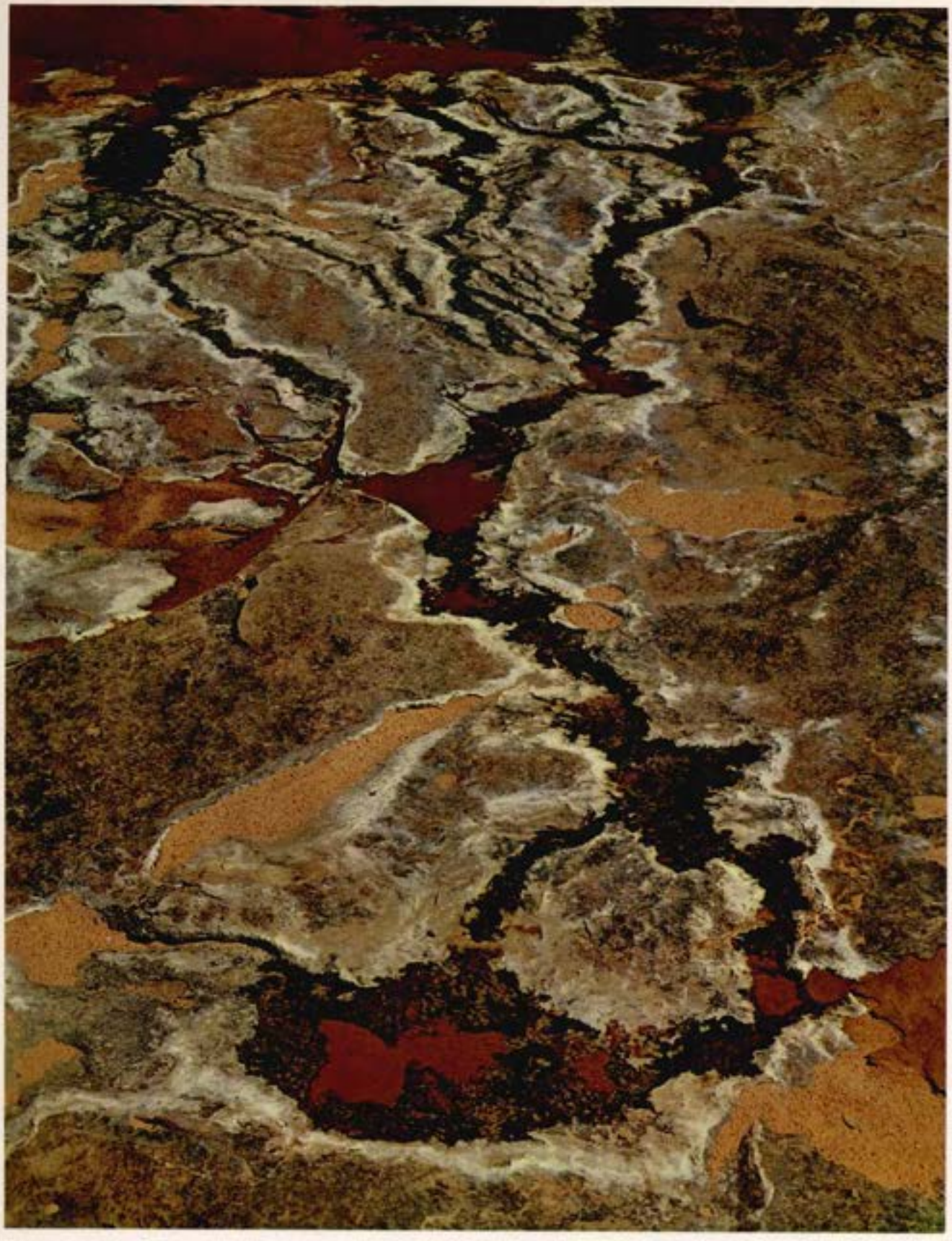
The finest workers in stone are not copper or steel tools,
but the gentle touches of air and
water working at their leisure
with a liberal allowance of time.

—Henry David Thoreau



By the side of religion, by the side of science, by the side of poetry,
stands Natural Beauty, not as a rival to these,
but as the common inspirer and nourisher of them all.

— G. M. Trevelyan



All Nature is but Art unknown to thee;
All chance direction, which thou canst not see;
All discord, harmony not understood;
All partial evil, universal good:
And spite of Pride, in erring Reason's spite,
One truth is clear, Whatever is, is right.

— Alexander Pope

The Judgment of the Birds

It was a late hour on a cold, wind-bitten autumn day when I climbed a great hill
spined like a dinosaur's back and tried to take my bearings.
The tumbled waste fell away in waves in all directions.
Blue air was darkening into purple along the bases of the hills.
I shifted my knapsack, heavy with the petrified bones of long-vanished creatures,
and studied my compass. I wanted to be out of there by nightfall,
and already the sun was going sullenly down in the west.

It was then that I saw the flight coming on. It was moving like a little close-knit body
of black specks that danced and darted and closed again. It was pouring from the north
and heading toward me with the undeviating relentlessness of a compass needle.
It streamed through the shadows rising out of monstrous gorges.
It rushed over towering pinnacles in the red light of the sun,
or momentarily sank from sight within their shade.
Across that desert of eroding clay and wind-worn stone
they came with a faint wild twittering that filled all the air about me
as those tiny living bullets hurtled past into the night.

It may not strike you as a marvel. It would not, perhaps,
unless you stood in the middle of a dead world at sunset, but that was where I stood.
Fifty million years lay under my feet,
fifty million years of bellowing monsters moving in a green world
now gone so utterly that its very light was travelling on the farther edge of space.
The chemicals of all that vanished age lay about me on the ground.
Around me still lay the shearing molars of dead titanotheres,
the delicate sabers of soft-stepping cats, the hollow sockets
that held the eyes of many a strange, outmoded beast.
Those eyes had looked out upon a world as real as ours;
dark, savage brains had roamed and roared their challenges into the steaming night.

Now they were still here, or, put it as you will, the chemicals that made them
were here about me on the ground. The carbon that had driven them
ran blackly into the eroding stone. The stain of iron was in the clays.
The iron did not remember the blood it had once moved within,
the phosphorus had forgot the savage brain.
The little individual moment had ebbed from all those strange combinations of chemicals
as it would ebb from our living bodies into the sinks and runnels of oncoming time.

I had lifted up a fistful of that ground. I held it while that wild flight
of south-bound warblers hurtled over me into the oncoming dark.
There went phosphorus, there went iron, there went carbon,
there beat the calcium in those hurrying wings.
Alone on a dead planet I watched that incredible miracle speeding past.
It ran by some true compass over field and waste land.
It cried its individual ecstasies into the air until the gullies rang.
It swerved like a single body, it knew itself
and, lonely, it bunched close in the racing darkness,
its individual entities feeling about them the rising night.
And so, crying to each other their identity,
they passed away out of my view.

I dropped my fistful of earth. I heard it roll inanimate back into the gully
at the base of the hill: iron, carbon, the chemicals of life.
Like men from those wild tribes who had haunted these hills before me seeking visions.
I made my sign to the great darkness. It was not a mocking sign, and I was not mocked. . . .

— Loren Eiseley

If the Great Society is to have wild rivers,
and a conservationist Secretary of the Interior to lead in saving them,
can Grand Canyon's wild river conscionably be counted out?

Grand Canyon or a Mess of Mountains?

»» David Brower

When the Sierra Club undertook the book on Glen Canyon, there was almost no literature on the subject. John Wesley Powell treated it briefly in his accounts of his Colorado River exploration, and we used much of what he said. We borrowed heavily from writing about the Colorado in general, using excerpts that worked well with Eliot Porter's color photographs and augmented his own splendid chapter, "The Living Canyon." And we drew upon what Wallace Stegner described as "a chorus of voices *for* the wilderness." That book was too late to help save Glen Canyon. The conservationists' last chance vanished when the alliance against the Colorado River Storage Project dissolved in ignorance, false assumption, and in naivete—ignorance about the beauty of the place, false assumption about the necessity of the dam, and futile hope that the Bureau of Reclamation would honor an agreement not to impair the National Park System. The book could only be a beautiful requiem. No one will ever again see the canyon as it was.

With Grand Canyon it is different. The world knows it already. Millions of people have seen it and photographed it from the rims. Thousands have taken the trails into it and have learned about the canyon's depth at the quarter-way point—when they reach the bottom and must climb the vertical mile back out. Hundreds have followed Powell's example and, profiting from his mistakes, have run the Colorado down through its grandest canyon. A handful have run up it. At least one man has walked it, although not at river level.

The literature is impressive—about the place itself, about the meaning of the park, about the meaning of the Colorado to an arid land, about the life which that land supports. None of the literature, however, seemed sufficient in itself to combine with photographs and get to the heart of the crucial issue: what is important, in Grand Canyon, about the living river? We knew it was important for a number of vital reasons, but saw no easy way to demonstrate it. After all, wasn't the river running clear now and then, thanks to Glen Canyon dam? In a canyon more than a mile deep, what difference would a blue lake make, so small in those depths? Wouldn't it let tourists go up and down the canyon in power boats? And wasn't the Colorado River already dead, killed by Glen Canyon dam? Would modest releases of water from that dam ever revive it? As Wallace Stegner pointed out, every side canyon whose flood debris used to be swept away by the spring flood would now dump boulders and snags into the reduced river. Wouldn't this create permanent barriers and turn the river into a series of pools? In summation, what harm would it do to change the blue pools of an already dead river to a continuous blue pool, or even to divert the dead river into a dark tunnel between its fluctuating reservoirs, then squeeze the power out of it with one more hydropower installation, and by this device put more water on a thirsty land?

There must be a book to help people understand, to involve them. What should it say? Some inkling came to me in two significantly different trips up the head of Lake Mead. The first of these was in spring, 1962. The river was still free in Glen Canyon but Lake Mead was nevertheless heavily drawn down. For all that, a man who really knew how to navigate through mud could get into the canyon beyond the Pierce Ferry silt dump, where the river drowns and inters itself at its contact with the reservoir.

Bill Belknap, of Boulder City, knew the regimen of Lake Mead mud extremely well. Sensing where the channel was and scraping bottom only once, he took the Sierra Club's editor, Bruce Kilgore, and me some thirty miles above Pierce Ferry to Spencer Canyon. We spent the night at Spencer's bar. Not far from the reservoir's high-water mark in Spencer canyon—beyond the jungle in which tamarisks and sand bars had alternately lived and died in their impenetrable symbiosis—we discovered that there could still persist in that remote side canyon most of the elements needed for a renewing wilderness experience. The next day we had pushed up still farther, past Separation Canyon, past Bridge Canyon damsite, into an inner sanctum revealed when the Colorado cut into the Vishnu schist, the oldest rock yet exposed on earth. There was something almost sacred about what the river, with grain upon grain in its turbid load, had relentlessly chiseled and rounded and polished in that old obdurate stone. We went just a little bit farther up the river, up into the middle of the lowest of the Colorado's remaining rapids, which were still safely above the waters of Lake Mead that had long since drowned Separation Rapid. Bill Belknap could have taken us on up into the canyon but we didn't have the time. So he found a convenient standing wave, turned around it, and headed back downriver. Not, however, until we had felt the river's pulse. There it was, the big river, the sum of its thousand tributaries, boiling, whirling, and above all, alive.

Two Easters later my wife and two of my children were at Spencer Canyon, lucky to make it: perhaps no one but Mack Miller, of Temple Bar, could have found a way through the massive silt barrier now denying lower Grand

Canyon to all lesser river people than he. Lake Mead was really down now. The effort to fill Lake Powell left far too little water for Mead. Twice Mr. Miller told us he couldn't make it. Then he tried once more. He took us up to the edge of the silt dump, eased his jet boat into it here and there, looked hard at the water, then backed far enough away to charge full speed across the murky reservoir surface. He aimed at where he thought the channel was and guessed right.

We were now speeding up through a strange, sad world in which the Colorado was running again, the first time since the closing of Hoover Dam obliterated its channel. Philip Hyde's photograph on page 125 of *Time and the River Flowing* suggests the kind of place it was. The world was mud, its surface cracking, oozing, and tottering into the opaque river, which had resumed its interrupted assignment and was seeking but not finding the sculptured shores the river had taken a lifetime to create.

There wasn't much flow. Very little water was being released from Glen Canyon's gates and not much was being added from the Paria or the Little Colorado. Yet we saw no blue pools. The water totally lacked the clarity a new Bureau of Reclamation film, "Clear Water on the Colorado," had tried bravely to sell the public. The water was just about as muddy as it had ever been. We knew that 4,000 cubic feet of Colorado per second, or even the 8,000 to 12,000 which the releases might one day average out, was much less than the 100,000 or more an uncontrolled flood might bring were there no Glen Canyon dam. Separation Canyon and Spencer Canyon showed us what would happen. Flash floods would still come down the side canyons and had. The old bars were gone—the pleasant reservoir beaches where you could nose your boat in, plop ashore, camp in the tamarisks, and explore upstream. Only an untamed Colorado could build those bars back. A tamed Colorado could not do it.

Mack Miller took us up as far as the lowest virgin rapid. In spite of the extremely low flow, the river was still working: it still had its tools and its pulse. Living things came as close to the river banks as the floods had ever let them. The river swirled and murmured and sang, whirlpooled in the sucks and exhaled bubbles in the boils, foamed over the rocks and ground at them along the edges, deposited a cool softness alongside where herons could track it, floated the ducks that had paced us upstream, watered the willows, continued to chisel at what might lie below the schist, stood in throbbing waves alongside our boat, splashed us, excited us—and was vital throughout. While it lived, so would the canyon.

If we could see how alive the river was from that brief experience, François Leydet and his river-expert friends and photographers were learning far more. They were two hundred miles upstream at the time, riding the river down. We are grateful for what they saw and for what *Time and the River Flowing* can therefore reveal. We are grateful too to those who weren't there but whose wisdom we have borrowed and have used as counterpoint—especially to Loren Eiseley, Joseph Wood Krutch, and Wallace Stegner.

We could testify that the river was now badly injured, but far from the dead stream Wallace Stegner once feared it might be. He would have seen that even a vestige of the Colorado is a force to be reckoned with. All along, he has understood the river as few men are likely to. One of his finest contributions has been his book, *Beyond the Hundredth Meridian*. In it he has important things to say about two conflicting forces in the arid lands. One was represented by the vision of Powell, who wanted science to serve government; a government so served—by science not made subservient and forced into silence by Reclamation pressure—could have preserved the best of this country. The other force came from the pervasive illusions of the overoptimistic arid-lands promoter, William Gilpin—illusions such as seem now to inspire the Bureau of Reclamation's attempts to destroy the river by overextending man's dependence upon it. Mr. Stegner's book and Bernard DeVoto's introduction to it are essential to an understanding of the conflict over the Colorado.

* * *

In a sense, *Time and the River Flowing* is a continuation of *The Place No One Knew*. Each book tells about the same extraordinary river and its greatest canyons, both fully deserving national-park protection, even though there was not yet vision enough to provide it and we have only Glen Canyon's tombstone, Canyonlands National Park (threatened with overdevelopment by Park Service design and construction men) and Grand Canyon Park and Monument (threatened by Reclamation dam builders) instead of the vision we needed and the men with the boldness to fix that vision on the land.

Each book draws heavily upon perception by many of America's best writers of what these canyons mean to the world—what Glen Canyon could have meant and what Grand Canyon can always mean. Both books tell of the massive inflexibility and compulsive engineering that lost one canyon forever and seems determined to lose the other. Both books make the plea that this generation do better for all other generations than to let the Bureau of Reclamation carry out its present plans to destroy what is most important in Grand Canyon. The two books reinforce each other, *Grand Canyon* reiterating just enough of the Glen story to underline the tragedy it would be to let the Bureau of Reclamation repeat its mistake—not out of evil intent or incompetence, but from adamantly following a course of action that reveres engineering values and technology and ignores man's soul and sense of wonder.

Let me illustrate. In July 1964 I was speaking with a former United States Commissioner of Reclamation who had promoted Colorado River development with zeal for many years, who had claimed in public that his bureau liked "to push rivers around," who had spoken disdainfully of opposition by "conservationists in their air-conditioned caves," and who in retirement was trying to help

other countries get on with their dam building. He was talking enthusiastically of one especially massive project. "What kind of country would the reservoir inundate?" I asked him. "Nothing but a mess of mountains," he replied.

The Sierra Club has consistently tried to oppose blind progress and to support the kind of values this reclamation commissioner was unable to perceive in a particular mess of mountains. The club is rarely qualified to support a particular engineering solution in river development but does favor what Edward Higbee calls "preventive engineering." Accordingly, in the Columbia River Basin the club has supported a major dam at either the Paradise or Knowles sites because adequate development there could end the threat of upstream dams that would encroach on a national park, on a wilderness area, and on lands of high scenic-resource values that should be dedicated.

The club takes no part in the controversy over allocation of waters of the Colorado River. The club opposed water development that would serve San Francisco, the city of its birth, at the cost of destroying an important part of Yosemite National Park; the club opposes dams threatening parklands on the Colorado just as intensely—except that there are more and more people concerned about the less and less there is to preserve.

The moral is simple: Progress need not deny to the people their inalienable right to be informed and to choose. In Glen Canyon the people never knew what the choices were. Next time, in other stretches of the Colorado, on other rivers that are still free, and wherever there is wilderness that can be part of our civilization instead of victim to it, the people need to know before a bureau's elite decide to wipe out what no men can replace. The Sierra Club has no better purpose than to let people know in time. In Glen Canyon we failed. There could hardly be a costlier peacetime mistake. With support from people who care, we hope in the years to come to help deter similar ravages of blind progress.

Man must disrupt a great part of the planet in order to sustain himself in his present numbers and, reserving judgment about when enough population is enough, the club is in favor of man. It is also in favor of man's being intelligent enough to do better with the ninety-five per cent of the American earth he has already disrupted before he covets the unmanipulated five per cent. The club believes that Grand Canyon National Park and Grand Canyon National Monument should be extended to protect the integrity of the Grand Canyon between Lee's Ferry and the Grand Wash Cliffs, or that this area should be protected by other suitable means that would preserve unimpaired this outstanding scenic part of the river. There is simply nothing else in the world like it. Man cannot create its equal. He is capable of wrecking it. He is also capable of saving it.

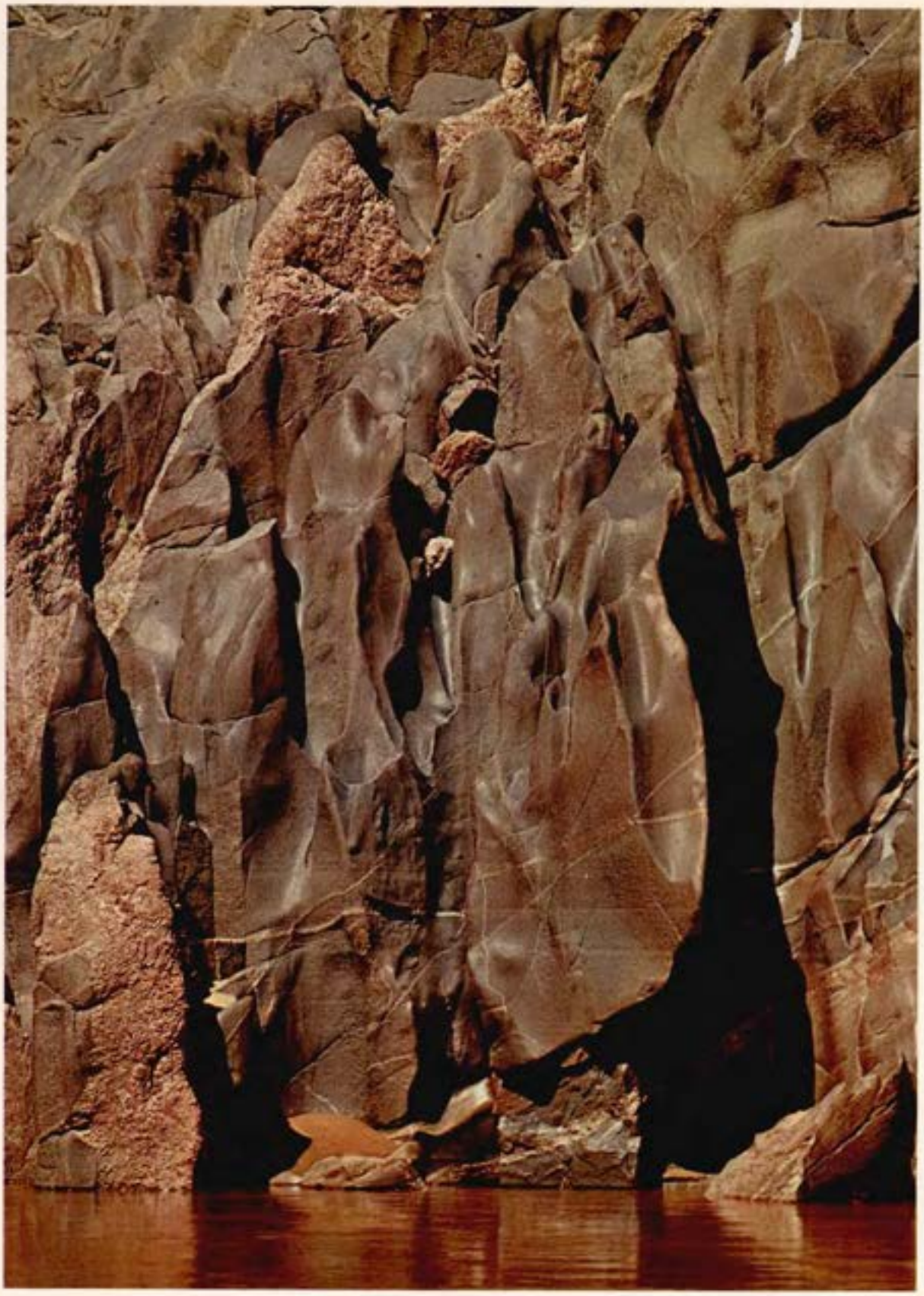
Let us go back a moment to the initial problem: the space available in the national parks is not big enough for all who want to use it. But the size of a park is directly related to the manner in which you use it. If you are in a canoe traveling at three miles an hour, the lake on which you are paddling is ten times as long and ten times as broad as it is to the man in a speedboat going thirty. An hour's paddle will take you as far away as an hour in a speedboat—if there are no speedboats. In other words, more people can use the same space with the same results . . . every road that replaces a footpath, every outboard motor that replaces a canoe paddle, shrinks the area of the park.

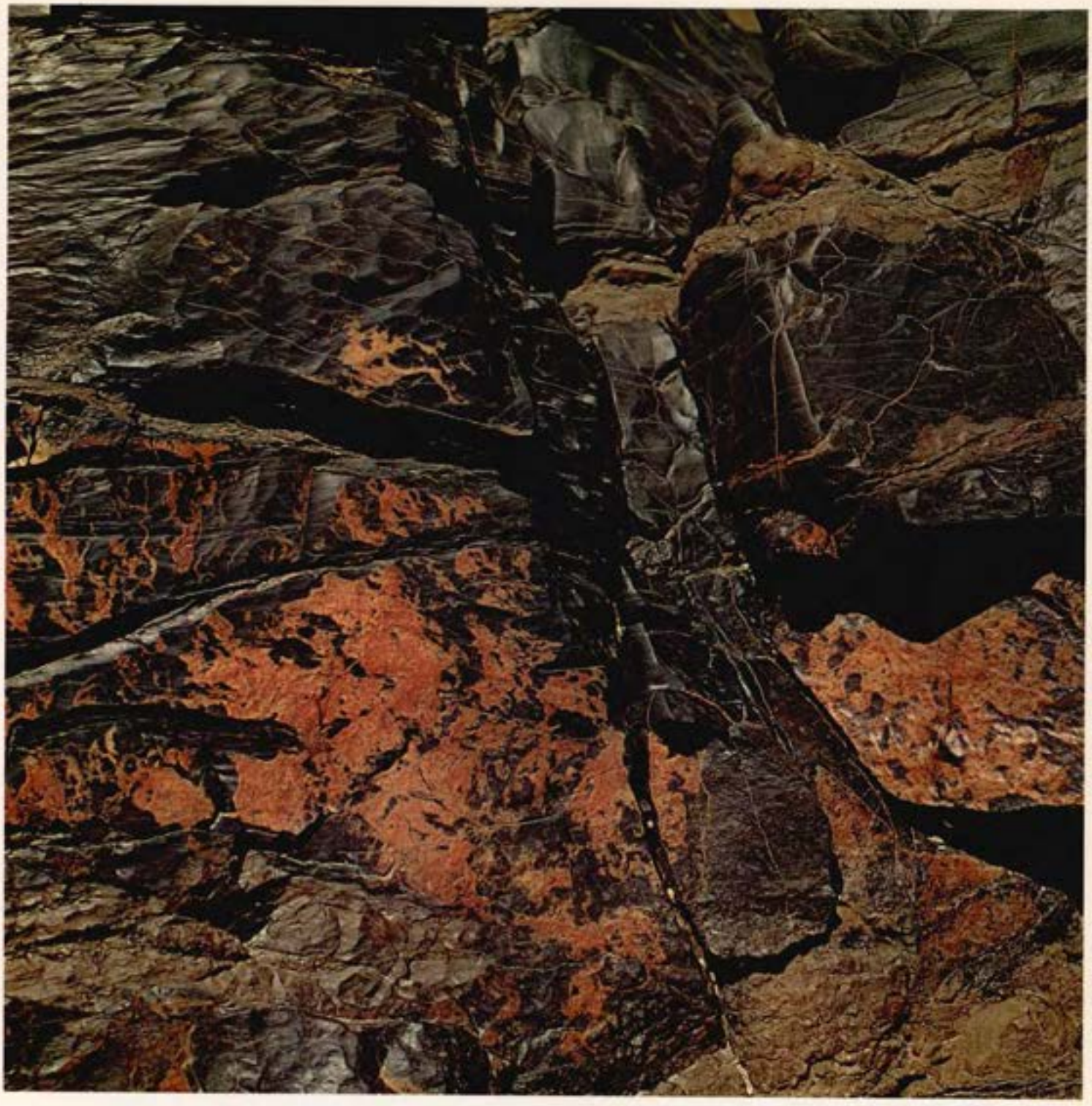
— PAUL BROOKS in the *Atlantic Monthly*

The following four photographs are from Time and the River Flowing: Grand Canyon, *by the route described in the note on page 16. See also page 95.*

Below the Paria the Colorado enters the older rock formation of Marble Canyon and makes the gradual transition into the renowned feature of which it is an integral part—the Grand Canyon, a place that no one yet knows well enough, but which the public as a whole rallied to protect in time. Standing beside that canyon on May 6, 1903, Theodore Roosevelt said: "In the Grand Canyon, Arizona has a natural wonder which, so far as I know, is in kind absolutely unparalleled. . . . I want to ask you to do one thing in connection with it in your own interest and in the interest of the country—to keep this great wonder of nature as it now is. . . . I hope you will not have a building of any kind, nor a summer cottage, a hotel, or anything else, to mar the wonderful grandeur, the sublimity, the great loneliness and beauty of the canyon. Leave it as it is. You cannot improve on it. The ages have been at work on it, and man can only mar it."

. . . In no other portion of the world are the natural laws governing the processes of land sculpture exemplified so grandly; nowhere else are their results set forth so clearly. — CLARENCE E. DUTTON

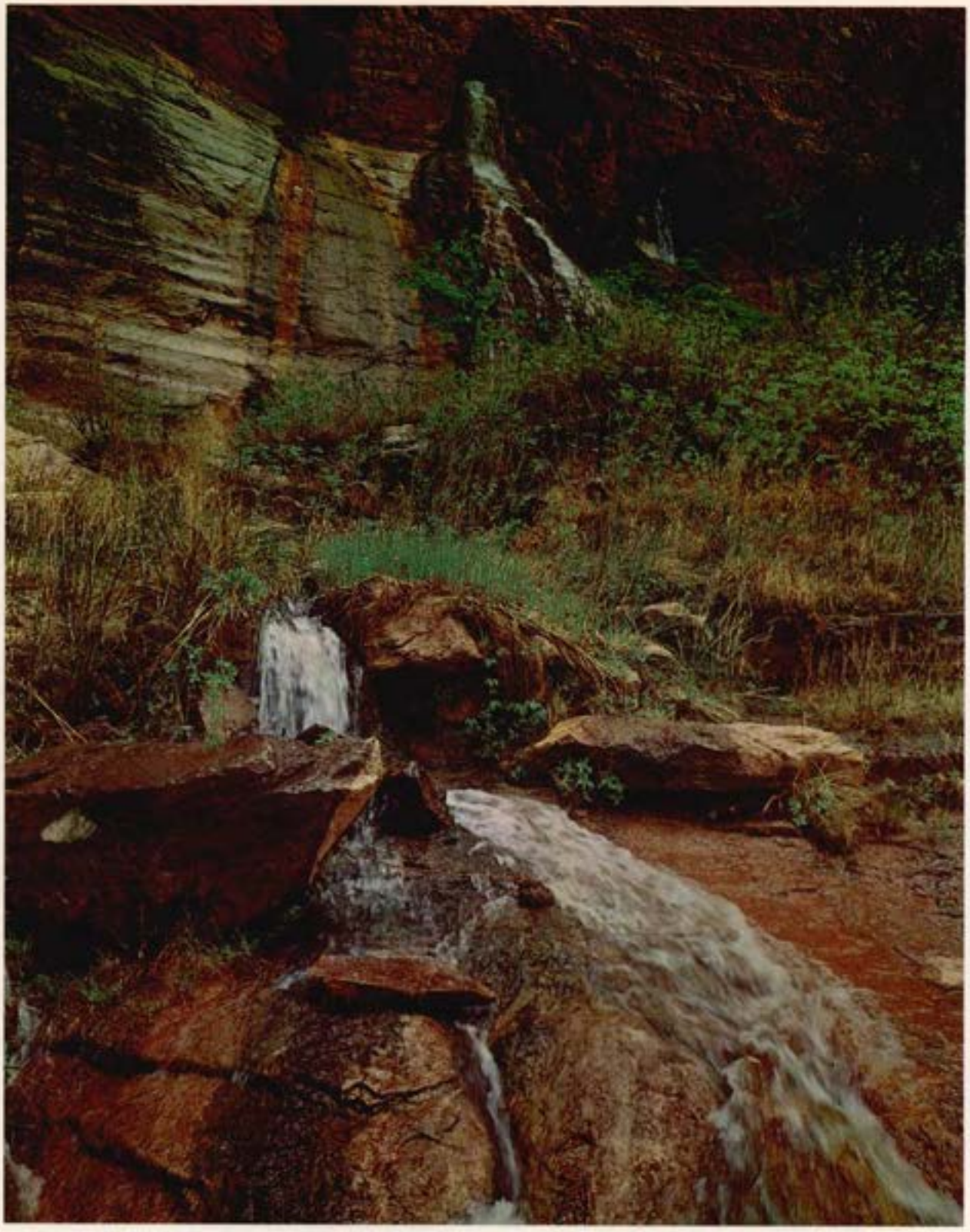




. . . nature has here brought home to us the truth that symmetry is only one of an infinite range of devices by which beauty can be materialized.

And finer forms are in the quarry
Than ever Angelo evoked.

— Clarence E. Dutton



PHILIP HYDE: Vasey's Paradise, Mile 31.9

. . . At a bend where the river turned sharply to the east a wall glittered as if set with gems, and on coming nearer they found springs bursting from the cliffs high up and sheeting the rock in rainbows. Below was a garden of incredible green, moss and maidenhair and redbud and hackberry and ferns. They named it Vasey's Paradise, after their last year's botanist from Bloomington.

WALLACE STEGNER

An adaptation of the club's testimony in August before the House Committee on Interior and Insular Affairs —and a convincing exposition of the reasons for preserving, undammed, one of the world's superlative places.

Dams in Grand Canyon—a Necessary Evil?

HUGH NASH

ONE OF THE WORLD'S greatest natural wonders is threatened by proposals now before Congress to build Bridge Canyon and Marble Gorge dams within Grand Canyon. Either or both of the proposed dams would destroy natural conditions within Grand Canyon, damage Grand Canyon National Park and National Monument, create a dangerous precedent threatening the National Park System itself, violate existing laws that established Grand Canyon National Park and the National Park Service, aggravate a situation that has embittered relations between the states of the upper and lower basins of the Colorado River and relations between the United States and Mexico, waste water in a water-deficient region and impair the quality of water remaining for downstream users, burden taxpayers with an uneconomical solution to a problem when better alternative solutions are available.

A longstanding tradition that national parks shall not be impaired, and a new concern for natural beauty expressed by the administration and echoed throughout the country, would seem to doom such destructive proposals. And so they would unless the dams were purported to be an absolute necessity. That is exactly how they have been represented—as a necessity. But the dams are *not* necessary for flood control, *not* needed to store water or divert it for irrigation. Their sole function would be to generate electricity, part of which would be used to pump water (from Lake Havasu, an already existing reservoir) into central Arizona. The rest of the electricity would be sold to help finance aqueducts and other waterworks functionally necessary to the Central Arizona Project. Granted that bringing Colorado River water to central Arizona is a worthy aim, the fact remains that Bridge Canyon and Marble Gorge dams are not necessary elements of such a project. Better sources of power, and of money, are available.

The richest country the world has ever known could surely afford to pay a premium, if necessary, to keep Grand Canyon intact. But there is no need to pay a premium. On the contrary. Building dams in Grand Canyon would be the expensive way to bring water to central Arizona. On economical as well as other grounds, the national interest requires the preservation of Grand Canyon.

Proponents of the dams—notably the Bureau of Reclamation, which would build them—argue that dams affecting Grand Canyon National Park and National Monument were foreseen and provided for when they were established. Their arguments generally leave a good deal unsaid. For example, take this statement by a Regional Director of the Bureau of Reclamation: "When the Congress created Grand Canyon National Park in 1919 . . . it recognized that there should be a balance between water-development and park-preservation values and accordingly gave the Secretary of the Interior the authority to permit the construction of Reclamation projects within the Park's boundaries."[1] This is a considerable oversimplification, as we shall presently see.

Commissioner of Reclamation Floyd Dominy declares that to "fence out" dams from Grand Canyon ". . . would be *breaking faith* with the pledges made when Grand Canyon National Park was authorized in 1919 and Grand Canyon National Monument was proclaimed in 1932. In both cases, there is a definite reservation in specific language for further anticipated Reclamation development which the 'status quo' group is seeking to ignore."[2]

Are dams permitted by existing law?

Robert W. Jasperson, General Counsel of the Conservation Law Society of America, states that President Hoover's proclamation establishing Grand Canyon National Monument "makes no provision express or implied for any authority in the Bureau of Reclamation to utilize any area within the monument for reservoirs for reclamation or power purposes."[3]

So far as the monument is concerned, advocates of the dams must rest their case on a letter from a former Director of the National Park Service, who wrote: "As I see it, the Bridge Canyon Project is in no way affected by the Grand Canyon National Monument proclamation. . . . While I did not handle this personally, I am absolutely certain that the men who did handle it for me kept the project in mind in formulating the Grand Canyon National Monument plan."[4]

That National Park Service personnel had the Bridge Canyon project in mind when formulating plans for Grand Canyon National Monument makes it all the more significant that the proclamation as issued by President Hoover contained no provision for reclamation projects affecting the monument.

Is there "a definite reservation in specific language" in the Grand Canyon National Park Act of 1919? The Act nowhere refers to any specific dam or reservoir site, but does provide as follows: "That, *whenever consistent with the primary purposes of said park*, the Secretary of the Interior is authorized to permit the utilization of areas therein which may be *necessary* for the development and maintenance of a Government reclamation project [em-

phasis added]." The primary purpose of the park is defined in the act of 1916 establishing the National Park Service: "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." As will be shown later, either or both dams would impair the scenery, the natural and historic objects, and the wildlife within Grand Canyon National Park; the dams are therefore inconsistent with the primary purpose of the park, and are not permissible under existing laws.

Are Bridge Canyon and Marble Gorge power dams reclamation projects within the meaning of the Grand Canyon National Park Act? The purpose of reclamation is to conserve water and make it available for irrigation. The dams would waste water, not conserve it, and apart from the provision of pumping power which is readily obtainable from other sources, they would have no engineering relationship to the irrigation project of which they are allegedly a part. To insist that the dams are reclamation projects at all stretches the facts; to insist that they are *necessary* reclamation projects is to stretch facts beyond the breaking point.

Bridge Canyon and Marble Gorge dams do not meet the test of legitimacy under existing laws requiring that they be necessary reclamation projects consistent with the primary purposes of Grand Canyon National Park. The law can be changed, of course, if Congress wills it. But let us have an end to pretense that the dams are sanctioned by laws that are already on the books.

What harm would the dams do?

Understandably on the defensive concerning the impact of dams on Grand Canyon National Park and National Monument, the Bureau of Reclamation stresses the fact that Bridge Canyon dam would be downstream from the monument and Marble Gorge dam would be upstream from the park. Bridge Canyon dam, however, would back water all the way through the monument and 13 miles into the park. This would convert the living river, chief architect and artery of the Canyon, into a dead reservoir. It would halt the processes that created the Canyon, and turn a living laboratory of stream erosion into a static museum piece. It would flood the habitat of wildlife that through the ages has depended on the living river for its own life. It would make invaluable archaeological and geological records inaccessible. It would inundate campsites on beaches and sandbars, and the sheer walls of the new shoreline would offer no substitute. Fluctuations in reservoir level would stain the walls between high and low water. Dambuilders' access roads would disfigure the scene, as would transmission lines. And dams in Grand Canyon would extinguish for all time one of the great experiences available to modern man: the boat trip on the living river through the whole length of the Canyon from Lee's Ferry to Grand Wash Cliffs at the head of Lake Mead.

Marble would be as bad as Bridge

What about Marble Gorge dam? The Bureau of Reclamation asserts that "Construction of the Marble Canyon Dam and Reservoir would have no effect on the National Park since the dam and reservoir would be upstream from the park boundary."[5]

Superficially plausible, the "no effect" argument is specious. Although the area that would be flooded out by Marble Gorge dam does not enjoy statutory protection, it should; it is an integral part of the geological entity known as Grand Canyon. The reservoir would drown such spots as Redwall Cavern and Vasey's Paradise, attractions comparable to any found in the national park.

Downstream, within the national park, the effects of Marble Gorge dam would be serious. High-water stages that build sandbars, beaches, and dunes would be suppressed and the forces of erosion would destroy them faster than they could be rebuilt. Campsites and habitat for flora and fauna would deteriorate or be destroyed. "It is anticipated," says the Bureau, "that a minimum of 1,000 cubic feet per second will be maintained below Marble Canyon Dam."[6] But 1,000 cfs in this channel is a pitiful trickle that is completely incapable of floating boat parties down what the Bureau calls "this 104-mile undisturbed stretch of river" between the foot of Marble Gorge dam and the head of Bridge Canyon reservoir. Many of the park's finest exhibits can only be reached by boat, and even assuming that means would be provided to get boats to the river below Marble Gorge, the river's flow would be metered through valves at the whim of Bureau engineers. Boating trips could not be scheduled in advance with assurance of sufficient flow, and would thus, for all practical purposes, be rendered impossible. Those who attempted a river trip despite the difficulties would be endangered by unpredictable surges of water released for the generation of peaking power.

Marble Gorge dam would physically impair natural objects within the national park in violation of existing laws. And by effectively denying access to many scenic and scientific gems within the park, along the mainstream of the Colorado and up its side canyons, the dam at Marble Gorge would certainly impair the park "for the enjoyment of future generations" whether actual physical impairment occurred or not.

Marble Gorge dam is as great a threat as Bridge Canyon dam. It would be a long step toward realization of a cherished dream of the Bureau: the Kanab diversion. This is a plan to divert 90 percent of the Colorado's flow from Marble Gorge through a 45-mile tunnel to a hydroelectric plant at Kanab Creek—which, uncoincidentally, is at the head of Bridge Canyon reservoir. This would reduce to the vanishing point the Colorado's flow through the national park.

In a rather pathetic attempt to offset damage that the dams would inflict, the Bureau claims tremendous recreation values for the proposed reservoirs. The most extreme statement of its case was made by Regional Director A. B. West: "We think the recreational, fish and wildlife values accruing from these developments—aside from their other multipurpose water benefits—are ample justification for their construction."[7]

This extraordinary contention can be most conveniently disposed of by quoting a report of the Bureau of Outdoor Recreation, which, like Reclamation, is an agency of the Interior Department:

"No additional recreation benefits can be claimed for the proposed Bridge Canyon dam because of the unusual existing recreation values of the proposed reservoir area and the adverse effects the dam and reservoir would have on these values.

"Water-oriented recreation cannot be considered one of the primary purposes for constructing the Bridge Canyon and Marble Canyon dams because less costly alternatives for expanding recreation facilities in this area are available.

"The types of water-oriented recreation which could be supplied by the reservoirs are available at Lake Mead and Glen Canyon National Recreation Areas. These recreation areas serve the same population centers, and facilities could be added as recreation demand expands."[8]

Flaming Gorge, Navajo, Glen Canyon, Hoover, Davis, Parker and Imperial Dams already furnish 600 miles of reservoir recreation in the Colorado basin. This is far more than the mileage of recreational swift-running water, and more than enough.

The Bureau of Reclamation is fond of alluding to the dangers of river running and contrasting it with the supposed safety of boating on "placid blue water." But sudden squalls whip up dangerous waves on Lake Powell, behind Glen Canyon Dam, and in most places its sheer walls offer no haven for boats or avenue of escape for boatmen. Reservoirs behind Bridge Canyon and Marble Gorge dams would expose boatmen to the same hazard in equal or greater degree.

Dam proponents complain that preserving the river for the river-running experience would deny access to millions who could enjoy a reservoir excursion. This argument leads logically to the conclusion that any experience, however unique and valuable, should be sacrificed if it stands in the way of another experience that is capable of being more widely enjoyed. Do we really believe this? Is it really worth making a place easier to reach if, in the process, we make getting there less worthwhile? What would happen to a nation's spirit if this least-common-denominator, TV-ratings philosophy prevailed? Quantity is not the only measure of value; quality counts for something too.

Sensitivity to encroachments upon Grand Canyon National Park and National Monument, by defenders and detractors of the dam proposals alike, has tended to obscure the fact that the park and monument contain less than half of Grand Canyon proper. Neither damsite is within the boundaries of the park or monument, *but both dams and both reservoirs would be wholly contained within Grand Canyon.* Parts of the canyon not within the park and monument are in no way inferior to other parts that are included. The Sierra Club has long advocated national park or equivalent protected status for the entire Grand Canyon from Lee's Ferry to Grand Wash Cliffs.

Whether or not the dams and reservoirs would impair Grand Canyon National Park and Monument is the key legal question. But in broader perspective, the key question is whether the dams would impair the integrity of Grand Canyon as a physical entity and priceless national resource. Marble Gorge dam is at least as offensive as Bridge Canyon dam in this respect, if not more so.

Too many dams, too little water

The Colorado River has about one thirty-third the volume of flow of the Mississippi and one-twelfth that of the Columbia.[9] "There is little doubt," says Representative Craig Hosmer of California, a supporter of the dams, "that the troubles on the Colorado River stem from the fact that the river simply does not contain enough water to satisfy all the uses to which it can be put."[10]

Inadequate as it is, the Colorado's limited supply of water is grossly overcommitted by interstate compact and international treaty. The Colorado River Compact allocates 7.5 million acre-feet of water annually to the states of the upper basin (Colorado, New Mexico, Utah, Wyoming), and another 7.5 million acre-feet to the lower basin states (Arizona, California, Nevada). A 1944 treaty guarantees Mexico 1.5 million acre-feet of usable water annually from the Colorado. So commitments total 16.5 million acre-feet per year. These commitments were based on streamflow measurements made during a cycle of abnormally wet years, 1906–1920. ("The last previous wet cycle was in the period 1826–1840," says James E. Cook of *The Arizona Republic*. "To find another such cycle, you have to go back into the early 1600s.")[11] An annual flow of 16 million acre-feet past Lee's Ferry was assumed on the basis of these measurements, but the average streamflow was only 12.8 million acre-feet from 1914 to 1962. (Note that almost half of the last abnormally wet cycle was included in this period.) The U.S. Geological Survey says that the flow has exceeded 16 million acre-feet only 13 times in the 49-year period—one year out of four—and has dropped as low as 4.4 million acre-feet.[12] Interior Secretary Stewart Udall reports that "of today's present total water supply of about 13.2 million acre-feet per year in the Pacific Southwest, the Colorado River furnishes almost 10 million acre-feet."[13]

To promise delivery of water that simply isn't there to be delivered is obviously a recipe for trouble. The Central Arizona Project was blocked for twelve years by California in the courts before a dispute over water allocations was resolved in Arizona's favor by the Supreme Court.

Former Governor Edwin C. Johnson, Colorado's representative on the Upper Colorado River Commission, recently urged the commission to bring suit against Interior Secretary Udall in the Supreme Court "to protect the rights of the upper basin states."[14] The anger and anxiety of the upper basin states is understandable; they remember bitterly how Reclamation released water from the upper basin's Glen Canyon Dam in March 1964 in order to keep turbines turning at the lower basin's Hoover Dam. Senator Wallace F. Bennett of Utah asked at that time, "If we can't even fill Glen Canyon Dam, how can we begin to discuss the construction of the vital Central Utah Project, of Bridge and Marble Canyon dams and of the Central Arizona Project?"[15]

Upper basin states are painfully aware of the fact that installation of additional generators downstream, as at Marble Gorge and Bridge Canyon, would increase the temptation for the Bureau of Reclamation to keep downstream reservoirs at minimum operating level even at the expense of upstream users. The Bureau calls its hydroelectric plants "cash register dams" and hates to see the flow of electricity (and dollars) stopped for lack of an adequate head of water. On the other hand, the lower basin states have legitimate cause for concern too. Interior Secretary Udall warned a Senate subcommittee that "as the Upper Basin develops new projects to utilize its share of Colorado River water, the amount remaining for use in the Lower Basin will decrease."[16]

To build additional dams on the overburdened Colorado would obviously exacerbate an already explosive situation in two ways—one, by wasting water (of which the region has none to spare) in order to generate electricity (which can be more economically provided in abundance by fossil-fuel and nuclear technology), and two, by impairing the quality of water available to downstream users.

Power dams are water wasters

"We are losing as much as seven feet off the top of our reservoirs on the Pacific Southwestern desert each year" says a Bureau of Reclamation source.[17] Evaporation does it. The combined evaporative loss from existing reservoirs behind Hoover and Glen Canyon Dams, if full, would exceed the 1.5 million acre-feet per year allocated by treaty to Mexico—and far exceed the 1.2 million acre-feet that will be imported to central Arizona by the project of which Bridge Canyon and Marble Gorge dams are unnecessary parts. Advocates of additional dams on an overdammed river argue that water saved by storage, which would otherwise run uselessly by, offsets evaporative losses. Congressman Hosmer of California, for example, remarks that "Some people are suggesting instead of hydroelectric plants that thermal-generating plants be installed at other locations to act as cash registers for the Lower Colorado River Basin Project. This too is lacking in reason in relation to the purposes and economics of the project. The dams are needed not only to produce power but as well to regulate flow of the river which varies greatly from year to year."[18]

Congressman Hosmer's assertion of the need for storage capacity at Bridge Canyon and Marble Gorge dams is not convincing. An Interior Department brochure notes that "Hoover Dam's reservoir—Lake Mead— stores more than 2 years of average Colorado River flow."[19] The same brochure gives Lake Mead's storage capacity as 29.8 million acre-feet. If Interior Secretary Udall's estimate of the Colorado's flow is correct—"almost 10 million acre-feet" —then Lake Mead can store a full three years of average flow. Glen Canyon Dam also has the capacity to store about three years flow, and other existing dams raise total storage capacity well above the six-year level. Because reservoirs behind Bridge Canyon and Marble Gorge dams would be unusually small in volume in relation to their depth, the two dams combined could store only about five months average flow.

Claims concerning storage capacity are an embarrassment to the dambuilders for another reason. While it is true that storage capacity offsets evaporative losses when a river is incompletely regulated, excess storage capacity cannot be used for storage. You can't store something that isn't there. After adequate storage capacity on a river has been attained, say three years average flow, building excess capacity simply increases evaporative losses without producing any compensatory gain in storage benefits. Because of their comparatively small surface areas, reservoirs behind Bridge Canyon and Marble Gorge dams would not lose water through evaporation on the same scale as Lakes Mead and Powell. Estimates are on the order of 100,000 acre-feet, however, and this uncompensated loss is enough to supply the needs of a large city.

Dams lose water not only through evaporation, but through seepage into the floor and walls of their reservoirs. A newspaper reported last January that "with Lake Powell less than a quarter full at 6,200,000 acre-feet content, stream flow records indicate an additional 1,600,000 acre-feet to have seeped into the porous lake bottom and sides since Glen Canyon Dam was put into operation." The paper quoted Dallas Cole, Chief Engineer of the Colorado River Board of California, as saying, "About 25 percent of the water being held back of Glen Canyon Dam in Lake Powell seems to be percolating into the porous Navajo Sandstone Basin. This is substantially higher than the 15 percent factor allowed for such 'bank storage' by the Bureau of Reclamation. . . ."[20]

Critics of the Bureau acknowledge that there is no way of telling what the bank storage factor will be when the reservoir fills. It seems probable, however, that increased pressure created by a deepening reservoir will increase losses and that rising waters will find new avenues of escape.

Bank storage has its defenders, who point out that it may raise the level of water tables in the surrounding area, is not subject to evaporation, and will seep back into the

reservoir if it is ever emptied. But there are few to benefit from higher water tables in the vicinity of Glen Canyon Dam or Bridge Canyon and Marble Gorge damsites. And water seeping back into a depleted reservoir would be extremely susceptible to evaporation. In any event, water in bank storage is in dead storage—it is not available for use. The same may be said of water impounded within power-dam reservoirs below their minimum operating levels; it is useful only to hold other water on top of it, and for all intents and purposes is in dead storage.

Professor William C. Bradley of the University of Colorado Geology Department gives this appraisal of the Marble Gorge damsite: "Marble Canyon dam, which the Bureau proposes to build at mile 39.5 (just above President Harding Rapids), will abut one of the most cavernous limestones in the region, the Redwall Limestone. . . . Marble Canyon reservoir will have an average level of 3140 feet and will raise water some 300 feet at its deepest point. The walls of the reservoir will involve the cavernous Redwall Limestone at its lower end, the porous Coconino Sandstone in about the middle section, locally cavernous Kaibab Limestone and the basal Chinle Formation, Moenave Sandstone, Kayenta Formation, and Navajo Sandstone at its upper part—most of which are moderately to very porous. . . ."[21]

It would seem from this analysis that Marble Gorge dam would be likely to lose as much water through underground percolation, relative to its reservoir size, as Glen Canyon Dam has been losing.

Salinity of Colorado embitters Mexico

Evaporation not only reduces the quantity of water available, but also reduces the usability of water remaining. It removes pure water, leaving behind the salts and other impurities it once contained. The concentration of salts is thus raised in the water remaining.

Salinity of the lower Colorado has caused a crisis in relations with Mexico. Farmers in the Mexicali Valley have lost one third of their lands to salt in three years. William T. Blackledge, a U.S. businessman living in Mexicali, says that "it is only a matter of a few years, perhaps no more than five, until the major portion of the lands in the valley irrigated by the waters from the Colorado will be totally out of production due to the accumulation of salts contaminating the waters. . . . We estimate that 400 to 500 small farmers are going out of business each year. It is likely that 200 to 300 more will be ruined before this year is out."[22]

Delivery of contaminated water to our neighbors near the mouth of the Colorado is a violation of the spirit, if not the letter, of our 1944 treaty with Mexico. It creates problems for our Mexican friends and imperils cordial relations between our nations. Of course, reservoir evaporation is not the only cause of the Colorado's salinity, or even the major cause. (Drainage from irrigated land back into the river is the main offender.) But concentration of impurities by reservoir evaporation aggravates the problem. And in the case of power dams used only to generate electricity that is obtainable more economically from other sources, the increase in salinity attributable to reservoir evaporation is an unredeemed evil.

The need for dams is a fiction

Bridge Canyon and Marble Gorge dams obviously are not a "necessity" in any absolute sense of the word. The electricity they would generate for pumping power and the dollars they would generate to help finance the Central Arizona Project are both obtainable from other sources. The real question, then, is not whether the dams are necessary; the question is whether damming the Colorado in Grand Canyon is the most desirable of the various possible means of transporting water from the Colorado to central Arizona.

On the floor of the House of Representatives, Congressman Craig Hosmer told his colleagues that "Hydroelectric plants will provide the necessary revenues to underwrite the pumping plants, aqueducts, reservoirs, pipes and conduits that make water available. Without these hydroelectric plants, the plan is totally infeasible and impossible of accomplishment."[23]

Rich Johnson, President of the Central Arizona Project Association, contends that "If successful, the opposition will block an essential water supply development desperately needed by 23,000,000 people in the 7 states of the Colorado River Basin."[24]

Commissioner of Reclamation Floyd Dominy writes of ". . . the Lower Colorado River Basin Project, of which Bridge Canyon and Marble Canyon Dams are the key features. . . ." and says, ". . . we found . . . that the dams were essential to the overall effectiveness of the total program."[25]

"Arizona Days and Ways," the Sunday magazine section of *The Arizona Republic*, refers to Bridge Canyon dam as "the keystone of the Central Arizona Project."[26]

Suddenly, Bridge Canyon is superfluous

We see that Bridge Canyon dam was described as "necessary," "essential," and "the keystone" of the Central Arizona Project. One would suppose that elimination of a genuinely necessary feature of a plan would result in cancellation of the whole plan. But no. When the Bureau of the Budget recommended that Bridge Canyon dam be "deferred for later consideration," the Interior Department quit pushing for Bridge Canyon dam—temporarily—but continued to press for the project of which it was allegedly an essential part. All of a sudden, Bridge Canyon dam was not essential after all.

Bridge Canyon dam would have a generating capacity of 1,500,000 kilowatts, of which 500,000 kw would be used for pumping and 1,000,000 kw would be available for sale. Marble Gorge dam would have a capacity of 600,000 kw. In combination, the dams would provide

500,000 kw for pumping and 1,600,000 kw for sale. If the project were to proceed without Bridge Canyon dam, Marble Gorge dam could furnish the 500,000 kw of pumping power but would have only 100,000 kw surplus for sale—one sixteenth the amount of the two dams combined. If the project is still financially feasible under these conditions, why were we ever told that Bridge Canyon dam was a necessity?

At one time, a lower Bridge Canyon dam that would not back water into Grand Canyon National Park was under consideration as an alternative to the high dam. The low dam was rejected. Why? The answer was given by Interior Secretary Udall: "Our studies show that on a 50-year project repayment basis the financial feasibility of the proposed regional plan would be marginal without the added revenues provided by a high dam at Bridge Canyon. . . ." Secretary Udall added that a low Bridge Canyon dam "would produce only 80 percent of the net power revenues that would be generated by the higher dam."[27]

We are now being asked to believe that although the financial feasibility of the plan was marginal with revenues from Bridge Canyon dam cut by 20 percent, it is still perfectly feasible with Bridge Canyon's contribution eliminated entirely!

Bridge Canyon dam is not, and never was, necessary to the Central Arizona Project. Marble Gorge dam is not, and never was, necessary to it either. Subsidizing irrigation with power revenues has become a habit with the Bureau of Reclamation and the country, but it certainly isn't the only way of getting water to farmers at prices they can afford. Is it the best way? There is growing doubt. Noting that Bridge Canyon and Marble Gorge dams would drown "long stretches of some of the finest canyon wilderness left to the U.S.," *Life* magazine said:

"By classic reclamation criteria, the plan is a good one. At canalside, in Pinal County, a farmer will be able to get an acre-foot of water . . . for only about $10, far less than the cost of getting it there. . . . The catch here is that classic reclamation policy is wildly, even dangerously, out-of-date. It made good sense in the days when supplying cheap water was the only way to open up dry Western lands to settlement. But now the problem is not land reclamation but agricultural surpluses, which are encouraged, not controlled, by subsidizing irrigation water. Some Arizona water, for example, would go to irrigate cotton, a price-supported crop."[28]

William Bowen, writing in *Fortune*, remarked that "Bridge and Marble, in short, would provide not water but water subsidies. Opponents of CAP, moreover, point out that part of the subsidized water would be used to irrigate cotton, an overproduced and price-supported crop —cotton is the principal crop in Maricopa and Pinal counties. . . . Even with Senator Hayden steering it, the bill may run into shallows and cataracts in Congress. Since overproduction rather than scarcity is the nation's agricultural problem, some legislators have come to doubt that building more hydropower dams to subsidize water for irrigation ought to rank high among national priorities."[29]

What are some of the other results that would be achieved at the expense of the greatest canyon in the world? *The National Observer* reports that "The U.S. Geological Survey estimates that one-third of the water impounded or diverted for irrigation in the 17 Western states is lost to evaporation and seepage before it reaches the farm to be irrigated."[30]

An item in *Water Newsletter* reveals that "Wasteful irrigation practices were seen as one of the main reasons for an agricultural water shortage in Arizona, according to speakers at the annual meeting of the Arizona Association of Soil Conservation District Supervisors. Recent evaluations show that efficiency of water use throughout the state averages no more than *50 percent* and is as low as 10 percent in a few cases."[31]

It would seem that the cost of Bridge Canyon and Marble Gorge dams might be better spent on research and education leading to more efficient utilization of irrigation water in the southwest.

The tail is wagging the dog

Representative John P. Saylor of Pennsylvania charges that the hydropower tail is wagging the reclamation dog:

"The present officials of the Bureau of Reclamation have become so preoccupied with attempts to develop unnecessary hydroelectric power projects and Federal power transmission grids that their thinking has become as arid and barren as the western lands they were formerly charged with reclaiming."[32]

The Pennsylvania Congressman's tail-wags-dog charge is certainly borne out by the Central Arizona Project, as proposed by the Bureau. The plan calls for an investment of $750,000,000 in Bridge Canyon and Marble Gorge power dams to help finance functional parts of the project which would cost $499,000,000. Reclamation's "cash register dams" would cost, by Bureau estimates, $251,000,000 more than the project they are to help finance! No wonder it has been suggested that the way to finance the Central Arizona Project is *not* to build either Bridge Canyon or Marble Gorge dam. The dams would have to pay for themselves before they could begin to pay for the rest of the project, and it is doubtful that they could even do this.

Senator Clinton P. Anderson of New Mexico reports that Glen Canyon Dam ". . . is generating power at six mills per kilowatt hour. That is almost too high to be competitive. At the new Four Corners plant in this state [New Mexico], with coal to generate steam, power is being generated at four mills per kilowatt hour."[33]

More recently, another report states that "Sales of Glen Canyon power at 6 mills on firm contracts with preference customers, meanwhile, have lagged. . . . Leslie M. Alexander of Consumer Power Group and of the Salt River

Project, asks a *price cut* to 5.15 mills over the 42-year pay-out period. Felix Sparks says the project can't *pay-out* if Glen Canyon power price is cut below 5.7 mills. . . ."[34]

It appears that power from barely-completed Glen Canyon Dam is already non-competitive or marginally competitive. With the pronounced downward trend of thermal and nuclear power prices, the prospect of a pay-out is dim indeed.

Granted for the sake of argument that subsidizing irrigation from power revenues is sound in principle, how has it worked out in practice? Congressman Saylor has presented data showing: that power operations of the Missouri River Basin project had accumulated a deficit of $51 million from annual losses going back to 1954; that the Bonneville Power Administration had a total deficit of more than $50 million in a six year period ending in 1963, and that the deficit was expected to reach nearly $60 million by 1965; that power operations of the Rio Grande project have been losing money in every year since 1951; that power from the Trinity project is being sold to preference customers at the "postage stamp" rate of 4½ mills, a loss of 3 mills or more for each kilowatt-hour sold. Small wonder the Congressman asks "Is Power Really Reclamation's Paying Partner?"[35]

Is it really Reclamation power that is subsidizing irrigation or is it the taxpayer who is really subsidizing *both* irrigation and Reclamation's power?

If Reclamation is not always able to compete successfully in the power market, it is not for lack of advantages. It pays no taxes on revenue from power sales. It is not required to repay the government for expenditures on "nonreimbursable benefits" such as flood control and recreation—one of the reasons the dubious recreation values of Bridge and Marble reservoirs are spoken of in such glowing terms by the Bureau. And the federal government, which itself currently pays about 4¼ percent on long-term borrowings, gives the Bureau construction capital at an unrealistically low 3 percent. William Bowen observes in *Fortune* that "among other consequences, a low interest rate loads calculations in favor of public hydropower (big capital investment, but no fuel costs) as against private steam-electric power (fuel costs, but smaller capital investment). The lower the interest rate used in the calculations, the better a big-dam project looks."[36] If Reclamation were required to compete on anything like equal terms, it is extremely unlikely that it could ever again make a convincing case for a power project. Favoritism enjoyed by Reclamation is a massive subsidy in disguise. "If we really want to provide financial assistance to irrigation," urges Congressman Saylor, "let us do it in an aboveboard fashion."[37]

The Sierra Club's objection is not to public power *per se*, but to public (or private) power projects that needlessly destroy scenic and wilderness resources. Nor is the Sierra Club the victim of a Pavlovian conditioned reflex that impels it to react violently against any and all proposals to build a dam. It has often been neutral, when scenic resources were not involved, and has advocated dams on occasion. When Reclamation proposes to develop a site lacking in scenic and wilderness values, the club has no basis for opposition. But when Reclamation insists upon locating power dams at sites of unparalleled scenic splendor, the club is obligated to point out that other powerplants at other locations could produce power at less cost to users and the public.

A Parkinsonian need for dams

Dams in Grand Canyon are not necessary to the Central Arizona Project, but they probably are "necessary" in another sense. They are necessary to the Bureau of Reclamation, which is running out of damsites and, in obedience to Parkinson's Law, is unwilling to watch its dam-building empire dwindle. Rather plaintively, Commissioner Floyd Dominy confesses the Bureau of Reclamation's dependence on power dams (and damsites): "It has never been clear to me what these non-Federal-power-only advocates would have us do. If they ever managed to persuade Congress to take our cash register away from us there would be only two alternatives left for Reclamation: our future water conservation projects would have to be subsidized in large part or reclamation development would simply grind to a halt."[38]

As though Reclamation's water and power projects were not "subsidized in large part" already!

To keep its large corps of dam designing engineers gainfully employed the Bureau must exploit every suitable, semi-suitable and quasi-suitable damsite that is can lay hands on. It would be most convenient for the Bureau if it could breach the tradition of inviolability protecting national parks and monuments, where many of the best remaining damsites are located. A breach of national parks policy at Grand Canyon would unquestionably expose Dinosaur National Monument to renewed attack. Echo Park damsite has not been forgotten. Senator Frank E. Moss of Utah said, according to a press report, that "he wouldn't be surprised if a determined effort were made to keep Bridge Canyon Dam in the legislation. He said deletion of the project would hurt Utah's chances of ever getting Congress to amend the Colorado Storage Act and include the proposed Echo Park Project as one of the storage projects of the Upper Basin Program."[39]

The first violation of a national park or monument will serve as justification for further violations. And what better way to weaken resistance than to imply that the tradition of inviolability has been breached already? This is what Commissioner of Reclamation Floyd Dominy has done. "Contrary to general knowledge," said he, "there are presently functioning Reclamation reservoirs in other national parks."[40] This half-truth is wholly misleading. There have been only two invasions of the National Park System by major dams and reservoirs, and neither one set any legal precedent. One was Hetch Hetchy Dam in

Yosemite, which was built prior to the Act of 1916 establishing the National Park Service. The other encroachment is at Rainbow Bridge National Monument, where there is nothing to prevent the waters of Lake Powell from invading the monument. This is not a legal precedent; it is a plain violation of the law. Legislation authorizing the Upper Colorado River Storage Project provides that ". . . as part of the Glen Canyon Unit the Secretary of the Interior shall take adequate protective measures to preclude impairment of the Rainbow Bridge National Monument. . . . It is the intention of Congress that no dam or reservoir constructed under the authority of this chapter shall be within any national park or monument."[41]

In his *Time and the River Flowing: Grand Canyon,* François Leydet shows how important and far-reaching the consequences would be if the Bureau of Reclamation succeeded in setting a legal precedent for park violation:

"If the Grand Canyon is not considered too sacred for such uses Dinosaur will not be. And what then would stand in the way of other water and power developments by the Bureau of Reclamation or Army Corps of Engineers that would adversely affect Glacier National Park (the Glacier View dam, Belly River and Waterton Lake diversions), Yellowstone National Park (a dam on Yellowstone Lake, the Bechler Basin project), Grand Teton National Park (Buffalo River dam), Yosemite National Park (the Wawona project), Kings Canyon National Park (dams proposed at Cedar Grove, Tehipite Valley, Paradise Valley, Sentinel, Simpson Meadow, not to mention fifteen power and storage structures in Kings River High Sierra), Mammoth Caves National Park (Mining City dam), Big Bend National Park (dams proposed on the Rio Grande within the park), or Arches National Monument (the Moab dam, in the Bureau's inventory)."[42]

If a legal precedent is ever set for park violation in order to build up the Bureau of Reclamation's depleted inventory of reservoir sites, what justification will there be to continue excluding private utility companies, lumbering, mining, and other forms of commercial exploitation?

Has Reclamation explored alternatives?

The Bureau of Reclamation claims to have made exhaustive studies of alternatives, as indeed it should before recommending that Bridge Canyon and Marble Gorge dams be built in Grand Canyon with three quarters of a billion dollars of taxpayers' money. "There have been many studies of alternative plans to provide the needed water and power supplies and accompanying revenues that are required to make the adopted plan financially feasible," says an Acting Assistant Commissioner.[43] But so far as we know, comparative studies have not been released to the public for independent and impartial analysis. In view of the Bureau's obsession with what it lovingly calls its cash registers, one may be forgiven for wondering whether the Bureau actually studied any alternatives that would not fit within the framework of its power-is-Reclamation's-paying-partner concept.

Fossil-fuel plants

Power dams are water wasters, but steam generating plants need water too. How does the water consumption of the two systems compare? J. K. Horton, President of Southern California Edison, says of steam plants that "It takes about 30,000 acre-feet of water per year for a 750,000 kilowatt plant."[44] This works out to .04 acre-feet per kilowatt of installed capacity. Hoover Dam, with an installed capacity of about 1,350,000 kilowatts, loses about 850,000 acre-feet per year to evaporation. This loss is .63 acre-feet per kilowatt—almost 16 times the loss of a steam plant of the same capacity.

True, Bridge and Marble reservoirs would have comparatively small surface areas and would not waste water on the scale that Lake Mead does. Regional Director A. B. West of the Bureau states that "As for evaporation losses, our studies indicate that the increase in evaporation resulting from construction of Bridge and Marble Canyon Dams would be relatively insignificant in relation to the total water supply, in the order of 100,000 acre-feet annually, which amount is not too much more than would be required for the operation of thermal electric powerplants of equal capacity. . . ."[45]

Mr. West's statement indicates that even by the Bureau's calculations, the dams would consume more water than steam plants of equal capacity. The question is, how much is "not too much more"? A coal-fired powerplant to be built in southern Utah, not far from Marble Gorge, has been authorized to withdraw almost exactly the same amount of water from Lake Powell as would be evaporated from Bridge Canyon and Marble Gorge reservoirs: 102,000 acre-feet per year. But the coal-fired plant will generate 5 million kilowatts—nearly two and one-half times as much as the two proposed dams.[46] Or to put it another way, Reclamation's hydroelectric plants would produce only about 40% as many kilowatts per acre-foot of water consumed.

It appears that the Bureau's claim of "not too much more" water loss should be viewed with skepticism. In any event, isn't "not too much more" a strangely imprecise measure of water loss for the Bureau to use in a parched land? "In the desert southwest water is the most basic need of people; more important than electricity," says Rich Johnson, President of the Central Arizona Project Association and a staunch supporter of the dams.[47] A truer word was never spoken, though it seems a curious argument to use in support of water-wasting electricity producers in Grand Canyon.

What about the comparative costs of hydroelectric and steam-generated power? "The Bureau's Grand Canyon power will sell at a composite figure of 5.3 mills per kilowatt-hour," says Professor Richard Bradley, "whereas private plants at Shiprock, New Mexico [within two

hundred miles of Marble Gorge damsite], are now selling it for 5.8 mills. And if the steam plants had the same low interest tax-fee benefits the Federal dams enjoy, they could sell power today for somewhat less than 5.3 mills." Professor Bradley continues:

"But how about the trends in power generation? Will the 5.3 mill power continue to be competitive for the next 60 years while the dams are being built and amortized? We cannot answer this with certainty, but we do know that advancing technology is bringing down the costs of thermal power without materially changing that of hydropower. A decade ago steam plants were selling power for over 7 mills per kilowatt-hour. Now it is below 6 mills.

"Assistant Commissioner Bennett of the Reclamation Bureau predicted a year ago that thermal power would soon be delivered in the Colorado River Basin at less than 5 mills. Senator Anderson of New Mexico said last fall that the Four Corners area [within two hundred miles of Marble Gorge] will shortly be getting it for 4 mills."[48]

As its own customer, without the need to show a profit, surely the Bureau could furnish its own pumping power at lower cost than an outside supplier? It's by no means certain that it could. "According to our calculations," says the National Parks Association, "any 50-year average cost below 4.2 mills would make it more economic for the Project to purchase pumping energy than to construct Marble Canyon."[49] Remember two things in this connection: that coal-fired steam generating plants are selling 4 mill power within two hundred miles of Marble Gorge, and that the selling price of steam-electric power has declined in a little more than a decade from 7 mills to 4 mills while the selling price of hydroelectric power has remained about the same. Is the *average* cost of power competitive with the Bureau's likely to remain higher, over the next half century, than the cost of power available today? And if the Bureau can't even generate power for its own use as cheaply as it can buy it from thermal plants, how much chance is there that it could find enough market for its high-cost power to pay off a billion dollar investment in 50 years?

Fuel is abundant in the area

Fossil fuels for steam plants are abundantly available in the area and will last far longer than hydropower reservoirs will remain unclogged by silt. "Southwestern Utah [within several hundred miles of Marble Gorge] is one of the largest undeveloped coal-bearing regions in the United States," says the *Guidebook to the Geology of Southwestern Utah*. "Estimated bituminous coal reserves of 7,200,000,000 short tons occur in Iron, Kane, Garfield and Wayne counties."[50]

Coal is not the only fossil fuel in plentiful supply in the vicinity of Four Corners (where Arizona, Colorado, New Mexico and Utah's boundaries meet, not far from Marble Gorge). *The Denver Post* says that "A new element may soon come into economic prominence in the oil industry—development of the oil shale resources of Colorado, Wyoming and Utah. The federally owned shale lands, richest of which are in western Colorado, are estimated to contain more than one trillion barrels of oil."[51]

Private power apparently does not worry about its ability to compete in Reclamation's backyard. *Western Water News* reports that "The Southern California Edison Co. will build a $370 million, 3 million kw coal-fired, steam electric generating plant on the Colorado River in Nevada below Davis Dam, if it receives Nevada, California and Federal regulatory approvals. Work on the first 750,000-kw unit could start late in 1965 and be completed in '69. Coal would be delivered to the plant over a 30-mile rail spur from Needles, or by pipeline."[52] Notice that this steam plant will generate five times as much power as Marble Gorge would. We have no information about the selling price of the steam plant's power, but it should be low. Southern California Edison says it will probably be the largest facility of its kind in the United States.[53]

Another massive electric development has been organized in Reclamation territory—the seven states of the Colorado River basin plus contiguous areas of Idaho and Texas. "In September 1964," writes Paul Averitt in *Economic Geology*, "ten of the largest electric utilities in the southwestern United States announced the formation of a cooperative, the Western Energy Supply and Transmission Associates (WEST Associates) through which they plan to increase generating capacity and to improve the transmission of electricity throughout a 9-state area."[54] Ben Avery of *The Arizona Republic* reports that "The first development under WEST will be a huge new coal-fuel power generating facility in the Four Corners area. . . . It is scheduled for completion of its first 750,000 kilowatt unit by late 1969, and eventually will consist of two such units. . . . It will be a completely separate facility from Arizona Public Service's present Four Corners plant which already totals 575,000 kilowatts of installed capacity. The present APS plant eventually is planned to exceed a million kilowatts." The two plants mentioned by Avery will ultimately have a capacity of 2.5 million kilowatts—400,000 kw more than Bridge and Marble combined, and more than four times the capacity of Marble alone. Again, we have no data on the selling price of WEST's power. But Avery reports that "WEST will coordinate operations in the nine-state area so the most economical power generating facilities can be used at all times to meet load requirements. . . . These results will effect many economies in power transmission and generation and these savings will flow to the consumer. . . ."[55]

If coal-fired steam plants were the only form of competition the Bureau had to consider, they would give it plenty to think about. "We suggest," says the National Park Association mildly, "that the public and private utilities in the region be questioned on their expectations of long-term costs for pumping power before Marble Gorge is considered further for that purpose."[56] This

seems an eminently sane idea. The "cash register" concept is obsolete if the Bureau can buy power cheaper than it can generate power to operate its own pumps.

Nuclear power plants

It takes a lot of water falling a long way to generate as much power as a few atoms of fissionable material are capable of releasing. And atomic reactors may soon be generating electricity at lower cost than the coal-fired plants that are already underselling Reclamation's subsidized hydropower. An editorial in *The New York Times* states that "Already there is evidence that either coal-fired or atomic plants would be at least competitive with hydropower and probably less costly in the long run. As an indication of the diminishing cost of atomic power Dr. Glenn T. Seaborg, Chairman of the Atomic Energy Commission, predicts that within 35 years all new private power plants will be operating on nuclear energy. . . . The Marble Gorge dam should follow Bridge Canyon dam into limbo—if not oblivion. It is time to follow Theodore Roosevelt's admonition about the Grand Canyon: 'Leave it as it is. . . . The ages have been at work on it, and man can only mar it.' "[57]

Last year, the financial section of the *Times* carried a story about an atomic plant at Oyster Creek, New Jersey, that will have 600,000 kilowatts capacity and cost $68 million.[58] (Marble Gorge dam would have the same capacity but, according to Bureau estimates, would cost $239 million—3½ times as much.) Cost of the Oyster Creek plant's power, according to Philip Abelson in *Science*, will be 3.66 mills per kilowatt-hour.[59] If a nuclear plant with Marble's capacity is now being built at less than one third the cost, and will sell its power almost one third cheaper, why build Marble? Are we so determined to desecrate Grand Canyon?

Even cheaper nuclear power will not be long in coming according to the *Christian Science Monitor:*

"California is talking about what may be the peaceful atom's biggest breakthrough. By 1971, if all goes well, the state will be making electricity with a new design of nuclear reactor. It may be 50 times more efficient than any now in use in its conversion of nuclear energy. . . .

"The power will be used to pump water from the Feather River over the Tehachapi Mountains into Southern California. [This is a far greater lift than will be required to get water from Lake Havasu to central Arizona.] By using an advanced reactor of a seed-blanket type, the cost will not exceed 3.5 mills per kilowatt hour."[60]

In its study of nuclear powered desalinization plants, the President's Office of Science and Technology estimated that the delivered cost of atomic power would be as low as 3.2 mills in 1970, as low as 2.7 mills in 1975, and as low as 2.1 mills in 1980.[61] Bridge and Marble dams would hardly have begun to pay for themselves by 1980—and their chance of paying out after 1980 is not discernible to the naked eye. "My own belief," says Alvin M. Weinberg, Director of Oak Ridge National Laboratory, "is that very large, publicly-owned atomic power plants will eventually generate electricity at costs of no more than 1.5 mills per kilowatt hour. I think therefore we ought to turn some of our attention to the question: 'What would we do with unlimited 1.5 mill power?' "[62]

Uranium to fuel reactors serving the Central Arizona Project is locally available. According to a report on energy resources published by the Committee on Natural Resources of the National Academy of Sciences and the National Research Council, rich uranium ores totaling 500,000 to 2,000,000 metric tons underlie northern Arizona, Eastern Utah, and western Colorado and New Mexico—the Four Corners area within several hundred miles of Marble Gorge.[63]

Nuclear desalinization plants

Atomic plants that simply generate electricity may very soon look old fashioned. Plants that produce huge quantities of electricity as an incidental byproduct of the desalinization of water are not far off. A recent newspaper report states that:

"Sea water could be transformed into fresh water by atomic power at about one-fifth of current costs, the latest federally-sponsored engineering study indicates.

"That would put the cost—a minimum of 22 cents a thousand gallons—close to what Southern California expects to be paying for natural fresh water from inland sources within the next five years. The rate would be favorable for other water scarce sections of the country as well.

"This prospectus was given today in a report by the Bechtel Corp., one of the nation's largest engineering firms, to the Department of the Interior, the Atomic Energy Commission and the Metropolitan Water District of Southern California. . . .

"The plant would produce 150 million gallons of water a day, enough for a city of 750,000 people. . . .

"The power output would be 1,800 megawatts, enough for a city of two million people—bigger than Hoover Dam's capacity of 1,300 megawatts. . . .

"The economic estimates were premised on the sale of power at 4 mills per kilowatt hour, which would be competitive with current prices."[64]

Lower cost power will soon be forthcoming from desalinization plants according to another report in *The New York Times:*

"Congress was told last summer that a task force has found that by 1975 this country should have large dual-purpose desalting and power generating plants that would turn out fresh water at a cost of 20 to 25 cents a thousand gallons along with 1,000 to 1,500 megawatts of electricity that could sell for from 2.3 to 2.5 mills a kilowatt hour. The plants would produce 500 to 800 million gallons of fresh water a day."[65]

Senator Clinton Anderson has predicted that "we will

in time develop nuclear electrical energy at a cost of 1½ or 2 mills per kilowatt hour and water at a cost of about 15 cents per 100 gallons. . . ."[66]

Writing in *The Nation*, David E. Pesonen says that "it is conceivable that eventually all additions to electrical generation capacity in the Pacific Southwest will be 'surplus' from desalinization plants."[67]

Dr. R. Philip Hammond, Director of the Nuclear Desalinization Program of Oak Ridge National Laboratory, says "nuclear sea water conversion can deliver the same amount of water to the same places and at approximately the same cost as the Department of the Interior's elaborate Pacific Southwest Water Plan. [Later called the Lower Colorado River Basin Project, of which the Central Arizona Project is a part.] Nuclear water might even sell cheaper—if the nuclear plants get a good price for the electricity they'll generate as a byproduct."[68]

When it comes to a choice between dams that waste water in order to generate high-cost power and plants that produce fresh water with low-cost electricity as a byproduct, the choice shouldn't be difficult. By the time they could be completed, Bridge Canyon and Marble Gorge dams would be expensive anachronisms. Coal-fired, oil-fired, or nuclear powerplants could be built at less cost, could be put into operation sooner, and would produce electricity at considerably lower cost.

Peak power: Reclamation's last trump

The Bureau of Reclamation is realistic enough to know that it is being priced out of the market for firm, base-load power. Says Commissioner Floyd Dominy:

"Prophecy is a hazardous business but some aspects of the future role of hydroelectric power seem reasonably certain. First, it seems quite likely that the declining role of hydro-electric power in meeting base load requirements for power and energy supplied by electric systems in the United States will continue. . . .

"The fact that public utilities the country over are turning more and more to hydropower for peaking capacity and to thermal generation for load factor power indicates to me that the traditional competition between thermal and hydropower is at an end."

[If you can't lick 'em, join 'em! Priced out of the market for base-load power, Reclamation looks toward peaking power for its salvation. Peaking power, i.e., reserve power to meet temporary demand over and above the steady base-load demand, commands a higher price because it requires standby equipment that cannot be utilized all the time. Premium-priced peaking power is the last trump in the Bureau's hand and the Bureau is playing it to the hilt.]

"From our standpoint the gradual shift from base to peak load operations and market is advocated for the following reasons: First, the financial integrity of existing plants may be in jeopardy in future years because of the competitive inroads of thermal power."

[*Existing* plants? The Commissioner might have noted that the financial integrity of unbuilt plants that he is now urging upon Congress and the country is in even greater jeopardy; they would cost more than existing plants, and existing plants are deeper in trouble than they are in water.]

"Second, against this competition new hydroelectric projects, which inevitably will be more costly, may not be financially feasible unless power and energy are sold primarily for peaking purposes."

[We should have said "will not," rather than "may not," be financially feasible. Notice the commissioner's assumption that it is absolutely essential to find some way to keep Reclamation in the powerdambuilding game. We have no doubt the Commissioner feels that way about it, but why should he expect anyone outside his Bureau to share his sentiments? Having sidled into power generation through the side door, as an adjunct to its assigned task of reclaiming arid western lands by irrigation, why shouldn't the Bureau sidle out again when its hydroelectric activity no longer makes the sense it once seemed to make?]

"Third, as time passes, fewer and fewer of our hydroelectric installations will have sufficient water for total load factor operations to supply current and future needs. This, of course, will result from increased upstream consumptive water usage and is taken into consideration in our payout schedules but it does not help in fulfilling the power needs of the West."[69]

As time passes? Reclamation has never been able to fill Lakes Powell and Mead full enough to operate the Glen Canyon and Hoover powerplants at rated capacity simultaneously. It has never come close. Powell has been lowered to provide a minimum operating head at Hoover, and Hoover has been kept below rated capacity in an attempt to raise Powell's level. Meanwhile, Reclamation fills its power contracts by paying millions of dollars for supplementary electricity from outside suppliers! If "fewer and fewer of our hydroelectric installations will have sufficient water," what kind of reasoning is it to insist upon more dams on a river that cannot fill the dams it has got? Why does Commissioner Dominy speak of "fulfilling the power needs of the West"? Fulfilling the west's power needs is not Reclamation's job.

Peak power is required in parts of the country where hydroelectric power is not available, and there are other means of providing it. Richard C. Bradley writes that Commissioner Dominy ". . . is certainly correct that it is easier to draw down a reservoir when power demands suddenly go up than it is to fire up another boiler. But there are several other good ways of producing peak power besides steam and hydro. Diesel-electric peaking plants, for example, are now being built that can be turned on in a matter of seconds. Such plants can be installed when and where they are needed in much less time and at much less cost per installed kilowatt than the Bureau's dams, and

although they require fuel (which is not in short supply) they do not evaporate water (which is). Thus, even if we grant the need for peaking plants, there is still no need to put them in Grand Canyon."[70]

Gas turbines turning generators are another possible source of power with quick start-stop capability and no water consumption. Older, less efficient thermal plants are maintained on a standby basis to provide peaking power in many electric networks. And what about atomic powerplants? In reply to a query by C. Edward Graves of Carmel, California, an answer was given by A. Giambusso, Assistant Director for Civilian Power of the Atomic Energy Commission's Division of Reactor Development and Technology:

"From a technical point of view, nuclear power reactors would be quite satisfactory to meet peaking demands. A great deal of operating experience has demonstrated that nuclear plants of the type in commercial use today have excellent load-following characteristics—they can respond quickly and smoothly to pronounced fluctuations in load."[71]

Mr. Giambusso goes on to say that the difficulty with using nuclear reactors for peaking power is their high capital cost: "It would be preferable to operate a high-capital-cost plant to the fullest extent practicable in order to spread the capital carrying charges over a large number of kilowatt hours produced. . . ." But the capital cost of hydroelectric installations is higher than that of fossil-fuel or nuclear plants of equivalent capacity; this argument against nuclear peaking power applies with even greater force to hydro peaking power. And as we have seen, nuclear desalinization plants will soon be generating so much byproduct electricity that we may have difficulty finding ways to put it all to good use. Meeting peak power requirements may be the best way to utilize *existing* Reclamation hydropower, but it does not provide economic justification for the building of additional high-capital-cost hydroelectric plants.

Will peak power remain profitable?

The Bureau hopes to sell Bridge-Marble power at an average price of 5.3 mills, of which the peak-power component would be 6 mills. With experts predicting drastic reductions in the price of steam and nuclear base-load power, is it likely that the price commanded by peak-load power will remain high enough over the next half century to make the Bureau's Bridge-Marble proposal financially feasible? Surely the price of peaking power bears some necessary relationship to the cost of base-load power, and must drop in response to reductions in base-load prices. If this is the case, reliance upon the sale of peaking power does not look like the salvation of the Bureau's hydroelectric ambitions.

Demand for peaking power is satisfied in many parts of the country by interconnected transmission lines enabling surplus power in one area to be sent to an area of peak demand. Commissioner Dominy recently spoke of two such interties: "One is the interconnection of private power transmission systems with the transmission grid of the Colorado River Project. The other is the historic Pacific Northwest-Pacific Southwest Intertie. . . . The Pacific Northwest-Pacific Southwest Intertie . . . will permit exchanges of large blocks of power between the Northwest and the Southwest, and enable each region to take advantage of diversities in peak load requirements."[72]

Such interties will presumably make it less and less necessary to fill peaking power requirements from powerplants in the area served. Might it not be economical for large, efficient, relatively low-cost thermal or nuclear plants to meet the peaking power needs of entire interconnected systems? Or *existing* hydroelectric plants might be utilized entirely to satisfy the peaking power requirements of power grids, leaving base-load generation to fossil-fuel or nuclear plants.

The need for peaking power is real, and hydroelectric plants are more competitive in this field than they are in the generation of base-load power. But in view of technological and economic trends, we seriously question whether peaking power justifies the construction of any *new* Reclamation dams anywhere—much less in Grand Canyon.

Other sources of power and revenue

David Brower, Executive Director of the Sierra Club, has offered two suggestions that would give Reclamation the pumping power and revenues it needs without involving the Grand Canyon or other scenic areas:

"We are fully aware of the traditional dependence the Bureau has upon power 'incident to the river.' People who don't like TVA or who think one TVA is enough are not likely to want another government agency in the business of generating power for profit—enough people, probably, to make such an innovation politically impossible unless there are safeguards. We would suggest two possibilities:

"1) Allow the Bureau of Reclamation to build equivalent steam generation (coal, oil, or gas) or reactor capacity *only* when necessary to save a major resource, such as Grand Canyon or any of several stretches of wild river, each determination to be made by Congress.

"2) Allow the Bureau to contract for private construction and operation of such substitute facilities (again, each authorized by Congress), with capital to be supplied at the same interest rate the Bureau enjoys and taxes forgiven, as the Bureau's are, most of the profits to go into the Southwest Development Fund (along with revenues from Hoover Dam, *et al*) after it is paid out."

For Congress to authorize the Bureau to build steam or nuclear plants, under certain specified conditions, might require a shift in habits of thought. But it would require a radical change in policy, and the sacrifice of a respected tradition, for Congress to authorize the construction of power dams in Grand Canyon that would eviscerate the

national park and endanger the National Park System.

If the late Howard Zahniser, father of the Wilderness Act, were alive to comment on proposals to dam the Colorado River in Grand Canyon, we know pretty much what he would say. He said it about Echo Park Dam (a project defeated in large part through his efforts) in Volume XIX, Number 50 of *The Living Wilderness*, published by The Wilderness Society. We have substituted "Bridge and Marble dams" for "Echo Park dam" and "Grand Canyon" for "Dinosaur National Monument," but the text is otherwise as Howard Zahniser wrote it in his editorial in *The Living Wilderness:*

". . . It is clear that the real issue is the integrity of the National Park System, assuredly an issue that we must continue to face with vigilance and determination.

"A principle is involved—the principle that once an area has been set aside for preservation it must be held inviolate and used for commodity purposes only in a case of extreme national need. Former Secretary of the Interior Julius A. Krug once stated this principle, in its application to dams, as follows: 'Large power and flood control projects should not be recommended for construction in national parks, unless the need for such projects is so pressing that the economic stability of our country, or its existence, would be endangered without them.'

"The proponents of [Bridge and Marble dams] seem themselves to be deeply conscious that the controversy is in large measure over this principle. Conservationists have insisted again and again that their objection is not to dams, or to reclamation, or to water storage for power production, but to the choice of a site. . . . Yet the proponents of this project continue to urge the [Bridge and Marble dams] proposal. In view of these circumstances, and the demonstration of alternatives to [Bridge and Marble dams], there are, indeed, strong suspicions that the persistent advocacy of damming the [Grand Canyon] is deliberately intended to break down the national policy for park preservation and to secure for those who are responsible for impoundment projects the freedom to use any National Park System site that seems advantageous.

"Thus the [Bridge and Marble dams] controversy is essentially a great debate over our national policy of park preservation. We are principals in this debate, and we must keep ever alert both in argument and refutation, insisting that the threatened invasion of the [Grand Canyon] be turned back and the sanctity of our National Park System reaffirmed and thus strengthened."

How we can help save the Canyon

To mutilate Grand Canyon and undermine the principle of park preservation would be bad enough at best. To do so when the sacrifice is neither necessary nor desirable would be an inexcusable act of wanton vandalism. Readers are urged to study the matter carefully and bring the weight of their opinion to bear on opinion-makers and decision-makers. The issue will be decided in Washington, but Washington's decision will be shaped by opinion in all sections of the country.

The canyon is at least two things besides spectacle. It is a biological unit and the most revealing single page of earth's history anywhere open on the face of the globe — Joseph Wood Krutch

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Rather than countenance dams in Grand Canyon, we should be thinking of 1) strengthening the protection that, by law and tradition, is supposed to be accorded Grand Canyon National Park, and 2) including the *entire* Grand Canyon, from Lee's Ferry to Grand Wash Cliffs, within the national park boundaries or affording it equivalent protection. The Grand Canyon has done something for everyone who has visited it. Now people who have visited it, or hope to visit it, can do something for the Canyon.

Citizens of a democracy have an opportunity and a duty to raise a clamor against any proposal they oppose; if they remain passive and the proposal is adopted, they have only themselves to blame. There are many things you can do to inform yourself further and to make your opinion felt. Here are some of them:

1) Borrow *Time and the River Flowing: Grand Canyon,* by François Leydet, from a friend or a library. Leydet's book develops the case against dams in Grand Canyon at greater length than is possible here. Having obtained a copy of the book and absorbed its message, lend the book to people you wish to influence. It is a powerful persuader. (A big book with a hundred color photographs, it is necessarily expensive. But if you are deeply interested, you may want to own it. It costs $25.)

2) Obtain a print of the 16mm. sound-and-color film, "Glen Canyon." This half-hour film reveals the incredible beauty of Glen, and its side canyons, before they were drowned by Glen Canyon Dam, and it makes a powerful case against further dams in the canyons of the Colorado. Show the film to clubs, civic organizations, and other groups. (Obtainable from the Sierra Club for a $3 rental fee; also available for purchase at $275 per copy.)

3) Discuss the issues in personal conversation and correspondence. The people you talk or write to may catch fire, and public opinion is nothing more than the sum total of individual opinions.

4) Write the editor of your local newspaper. The fate of Grand Canyon is a "local issue" in every city and town in America. Write also to the editors of national magazines, to columnists, to radio and TV commentators.

5) Propose resolutions against dams in Grand Canyon in clubs and groups you belong to. Send copies of such resolutions to President Lyndon Johnson, to Secretary of the Interior Stewart Udall, to the Congressman from your district and the Senators of your state.

6) If you are qualified and able to do so, make it known that you are available to fill speaking engagements in your community.

7) Register your opinion in a letter to President Johnson—perhaps the only man alive who could, by his own individual efforts, end the threat to Grand Canyon and the National Park System. Send a copy of your letter, or another letter, to Interior Secretary Udall, your Senators, and your Congressman.

8) Tell your Senators and Congressman how you would like them to vote on this issue. They are not obliged to follow your advice, but they will respect the opinions you express.

9) Write to key members of the Senate and House committees that will report to Congress on bills providing for dams in Grand Canyon:

Hon. Wayne N. Aspinall, Chairman
House Committe on Interior and Insular Affairs
Hon. John P. Saylor, Ranking Minority Member
House Committee on Interior and Insular Affairs
Senator Henry M. Jackson, Chairman
Senate Committee on Interior and Insular Affairs
Senator Thomas H. Kuchel, Ranking Minority Member
Senate Committee on Interior and Insular Affairs

10) Consider how opinion is formed and how things get done in your particular community. Consult with your most active and knowledgeable acquaintances.

11) Support the efforts of organizations that are fighting to save Grand Canyon. The Sierra Club will be glad to send you a list of them.

12) Get as many people as you can to do as many of these things as they can.

There is a story about one of our great atomic physicists—a story for whose authenticity I cannot vouch, and therefore I will not mention his name. I hope, however, with all my heart that it is true. If it is not, then it ought to be, for it illustrates well what I mean by a growing self-awareness, a sense of responsibility about the universe.

This man, one of the chief architects of the atomic bomb, so the story runs, was out wandering in the woods one day with a friend when he came upon a small tortoise. Overcome with pleasurable excitement, he took up the tortoise and started home, thinking to surprise his children with it. After a few steps he paused and surveyed the tortoise doubtfully.

"What's the matter?" asked his friend.

Without responding, the great scientist slowly retraced his steps as precisely as possible, and gently set the turtle down upon the exact spot from which he had taken him up.

Then he turned solemnly to his friend. "It just struck me," he said, "that perhaps, for one man, I have tampered enough with the universe." He turned, and left the turtle to wander on its way.

— Loren Eiseley

NOTES

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8. Report of the Bureau of Outdoor Recreation appended to the Pacific Southwest Water Plan as modified in January 1964.

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10. "Castro on the Colorado," extension of remarks of Hon. Craig Hosmer, *Congressional Record*, May 25, 1964.

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12. See note 11.

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28. *Life* editorial, May 7, 1965.

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36. See note 29.

37. See note 35.

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41. See note 3.

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July 27 was an incredible day, in unbelievable country, of exploring for a new national park in Peru

The Cutibireni River Wilderness: Excerpts from a Journal

»» John Milton

July 15, 1965

I left New York's Kennedy airport a little over ten hours ago. Since then I've crossed the Caribbean, stopped over in Panama, crossed the equator over Ecuador, and I'm now about to land in Lima, Peru, which is about 12° south of the equator. It's about 7:15 A.M. in Peru and our plane, which began to descend a few minutes ago, has just dropped down out of the cloudless sky above the arid highlands of the western Andes and into a thick blanket of clouds. These clouds—they call them *garua*—roll in from the Pacific's Humboldt Current during much of Lima's winter. The jet is skimming their surface, and for a few brief seconds the landscape is a vast plain of ragged cotton wisps stretching to every horizon. Then we dip into blank gray and descend to several hundred feet above the calm, dull surface of the Pacific. It never looked more suited to its name. I get only a few quick glimpses of seabirds scattering below, startled by the plane, and see several unstartled small fishing boats; then our wheels touch the runway.

July 17, Saturday

The past two days in Lima have been so busy and the hours so completely filled with the details of preparing for our expedition into the Cutibireni River Canyon that I've not had a chance to do much with the journal—the old tug-of-war between experiencing and recording.

July 21, Wednesday

Today Ian Grimwood, Wolfe Drewes, and I flew from San Ramon into the little grass missionary airstrip at the small Indian Village of Quempiri, where Ian and I will begin our trip on foot into the Cutibireni Canyon. Before landing, we made an overflight of the valley—magnificent wilderness country, and nearly all of it is still unexplored.

The biotic and topographic diversity of the region is fascinating. High mountain plateaus, covered with subtropical rain forest, provide a vivid green backdrop for the dramatic gorge of the Cutibireni and its tributaries; bands of white limestone and an erosion-resistant reddish sandstone are exposed prominently where more waterfalls than I could count are still dissecting the plateaus. From the air, there seemed to be relatively little Indian occupation of these wild highlands, especially when I think of some of the more densely settled mountains and valleys west and south.

The deeper our pilot took our little single-engine plane into the mountains and away from the relative safety of the lowlands around Quempiri, the more nervous he became. A crash landing in these more inaccessible parts of the Andes could be serious. Finally, he was forced to turn back as a series of knife-like ridges up to 14,000 feet blocked the horizon, and thermals associated with a late afternoon storm's building started to toss us around. We landed at Quempiri with a healthy respect for the upland wilderness we'll soon be entering.

Considering the rapid and profound changes now occuring in most of the world's natural environments, areas like the Cutibireni valley will become increasingly scarce and progressively more valuable in future years. One of the present century's great tragedies is that we are just now on the verge of understanding the ecology of these natural ecosystems at a time when their very existence has never been more tenuous. Hopefully, the work of such groups as the International Biological Programme, now being organized, can contribute importantly to the preservation of these few representative wild habitats left on our planet.

Again, I am airborne, this time enroute to Cuzco and then Machu-Picchu. In several more days our government expedition into the Cutibireni watershed will begin. I am impatient for all these preliminaries to be done with and for us to be on our way.

July 23, Friday

Dawn broke early, shortly before 6 A.M. here in this little Campa Indian settlement of Quempiri on the edge of the Cutibireni Wilderness; either the crying of babies or crowing of roosters was bringing up the sun, and we woke to a dim, rosy dawn. In order to prevent the interminable delays involved with taking breakfast in camp, Ian, Juan Toulier, eight Campa Indians, and I said our farewells to the rest of the group and plodded off into the rain forest shortly after rising, empty-stomached, but glad to be on our way at last.

July 26, Monday

It is now nearly 11 P.M. and I'm writing by candlelight. We're now up into a part of the main Cutibireni Canyon that no white men have ever been known to penetrate on land. Wolfram Drewes' OAS expedition last year, which was the first to get up to the 900-foot Seward Falls, went no further up the main valley.

Several nights back, while still in the lower reaches of the Canyon, we were caught around midnight by a sudden thunderstorm while sleeping out on the open riverbank under a few sheets of clear plastic. The storm broke with

several violent thunderclaps and flashes of lightning that lit up the river canyon nightmarishly; when the rain finally came, it swept down the canyon from the south, smashing everything under it with such force that the rain forest seemed to cower, quivering in the intermittent flashes of blue light. Similar storms have followed nearly every night since, although less intense.

July 27, Tuesday

The river flowed swiftly, silently in green swirls. It gurgled, formed small whirlpools, and boiled up here and there at the surface like a giant snake coiling and uncoiling. The three of us wound our way along the river bank, climbing over jumbled boulders, clattering across pebble bars, and striding easily over dark sand benches.

We passed several very attractive campsites behind large boulders, overshadowed by spreading trees with soft sand underfoot. The canyon had taken on a very personal closeness and an atmosphere of intimacy that had been lacking before. Rock walls overhung the river on either side and the sun cast deep shadows into the curling green water. The deeper into the gorge we got, the more and more nervous our guide, Quendiovia, became; he was the last of the Campa Indians willing to stay with us. I couldn't really understand it, for although we had had some difficult passages, the going had not been much more difficult than the day before; now we were carrying a much lighter load: two days' rations and raingear in my small pack—we had not even taken our sleeping bags.

Finally, we reached a steep cliff face on our side of the Cutibireni against which the river threw its full force. The current was too swift and the river too deep to ford, and the cliff face on our side seemed without a ledge to help us past the rough water; the only possible way to get around was to climb up and over the cliff above us through the steep scrub of the upper canyon wall. Quendiovia would go no further. We argued in signs (he spoke no Spanish) that he should continue with us but to no avail. He flatly refused.

Just as negotiations were about ended and he was to turn back, we spotted a paca, a large rodent about two and one-half feet long, sitting dazedly under the cliff on a rock amidst the swift current. We had no gun, but Quendiovia's hunting instincts took quick hold. In a minute he was stark naked, gliding into the river with a rock poised in one hand, a spear in the other—stalking the animal. He got to within ten feet of it, water swirling dangerously about his waist, then hurled the rock like a pitcher throwing a fast ball. It smashed into the poor animal just as it leaped toward the river, emitting a loud squeal. The rodent disappeared in the current, only to reappear again about 70 yards downstream. With its wet fur plastered to its skinny body, the paca pulled itself onto the rocks and into the jungle.

Despite the interlude, Quendiovia still refused to go on with us. In desperation, I tried to force his feet by starting the climb up and over the cliff. When about halfway up, I looked down and back; Ian was still with Quendiovia and motioning expressively. Quendiovia looked gray, but wouldn't budge. Finally Ian left to join me. Quendiovia rose, walked a few paces, turned back to look at us, walked a few paces more, looked again, then turned and walked on out of sight. Again, fear of the unknown had won out—or perhaps he knew far more about what lay ahead than we were able to comprehend.

Ian and I scrambled on over loose rock scree through a jungle of palms, lianas, nettles, and biting ants. It was decidedly unpleasant. It took us nearly an hour to complete this one detour, then we continued on up the valley floor of the Cutibireni as before. Our next major obstacle was an even more difficult cliff. This time there seemed no possibility of an ascent, for it went on up interminably. With the short time available to us to get up the main canyon, an attempt seemed impractical, both because of the time it would require and because of high possibility of failure. The river threw its full force along the rock wall on our bank for a good 100 yards; the few passable ledges across the cliff made a gradual descent into the swirling waters, rather than going along above it.

Ian stripped down to his underpants, cut a pole, and waded out into the clear, greenish current to see if we could cross. He got nearly halfway, then the water lifted his feet out from under him as the water swirled over his waist; he just barely got back into the shallows in time to avoid being swept away. Later on I learned that he can swim only poorly, much less fight a tough river current such as the Cutibireni's.

As a last resort, we tried wading along the edge of the rock wall while holding onto the rock for support, virtually lifting ourselves along through the water. However, when the wall turned into a smooth, sloping overhang and the rapid current began to bristle over our shoulders, we had to give up. Sitting quietly and eating a cup of mush, we were about ready to admit defeat and turn back. I decided to give the crossing one last try, this time holding a large stone for extra weight on my head with one hand while using the pole for support with the other. The going was tricky, especially when the river boiled up once or twice over my chest, but the additional weight of the stone did the trick. Using the same technique, Ian was also able to cross successfully.

We were now without any equipment—camera, food, binoculars, notebook—everything, save ourselves and the clothes we were wearing, was now behind us. We determined to make a dash upriver as far as we could and still have time to get back for a return crossing before nightfall. If not, we risked having the river rise and become impassable in an usually heavy evening storm. Should that happen, we could be cut off for days until the water level subsided.

On this side of the river we found our route a much better one than what we would have had if we had stayed

on the other bank. Within a kilometer, two more apparently impassable rock walls dropped straight into the river on the opposite side. The gorge deepened and the cliffs grew higher and higher from the riverbanks as we traveled. In the late afternoon sun the reddish and white rock walls glowed with intense reds and whites against the green of the jungle and occasional brilliant blue metallic flash of a passing morpho butterfly.

The fever of exploration had by now taken me over completely; I felt driven on to see more and more of this strange land, to round that far bend, to reach that distant cliff. The increasing splendor of the wilderness landscape only served to heighten this compulsion. Ahead the gorge broadened out into a wider-bottomed canyon of red sandstone and white limestone that soared over 2,000 feet above the river. A few hundred yards ahead lay the main junction of the Cutibireni that we had spotted on our earlier aerial flight, one branch flowing to the right and south where it eventually flows out of the Lago Juntingosococha, the other branch on the left turning east and then north, past the Cataracts of the Three Sisters and up into country not even surveyed by air as yet. A pebbled flat leading out into the middle of this junction lay just beyond several boulders; in a few minutes we would stand in the heart of the Cutibireni canyon, glowing golden in the late afternoon sun. I leapt quickly ahead just as Ian behind me whispered a sharp "John!"

He was staring beyond me at something up-river; I turned just in time to see three Indians, their bodies all painted a brilliant orange and carrying sets of long arrows. They ran lithely into the forest just off the pebble beach ahead of us, but running in our direction as they disappeared. "They stood staring at you before they ran," Ian calmly whispered. "I think they're coming this way . . . we'd better leave!"

In a moment we were splashing, sliding, vaulting down the rocky riverside we'd just come up. The realization that we were doubtless the first white men these Indians had ever seen plus the recent past history of war between the Campa and whites didn't ease my mind about their intentions. There still was the mystery of the three Peruvians who disappeared near these headwaters last year, our guide's sullen fear of the "wild Campa" territory, and the recent hostility of many Indians to the new colonization schemes in their former territory along the nearby Apurimac River. I moved a little faster after Ian's retreating heels.

Just as we began to be sure that we had imagined their intent to follow us, I glanced back and caught a quick glimpse of one of the Indians loping along behind, with bow in hand, perhaps 100 yards away. I had just a flash look, then he was gone, but there was no doubt they were behind us now, armed and trailing us. Whatever their intentions, unarmed and outnumbered as we were, we could only beat a very hasty retreat while and if we could.

The feeling of being hunted is unlike any other sensation; the body performs as it never has before. You are lent the ears of a cat, the feet of a gazelle, and the eyes of a hawk. We feared that they might cut us off by cutting inland across a U-shaped turn in the river that lay just before our fording place. As we neared the final curve of the bend, our eyes and ears scanned every shadow, every hidden corner, but we could see no one. In a moment we had stripped off our clothes and were recrossing the river; this time with far less hesitation than before.

We didn't arrive back in camp until after dusk had fallen; and only then did I relax and let the full exhaustion that had been creeping through my limbs take full control. "Excellent country for tourists," I heard Ian comment to himself before I fell asleep.

HISTORY AND PURPOSE OF THE 1965 CUTIBIRENI EXPEDITION

The Cutibireni Valley lies in one of the wildest, least-known portions of the Peruvian Andes' eastern slope. A national park has been proposed for the area in the northernmost extension of the Cordillera Vilcabamba, virtually surrounded by the humid tropical forest of the Amazon Basin. Until the mid-1960's no visit by white men had been recorded for the Valley.

During 1964, following the initial expedition into the Cutibireni Valley led by Dr. Wolfram Drewes of the OAS, and publication of a report on the reconnaissance entitled "Resource Conservation and the Establishment of National Reserves in Latin America; The Cutibireni National Park, a Pilot Project in the Selua of Peru," the Forest Service of the Peruvian Government decided to initiate further investigations to determine the feasibility of setting up a National Park in the region. Under the able organization of Flavio Bazan, Director of the Peruvian Forest Service, the second expedition was undertaken during July and August, 1965; it involved an overflight of the proposed park watershed, a permanent collecting team based in the small Campa Indian village of Quempiri near the Cutibireni Valley, and a long field trip up into the main canyon to determine the suitability of the area for a national park. To date approximately 35 major waterfalls, some over 800 feet high, have been discovered in the watershed, and most of the life zones typical of the eastern Andes can be found in the 2,000 to 13,000-foot variation of the humid, mountainous region.

A more intensive series of investigations and a permanent field center has been proposed to help prepare a major park plan for the area. Such studies would attempt to define, *a*—the necessary minimum boundaries needed to preserve intact the full range of natural ecosystems in the Cutibireni Watershed; *b*—an adequate buffer zone; *c*—duplicate sites where manipulative (habitat-altering) ecological research could be carried out; *d*—location of recreational and educational zones for various kinds and degrees of human use; *e*—the necessary protective measures needed. The Cutibireni project represents one of the first times a government has requested ecological surveys as the basis for creation, zoning, and management of a national park, and as a part of an overall master plan for a region; The project might well be the basis for preparation of a model report for use by other countries in formulating similar national park plans.

A further inquiry into the thin epithelium of the earth, into the living things that make it barely understood by too many who profess allegiance to sustained yield

The Soil of the Wilderness, II

→»» Wm. Bridge Cooke

Stopping to rest by a trailside waterfall, we can see the face of the land as it has been built up during the time that the climatic cycle in which we now live has permitted a stable forest to grow here. The water comes from a stream whose source is in the melting snows high up on the mountainside. It comes down through narrow canyons and broad grassy meadows, between cliffs of lava high on the mountain or ridges of granite not far from the base where we are now. It provides clear water for wildlife, clean cool water to the thirsty hiker, sparkling, rippling water to the mosses and algae in the creek bed, a gentle spray to the mosses and ferns and flowers in the talus near the base, and irrigation to the grass and flowers of the meadow and the forests of the mountainside.

The soils we see here are covered with a thick layer of leaf and twig litter which is gradually decomposing. During the first year after the leaf falls it is attacked by several mold-type fungi and many of the tissues between the veins are rotted away. By now this litter is covered with a new layer of litter, but a long succession of organisms has begun to find its food supplies in this leaf and its neighbors. As the second wave of fungus growth extracts all it can from the remains of the leaf, a colony of minute animals takes over. These tiny creatures leave waste products of their own and molds again take over. Finally only the most resistant components of the leaf remain and these accumulate together with similar materials from other leaves and twigs to form the humic acids of the humus which percolate into the soil, giving it a dark color. As a wide variety of fungus and other organisms continue to attack the decomposing organic matter they leave a trail of beautiful fruit bodies behind them: mushrooms of all shapes and colors, delicate sporangia of slime molds, and spores of many sizes, shapes, and colors. Various organisms continue to peck away at these slowly decomposing substances until they are removed completely from the soil, but their place is continually taken by a new series of waste products.

The litter has piled up in a small creek basin overhanging the wall of the waterfall. A young tree which has fallen from the wall at this point gives us a view of a beautiful profile of the soil. At the top is a thin layer of last year's litter. Then the decaying litter of previous years has formed a thicker layer. Beneath this is a mixture of dark humus and lighter-colored parent materials. Here the parent material is basically the granite which forms the walls of the canyon. Through various kinds of erosion it has formed a little sand and gravel bed in the stream valley. As the granite weathers it decomposes, leaving sand; so the soil of the meadow is highly porous. If the valley were older the sand could have decomposed to form clay and the meadow could have become a clay-bottomed swamp or lake. But most of the lakes in this basin have clear water, permitting us to see the granite bottoms, which sometimes may fill up with plants, rotting humus, and washed in soil so that they become marshes or swamps.

From the trail along the side of the mountain we have seen openings in the forest below, openings that may be caused merely by a change in the local environment—a different outcrop producing a different soil, or a large spring producing a soil too wet to be tolerated by the forest. A grassy opening may demonstrate an old homestead, the road once leading to it now nearly obliterated by the forest. Several old buildings in a cluster may indicate that a colony of people decided to try to settle here. A scar on a nearby hillside could show where this colony scratched a meager existence from a placer mine which petered out. Their houses were built from the trees cut from the clearing where gardens were.

Here we have most of the ingredients of an expanding civilization that has made inroads on the forest, then abandoned the results without thought of their effects on the forest or the effects of the forest on them. Here I use the word "forest" not just as an assemblage of cuttable trees, but as a whole ecosystem, from the lowliest bacterium to the mightiest forest giant. The giant, of course, supplies the seeds for future forest tree generations. Many of us see only this aspect of the forest community. But there are smaller trees, shrubs, herbs, grasses, ferns, mosses, liverworts, algae, fungi, slime molds, bacteria, and the myriad animals that live with or on these various kinds of plants, and all these go together to make up the forest ecosystem. Interruption of a portion of the system can be repaired by the replacement of one species with a stronger competitor. Interruption of the whole ecosystem, as when a road is built, a clearing made, trees harvested, or a mine installed, requires a much longer period of time to repair, and the results of the repair will never exactly resemble the original.

A country lane cut through a forest may remove only a row or two of trees, but much damage can be done to the soil by compacting of the litter and humus through the action of horses hooves, people walking, or tire and wheel tread action. Eventually, with disuse, the roadway becomes the habitat for numerous herbs and grasses that otherwise grow poorly in the forest for lack of light. Their

decomposing remains aid in rebuilding a soil in which seedlings of shrubs and trees get a start. With a long corridor of light a dense mass of growth develops; but competition for the light above and nutrients below takes its toll, and the faster-growing and best-established trees grow rapidly to fill up the space. In a few years after the trees again get a start little is left of the roadway but a deer trail and an occasional ledge on a rocky outcropping, where only a few herbs and grasses can grow.

The recovery of the farm clearing by the forest is more complex. Rough stakes bound together with wire formed a picket fence where a rail fence was too loose a structure. Farm buildings, including a house, barn, and sheds, were left as the homesteader last used them in his losing battle. As the seasons passed, the hand-hewn, or hand-sawed, or roughly milled lumber was subjected to the soaking of the rain and snow, and the drying of the summer sun and ocean winds. Since the wood had never been treated or painted it was easy prey to wood rots, dry rots, molds, and insects. Gradually the structural wood gave way, the roofs fell in, and eventually only a pile of rotted wood or brown rot remained. The clearing which had been used as a field supported a crop of grain grasses and weeds for a few years until the grains could no longer compete with the herbs and native grasses that took over the field, forming a meadow in which various animals grazed on occasion. The garden plot lost its cultivated character more quickly. The introduced vegetables soon were crowded out by adventive weeds or native herbs and grasses, and the flowers in the border quickly died for lack of care. Throughout the cultivated areas the soil was only stirred up and rearranged; it was not damaged as much as that in the roadway or under the buildings. A few forest-tree seedlings became established, mostly at the margins of the clearing, and gradually more of these moved deeper into the clearing. The whole process of returning this bit of civilization to wildness took many decades.

The cliff face which was marred with a placer-mine operation or, for that matter, any scar on the hillside, such as a mine opening with its accompanying tailings or a strip mine with its bare earth shoulders, is a more difficult bit of earth to be reclaimed by natural forces unaided by those who disrupted the place. Lucky is the area of this type that is able to support thickets of alder trees, for here is a plant which is able, through bacteria in nodules on its roots, to fix in the soil the elemental nitrogen of the air so that it can be used by other plants for their vital processes. First a rudimentary soil must be developed. A few plants can colonize these bare areas, but until they do there is nothing that resembles soil. Some plants, with their accompanying nitrogen-fixing microörganisms, may start the development. A few nitrogen-fixing bacteria may blow into the area with dust from neighboring soils during a windstorm, and a few blue-green algae may migrate to the area in a similar way. Birds scratching for food or gravel may leave some of the tiny bits of life which stuck to their feet in mud or soil picked up from other places. Gradually a few herbs and grasses may become established, and a tree seedling or two. Without the nourishment obtained from a well-developed soil, the growth of these plants will be poor and slow. The death of the herbs and grasses and the leaves from the trees will not build up a litter layer very rapidly, and humus particles will be scant for a long time. The rocks that were laid bare when the area was denuded will take a long time to weather; if they are colonized by lichens, the growth of these organisms will be slow and the production of little niches in which plant seeds can germinate will take a long time. Gradually, however, lichens may grow, etch the rock, and form patches of decaying organic matter in which other larger plants can survive. Weathering processes will be able to work on these rocks, reducing them to sand and clay and starting the process of developing a soil parent material which will be useful to larger and larger numbers of plants.

Many kinds of soils have been built up over the period of time that land has been available for colonization of plants. The deepest of these are prairie soils because grass roots go deep and form a larger part of the plant than the roots of other plants. Alluvial soils of river bottoms may form relatively deep deposits on gravel bars. These two types of soils are rich and fertile. Another type of fertile soil is that developed under the broad-leaved deciduous forest of the northeastern United States. Here the long-accumulating and decomposing leaf litter produces a deep and rich soil. In spite of the fact that there is a large amount of leaf litter, the forest soils of the more humid regions to the south and in the tropics are progressively poorer in quality. Rapidity of decomposition, luxuriance of growth of the forest, and other factors combine to reduce the amount of organic matter held in these soils. Westward, in the forests of the mountains, the soil forms a very shallow layer on the rocky surfaces of the young mountains. In the valleys where soil has built up it is fairly rich, but on the mountainsides and in the deserts it is thin and hardly tillable.

The soil can be thought of as a living thing. It not only includes the clay, silt, sand, and gravel derived from the rocks from and on which it is built, but within this complex of inorganic materials are plant roots, the rhizoids of mosses and liverworts, the cells of algae, filaments of fungus tissues, cells of bacteria, and moving throughout the mass the minute protozoans, the larger nematodes, insect larvae, worms, earthworms, and even small burrowing mammals and crustaceans. The surface of each root is partly covered with a whole microcosm of bacteria and fungi which, in the rhizosphere, are living on the cast-off cells of the root and the exuded waste products of the plant.

Man has denuded the forest and broken the sod of the prairie without thought to the consequences in loss to the

soil of the systems of life so destroyed. For some time he expected to recover from the soil as much in crops as the first crop gave him. But as time went on the soil became less and less able to do this. The soil had to be helped and fertilizing materials became necessary. Maybe this was first noticed by farmers who had to dispose of barnyard manure and night soil and did so by spreading it over nearby fields. Later the raising of cover crops and their return to the soil as green manure, and the addition of carefully controlled mineral and organic supplements, came into vogue. There are people who say that only mineral fertilizers should be used, there are those who will use only organic fertilizers, and there are those who use a judicious combination of the two.

Where it is no longer practical to till the soil, even under the best cultural conditions, the land is returned to forest. A favored type of tree for early planting is the legume that returns quantities of nitrogen to the soil. As man learns more and more about slopes, soils, and plants, he is able to develop a series of plants to use in covering bare hillsides, road cuts, and similar types of damage to the landscape. First grasses are planted, then herbs, and finally shrubs. Trees may be used, especially along roadsides.

As man abandons his more needless desecrations of the landscape, there is always some organism in the vicinity which can colonize the area and aid in preparing it for the coming of more and more of the plants and animals that find there the niche in which they will make their best growth. The process of returning this landscape to its original state may never be completed because new plant and animal communities will have developed in response to various changes in the physical environment. Stone-lined foundations and well openings leave gaping holes which gradually become filled up even before the walls crumble away; changed stream channels reroute creeks or rivers; stones piled for other uses may last as long as it takes for the stones to crumble away; dams may stand for the eons it takes for a river to restore its former gradient.

Man has altered his environment in many places and many ways. No one knows for sure what the California valley grasslands looked like a hundred years ago, the wild oats and other introduced grasses and herbs have taken over so well. No matter how well man plans his environment, whether this be the farm or ranch, the village, the city, or its suburbs, he must continually keep after the vegetation and the wildlife to ensure the continual maintenance of the planned surroundings. This is well demonstrated by the fact that in parts of the country the best place to study the original vegetation is the enclosure of the unlandscaped cemetery that is allowed to exist as it was laid out a century or more ago.

So as we see in the forest below us, as time moves along, the natural vegetation returns to the disturbed land. Those organisms, bacterium, fungus, herb or grass, shrub or tree, squirrel or deer, best suited to occupy a given niche in space will find their way to the speck of soil or the acre of forest occupying that space. It may take a long time for the ancestors of these organisms to prepare the way, to aid in the return to a natural habitat. The new populations of this renewed habitat may resemble the original populations of the area but will not be identical with them. The changes will be more drastic than those which would have taken place in the populations of the habitat had it never been disturbed.

The price of man's progress, of his rapid increase and almost complete take-over of the surface of the earth, is the rapid change in his natural environment: the denudation of the land is followed by the replacement of the forest, prairie, or desert with man's communities. As these are abandoned the natural vegetation and wildlife return, but in an altered way. The plant geographer of the future will have few guides to the reconstruction of such vegetation complexes. The preservation of bits of vegetation in national parks, wilderness areas, and similar reserves throughout the country thus is essential to an understanding of the original vegetation, soils, and wildlife of each region in our country.

The wilderness and the idea of the wilderness
is one of the permanent homes of the human spirit.
Here, as many realized, had been miraculously preserved,
until the time when civilization could appreciate it,
the richness and variety of a natural world
which had disappeared unnoticed and little by little from Europe,
America was a dream of something long past
which had suddenly become a reality.
It was what Thoreau called the great "poem"
before many of its fairest pages had been ripped out and thrown away.
The desire to experience that reality rather than to destroy it
drew to our shores some of the best who have ever come to them.

—Joseph Wood Krutch

An Appreciation of Robinson Jeffers

LOREN EISELEY *with lines from Jeffers*

Then what is the answer?—Not to be deluded by dreams.
To know that great civilizations have broken down into violence,
and their tyrants come, many times before.
When open violence appears, to avoid it with honor or choose
the least ugly faction; these evils are essential.
To keep one's own integrity, be merciful and uncorrupted
and not wish for evil; and not be duped
By dreams of universal justice or happiness. These dreams will
not be fulfilled.
To know this, and know that however ugly the parts appear
the whole remains beautiful. A severed hand
Is an ugly thing, and man dissevered from the earth and stars
and his history . . . for contemplation or in fact . . .
Often appears atrociously ugly. Integrity is wholeness,
the greatest beauty is
Organic wholeness, the wholeness of life and things, the divine beauty
of the universe. Love that, not man
Apart from that, or else you will share man's pitiful confusions,
or drown in despair when his days darken.

MORE THAN THIRTY YEARS AGO, accompanied by Edward Weston, I met and spoke with Robinson Jeffers on the road beyond his door. The circumstances have long faded from my mind except for the haunting presence of his features, lined and immobile as a Greek mask. I have also a rough memory that he spoke casually and without heat, of being called for jury duty in a homicide case, and of having been rejected by the defense because of the assumed cruelty of his countenance. The eyes looked at me sidelong as he spoke, not with amusement, but with the remote, almost inhuman animal contemplation that marks his work and that very obviously had aroused the mistaken animus of the defense counsel.

I felt in his presence almost as if I stood before another and nobler species of man whose moods and ways would remain as inscrutable to me as the ways of the invading Cro-Magnons must have seemed dark to the vanishing Neanderthals. In later and more mature years I have met cleverer vocalizers and more ingenious intellects, but I have never again encountered a man who, in one brief meeting, left me with so strong an impression that I had been speaking with someone out of time, an oracle who would presently withdraw among the nearby stones and pinewood.

A yearning for that retreat can be felt in Jeffers' work. D. H. Lawrence once observed that the essence of poetry "is stark directness, without a shadow of a lie, or a shadow of deflection anywhere." No one reading Jeffers can escape the impress of the untamed Pacific environment upon which he brooded. He was its most powerful embodiment—an incarnation of the spirit of place so intense as to epitomize Lawrence's demand that there be no deflection between the poet and what he expresses. Jeffers' peculiarly distinctive style, developed by degrees from the unpromising conventional prosody of his youth, has the roll of surf and the jaggedness of rocks about it. Something utterly wild had crept into his mind and marked his features. I cannot imagine him as having risen unchanged in another countryside. The sea-beaten coast, the fierce freedom of its hunting hawks, possessed and spoke through him. It was one of the most uncanny and complete relationships between a man and his natural background that I know in literature. It tells us something of the power of the western landscape here at the world's end where the last of the American dream turned inward upon itself.

Jeffers was not limited to the simple expression of the natural. Fierce shapes and dark symbols, as intimidating as certain supernatural evocations in his long narratives, erupt from even his short poems. He was an educated man whose mind roved from the contemplation of nebulae to the incipient beginnings of planetary life. He felt in his bones man's transcience and the looming disaster contained in the sciences upon which man placed his hope. Stones, the bones of deer, Indian palm prints in a cave—all relate themselves symbolically to us but remind us at the same time of our human mortality.

Man himself will descend into the night he has decreed for other creatures. His untidy lunch boxes, his defilement of beaches will eventually, in some oncoming age, disappear before the great winter storms of the Pacific. Musing upon the rusted machinery in an abandoned

stone quarry, Jeffers notes the persistent intrusion of expelled nature: "Men's failures are often as beautiful as men's triumphs but your returnings/are even more precious than your first presence."

With an artist's eye he has seen how quickly ugly ruins perched upon by birds and subjected to the weather can be transmuted and softened into beauty. He observes that a similar but lost nobility would return to man if he could but regain "the dignity of rareness." Of an old rancher who had spent his life under the open sky, Jeffers remarked that his was an existence all of our ancestors since the ice age would have known and appreciated.

With a kind of austere Spenglerian aloofness, "a neutral among all the dreaming factions," the poet looked on without hope for man, but at the same time he remained touchingly sensitive to individual tragedy whether animal or human. A person of great emotional depth, he suffered as only the seer can suffer in an age of vulgarity and material affluence. The Pacific at his doorstep became for Jeffers an enormous blue eyeball staring into outer space, staring perhaps into that "hawk's-dream future" which now is almost an obsession with humanity. Men feel, in growing numbers, the drawing of a net of dependency against which something wild in their natures still struggles as desperately as trapped fish in a seine. They ride in imagination with the astronauts, yearning for the last crag "on the ocean of the far stars." "No escape," counters Jeffers: "I feel the steep time build like a wave/towering to break. . . ."

The poet is not unaware at times of those elemental forces which speak through him. In a moment of self-critical understatement he remarks: "It is certain you have loved the beauty of storm disproportionately."

The man saw correctly. His long narratives threaded with violence made him a cult object in the twenties and early thirties so that to reread the critical effusions about him causes one to blush a little for the extravagances of the professional reviewers. Time has eroded this superficial praise and left exposed what was best in the man. Much of it will be found in the short lyrics or interpolated in the narratives. The best passages will be found concerned with waves and sea-fog, the small hoof-prints of deer, the clay homes of swallows under the eaves, the passages of hawks or mountain lions—all, that up to our time, has been regarded as permanent in the American landscape.

Like Thoreau, Jeffers was essentially solitary in his communion with nature. Both men were profoundly "imprinted," as the modern biologist would say, with their natural environment. It meant more to them than their human surroundings and they drew their literary sustenance from it. The one, Jeffers, is more addicted to the surge of the great waters, the other to a New England winter reserve. Both, though separated by a century as well as a continent, express the frontiersmen's distaste for numbers. Jeffers eyes the sea birds "alone in a nihilist simplicity." Thoreau confesses "an immense appetite for solitude," and maintains that he never met any man so elevating as the silence of a meadow.

Somewhat like Jeffers before the abandoned rock quarry, Thoreau sensed the aroma arising from ruined nature: "It is not in vain, perhaps, that every winter the forest is brought to our doors, shaggy with lichens. Even in so humble a shape as the wood-pile, it contains sermons for us." As Jeffers, later, was to examine the palm prints of an exterminated race on a cave wall, Thoreau is attracted by the arrow heads "sleeping in the skin of the revolving earth." He calls them "fossil thoughts" which will outlast today's sculptures. Similarly, in a letter addressed to me in the thirties, Jeffers expressed a fascinated interest in the Folsom and Yuma archaeological discoveries which were then beginning to suggest an unexpected ice-age antiquity for man in the New World.

With Jeffers, however, the American wilderness is dangerously close to sundown. One is forced to turn and survey the cities on the site of vanished forests, the vast population explosion with its dire implications, the two great decimating wars of our century and, finally, the nature of man himself—or such intimations as earth's strata choose to reveal, perhaps in those same arrow points. Jeffers recognizes that we have treated America's prodigal riches, not with love, but as despoilers. Within a few generations we have destroyed our forests, and mutilated the landscape almost beyond recall. A powerful sense of alienation has turned our literature to cracked laughter and pornography. The sound mind seeks to be "laired in the rock that sheds pleasure and pain like hailstones."

Thoreau tried hard to get his head above the clouds that represented "the underside of heaven's pavement." He was convinced that we had not got half way to dawn and he laid down, for a recluse, some rather discerning precepts for getting there. They included, among other things, a preservation of wilderness as necessary for the well-being and preservation of man.

Over three hundred years ago another poet and mystic, Thomas Trahearne, who looked almost as sadly upon man as Jeffers, wrote: "There are invisible ways of conveyance by which some great thing doth touch our souls." For Americans, those ways of insight have, throughout our history, lain mostly in a profound reaction to the natural world about us, a deep transfusion, "a conveyance" of life, or wonder, found under the forest roof and in the great solitudes of the new continent. Jeffers, well read in the sciences, extended that wilderness to sidereal space: "desperate wee galaxies . . . shining/their substance away like a passionate/thought."

Jeffers never succeeded very well in immuring his mind in the stone house he loved. The "unagitable" nature in which he tried to clothe himself shrank perceptibly before the brutalities of the hunter, the axmen, and the forest

burners. He speaks bitterly of the starving sea bird on the strand, its feathers befouled with oil, or of the sea lion blinded by human thoughtlessness and malice.

"My essence was capacity," Trahearne wrote. The comment might have served as Jeffers epitaph. Bird, man, and star were transcended in his search for that organic wholeness which he prayed for, and which eluded him.

Part of him could be said to lie in the photographs of *Not Man Apart*, or rather, they mark his passage. Pictured are his beloved cypress worked into knots by "the sailor wind," the great raptor birds, diminishing, untamable, as man and the cities spread. There are the nebulae glimpsed from Mount Palomar fleeing, as it seemed to the poet, this "center of infection," consciousness. Jeffers, in his apostrophes to the rocks he envied, or to the slow life of forest redwoods, exhibits an infinite capacity for love outside that fragment of nature we call humanity. He saw humanity as the destroyer of a world it could not live without and remain human. He pleads with us to be, not fractional, but whole men; partakers and enjoyers of the natural world outside ourselves, not trapped in men's "pitiful confusions." The wise, he says, seek solitude, "the splendor of inhuman things," which give value and meaning to our lives.

Jeffers is gone now, and so many years and miles lie between us that I do not care to ask the fate of the trees he loved to plant, nor of those who stood with us on that summer afternoon at Carmel. I suppose, a century after Thoreau and being the man he was, Jeffers would have doubted we were half way to dawn or even that dawn would come.

As I look at these pictures drawn at random from the world he loved, it is not at the end the brutal male figures with their magnified human cruelty that cross the rock-torn stage. Now in my late years all those fierce voices have passed unremembered from my mind. What remains to me are the lines from *The Loving Shepherdess:*

All our pain comes from restraint of love . . .
The beetle beside my hand in the grass
and the little brown bird tilted on a stone . . .
there was nothing there that I didn't love with my heart . . .

I, who spent much time alone in my young years, and who, out of sheer love of life, planted sapling trees that were destined mostly to be torn up, am not unfamiliar with such feelings. I choose to remember this gentler aspect of Jeffers.

Clare Walker's love, driven mad by tragedy, had been extended beyond human boundaries. Her compassion for life was so intense that she became life's victim. Perhaps Jeffers meant to show this, but, in reality, this lost girl of the roadside, walking with her faithful sheep through rain and hunger, to death, is the most agonizingly real of Jeffers' characters. Dying, she dwarfs "normal" humanity. Psychologically unfit though she is pictured, I suspect that something escaped the reserved Jeffers that he did not quite intend. "Love the coast opposite humanity and so be freed," he had once written gruffly. But the loving shepherdess had come by way of loss to Trahearne's magnificent insight: "The more we live in all, the more we live in one."

Since, to my mind, the shepherdess is actually the alter-ego of Jeffers, it is evident that he who found it difficult to bear the sight of laboratory animals had his own experience of compassion. "Sane men," he writes ironically of the experimenters, "well buttoned in their own skins." He does not praise them, though they are insulated from pity, laired truly in the rock of insensitivity that he professes to long for. Instead, he cried with a sudden anguish that might have been torn from Clare Walker:

whilst I like a dowser go here and there
with skinless pity for the dipping hazel fork.

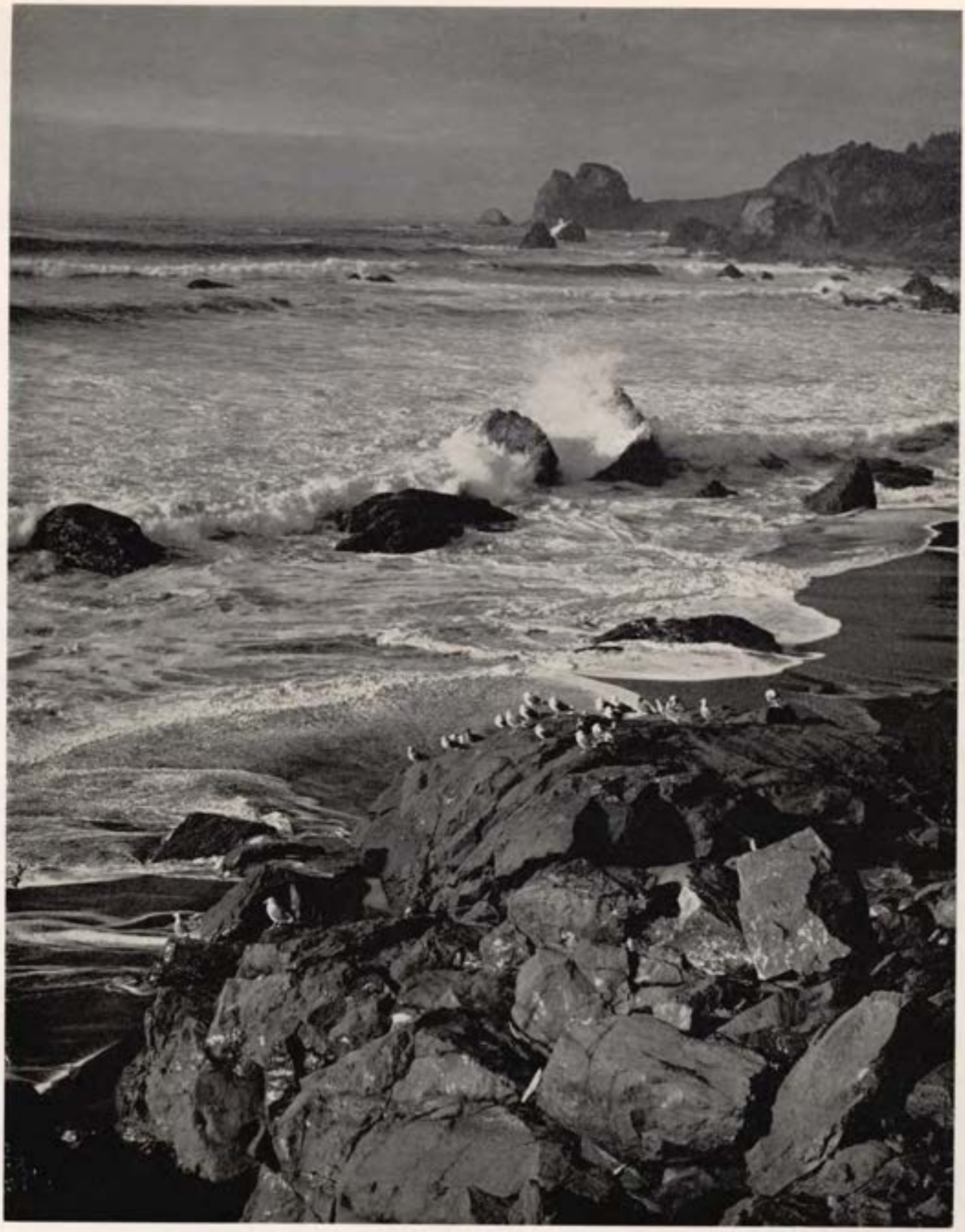
Thus Jeffers confronts the paradox of his daemon: to escape and not to love; to love and not escape. I think Clare Walker's was the nobler folly. I think, at heart, her creator knew this. The man who had confessed to "widening the disastrous consciousness of life with poems," projected through another mask than his own the agony of that love which encompasses both man and his creatures.

Robinson Jeffers had endured the all in the one, known the infinite capacity for love which makes man so pitiably vulnerable, as was true of his last years. I do not know where he lies, but something of his insights and perceptions may linger in *Not Man Apart* in such a manner as to intrigue a later generation. I hope so, for his mind was deeply sensitive to those aspects of nature which contribute to the creation and maintenance of human dignity, and which are sadly threatened in our time.

RETURN

A little too abstract, a little too wise,
It is time for us to kiss the earth again,
It is time to let the leaves rain from the skies,
Let the rich life run to the roots again.
I will go down to the lovely Sur Rivers
And dip my arms in them up to the shoulders.
I will find my accounting where the alder leaf quivers
In the ocean wind over the river boulders.
I will touch things and things and no more thoughts,
That breed like mouthless May-flies darkening the sky,
The insect clouds that blind our passionate hawks
So that they cannot strike, hardly can fly.
Things are the hawk's food and noble is the mountain,
Oh noble Pico Blanco, steep sea-wave of marble.

The Jeffers poems are from the club's Not Man Apart, *for which the Jeffers lines were in turn selected from works published and copyright by Random House.*



PHILIP HYDE: Gulls, False Klamath Cove

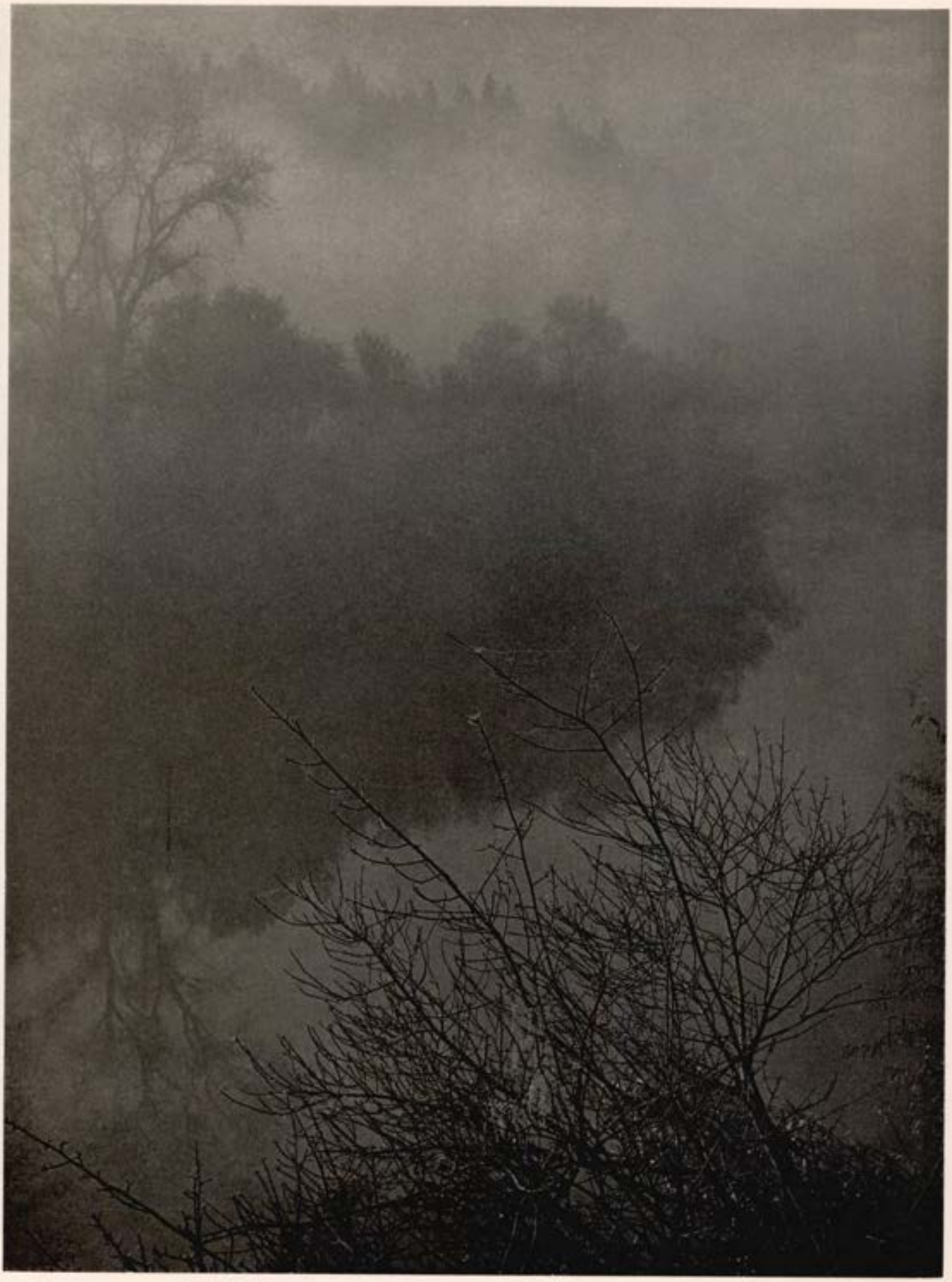
Redwood Country

WITH TEXT AND PHOTOGRAPHS FROM *THE LAST REDWOODS*

This is the land of the last Redwoods
Life's urge to survive is the force
that shaped them and their world of wildness,
that made them one of the great miracles.

PHILIP HYDE: Alders reflected in stream, Russian Gulch State Park

PHILIP HYDE: Russian River near Rio Nido

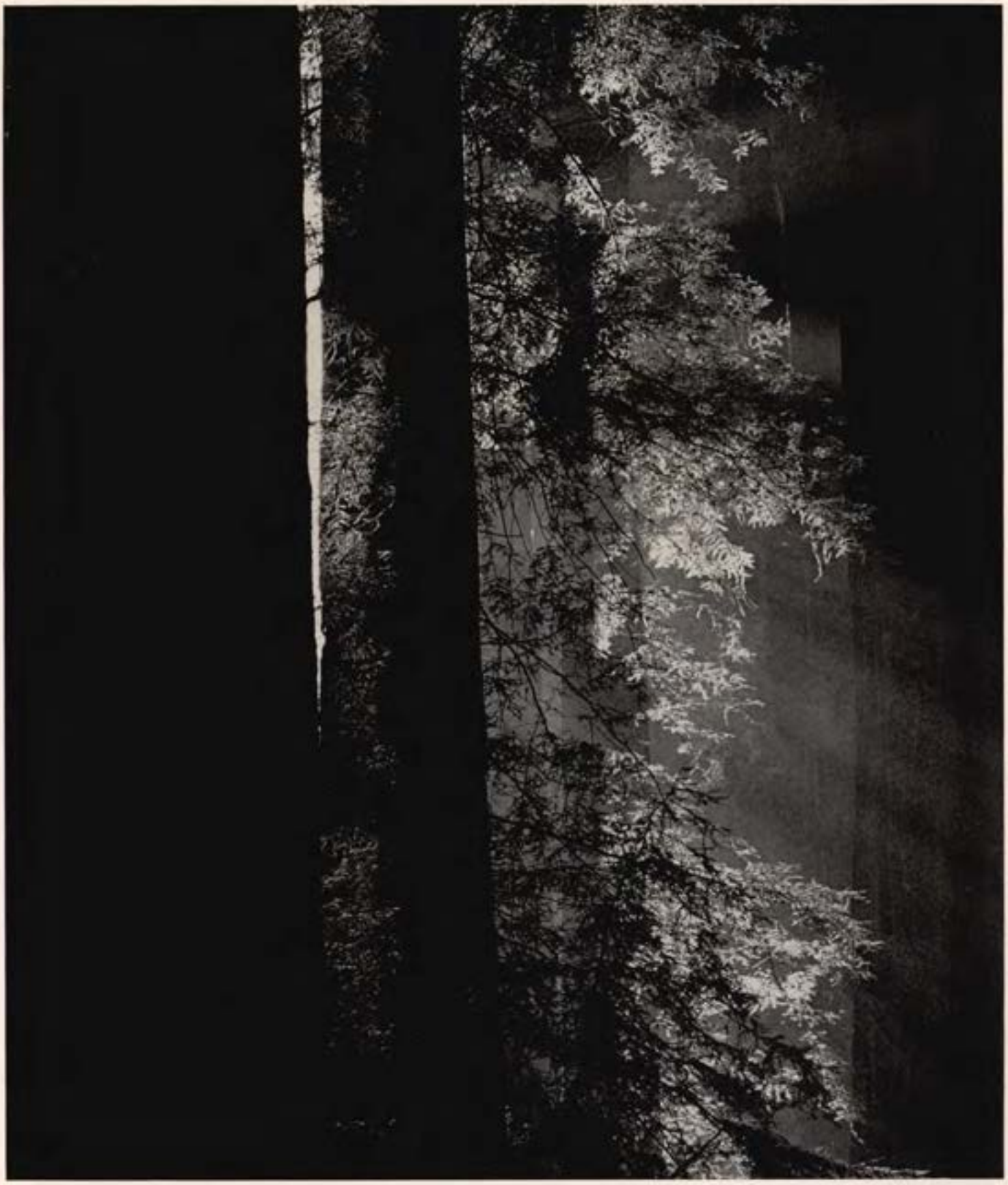


ANSEL ADAMS:

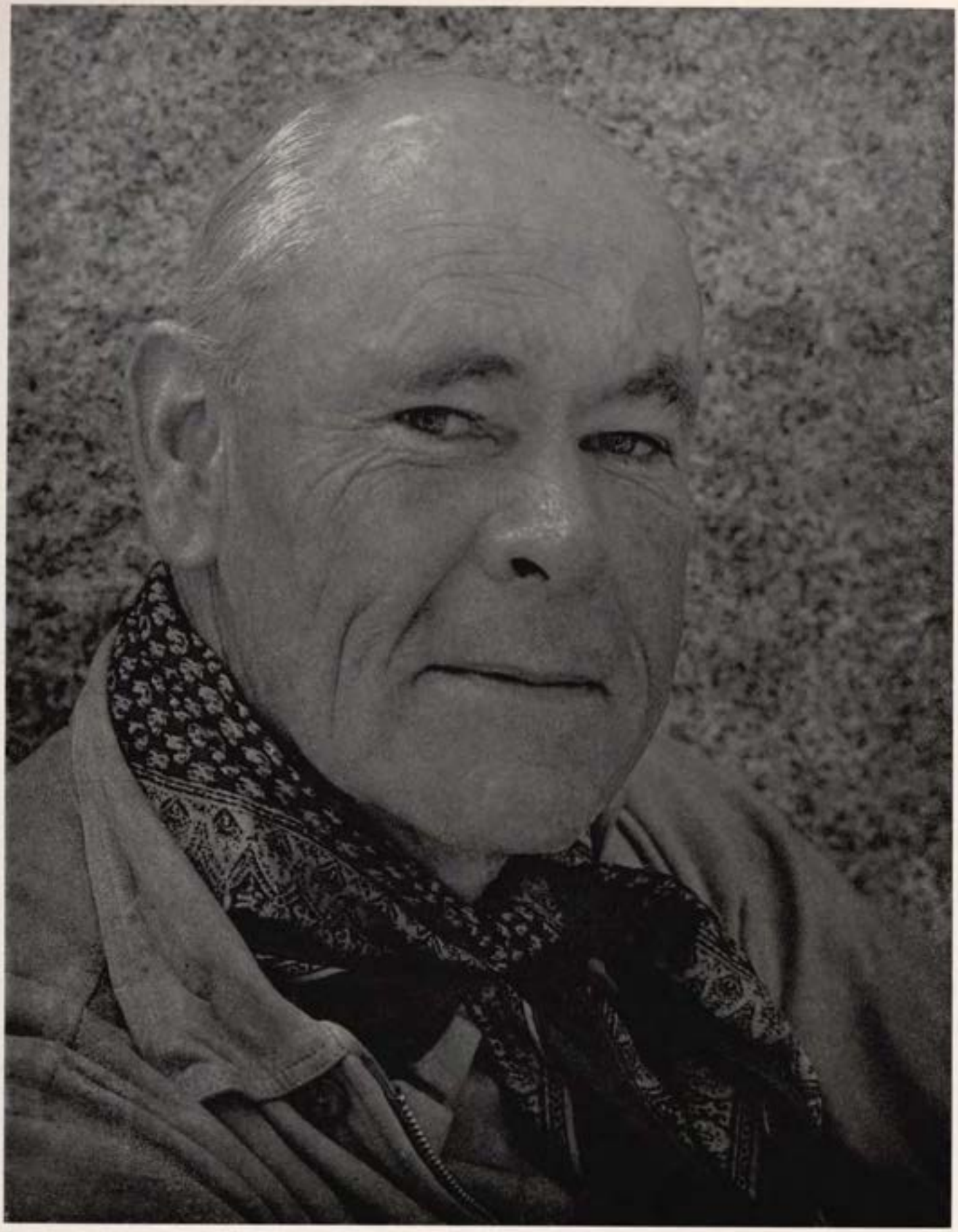
Edge of redwood forest, Bull Creek Flat

Man, if he is too impatient to care,
can end this miracle, can terminate a chain of life
going back without interruption to an old eternity.
We cannot destroy it without destroying something in us.

DAVID SWANLUND: Bend in Redwood Creek, and the tallest trees



PHILIP HYDE: Redwood foliage, Humboldt Redwoods State Park



CEDRIC WRIGHT: William E. Colby

Remembering Will Colby

WILL COLBY, to whom the Sierra Club owes more than to any other man, died at his home in Big Sur on November 9, 1964. He would have been 90 on May 28, 1965. He had served as Honorary President of the Sierra Club from 1950, having been elected to that office after retiring from the Board of Directors, on which he served 49 years, 47 of them as Secretary and two as President. He was associated with John Muir in the club's early years, especially in the campaigns to make Yosemite Valley part of Yosemite National Park and to try to save Hetch Hetchy Valley from inundation. With Muir he founded the club's High Trips in 1901 and led the trips until 1929. He contributed substantially to the saving of redwoods, to enlarging Sequoia and establishing Kings Canyon and Olympic national parks. He was also first chairman of the California State Park Commission and achieved notable eminence as a mining attorney, an achievement that served him well in his conservation work. No one was better suited to carrying the torch Muir laid down when he died in late 1914.

We have not begun to list, much less to evaluate, what Will Colby's brilliance, scope, and devotion meant to the club throughout most of its 73 years. We are hoping for a book that will tell of his unsurpassed service to the club and to conservation.

The family has generously suggested that contributions in his memory be made to the Sierra Club. The Board of Directors decided to reconstitute the club's collections as the William E. Colby Memorial Library. It was dedicated in Mills Tower, San Francisco, November 15.

I last saw Will Colby just a few months before he died. Remembering well the vigor of his words at that time, I know that nothing would please him more than to see the Sierra Club continue to be an organization with the perception and boldness he and John Muir built into it, and to have that library a working part of the club's work on through the years.

An extraordinary service and contribution from the Bancroft Library, University of California, Berkeley, is the series of interviews it has been taping. We are particularly fortunate that the library interviewed William Colby at his home, then in Berkeley, on October 21, 1953. Those who knew Colby will not forget his phenomenal memory for important detail, not only of events but also of the places where they happened—the character of the man who was in a given role, his words, the color of the bowl on the near-by shelf or of the view from the campsite when the words were spoken. Here we get new insights on Colby's own beginnings, his work with Muir in the battles for Yosemite and Sequoia, his role in starting the club's wilderness outings, and as chairman of California State Park Commission. We give it as he spoke it, taking freedom with the punctuation (which he did not dictate), but not with the words; he would himself have caught the minor grammatical problems had he checked the transcript, but we don't choose to, because he was talking, not writing, and he should sound that way here. We still want to know more, for these pages, from those who knew him and who should not let us forget what he meant to the organization and what it does.—D.B.

Q: Mr. Colby, would you go ahead with your narrative?

A: This afternoon I'd like to talk about my conservation work and my interest in conservation.

My parents were both very much interested in the out of doors, my father and mother having taken trips in their two-horse carriage to Calaveras Big Trees and Yosemite in the early 70's before I was born. I can remember a trip I took with my father after my mother's death—I must have been four or five years old—from our home at Colby's Landing on the Sacramento River, when we drove up in our team to some meadows in the Sierra in Plumas County and camped there evidently for a couple of weeks. I can remember the wonderful pine forest. And very early in our stay there they brought into camp to show the paw of a huge grizzly which some hunter had shot nearby at that time. I was very much impressed with that because they told me that if I strayed from camp any distance that one of those grizzlies would get me.

My father was a grizzly bear hunter. That was one of his favorite hobbies. And I was told afterwards by a cousin much older than I that he had been taken by my father on a grizzly bear hunt, and my father had nearly run his legs off. My father was a civil engineer and surveyor and was noted for his travelling abilities, travelling on foot.

* * *

My first direct connection with conservation came during my first trip into the Sierra, which was taken in 1894, starting toward the end of May and it was completed about the middle of August. It occupied nearly three months, and I went with two older men, both graduates of the University, one taking work at Hastings Law School and the other getting his master's degree. It was only his fourth year in college, having completed his bachelor's work in three years. He was one of the most brilliant men that I ever met. His name was Leon Solomons, and he afterward attended Harvard University and got his doctor's degree in a very short time. Both Professors Munsterberg and William James, in the Department of Psychology where he specialized, stated that he was one of the most stimulating young men that they had

ever met. He afterward became Professor of Psychology at Nebraska University and then at Wisconsin, where he died from a very minor operation. He was one of the most high-strung individuals I ever came in contact with. The other fellow was Ernest Bonner, who afterwards became District Attorney and Superior Judge of Modoc County. He was much more phlegmatic.

We arranged for the trip, and would go up into the hills here at Berkeley up Grizzly Peak sometimes on moonlit nights and lie out there on the side of the hills discussing our great trip that we were going to take into the Sierra. We, all of us, had read John Muir's writings, and at that time his magnum opus, which was written for the San Francisco *Bulletin* and issued in fine illustrated form, very large pages, had just appeared. In that were intimate descriptions of Yosemite Valley and the Sierra, illustrated by engravings taken from William Keith's paintings and those of other noted artists, as well as photographs. We started from Placerville and traveled down the Sierra through the Calaveras Big Trees, Lake Eleanor, Hetch Hetchy Valley, and over to Yosemite, where we spent quite a few days. From Yosemite we went up into the Tuolumne Meadows and stayed there for about a month, took a knapsack trip down Tuolumne Canyon, which had only been visited by a very few hardy explorers like John Muir and Galen Clark. We then visited the Mono Craters, climbed several of the mountains in the vicinity, and returned home toward the middle of August.

This trip gave me a very wonderful insight into the beauties of the Sierra and the magnificence of that range. I realized that travel of that sort was of the highest order, something that I repeated largely during the rest of my life as long as I was able to go into the mountains and do the strenuous hiking that was necessary for such trips. I met some people on that trip in Yosemite and other places who afterward had quite an influence on my life and became some of my intimate and best friends. Among them was Professor Joseph LeConte—J. N. LeConte, the son of the elder Professor Joseph LeConte, the noted geologist, whom I also met. I had taken work with him at Berkeley, so I knew him, but I met him and had a delightful chat with him at Crockers, on the Big Oak Flat road going into Yosemite. I also met Robert Price, who was then the Secretary of the Sierra Club, whom I succeeded in a few years.

* * *

The Sierra Club had become very well known in defending the Yosemite National Park, which had been created by its President, John Muir. Most of the people who went into the Sierra belonged to the Sierra Club. I was requested in 1900 to become the Secretary of the Sierra Club. This was almost entirely due to the friendships that I had made among Sierra Club members on that first expedition. I was glad, indeed, to take this position because of the very fine type of people who were members of the club and the character of the work it involved. John Muir was the President of the Sierra Club, had been from its organization in 1892 and remained its President until the day of his death, Christmas Eve, 1914. As a result of my election as Secretary, I was brought into very close and intimate contact with Muir. He invited me up to his home in Alhambra Valley, near Martinez. I visited him many times there, talking over various matters that involved the Sierra Club and conservation. It is interesting that my mother should have taught his wife, Louise Strenzel, before she married John Muir. I met Mrs. Muir on these various trips to the Alhambra Valley in the early days of my secretaryship before Mrs. Muir died.

Giving Yosemite Back

One of the first extremely important matters that came to the attention of the Sierra Club and which I was called on to take charge of was the campaign for the recession of Yosemite Valley to the federal government. John Muir had lived in the valley for several years after he first came to California, from about 1870 to 1880 or thereabouts, and had become devoted to everything that concerned the Valley. He became distressed at the manner in which the Valley was managed, because it had degenerated from a fine group of Commissioners, who were appointed by the Governor when the state park was created by Congress. It had become a political catspaw, and members of the Yosemite Commission, with few exceptions, were appointed for political reasons rather than for any qualifications for the position.

Q: Was it a salaried position?

A: It was not a salaried position; but the expenses of the commissioners were paid, and it had a certain political prestige, so that rather important people were often times appointed on the Commission but without any particular qualification for guiding the best interests of the Valley.

John Muir was called on to accompany President Theodore Roosevelt into Yosemite and guide him around on a camping trip above the Valley.

Q: What year was this?

A: This was in 1903, I believe. It was when Roosevelt came out during his Presidency on a tour of the Coast. Muir took the opportunity to get Roosevelt committed to the idea of having the state park, which included the Valley itself, turned back to the federal government and included in the great national park which surrounded Yosemite and which included something over 1,000 square miles.

Q: What would be the advantages of having it be national?

A: The advantage of having it national was that in the first place Yosemite Park was only a small area extending a mile back from the walls of the Valley itself, and this small area was entirely embraced within the larger national park. It resulted in a great conflict of interests. Sometimes a fire would start on the border. The

national government would claim that it was in the state park, and the state people would claim that it was in the national park. This conflict of interest was rather serious so far as carrying on the operations of the two parks in a coöperative way.

More fundamental than anything else was the fact that Yosemite Valley was operated through state appropriations and they were very meager. I was amazed when I started to investigate to find out how much was appropriated—only ten to fifteen thousand dollars a year to cover all the expenses, which included the expenses of the Secretary of the Commission in San Francisco, his offices there, the travel expenses of all of the Commissioners, and the salary of the Guardian, a state official. Whatever money was left over was used to keep up the roads and trails and buildings. It was a paltry amount, so that it was no wonder that trails were in bad condition, as well as the roads not surfaced at all; there was a general unkempt appearance about the Valley floor, which we noted when I went into the Valley first in 1894.

With these arguments, John Muir was able to interest not only Theodore Roosevelt in having the Valley turned back to the federal government but George C. Pardee, Governor of California, also, who was a member of the party, though he did not accompany Roosevelt on his trip with John Muir, which was a private affair. Pardee was also willing that the Valley should be turned back, and that arrangement was made between them; but of course the work of getting the recession bill through the legislature was another matter that had to be handled by other people. John Muir took up the gauntlet. He enlisted my support as Secretary of the Sierra Club, and we got the Club strongly behind us. I prepared at the outset a little leaflet giving the reasons for the transfer and quoting from several editorials of leading newspapers in the state which had advocated it after we had called it to their attention. I got the leaflet printed and distributed to the members of the legislature before they met in January, as I remember it.

Q: Of what year?

A: Of—that would be 1904, I think. I got it out none too soon. In fact, the speaker of the Assembly, William Waste, who afterward became Chief Justice of the Supreme Court of California, told me that he received my little leaflet in the mail just before he left Berkeley to attend a Masonic meeting in Oakland one evening. He read it on the way over on the street car and became thoroughly convinced that our cause was just. During the Masonic meeting he was called out by an *Examiner* reporter and asked what he thought about this proposition. So he was able to tell him without any question. The *Examiner* was violently opposed to the transfer.

Q: Why?

A: The reason for the *Examiner's* opposition was manifold. I found that out, after many years of experience . . . Hearst had little sympathy with parks. One reason was that he had purchased a beautiful home. It was a small hotel, in the Grand Canyon National Park, at Grandview. He didn't like park restrictions, and it showed up in many other ways. This was long before that, but he had the same trend of thought. His principal argument was that we would be virtually moving Yosemite Valley back to Washington; we'd have to get down on our knees and go to Washington to be permitted to enter the Yosemite Valley; and it was a great reflection on the people of the State of California if they couldn't run something that was within their own borders. Another reason, and probably one of the principal ones, was the fact that a very prominent criminal lawyer by the name of W. W. Foote, who had offices in San Francisco, had been during the latter portion of his lifetime attorney for the *Examiner* and the Hearst interests. He had been a Commissioner of the Yosemite Valley, a State Commissioner. He had died shortly before this, but his partner, J. J. Lerman, had become the attorney and had been made Secretary of the State Park Commision. This intimate tie with the *Examiner* explains in large part their great opposition.

Anyway, the first day the *Examiner* came out after they got wind of our little leaflet, they had a full front-page picture of Yosemite Falls and underneath was this label: "Do you want to have this taken away from the residents of California and practically moved back to Washington?" They played up that sentiment very powerfully and devoted at least a page of the *Examiner* each day all during the campaign, which lasted for a couple of months or so, getting everyone that they could to advocate the retention of the Valley by the state.

I realized right away that we were up against a difficult battle, and that if we were to win we'd have to do something very drastic. So I take credit on myself for having thought up a strategy which proved successful. I remembered that John Muir had been a great friend of E. H. Harriman, the railway magnate.

Harriman had had a nervous breakdown and his doctors ordered him to take a sea voyage and a thorough vacation and forget all about railroads. He asked if he could take friends along with him. The doctors said yes, take plenty of them, but don't take any railroad men. He invited leading scientists: John Muir, John Burroughs, and a great many others in the government service who were biologists, geologists and botanists and so on, on what was called the Harriman Expedition, which went to Alaska in 1893 with the fine object of writing up the geology, geography, and botany of Alaska. John Muir was included. I remembered this. Harriman, because John Muir didn't kowtow to him and show the deference that so many of the other members of the party did, took a great liking to him. Every time that Harriman would come to California after that, he would get in touch with John Muir and try to get him to go up to his lodge at Pelican Bay, Klamath Lake, or up to his Idaho lodge. I realized that this great influence could be brought to bear: Harri-

man, through the Southern Pacific—he was President of the Southern Pacific Railroad Company at that time and the Southern Pacific had almost absolute control of the legislature. They did it for self-protection, of course—to protect their own interests. But they had such a control that they could do almost anything that they wanted to, within reason, with the legislature. So I told Muir to write to Harriman and tell him in great detail why the Valley should be returned to the federal government. As soon as Harriman received the letter, he wired out to William Herrin, who was the chief counsel of the Southern Pacific Company in California and who handled its political affairs. Herrin called me over to his office and I explained to him all the details, gave him the data that we had accumulated on the subject. He told me, "Now don't think that we are going to fight this battle for you. You've got to get out and do the real fighting, and we'll help where we can where it will not affect the Southern Pacific interests." I learned more about politics and the state legislature in those few weeks than I have in all the rest of my life put together.

Q: Who were your opponents? Do you remember them?

A: Yes. One of the principal opponents was a state senator by the name of John Curtin, who came from the district in which Yosemite is situated. He was an attorney from Sonora, and he represented as a lawyer most of the interests in the Valley—the hotel people, the stage people, and all the other interests. He had had several battles with the United States government over the cattle he drove into the Yosemite National Park and allowed to run free over great portions of the park. They tried to stop him. Colonel Benson, who took over the management and was in charge of Yosemite National Park, tried to stop him and drive his cattle out, but he got a decision from the Supreme Court of the United States to the effect that he could do that as long as the federal government did not fence his land and keep the cattle from running into the park, and on that ground he was bitter against the national park and made a very good champion for the other side as well as representing all his clients. It really was a battle royal on that ground.

I found out, however, that several of the leaders who everybody knew represented the Southern Pacific Company fought us and made speeches against us. I found out afterward that this was a part of the game. The Southern Pacific wanted to divert attention from itself, and by doing this would get people to believe it was not interested in the recession.

John Muir and I took nine trips to Sacramento to talk with members of the legislature and try and get them to vote favorably. I always reported to Mr. Herrin when I came down as to how things were getting on. I told him one time that Charlie Shortridge, who was really a Southern Pacific representative, in that his vote would generally go for the railroad's bills (he was a state senator from San Jose), was making great speeches against us, talking about the golden-haired girls, the golden state, golden poppies—all these things would be moved out of the state, taken on to Washington, if this bill was carried through. Herrin smiled rather an amused smile and said: "Well, I think you'd better send all the wires and letters that you can get written to Charlie Shortridge from his constituents down there. That will help a lot. And we'll see what can be done."

David Starr Jordan was one of Shortridge's constituents. He and others, and some very high member in the Catholic Church in San Jose, helped us tremendously—one was head of the Sempervirens Club. Altogether we brought this pressure to bear on Charlie Shortridge. When the vote came up, it passed the Assembly very easily, by a great majority. But in the Senate, we checked up and found that we needed one more vote. When it came to the balloting in the Senate, Shortridge, when his name was called, got up and said that he was still of the opinion that the Valley should not be turned back but he had heard from so many of his constituents who wanted him to vote in favor of the recession that he would have to do it. That carried the day. Of course, Governor Pardee signed the bill without any question.

* * *

After the recession of Yosemite Valley to the federal government by the legislature of California, it became necessary for Congress to accept it to make it legal. The state had originally accepted the responsibility and therefore Congress had to agree to take it back.

We thought that there would be no difficulty because the strong adverse sentiment that had arisen in California through the work of the *Examiner* was entirely lacking in the East and among the Congressmen generally. But to our consternation, when the bill came up in the House of Representatives (it was sponsored by a very prominent Congressman from Stockton), Speaker Cannon would not recognize him. Cannon at that time was the Tsar of the House. Unless he recognized the advocate of a bill, it was dead. When I found this out—it was Congressman Needham, who afterward became a Judge in the East by appointment—I immediately got in touch with John Muir and told him of our trouble; he'd better get busy with Harriman again because Harriman, of course, through his Southern Pacific interests, had great influence in Congress. He wired Harriman the difficulty and in a day or two Cannon recognized Needham. The bill passed the House by a very large majority. One reason for the opposition of Cannon was probably the fact that he was a great economist and wanted to cut down on federal expenses everywhere. He thought that if the state would pay for the upkeep of the Valley, that was all to the good.

We thought our difficulties were over. The bill came up in the Senate, and Senator Perkins, who was next to if not the Senior Senator and had great prestige and power on that account, had introduced the bill and was one of the charter members of the Sierra Club. He was very

strongly in favor of it and would do more than most persons would on that account. But the bill was referred to the Committee on Public Lands. The chairman of that committee was a Senator from Dakota—I think before Dakota was divided.

In any event, this chairman would not report out the bill. The reason was that he had visited the Valley the year before, and the Yosemite and Eastern Railroad, the little branch road that extended up from Merced to El Portal, had taken him in tow, told him their troubles, and they had had a rather violent contest with the Southern Pacific company. The Southern Pacific company wanted to own and control the railroad, and the Yosemite Railroad would not give up their interest and control. They had enlisted the support of this Senator. The Southern Pacific, in order to get a little advantage over this branch railroad, had provided in the bill before Congress for the cutting off of a small corner, inconsequential in park value, of the park to enable the Southern Pacific railroad to run a branch road in from Fresno and in that way compete with the Yosemite road. For this reason, this Dakota Senator would not report the bill out, which meant that it was dead if he continued in that view. However, Senator Perkins was so powerful that he obtained the consent of two-thirds of the Senate when a bill came up to provide an appropriation for the District of Columbia—a customary bill every year; he moved that the Yosemite Recession Bill be taken out of committee and brought up on the floor of the Senate. He obtained the two-thirds vote which was necessary, and the bill was called out and passed without any difficulty. Of course President Roosevelt signed it without question, as he had already promised John Muir. We finally concluded this long and arduous campaign.

Q: Did any other newspapers besides the Examiner oppose you?

A: The *Examiner* and the *Lodi Sentinel* were the only two papers in California that opposed it, and we had favorable editorials from almost every other paper in the state showing the overwhelming public sentiment in favor of the transfer. As it has turned out from a practical standpoint, Congress commenced appropriating sums ranging up to $50,000 at first, then $100,000 a year, and now I don't know what the amount is, but it is upwards of $250,000 or more each year for the upkeep of the Valley as compared with the $10,000 or $15,000 the state appropriated before. Any fair-minded person would agree that the transfer of jurisdiction was one of the finest things in the interest of the Valley itself that was ever done.

Hetch Hetchy

Another outstanding matter that came before the Sierra Club for action, and John Muir was strongly behind it, was what we refer to as the Hetch Hetchy fight. Hetch Hetchy Valley had been included in the Yosemite National Park largely as a result of John Muir's efforts, aided by Robert Underwood Johnson, one of the editors of *Century* Magazine. It was only for that reason that it was included in the national park. It had never been filed on and water rights obtained, either for the flooding of the Valley or for the development of electric power. The United States Geological Survey, when they surveyed the general region, had reported that the damsite resulting from the narrowing of the Hetch Hetchy Valley at its lower end was one of the fine damsites of the world because it would impound so much water of the Tuolumne River.

San Francisco became interested in acquiring this as a municipal water supply. When we heard of it, of course John Muir was tremendously exercised to think that a great part of his work would be undone. The Sierra Club strongly opposed this application by the city of San Francisco. We were successful in preventing the grant for a number years.

Q: How did you manage to do this?

A: We managed to do this because John Muir had personal interviews with Theodore Roosevelt, who was then President, and enlisted his support. Theodore Roosevelt, though he had a great many friends on the other side—because on the other side there was Governor Pardee, Gifford Pinchot, and other notable people—had such an interest in conservation and realized that John Muir had done such a wonderful work in preserving the Valley that he threw his weight in favor of the preservation of the Valley as long as it was possible to do so. Garfield was his Secretary of the Interior and Garfield decided against San Francisco as far as the Hetch Hetchy Valley was concerned. However, he permitted San Francisco to file on Lake Eleanor, which was within the national park. The officials in Washington felt that the city's needs would be taken care of. The permit was made that way, and Hetch Hetchy was eliminated from it.

But the tide turned when Woodrow Wilson became President, because he named [as Secretary of the Interior] Franklin K. Lane, who had been City Attorney of San Francisco when the application for the Hetch Hetchy Valley for a site for a municipal supply for San Francisco had been made.

Q: Do you know the date of that original application?

A: I couldn't tell you offhand. Benjamin Ide Wheeler had recommended Franklin K. Lane to Woodrow Wilson. Because of this change in the political situation we found that we were at a great disadvantage. We found afterward that that was largely due to the fact that San Francisco sent on to lobby in Washington a secretary or some representative of the Board of Supervisors, who stayed in Washington for a year or more, talking to Congressmen and getting them enlisted on the side of San Francisco.

We issued a pamphlet which I helped to prepare, illustrated by some beautiful reproductions of photographs of

the Hetch Hetchy Valley, and that was circulated very widely. We had tremendous support from many sources. But this political change was too powerful for us. They had hearings in Washington. We had representatives at those hearings who did splendid work.

Q: What type of people supported you?

A: There was an attorney, one of the leading attorneys of Boston, Mr. Edmund Whitman, who had come out on some Sierra Club outings, and went down to Washington to appear at one of these Senate hearings. Harriet Monroe, the editor of *Poetry* Magazine, made a special trip from Chicago and delivered a most eloquent address. She had seen the Hetch Hetchy, as had this Boston attorney. We had many others who represented us at those hearings.

Q: Were they all just interested in preserving the beauty, or were there any other interests involved?

A: No. It was entirely preserving the beauty, and the fact that it was a national park and that this would set a very serious precedent if national parks could be invaded on such a count. We even enlisted the support of civil engineers, hydraulic engineers, who aided us in preparing reports showing that there were very many other, half a dozen other, sources of supply that San Francisco could have obtained. That was absolutely demonstrated later on by the fact that Oakland went over to the Mokelumne River and obtained a fine water supply and brought it into Oakland long before San Francisco got the Hetch Hetchy supply.

Q: Well, that would take care of water, but what about electric power?

A: Yes, that was true; the power situation was the sticking point. Yet the San Francisco advocates insisted that power was not the thing they were after in spite of the fact that it was proven by so many side issues and reactions that we found. It was due mainly to the fact that Mayor Phelan was in violent opposition to the United Railroads, who ran the streetcars in San Francisco, and it was his great desire to obtain public power for the city to run those railroads. I think that if it hadn't been for that we would have won the Hetch Hetchy fight. But we were handicapped in every direction.

The city officials and representatives promised that they would see that campgrounds that were near the Hetch Hetchy Valley would be set aside for the public. It was only a limited amount of campground near the damsite that could be used, because any campgrounds that were above the reservoir and would drain into the watershed would of course be objectionable on account of sanitary reasons. This campground that they talked so much about, that they were going to open up to the public, is now devoted entirely to a lodge which had been built for the benefit of San Francisco supervisors and other public officials. They also stated that boating on the lake would enable people to enjoy its wonders and that it would be even more beautiful as a lake than as the original valley. Sanitary reasons, as backed up by San Francisco, have caused them to close up the lake entirely to public travel. There's no boating on it. Nobody can view the waterfalls and cliffs except from the damsite at the lower end. So that all of these statements and promises that were held out were entirely specious and were never carried out when it came to the actual test. The city did very reluctantly put up some money to build some roads and trails back into the country above the Hetch Hetchy Valley. I never felt that amounted to very much, though a great deal was made of it, because the roads and trails have fallen into disuse and nobody uses them now. They have proven of practically no value as far as making the park more accessible is concerned. This loss of Hetch Hetchy Valley was a tremendous blow to John Muir.

Of course we opposed the Raker Act, which was the granting act, and Congress put a number of conditions in the Raker Act that were supposed to be for our benefit. We didn't care anything about them because if the Valley was lost we felt the major wrong was done and it couldn't be righted by any conditions that were put in the Raker Act. They never amounted to anything so far as benefiting the situation was concerned. I'm quite sure that this loss of the Hetch Hetchy Valley had a great deal to do with Mr. Muir's subsequent illness and ultimate death. He probably died in advance of the time that he would have if the attempt to save Hetch Hetchy had not gone against him, because he felt so deeply on the subject.

Q: Do you think that the fact that there was a progressive government in California at that time affected the situation any?

A: It helped tremendously because the municipal government, everybody realized, under Taylor, Mayor Taylor, who followed the very corrupt regime of Ruef and Schmitz, was such a reversal that almost everyone who had any morality or advanced views of citizenship favored that regime. That undoubtedly had a very powerful effect with Congress, because they felt they could trust such an organization and that everything was done in good faith. It was rather interesting because Mayor Taylor was a great friend of John Muir's and was one of the early members of the Sierra Club, if he wasn't a charter member. I don't recall whether he was or not. He was a great friend of Muir's and Keith's and others of the Sierra Club who opposed the granting of this right to the city. Muir met him once or twice in an elevator somewhere in San Francisco and he told me he just went right after him. Of course, Taylor couldn't say very much but Muir didn't mince any words in expressing his ideas of the tremendous loss to the nation by reason of the flooding of Hetch Hetchy Valley.

Greater Sequoia

Another major item which came up before the Sierra Club was the setting aside of the Kings and Kern River watersheds in national parks. Almost everyone who ex-

amined the situation and had a fair mind agreed that these areas were of national park caliber. John Muir, as a matter of fact, advocated setting aside the headwaters of the Kings River in the '80s sometime. That was one of his pet projects, but he was never able to accomplish it during his lifetime. Stephen Mather, who became Director of National Parks, was converted to it largely by John Muir's ideas and talks with other members of the Sierra Club. He very strongly advocated it. After he became Director of National Parks, and the National Park Service was created through a bill which was strongly advocated by the Sierra Club and which the Sierra Club helped to pass in Congress, the matter of setting aside this great area, the headwaters of the Kings and the Kern, was taken over by Mr. Mather, and a bill was introduced. But due to local opposition from the irrigationists in the vicinity of Fresno and in the San Joaquin Valley, we were never able to get it through Congress. We tried it several times, but the local Congressman from Fresno would always oppose it.

We had it at the point one time when the bill would have passed, but the Congressman from Fresno—I think his name was Judge Church—was ill and was in a hospital, as I recall it, in Los Angeles. He sent on word to his fellow Congressmen as a favor to him, "Please don't pass that bill this time, because I'm not able to be there." They put it over out of personal friendship. Then, the bill came up again, and too much opposition had developed in the meantime.

Los Angeles became interested because they were going to take the water from the Kings River to Los Angeles. That was before they got the Colorado River water, and they caused us a lot of trouble. Of course, the Los Angeles interests and the irrigation interests in the San Joaquin Valley collided head-on. That helped us, but it didn't help us to get the bill that we wanted through. It held off any chance of invading the area at that time. However, Mr. Mather wrote out and wired out and phoned out to the club that he had the bill in such a condition that the entire headwaters of the Kern River could be added to the Sequoia National Park if the Sierra Club would agree to it. The Kings River would have to be left out temporarily. We held a conference. I had gone on to advocate the addition of the park and appeared before the Senate committee. We finally agreed that we had better take what we could before more opposition arose. So the headwaters of the Kern River, including Mount Whitney and that area, was added to Sequoia National Park.

We still had the Kings River Canyon to fight for. We tried that out, as I said, two or three times, but found the opposition too great and not enough support. However, when Ickes was appointed Secretary of the Interior, he became interested in it. I never found out why, and I'm sorry I didn't write to him before his death to find out why he was so definitely interested. I think it was due to the fact that he came from Chicago, where he had been a close friend of Steve Mather's, and Steve Mather had interested him in the Hetch Hetchy fight. He was opposed to that strongly. That was long before he was a federal official. He became interested at that time in having the Kings River set aside as a national park.

Anyway, to our great surprise, he had a bill introduced in Congress to have the headwaters of the Kings River made a park. We welcomed it, though one or two members in the Sierra Club felt that they should have been consulted first. He heard of this, and Ickes made a special trip to San Francisco to enlist the support of the Sierra Club. We had a meeting in San Francisco, a dinner. I remember one evening I sat next to Ickes and talked the whole situation over, and we were in thorough agreement of course. The irrigationists, however, were still opposed to it and a great many of the people in the Fresno region. Ickes held a hearing in San Francisco the following day and called for everyone interested in the subject to appear and present his views. I represented the Sierra Club and gave the reasons for the creation of the park.

Q: Do you remember what year that was?

A: No, I don't but I can look it up and find out. The irrigationists were represented there and opposed us, and the Chamber of Commerce of Fresno. However, Ickes was so intent on carrying the thing through that he went down to Fresno, had a conference with the leading men who were interested down there, and made a deal with them by which he agreed to favor the creation of the Pine Flat Reservoir if they would help with the creation of the park. Unfortunately, we had to leave the [Cedar Grove section of the] Kings River Canyon floor itself and the Tehipite Valley out of the park, which was a very serious lack. However, we felt that it was better to take the country above it, above these two areas, into the park while we could and then fight for the preservation of these two valleys later on. Things are developing so that it shows that our judgment was good. [The two areas were added to the park this year.] The park was created, and Ickes carried through magnificently because there was great opposition. It passed the House of Representatives fairly easily, though there was great opposition there. Fortunately the Congressman representing the Fresno Region, Bud Gearhart, after the Ickes compromise in that region, favored it, and he was our main strength. Ickes finally was a little dubious about its getting through the Senate, so he personally got President Roosevelt to write letters to various Senators asking them as a favor to vote for the bill. The bill carried, by some small majority. That created the new park.

I had a great deal to do with that because I drafted the little pamphlet we got out, illustrated by some very fine photographs of the region; and we sent out—the Sierra Club sent out—more than 10,000 of these, to members of Congress and others.

The Outings

I was appointed Secretary of the Sierra Club in 1900; and I started running Sierra Club outings, largely at the suggestion and backing of John Muir, in 1901. We felt that we needed a reserve of people who knew the Sierra and its needs well enough to help us fight our battles in Congress and before the state legislature, and that we could only get them acquainted with the wonders of the Sierra and the need of preserving these wonders by taking them into the Sierra and getting them familiar with the region. So I started these outings in 1901. We had a party of 100 this first time and went into Tuolumne Meadows. In 1902 we went into Kings River Canyon. Because of the fact that Kings River Canyon was seldom visited on account of the difficulty of getting in there, we were overwhelmed with applications and we took 200 people in on that trip. And the same way with the Kern, on the following trip; we had a party of over 200. Then in succeeding years we finally decided that it was difficult and it destroyed some of the value to have more than 200 people, by reason of the congestion that would result. And I ran those outings for thirty years or more and I was Secretary of the club for 46 years.

Q: Did you receive any salary or payment of any sort?

A: No. At first, when I first became secretary of the Sierra Club, in 1900, the organization was very small and not very much had been done in the way of having headquarters. They paid me fifteen dollars a month; it was given to me largely for stamps and expenses of that kind. I never received any real salary. It was all a labor of love, and I was more than repaid by my contacts with John Muir for the fourteen years that he was alive after I became Secretary. I was President for two years during the war, and Joe LeConte took over the secretaryship for that period.

Q: Which war?

A: The first World War. I resigned as Secretary and Director after 46 years, and I was made Honorary Chairman of the Board of Directors; then after Joe LeConte's death, Joe LeConte having been made Honorary President, I was made Honorary President and I still am.

State Parks

In 1927, I was asked by Governor Young whether I would become a member of the State Park Commission. I was a member of the Save-The-Redwoods League, and Duncan McDuffie, the great conservationist, and Newton Drury, who is now chief of the Division of Parks in the state park system and was a director of the national parks until recently, together drew up a bill, which was introduced in the legislature creating the State Park Commission. The Save-The-Redwoods League had put in so much money into purchase of redwoods that it felt that a definite official organization was necessary to carry on. We drafted this bill to create the State Park Commission, another bill to provide for six million dollars for the purchase of state parks, and still a third bill for a state-wide park survey. The bills all passed the legislature. The bond act, however, had to be put up before the people for a popular vote. It carried by a tremendous majority, about three or four to one. That gave us six million dollars which had to be matched by another six million given from private or county sources, so that inaugurated a great era in the state park system. Before that, the few state parks that there were had been controlled by local boards with no common organization.

We discussed the question of who should become the State Park Commissioners. I was asked to consider the proposition but turned it down on the ground that I could do more good as Secretary of the Sierra Club from the outside than I could from the State Park Commission on the inside. However, on the Kern river outing in 1927, a special messenger brought in a message to me from Governor Young. Governor Young had helped us tremendously in passing this program for the benefit of the state parks through the legislature. He asked me in this message—and it was of course inspired by Duncan McDuffie, who was a great friend of mine and who had helped in all of this work—asked me to become a member of the State Park Commission. I sent out word that I would consider it, and that I might. I eventually did agree to accept. Duncan McDuffie was a logical candidate but would not consider it because he was in the real estate business and would not subject the commission to possible criticism.

Governor Young also appointed Ray Lyman Wilbur, at that time President of Stanford University; Senator Chandler, who had retired from the Senate and who was an important politician from Fresno and a very upright man of the highest character; Henry O'Melveny, a prominent attorney of Los Angeles; and Major Burham, who had been the head of the British Scouts in the Boer War. He had also been a scout for the United States in the Apache days and was a remarkable man in many respects. He was a short fellow, not much over five feet tall. He said that he owed his life to the fact that he was so short that all the bullets that had been aimed his way had gone over his head.

We organized in Sacramento: I was selected as chairman of the Board because of my central position in San Francisco. I was available under all circumstances. We secured a very remarkable woman as Secretary, a Mrs. Gregory. I thought at first it was a political deal when the director of Natural Resources came to me and said that this woman was very competent and he'd like to have her appointed. But I found it was far from that, and it had only resulted from the fact that he had come in contact with her. She'd been connected with the Municipal Water District here around the Bay Region and had done such wonderful work there that he felt she would make a very

fine Secretary, which she did. She was really half of the operation of state parks after she took hold. She was such an organizer.

Q: Was your job a full-time job?

A: No. Oh, no. I was paid no salary at all, and I spent about half of my time on it, neglecting my law work.

Q: Did all the other Commissioners spend that much time?

A: No. Being chairman, I made another condition—which turned out to be very unfortunate as far as I was concerned—that the office should be in the Mills Building next to mine. It resulted in the fact that nothing was decided without coming and referring it to me. If anybody called at the office of any consequence, or had any matter of importance, they always called me in to help out on the discussion. I found that that did take a great deal more of my time than it would have otherwise, and at the same time it saved time in the fact that I could contact the representatives immediately when any occasion arose.

We were very fortunate in securing the services of Frederick Law Olmsted, the leading landscape architect in America, who knew more about parks than anybody else; he did it largely as a labor of love, though we did pay him some for his services, but never anything commensurate with the value of the service that he performed.

He started out with a questionnaire that he drew up and letters of inquiry were printed and sent all over the state to Boards of Supervisors, to everyone that we could think of who would be interested in state parks. And these questionnaires came in, of course, recommending state parks and giving us information as to values. That part we found was of very little weight. When it came to getting actual values, we had to employ appraisers. The other information we got was sometimes of value but not to be relied on. Under Mr. Olmsted's supervision and under our direction, we evolved one of the best statewide park surveys that was ever made in the United States. We got information from every source. Mr. Olmsted compiled it for us and prepared a pamphlet describing the different areas and giving a general survey of the state park situation in California, which was recognized as one of the most important publications of the kind which was ever issued in the United States. This was illustrated and had a wide circulation. Demand for it from all other states that were interested in state parks was great.

Then the question arose of acquiring these state parks. They were legion in number, and we had to go through the various suggestions made and boil the thing down. With the help of Mr. Olmsted, we did get it down to a point where we knew the outstanding areas that could be acquired. Then, of course, we were met with the proposition of getting matching money. It was a most interesting venture and one of the things that I have done in which I felt that I accomplished more than probably in any other of my activities. We really accomplished something. It resulted in the acquisition of twelve million dollars' worth of park lands, the six-million bond issue being matched. That was the only reason that I ever would have taken a political position, because I saw this opportunity of acquiring these wonderful lands for the benefit of the state.

Q: How long did you remain on the Commission?

A: I remained on the Commission for nine years, and I resigned in 1936, largely because of a change in administration which was very distasteful to me. Under this new administration, Mrs. Gregory, who had done such wonderful work for us, was relieved of her job. It was given to a politician. The chief of the Division of Parks, Colonel Wing, who had been the head of the civil engineering department at Stanford University and had done a wonderful job with his great knowledge of civil engineering—he was displaced and one of the poorest sort of politicians put in his place.

Q: It was still a Republican administration, wasn't it?

A: Yes, but it was an absolute change. We started under C. C. Young, under a reform movement. And under him everything went perfectly.

Q: How about under Rolph?

A: Under Rolph, we would have had difficulty because of the politics. When Rolph got in, he was one of the most astute politicans we ever had, and he of course had all sorts of political obligations and friends. We were very fortunate in the fact that Rolph's manager—he had been his secretary as mayor and he was his manager for the gubernatorial campaign—was Ed Rainey. Ed Rainey had been on Sierra Club outings, a great friend of mine. He went to Rolph after the election and said, "Now there's one person that you must not displace; that's Will Colby." He didn't say that as to other members of the Commission, and some of the other members were displaced for political reasons. One of them was Arthur Connick, who was really a wonderful fellow, in connection with the Redwood Highway and the acquisition of redwoods. He is now President of the Save-the-Redwoods League. But because he would not make Governor Rolph a loan to build wooden ships in the first World War—I guess that must have been it, the first World War—. It turned out to be that his judgment was perfect because the war ended and wooden ships were just a drug on the market, so because of that Rolph displaced him almost immediately. He left other members so that we got along very well. Because of Ed Rainey, Governor Rolph did not interfere in any way with the administration of the parks with one or two exceptions. They were very minor and didn't amount to very much. He left us alone.

Then Governor Merriam came in upon Rolph's death. He was Lieutenant-Governor and became Governor, and during the remainder of what would have been the Rolph administration he kept hands off. But he ran for election as Governor and was elected, and the very day that he was elected and his new administration came into office he

undid a tremendous amount of work that we had done. I saw right away that there was going to be trouble and that it would be very distasteful to me to stay on. I stayed on, however, in spite of this—of the fact that our secretary and our chief of the Division of Parks had been arbitrarily removed without any consultation with us. But I stayed on because we were making commitments still with the six million dollar bond issue. I made up my mind I was going to stay until all those commitments—until I saw them all through and the money which was available had all been pledged. I did that, told Governor Merriam that I was going to resign when we accomplished a little more. One day he called me up and wanted to know if I still wanted to resign. So I told him, "Surely." It wasn't long after that before he appointed somebody in my place.

Q: Did the policy of the Park Commission remain the same after that, under Olson?

A: No.

Q: Did it change under Olson?

A: Oh, under Olson. That was the worst of all.

Q: Worse than Merriam?

A: Oh, my yes. Terrible.

Q: How did it differ?

A: Well, under Merriam it was bad enough because the man he put in as chief of the Division of Parks . . . tried to put over deals on the Park Commission which we headed off. We saw they were coming, you know, and simply wouldn't stand for it. That was one reason Merriam didn't want us. But later on under Olson, they put in as administrative officer to select park lands and deal with them a man who had been trying to sell to us property under the previous administrations. I learned this afterward, that he actually sold to the state directly—to the Park Commission as park property—lands that he acquired himself knowing that that would be done. And, in other ways, it was just terrible what went on.

Q: Did it improve any under Warren?

A: Well, yes. Under Warren, of course, it came back again to a solid foundation. . . . So that I'll say that Warren's later appointments are much better than his earlier ones. Of course Governor Warren could be relied on absolutely because he is of such fine character and so dependable, and usually we had no difficulty, the Commission I mean had no difficulty. I, of course, wasn't on the Commission after he became Governor. In fact, he asked me if I would go back on the Commission, but I thought that I had had such a wonderful time, one of the happiest experiences of my whole life, and accomplished so much which I knew I couldn't accomplish under any other circumstances because the conditions were just perfect when we took over the new Commission and purchased the lands under the bond issue.

THE WILDERNESS IDEA

We shall seek a renewed stirring of love for the earth;
we shall urge that what man is capable of doing to the earth
is not always what he ought to do;
and we shall plead that all Americans, here, now,
determine that a wide, spacious, untrammeled freedom
shall remain in the midst of the American earth
as living testimony that this generation, our own,
had love for the next.—DB

A journalist who cares about open space,
and considers San Francisco Bay as a national resource,
looks at the impending Losangelization of the San Francisco region

For Whom the Bay Fills

→ HAROLD GILLIAM

ALTHOUGH THE PLANS of the San Francisco Bay fillers, both public and private, continually expand with rising population and prosperity, it may be enlightening to examine the status of fill plans around the bay as of mid-1965. This was just before the creation of the San Francisco Bay Conservation and Development Commission, established to regulate bay fill projects until a regional master plan could be developed.

It is noteworthy that without exception the planned fills were in the bay's critical zones, the shoreline areas that are the principal nurseries for fish and their food, and the main feeding grounds for millions of waterfowl—the same areas that provide close-in views of water for the bayside communities, that moderate the weather of the immediate shores, that offer the best opportunities for shoreline and water recreation.

Consider, for example, San Mateo County—the peninsula below San Francisco. In the late 1950's the county drew a master plan for future land use. In many respects the plan was a good one, balancing residential and commercial development with large areas to be reserved for recreation and open space, particularly on the county's oceanward slope. But along the bay side of the peninsula, the planners decided to allow filling of the shallow shoreline waters, reserving a few areas for parks and marinas.

The state legislature had decreed that there should eventually be another freeway parallel to the present Bayshore Freeway, but had not designated a location. The San Mateo planners chose a location two to three miles out in the water so that the new "bayfront" freeway would skirt the outer edge of the San Francisco Airport and leave plenty of room, along the rest of the shoreline, for "development" or filling of the area between the two freeways. The bay and shoreline area involved would amount to some 23 square miles—a region about half the size of San Francisco.

Where would all the dirt come from for such a vast fill? Luckily a convenient source was handy—the San Bruno Mountains, a high ridge flanked by green rolling hills at the northern end of the county, providing a monumental entrance to San Francisco from the south. Engineers reported that something like a billion cubic yards of dirt and rock could be gouged from the mountains and dumped into the bay. It made little difference, apparently, that the hills constituted a prime natural recreation area and had been so designated on the master plan.

By mid-1965 several major fills were under way or projected in the inter-freeway area outlined by the San Mateo County plan, notably at South San Francisco, San Francisco Airport, Burlingame, Redwood City, and Menlo Park. The Redwood Shores residential project, an extension of Redwood City, was being planned for a 4000-acre area of former marshland that had long ago been diked for salt ponds. Most of this area had been designated in the county master plan as recreational land and open space. In Burlingame a big fill for industrial and commercial use was occupying a large plot the master plan had reserved as a water area. Such breaches of a master plan made it obvious that municipalities and commercial interests could invoke a master plan where it suited their convenience and ignore it elsewhere.

San Mateo County offered a typical example of the politics of bay fill. Back in the wooded foothills of the Santa Cruz Mountains, developers were bulldozing and scraping away the hillsides at a tremendous rate for new subdivisions and high-rise apartments. Normally they would have had to pay somebody to haul away the prodigious amounts of dirt and rock excavated, but here they instead were able to sell it to truckers who hauled it down to the water's edge and resold it for bay fill. Add to these enterprises the banks and loan companies backing the projects and there is a formidable phalanx of commercial interests all profiting handsomely from the filling operation and all in a position to put pressure on local agencies to keep the dirt moving from the mountains to the bay, despite the complaints of local residents about the noise, dust, and traffic hazards created by the convoys of trucks. Here, surely, was eloquent rebuttal to those who claimed that the fate of the bay should remain in the hands of local agencies.

San Mateo County was not alone in its ambitious bay-fill plans. In mid-1965, Bay Bridge users were jolted by the news that the Port of Oakland was applying for a permit that would enable it to fill a two-square-mile area of the bay from the toll plaza almost to Treasure Island, obliterating the view of open water from the bridge approach.

San Francisco had a plan almost equally ambitious. Bayside Candlestick Park, where baseball fans could arrive by boat, was slated to be left high and dry by a fill for industrial purposes extending about a mile offshore.

Another Port of Oakland proposal was fill for an extension of Oakland Airport covering five square miles of the bay. Immediately southwest of the airport the Trojan Powder Company intended to fill about 1400 acres, a scheme that conflicted with plans of the city of San Leandro to acquire and develop the water area within its own city limits primarily for recreation.

Still another Port of Oakland fill, also for industrial purposes, was gradually turning most of San Leandro Bay into dry land. This area has long been a state game refuge, protecting the wildfowl from hunters but not from fillers.

Immediately west, the city of Alameda had given the green light to a developer planning to fill the northwest tidelands of Bay Farm Island. Bird authorities feared that if tideland habitats continue to be destroyed, the birds would increasingly retreat to the vicinity of the Oakland Airport, threatening the safety of jet aircraft.

Emeryville was extending itself farther into the bay, and the Santa Fe railroad had an elaborate scheme to develop vast water areas it owned off Emeryville, Berkeley, El Cerrito, and Albany. After an unfriendly reception the Santa Fe plan was withdrawn, at least temporarily.

The city of Richmond, which had 33 miles of shoreline but only 65 feet of publicly owned access to the bay, was planning to fill most of its tidelands for industry. Already Richmond's northern embayment was partly occupied by one of the region's largest dumps, importing garbage from Marin County to supplement the local refuse. To the south, proposed fills would have extended from the mainland around 72-acre Brooks Island, a place of great natural beauty, used for biological and archeological research by college and university groups. There was talk of leveling the hilly island for fill material.

Across the bay in Marin County, fill plans of San Rafael and Corte Madera were keyed to the presumed location of a new offshore freeway. San Rafael's master plan would have filled about 75 per cent of its 4300 acres of tidelands, including most of the waters around the two historic Marin islands, last redoubt of the Indian chief from whom the county took its name and presently one of the last roosting places of American egrets, among the largest flying birds on earth. Public protest prompted a new look at the San Rafael master plan, however, and pending further study San Rafael Bay was deleted from the plan.

Neighboring Corte Madera expected to use most of its marshlands for industry, reserving a small-boat lagoon inshore from the presumed new freeway fill. Both here and off San Rafael, the bay bottom was privately owned, and there was nothing to stop the owners from converting it to dry land.

Fortunately, the Marin Conservation League over a period of years had purchased considerable tideland acreage for preservation in a natural state. One result was the admirable Audubon Wildlife Refuge in Richardson Bay, the region's finest example of private action to save an invaluable heritage. It was the kind of superb outdoor museum of natural wonders that every city and town should have. Yet it represented an opportunity that would be denied to other communities without an enforceable master plan for the entire bay.

Offhand, the remedy for the ongoing destruction of the bay seems simple: outlaw filling. But the picture is too complex for such easy answers. The central problem is one of the oldest riddles of democracy: how to balance private rights with public rights. At stake around the shores of San Francisco Bay is the right of communities to preserve and enhance their waterfronts. To deny a community that right would be to destroy environmental values that belong not only to the present community but to future generations. It is not evident as yet how these conflicting private and public interests are to be resolved. But they will never be resolved unless the public interest is made clear and declared vigorously at every opportunity.

In creating the San Francisco Bay Conservation and Development Commission, the legislature has set a precedent that is significant for the conservation and planning of the entire state. If the BCDC were to successfully produce, as directed by the legislature, an "enforceable plan for the conservation of the bay and the development of its shoreline," such a plan would mark the first time a California state agency had developed a master plan for any region. Extended to other areas, this kind of regional planning could save California from the kind of progress-by-bulldozer that is obliterating the state's natural beauty acre by acre and mile by relentless mile.

The key word in the legislative mandate is "enforceable." The most onerous problem facing this commission—and any similar agency—is not how to draw up a master plan but how to enforce it. Somehow the tangle of ownership rights in the bay will have to be unscrambled before the commission will know what it can and cannot enforce. The BCDC will have to move into new planning frontiers, investigating such devices as easement rights and land-use zoning. The latter has been used in the U.S. only by local agencies except in Hawaii, where a pioneering program of statewide zoning is under way.

Yet zoning itself creates further problems. For example, the BCDC might be expected to designate certain privately owned parts of the bay and its shoreline as areas to be preserved as wildlife refuges, open water, or parks. In effect, the plan would in such cases forbid the owner to develop the property in the way he intended to do when he bought it.

Consequently, the state would seem legally and morally obliged to compensate the owner for his loss in some manner, probably by purchase of the property. After the development and approval of a master plan, then, there would remain the task of buying back the portions of the bay the plan indicates should be public property. This would possibly be a matter of local, regional, state, and federal participation—no small problem. But the stakes are high: the continued existence of San Francisco Bay as the region's greatest natural asset.

Bulldozed America *From CBS Reports, September 14, 1965*

PALMER WILLIAMS . . . . . *Executive Producer*
ROBERT RICHTER . . . . . *Producer*
CHARLES KURALT, *CBS News Correspondent* . . . *Reporter*
MARTIN BENNETT, WADE BINGHAM . . . . . *Cameramen*

Photographs from the program selected and arranged by RUSSELL D. BUTCHER

CHARLES KURALT: The American earth was the source of our strength, and the symbol of our spirit, and the landscape of our aspiration. We camped upon it, moved westward through it, built on it, sustained ourselves from the earth. Until suddenly—in our own time—there was very little of it left.

We, who inherited the American earth, are paving over our inheritance. We seem intent on turning the last great forests into housing tracts and the last meadows into parking lots. That is how America the Beautiful is becoming America the Bulldozed.

The bulldozers gave us the factory sites, and the suburbs and the superhighways that are the substance of our prosperity. The bulldozers helped carve a rich civilization from the sleeping earth. But that civilization grew largely without plan—and it was more wasteful and more destructive of the land than any before it. Now, the limit of unplanned expansion may have been reached.

KURALT: These are the Santa Monica mountains, 16,000 undeveloped acres at the center of Los Angeles, California. They were proposed as a green park to relieve the urban sprawl of our most sprawling metropolis. But the bulldozers got there first. They are cutting terraced building lots where the park might have gone. Say goodbye to the Santa Monica Hills.

Well, they say in San Francisco, that's too bad about Los Angeles. This is San Francisco Bay—which we are turning into a garbage dump. Land fill operations have already reduced the bay from 568 square miles of blue water to 325 miles. And there are no plans to stop the bulldozers. There are plans to send in more. Two-thirds of the Bay will look like this when the bulldozers have done their work. Say goodbye to the San Francisco Bay as we have known it. And say goodbye to the hills above it. They have stood there across the bay unspoiled through all of time. Now, real estate developers plan to cover them with industrial plants and apartment houses. The bulldozers will soon be at work above the Golden Gate.

Three thousand miles to the east, another bridge now spans the other great entrance to America, New York Harbor. And so the bulldozers are at work there, too, because there is a profit to be made by flattening the hills of Staten Island, filling in its ponds, clearing its streams, paving its surface. The borough president has sent out letters wistfully urging the developers to preserve as many trees as possible. But on Staten Island there are many rows of new houses with only telephone poles to shade them.

In these places, and in hundreds of other places, we are following the principle of "business as usual." But in 1965, in the view of many thoughtful men, what is needed is business pursued in a new way that respects the American scene.

FAIRFIELD OSBORN: I think America's got to wake up to the fact that our country's getting crowded all over the land.

KURALT: Fairfield Osborn of New York, the founder of the Conservation Foundation.

OSBORN: Traffic pressures, school pressures, physical pressures, junkyards. It's a hot battle, it's a hot battle, and I think we'd be foolish to say we're really winning it.

KURALT: Look what those tourists are seeing there.

OSBORN: I want to show you something. See those nice people looking at New York? Look at that that they're looking at most of the way up. Nice impression our city leaves! You can say a beautiful scene doesn't count. I don't believe that. I think people care for their environment. If the American people really want to clean up the land, they can do it. But they've got to want it. They've got to want it harder than they want it now.

KURALT: You have to want beauty and open spaces and clean air, and if you don't want them hard enough, the bulldozers soon remove the choice. That's what happened in the hills of eastern Kentucky. If you follow a coal truck up the mountain roads, you will see what strip mining—the new economical way of mining coal—has meant to these hills.

HARRY CAUDILL: The land here is being raped. Even more, it's being murdered, because the strip mining process simply results in the demolition of whole mountains.

KURALT: Harry Caudill, Kentuckian, author of "Night Comes to the Cumberlands."

CAUDILL: The mountains in some areas are being decapitated. In others, they are being skinned. The desolation here at this place is typical of the spreading death and ruin that is creeping across all the Appalachian coal fields. It is a despoliation that beggars the imagination. To give you some idea of the magnitude of this run, consider the fact that only a single coal company has indicated that it plans to strip mine and reduce to this situation more than 5,000 ridgeline miles of the east Kentucky land. In many parts of eastern Kentucky great boulders have been dislodged and sent rolling down the hills. These stones have in some instances destroyed houses, and this is a fairly commonplace occurrence. It will be a tragedy, almost too great to measure, if we have the time come when a greatly increased American population turns to this land because it needs it, and finds that in the meantime it has been reduced to a desert. There's nothing wrong with profitable industrial operations, so long as they are profitable not only to the operator, but to society generally. But this type of operation is profitable only to the coal man. It destroys the whole community. A pall falls over the communities in which strip mining occurs. The people flee, the land dies, the water turns acid, the wells become unpotable; it is a process which murders the land. And this cannot be economically justified in the long run. There has been a very large net loss—and that is precisely what is happening in the hills of eastern Kentucky.

KURALT: The same thing may happen in these mountains—the North Cascades of Washington State. Thirty years ago, the government reported that the North Cascades would be a more beautiful national park than any we already have. Today, a generation later, they have just finished another study. In the meantime, in the beautiful valleys below the snowcapped peaks it is already too late. The loggers are at work here and the big mining companies are surveying the hillsides. Like the other hills and woodsides of which we have spoken, the North Cascades had the fatal gift of beauty. In such places, men look at trees and see board feet of lumber. Men look at valleys and see building lots. And the bulldozers and the logging roads are sure to follow.

Not far from the North Cascades, a forest floats in a log pond at a sawmill of the Weyerhaeuser Company. These logs symbolize what is happening to the American land, and help explain why it is happening. When they were a growing forest, they provided peace and beauty for a country which needs both. But as logs, about to become lumber, they will provide jobs, income and wood products to a country which needs all three. Jobs, income and products usually win the conservation arguments in America today.

Weyerhaeuser's Bernard Orell, President of the American Forest Products Institute.

BERNARD ORELL: This is a tremendously important industry. I'm not sure of its place in the total scope of the country, but it amounts to millions upon millions of jobs and billions upon billions of dollars—and all of these logs in this pond, as representing one aspect of a very complex industry, represent the economic future. And so I say to you and to the preservationists who are so intent upon saying that trees are beautiful and that they must not be cut down—they must be cut down, because they do regrow and they certainly add to the economic sinews this country needs to be great in this world struggle in which we're engaged today.

KURALT: The lumber industry quite naturally is opposed to turning the North Cascades into a national park. Yet it's clear we need new national parks somewhere. The ones we have were unbearably crowded this summer. In Yosemite and Yellowstone and the others, more than a hundred million people—escaping one another in the cities—rubbed shoulders with one another in the woods. The search for leisure became an ordeal.

STEWART L. UDALL: If we don't expand our park system—state and federal and national—if we don't define wilderness and wild rivers and set up a system to protect them, we're going to find ourselves overusing them and abusing them to the extent that the very values that we seek to protect are lost. In other words, we're deciding what parts of the seashore we're going to save. We're deciding how many National Parks there'll be and where they'll be located. In terms of the wilderness of the country, we're deciding how much of our nation we're going to leave unspoiled. I think these are the kind of big decisions that we've got to make in the next few years, and if we make the right decisions, this will affect the whole future of this country, and what it will be like for our children and theirs.

KURALT: Down there you can see the decision that is being made for our children, and theirs, in the redwood forest along the coast of California. No forest groves in the world compare with these. Some of the trees were growing right here in the time of Charlemagne. By the time of William the Conqueror, 1066 A.D., they were already strong and tall. By the time of Columbus, they were giants. They are a part of America's heritage of serenity, a gift of the land, and many have urged that they be preserved in a National Park on the grounds that they are irreplaceable. But there is no Redwood National Park, and so the roar of the bulldozers is heard here too. A freeway has already cut a wide swath through one state redwood park.

Now the bulldozers are headed for another one, a place called Prairie Creek. Prairie Creek State Park is one of America's most remarkable places. Its great virgin trees stand on a windy bluff above the Pacific. The wild beach below the bluff is also part of the park. It is the only place left in the world where the Olympic elk can roam their natural range between the ocean and the forest. The highway builders wanted to cut straight through the park, widening the narrow road that's there now, but conservationists, at least temporarily, stopped that plan with a great public outcry. Then the highway builders announced that they would make a 700 foot wide cut through one of the park's memorial groves, which presumably had been preserved forever, and route the freeway along the beach —and there's a furious fight over that idea. The conservationists want the state to follow a more costly route—around the park through land already logged over. The highway builders can't see it. At a state legislative hearing, it became apparent that local chamber of commerce officials can't see it either. They want the freeway routed through the park because they think it will speed logging trucks to the sawmills, and attract tourists to their towns.

CHAMBER OF COMMERCE MAN: —and there's a lot of people who do not like to walk, they do not like to hike —they do not like to do anything. They want to ride where they're going. Why do you think they build supermarkets with parking lots all over? Because they won't even walk two blocks to the grocery store. They want to drive to it. Now, these people are entitled to see our beautiful beaches—and we have them, if we can go to them.

KURALT: But the conservationists think 60 miles an hour is no speed at which to enjoy scenic beauty, and they're still hoping to keep the bulldozers out of the Prairie Creek redwoods. A camper from the midwest, looking around at the trees, hopes they succeed.

GIRL CAMPER: I just have never seen anything so big in my life. In Ohio we have buckeye trees and that's about it. No buckeye tree looks like that. Just you—it's just so quiet. When you get out on the trails, that's when you really see the trees—and it's quiet, and you could just look at them all the time, and you don't really want to come back to civilization at all. The more you can preserve of this the better. I don't think that the world needs any more freeways. I think pretty soon you're just going to end up with a bunch of roads with no place to go on them.

KURALT: If road builders were the only threat to the redwoods, the virgin redwood groves might survive. But they are not.

A hundred years ago, the great, original redwood forest covered two million acres along the California coast. But more than two-thirds of the virgin redwood trees are gone. And within our lifetimes, at the current rate of cutting, all the rest will be gone, except for 2½% of the original forest, tenuously preserved in small groves. Right now, here is an argument over whether to put some of the surviving virgin redwoods into a national park. A few years from now, there will be no argument. Because there will be too few trees to argue over.

There is a good reason why the redwood trees of California keep crashing down. Redwood makes beautiful houses and fences. It is fire resistant. It is termite proof. It does not rot or mildew. The demand for redwood lumber is enormous. And by filling the demand, at a rate approaching a billion board feet a year, the lumber companies have become the largest employer along the northern California coast. The economy of that region depends upon them.

Howard Libby, President of the Arcata Redwood Lumber Company.

HOWARD LIBBY: I certainly do feel that the Federal Government, in establishing a National Park, would interfere with the private enterprise system, in that it would take so much land off the tax rolls. It would increase taxes on everybody else remaining and it would work a hardship on people who live in the timbered area where that park would be located. They undoubtedly would have to sell their homes, move elsewhere, find other kinds of jobs.

KURALT: Howard Libby's concern appears justified by the facts. But it is also a fact that these were jobs once. Men were paid to do this. Trees do grow back. But when the loggers come here again in 60 to 90 years to cut the lower quality second growth the most impressive thing they find will still be the stumps of the original forest. A grove of trees which perpetuated itself for a million years can be leveled in an afternoon.

Sometimes, when man changes the land, nature has a way of striking back. Just before Christmas last year it started raining in the redwood country. The water, at first slowly, then in a gathering rush, poured down the hillsides, where redwoods had once stood. The rush became a torrent, the torrent became a flood, the worst flood in the history of the west. At least 50 people died, 17,000 families were left homeless, damage amounted to a billion dollars. There is great disagreement on the question of whether logging contributed to the floods damage. But, whether coincidence or not, the worst of the damage was in the region where we have been busy for a century cutting down trees.

And after the flood, the bulldozers. They have been busy all year in northern California, reopening flood logging roads and repairing damaged sawmill sites, so the cutting of redwoods can begin once more.

From the redwood forests, to the Gulf Stream waters, the bulldozers do their work, and the land is changed forever. Sometimes for the better no doubt, but often, often for the worse. This is Storm King Mountain, on the Hudson. The bulldozers will soon carve part of it away for a power plant. These are the Indiana Dunes. Eight million people around Chicago could use them for recreation, but the bulldozers have flattened the best part of them for industry. This is the last unspoiled section of the Missouri River in Montana. This is the Buffalo, in Arkansas. This is the Allagash, in Maine. The bulldozers will soon be at work constructing dams on all three, which will drown all three forever. This is the Grand Canyon "The ages have been at work on it," said Theodore Roosevelt. "Man cannot improve it. Leave it as it is." But even the Grand Canyon, so spectacularly sculptured by nature, cannot any longer escape the carving blades of the bulldozers. Soon they will be moving earth and building dams that will back water into the Grand Canyon National Park. The bulldozers, by some rule that governs them, seem to aim first at the most beautiful wild places of America. And they have gone so far, and changed so much, that in September of 1965 it is literally true that what we save from the bulldozers now will be all that is ever saved.

JUSTICE WILLIAM O. DOUGLAS: You see, the American dream was to level the wilderness, and I suppose the symbol of our power has become pretty much the bulldozer. We're in the age of the machine, but the machine must not be our master. We must be the master of the machine. We need a new land ethic. Or else we're going to be consumed not by one great disaster, but by one thousand little brush fires all around the country that are too small to draw attention of anybody except the local people, and that will be lost fire by fire, battle by battle, until the whole of America is turned into a highway, into a junkyard.

KURALT: This is Charles Kuralt, for CBS Reports.

ANNOUNCER: "Bulldozed America" was filmed and edited by the staff of CBS Reports, under the supervision and control of CBS News.

NOTE: *See also the back cover, showing further redwood-country abuse permitted under the California Forest Practice Act. The photograph is reprinted by permission of* Time *magazine.*

The editor of the Bulletin *who earned for it the accolade "that most distinguished of mountain periodicals" is the authority on the history of the Sierra and the club's role in it*

The Sierra Club and the High Sierra

FRANCIS P. FARQUHAR

ON JUNE 4, 1892, articles of incorporation were signed by twenty-seven residents of the San Francisco area, bringing into being the Sierra Club.[1] Its purposes were declared to be: "To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and cooperation of the people and the government in preserving the forests and other natural features of the Sierra Nevada." John Muir was elected President. By the end of the summer there were 182 charter members. In January, 1893, the first number of the *Sierra Club Bulletin* was issued and has ever since carried out one of the primary purposes of the club, publishing authentic information and serving as a record of the club's activities.

In fulfillment of another purpose, to help preserve the forest and natural features, the club carried on the work already begun by some of its members in establishing and protecting Yosemite National Park. Efforts of this character have continued and have never been more active than they are now.[2] Other purposes stated in the Articles of Incorporation—to explore and enjoy the mountains and render them accessible—have in the course of time attained a magnitude hardly contemplated by the Club's founders. To "render accessible" became obsolete when the automobile brought almost too much accessibility, and the words were eventually deleted. Exploration and enjoyment, however, have never ceased, nor will they ever cease. There will always be something new to explore in the ever-changing life and aspects of the forests and mountains, while enjoyment continues from generation to generation.

Even before the Sierra Club was formally organized, some of its future members were engaged in opening trails to canyons and passes and in climbing peaks. Foremost among them was young Joseph N. LeConte, son of the professor who had accompanied the "University Excursion Party" in 1870. "Little Joe," as he was frequently called, while still an undergraduate at the University of California, accompanied his father in 1889 on a camping trip to Hetch Hetchy, Yosemite, Tuolumne Meadows, and the Mariposa Grove of Big Trees, in the course of which he climbed mounts Hoffmann, Dana, and Lyell.[3] Such was the effect of this trip that for the rest of his life, the younger LeConte, like his father before him, remained enamoured of the High Sierra.[4] The following year, with three college friends, he visited Kings Canyon, Kearsarge Pass, and Mount Whitney. They returned to Yosemite by way of Owens Valley, Bloody Canyon, and Tuolumne Meadows.[5] On this trip, LeConte carried a camera and began a series of photographs which for many years were famous as the finest views of the Sierra published.[6] Year after year he continued to camp in the Sierra and climb the peaks, with various companions but more and more with Miss Helen Marion Gompertz and some of her friends.[7] A climax for the LeConte family was a trip in 1900, when the elder LeConte, then 77 years of age, accompanied the younger people on a camping trip to Kings Canyon. They spent six weeks in the mountains, and the Professor climbed to 12,000 feet at Kearsarge Pass. "I enjoyed intensely," he wrote, "every step of the journey, and in some parts, as we approached the summit, the exhilaration of spirit and the exultation of mind was such as I had not felt for ten years."[8] In June, 1901, Helen Gompertz and Joe LeConte were married. She, too, was a charter member of the Sierra Club and for the rest of her life continued to share with her husband an unwavering devotion to the high mountain country.

There now enters into the history of the Sierra one of its greatest figures, William E. Colby, who was to lead the Sierra Club in action and in spirit for the next seventy years.[9] He was nineteen years old in the summer of 1894 when he joined two companions in a trip to the Tuolumne country. He was the youngest of the three, inexperienced and overconfident. His education began with his first mountain, Mount Dana; after that, in his own words, he "acquired some sense and did not overdo."[10] His next climb was Mount Conness, where he and his companion spent a night on top in bitter cold. The principal objective of the trip was a descent of the Grand Canyon of the Tuolumne, about which they had heard from John Muir and Robert M. Price. The latter had been through it from Tuolumne Meadows to Hetch Hetchy in 1892.[11] Just as they were starting, at the head of the canyon, who should show up but Price himself. A combined party of five made their way through to Hetch Hetchy in spite of a few minor mishaps.[12] The experiences of this first summer were of lasting benefit to Colby in preparing him for the years to come when he planned and led the long series of outings of the Sierra Club that brought thousands of people into the mountains.

Theodore S. Solomons, another charter member of the Sierra Club, was also active in the Sierra in the summer of 1894. He followed the Colby-Price party through the Tuolumne Canyon and took the first photographs of its splendid waterfalls.[13] He had previously made some explorations at the head of the North Fork of the San

Joaquin and had climbed Mount Ritter. He conceived the idea of a route from north to south nearer the crest than any that others had taken and was now ready to test it. With one companion and with food and equipment carried on a packhorse and two jacks he followed the well-known way from Yosemite and Wawona to the San Joaquin. From the junction of the Middle and South forks they continued up to Vermilion Valley, which Solomons named, thence over the ridge to Bear Creek. There they made their only contact with the true high mountain route, which in years to come was to be called the John Muir Trail. They climbed a picturesque peak of easy slope and gave it the appropriate name of "Seven Gables." There the year's exploration ended. It was the last week of September; a snowstorm caught them; they were obliged to abandon their jacks and with packs on their backs escape to lower altitudes.[14]

Solomons continued his search for a north-south route the following year, 1895. This time he decided not to take animals, believing that by going on foot with knapsacks he could examine more territory. With one companion, he went again up toward the headwaters of the San Joaquin and came to a high basin surrounded by peaks of varied form and hue. To these peaks Solomons gave the names of philosophers in whose theories he was interested—Darwin, Huxley, Haeckel, Spencer, Wallace, and Fiske—the "Evolution Group." This was as far as the two got in their search for a high mountain route. They now took a direction that no animals could follow. First they climbed Mount Goddard, then made a very rough descent southward down Disappearing Creek and Goddard Creek to the Middle Fork of Kings River, on the way passing through what Solomons called the "Enchanted Gorge." They continued down to Tehipite Valley, made a reconnaissance of the Dome, and resumed their journey over the Monarch Divide to Kings River Canyon. Although Solomons only partially succeeded in finding a north-south route, he should be given credit for the idea and for his initial attempts.[15]

Two University of California students of the class of 1897 now took the lead in exploring the Sierra. Walter Starr tells the story: "I spent the summer of 1895 in the northern part of Yosemite National Park with Allen Chickering. Having become infected with Sierra Club enthusiasm, we determined to make a trip of real exploration during the college vacation of 1896. We met Theodore S. Solomons, who was then as afterward tireless in exploring and mapping the High Sierra region."[16] The following spring Starr and Chickering entered the Sierra by way of Lake Eleanor and at the end of June joined Solomons in Yosemite for a journey to Kings Canyon. Solomons brought along a large camera with glass plates. "Unfortunately the unusual weather we experienced," wrote Starr many years later, "prevented our getting many of the pictures we most wanted. The seasons during the eighties and early nineties were in a stormy, wet cycle. The high mountains then presented a wholly different appearance to what they do now. Huge snowfields and accumulated drifts lasted out the summer at high altitudes and the glaciers were much larger. Perhaps due to this condition, summer storms were much more frequent and more violent." The trio crossed from the Merced to the San Joaquin by way of Isberg Pass and came eventually to Mono Creek and Vermilion Valley. Chickering and Starr climbed a peak above Mono Pass; but there Solomons became ill and the others were obliged to take him to a lower altitude. They went down to Blaney Meadows and on to a beautiful lake which they named "Florence Lake," for Starr's sister.[17] There Solomons reluctantly concluded that he could not continue on the trip. Starr and Chickering went back into the mountains and came to Tehipite by way of Collins Meadow. They ascended the Dome, measured it, and took pictures. They took the Tunemah Trail[18] up the north flank of the Middle Fork Canyon to Simpson Meadow, thence over the divide, by Granite Basin, and down Copper Creek to Kings Canyon. Starr and Chickering had thus made a continuous journey with animals from Yosemite to Kings Canyon.

It would occupy more space than is appropriate here to give an account of all the exploring, climbing, and camping trips of the 1890's. Many of them are recorded in the *Sierra Club Bulletin*, and there were doubtless many others of which no record exists. A few, however, of special interest should be mentioned. Bolton Coit Brown, Professor of Drawing at Stanford University, not only made several notable ascents but added to knowledge of the high country at the head of the Kings and the Kings-Kern Divide by his descriptions, his maps, and his fine sketches.[19] He made the first ascent, solo, of Mount Clarence King in 1896 and the same year joined J. N. LeConte in the first ascent of Mount Gardner. Professor Brown and his wife Lucy then crossed the Kings-Kern Divide and climbed Mount Williamson. A little later that summer they returned to the Divide and climbed and named Mount Ericsson, after which Brown ventured out on a northward-jutting knife edge to its highest point, where he built a monument and gave the name "Mount Stanford."[20] In 1899 Professor and Mrs. Brown resumed their exploration of the headwaters of the Kings, this time with a third member in the party, their two-year-old daughter. "We put her on a burro, and whither we went she went also."[21]

Not many college presidents have stood on the summit of a high mountain named for their institution. On August 16, 1899, President David Starr Jordan, of Stanford University, did exactly that. "I have never seen a more magnificent mountain panorama!" he exclaimed.[22] Dr. Jordan was well qualified to speak of mountain panoramas; some years before he had climbed the Matterhorn in Switzerland.[23] The Stanford party, which included Mrs. Jordan and several of the University's professors, spent many pleasant days at the head of Bubbs Creek, where Dr.

Jordan gave names to a number of features, including "Ouzel Basin," suggested by Muir's description in *The Mountains of California*.[24]

The rapid increase in the number of visitors to the High Sierra made the need for reliable maps more and more urgent. The Whitney Survey and Wheeler Survey maps, useful in their day, were quite inadequate, and other maps made by later explorers and by the National Park officers covered only parts of the territory. J. N. LeConte recognized this at the very beginning of his Sierra experience and, with an engineer's mind, proceeded to gather all the scattered information he could find and coördinate it. The first of his maps was published by the Sierra Club in 1893, followed by an enlarged and improved map in 1896. Thereafter he kept the work up to date by a series of blueprints until the sheets of the United States Geological Survey became available. His friend James S. Hutchinson wrote in a memoir of Joe LeConte: "I helped him carry his transit and his plane table to the summits of many high peaks in the Sierra when he was making observations and rechecking locations for his valuable maps of the Sierra."[25]

The greatest of the mountains they climbed together was the North Palisade, of which LeConte, Hutchinson, and James K. Moffitt made the first ascent in 1903.[26] LeConte was indefatigable in finding observation points for his mapping, particularly at the headwaters of the Kings River. One may share his enthusiasm by reading the accounts he wrote for the *Sierra Club Bulletin* in the years 1903 to 1909. The culmination of his explorations came in 1908 when, with James S. Hutchinson and Duncan McDuffie, he pioneered the first truly high mountain route from Yosemite to Kings Canyon. It was not quite as consistently high as the route ultimately attained by the John Muir Trail, but it linked together several sections that had been separately explored, such as Donohue Pass from the Tuolumne Meadows to Thousand Island Lake, Fish Creek to Evolution Basin, and from the latter to the Middle Fork of Kings River. The last of these links had been opened for pack animals the preceding year by George R. Davis, of the United States Geological Survey. "To be sure, the Geological Survey had crossed it at a time when everything above 10,000 feet was under snow," writes LeConte. "I myself had examined the gap when free from snow in 1904, and at that time considered it impassable to pack animals on the south side."[27] The critical day's trip is described by LeConte, in part, as follows: "We were stirring by earliest dawn, and long before the sun rose over the battlements of Mount Darwin were on the way. We passed around the east side of Evolution Lake, and at its head crossed to the west side of the creek. One bad, rocky place was encountered, and soft snow bogged one animal, but the top of the divide was reached by about 9 A.M. We were twelve thousand feet above sea level. Down the other side was an awful looking gorge in the black metamorphic rock, partly choked with snow. We went straight at it, and took our mules right over the talus piles. They did splendidly and we passed down into the rocky amphitheatre and around the south side of a little black lake, the extreme source of the Middle Fork of Kings River." The pass had been named by Davis "Muir Pass"; the canyon on the Middle Fork side is known as "LeConte Canyon," a fitting memorial to one of the greatest of High Sierra explorers. Let all who visit this remote and beautiful spot be reminded of Joe LeConte, little in stature but, in the words of his friend Jim Hutchinson, "a great and good man; a man who was fond of his fellow men, who loved his friends dearly, and who was loved by all who knew him, a man whose influence for good will last long."

James S. Hutchinson, besides accompanying Joe LeConte on a number of trips and climbs, made some notable explorations on his own account. In 1920 he led a party from Giant Forest to the Roaring River country, with Ernest McKee and Onis Imus Brown as packers, and made the first traverse of Colby Pass to the Kern Canyon. On the same trip Hutchinson, Duncan McDuffie, and Onis Imus made the first ascent of the Black Kaweah.[28] With his brother Edward, Jim Hutchinson made a first ascent of Mount Humphreys in 1904.[29]

The personal experiences of the members of the U.S. Geological Survey parties are so rarely recorded that only occasionally do we get a glimpse of them. The examination of the glaciers and glacial phenomena in the Dana-Lyell-Ritter region has already been mentioned. Willard D. Johnson was a charter member of the Sierra Club and Grove Karl Gilbert a contributor to the *Bulletin*. In fact there was always close coöperation between the club and the Geological Survey. We meet Gilbert and Johnson again in the Evolution Basin in 1908, when Johnson and E. C. Andrews, of the Geological Survey of New South Wales, climbed Mount Darwin, Andrews completing the climb solo for a first ascent of the highest point, a detached pinnacle.[30] George R. Davis, Charles F. Urquhart, and others climbed many a peak in the Sierra while surveying for the maps that have been the admiration of all who have used them in planning and carrying out camping and climbing trips in the High Sierra.

Of the many independent trips that have contributed indirectly to the history of the Sierra, a few not recorded in the *Sierra Club Bulletin* are met with elsewhere. An instance is a series of articles by Theodore P. Lukens, "One Hundred Days in the Sierra Nevadas," published in a Pasadena weekly.[31] Lukens, president of a bank and former mayor of Pasadena, with Walter Richardson, visited Mineral King, Golden Trout Creek, Mount Whitney, Kings Canyon, Owens Valley, Tuolumne Meadows and Canyon, Hetch Hetchy, and Yosemite in the summer of 1896. In Lukens' account there are many interesting observations. Another and better known account of a Sierra trip is that of Stewart Edward White, in "The Pass," first published in *Outing Magazine* in 1906, and

later in book form.[32] Although the story is slightly fictionalized, it presents a vivid picture of the country and the actualities of the trip, in which White and his wife Elizabeth, with a Forest Ranger called "Wes," found a way for their horses over open granite and steep ledges from Roaring River into the canyons of the Kaweah.

One of the major events in modern Sierra history took place when Will Colby in 1901 instituted the long series of Sierra Club outings. It was very largely his idea, but he had the strong support of John Muir, who believed that people should go to the mountains and learn to be at home in them and perceive and understand the beauty and order of Nature. Colby tells of the beginning: "It was from John Muir, the President of the Club, that I received the warmest encouragement. He was highly enthusiastic, and told me that he had long been trying to get the Club to undertake just such outings. Without his support, I would not have dared to embark upon such an enterprise, with its multiplicity of new and untried problems."[33] Colby received important aid from Edward T. Parsons, who had recently come to San Francisco from Portland, Oregon. He was familiar with the outings conducted by the Mazamas and proved an invaluable second to Colby. "Pioneering on untrodden ground, the Outing Committee had much to learn, and it took several outings before the basic problems were solved." That the problems were solved and year after year the outings continued in popularity, with profound effect both upon the lives of the participators and upon the cause of Conservation, is attested by the number of Sierra Club members who experienced life in the open under most favorable conditions. One of the features was the presence of men distinguished for their knowledge of the natural sciences who generously helped others to recognize the trees, the flowers, the birds and animals and to understand the significance of glacial polish and moraines. Among such teachers, besides Muir himself on several of the earlier outings, there were C. Hart Merriam and Vernon Bailey, of the U.S. Biological Survey; John G. Lemmon and Willis Linn Jepson, botanists; Andrew C. Lawson, geologist, and many others. Campfires were made memorable, not only by discourse of instruction and inspiration, but by music of rare beauty from the flute, the violin, and voices ranging from deep bass to lyric soprano.[34]

For a number of years the Sierra Club outings rotated between the Yosemite National Park, the Kings River region, and the Kern. Later the upper region of the San Joaquin was added. At first the outings were for four full weeks; then a few people began to come for the first two weeks or the last two weeks, until finally the pattern began to be a series of two-week outings, supplemented by a "base camp" and then by burro trips and knapsack trips. In part this change was brought about by problems of packing. Instead of one packtrain accompanying the club for the whole period, smaller packtrains coming in and out over the passes became the rule. Advanced roadheads on each side of the mountains also made it easier for people to come in and out on a shorter schedule. Yet in all these changes one thing has remained constant—the opportunity for young and old, mountaineers and "meadoweers," to visit the High Sierra under conditions that give them a maximum of enjoyment at moderate expense. A "commissary" provides excellent food in unfailing supply, prepared by skilled professional cooks, with aid, both volunteer and paid, from the membership. The main object of the outings has never been lost sight of, however. Colby constantly reiterated that he and the other leaders could not afford to spend their time and energy merely giving people pleasant vacations; the important thing was to lead them to know and appreciate the beauty and inspiration of the mountains, and to educate them to become defenders of the wilderness. The results give ample testimony to the wisdom of this program. And, almost as a by-product, the participants, through three, even four, generations, have profited in physical strength and health as well as in an educated idealism.

The leadership of the Sierra Club has never been content merely to provide means of enjoyment for its members; it is incumbent upon the members to contribute something to the general welfare. Colby was an ardent fisherman, as were many of those who went on the outings, but it was not enough for them to take fish from the streams and lakes; for many years the club's packtrain was utilized to transplant fingerlings, particularly Golden Trout, to lakes and streams known to be barren yet good breeding ground. Of late years volunteers from the club have performed heroic service in cleaning old campgrounds and removing cans and broken glass to repositories outside the choice areas of the High Sierra. Over the years, moreover, there has been much building and improvement of trails, sometimes solely by members of the club, sometimes in coöperation with the Forest Service and Park Service. In many ways the Sierra Club has endeavored to give back to the Sierra something for what it receives.

During the course of more than half a century of outings almost every peak and canyon has been visited, and in this there has been no distinction between the sexes, for women have become completely emancipated from their traditional handicaps. In the announcement of the first outing, in 1901, the following recommendation is found: "Women should have one durable waist for tramping and one light one to wear around camp. The skirts can be short, not more than half way from knee to ankle, and under them can be worn shorter dark-colored bloomers. For the women who ride horseback, divided skirts are recommended. It would be unsafe to ride otherwise than astride on portions of the trip." After ten years there was a slight modification—the bloomers under the skirt could be of the same color as the skirt! In 1914 there was a further change, this time a radical departure, a portent of the future: "bloomers or *knickerbockers*" should be worn under the skirt, as "the latter are essential for the

more difficult mountain climbs where skirts are dangerous to wear." In 1920 the outing announcement went so far as to say that "many women prefer to wear the knickerbockers or trousers on the entire trip to the exclusion of skirts." Three years later the inevitable had arrived—"women usually wear knickerbockers or riding trousers." In 1925 they were called "hiking or riding breeches." After that the girls were left to do as they pleased; skirts are now never seen, except occasionally at dinner time, and blue jeans have become the standard costume, substituted in an increasing number of instances by shorts, even at the expense of bruised knees.[35]

The climbing of mountains during the earlier years of Sierra Club outings was remarkable both for the number of people who attained the summits and the nonchalant way in which they did it. Edward T. Parsons, Colby's chief assistant, brought from his experience with the Mazamas on Mount Hood a method quite new to the Sierra. On Mount Lyell, for instance, more than half the outing party, a hundred or even more, would line up at dawn behind two or three leaders, trudging patiently over the snow until they came to the summit rocks. There, in smaller groups, they scrambled to the top with no more aid than a friendly hand or an encouraging word. It was a marvelous experience for many of the participants who never would have been able to enjoy it by any other means. It required good leaders with patience and discretion, leaders who went on to achieve more difficult climbs, such as Walter Huber and James Rennie, the durable Scot. Greatest of all mountaineers who have participated in Sierra Club outings is Norman Clyde. For over forty years he was the most ubiquitous climber in America and probably has more first ascents to his credit than anyone else in the country. Although a great many of his climbs were done alone, he was ever ready to help others. Moreover, from his residence in Owens Valley, he was called again and again to search for lost climbers, and once in a while to discover their mangled bodies. Norman in his prime was a superb climber, whose strength and endurance have hardly been equaled by any other in the Sierra.[36]

A complete innovation in Sierra climbing took place in 1931, when techniques long in use in Europe were introduced to the Sierra Club by Dr. Robert L. M. Underhill, of the Appalachian Mountain Club, who at the instance of the writer of this history had been invited to be a guest on the Sierra Club outing that year. Actually, the first properly roped climb made in the Sierra, so far as can be ascertained, took place just before his coming, when the writer led a small group directly up the face of Unicorn Peak on July 12, 1931. When Underhill arrived he organized a regular climbing school, practicing on the steep angles of Mount Ritter and Banner Peak. Progress from that time on was rapid. Half a dozen of the best climbers joined Underhill and Clyde for a postgraduate course on North Palisade, climbing from the east-side glacier. It was on this occasion that the climbers were caught on the summit of one of the peaks by a severe thunderstorm. As he was hastening to get off the crest to a place of safety, Jules Eichorn barely escaped electrocution when "a thunderbolt whizzed right by my ear," as he claimed. So "Thunderbolt Peak" was christened.[37]

The climbing party, reduced to five, went on to the east side of Mount Whitney and followed John Muir's old route up the North Fork of Lone Pine Creek. Next day, August 16, the first ascent of the East Face of Mount Whitney was made by Underhill, Clyde, and two others, Jules Eichorn and Glen Dawson, "young natural-born rock-climbers who had never seen the mountain; but neither had they seen any up and down the Sierra that they could not climb."[38]

In this manner modern rock climbing was introduced to the Sierra Nevada. In a short time a host of young climbers acquired the necessary skills, ascending the East Face of Mount Whitney by a variety of routes, and soon the spires and sheer walls of Yosemite. In 1934 a superb climbing team, Bestor Robinson, Richard M. Leonard, and Jules Eichorn, pioneered in the use of pitons for direct aid in the first ascent of the Higher Cathedral Spire, and a few months later made the first ascent of the Lower Spire. Another ascent of the Higher Spire (the third) was made the same year by Ted Waller, Jack Riegelhuth, and Marjory Bridge.[39]

Another event of the year 1931, repeated in 1934, is in striking contrast to the vertical rock ascents. Water was low in the Tuolumne River in both seasons, affording an unusual opportunity to investigate the mysterious Muir Gorge. John Muir and Galen Clark had passed through it many years before, in 1872, and a few others afterwards, but in later years powerful cascading water had blocked the entrance so that none of the current generation knew anything about it. However, in 1931 two small parties ventured into the steep-walled chasm and by swimming the pools came through to the lower end, where they met the fine trail that had been built to Pate Valley in the heart of the Canyon. Photographs were taken then and again in 1934, when another passage was made. To the few who have been there the central pool has been a goal fully equivalent to the summit of any of the highest peaks of the Sierra.[40]

It is inevitable that history should have its moments of sadness, but in one such moment the sadness is tempered by a glimpse of beauty and the immortality of youth. Walter A. Starr, Jr. ("Pete" Starr), loved the High Sierra with a devotion that led him there on every possible occasion. He usually traveled alone, for few could keep up with him on the trails and few equalled him in the agility with which he climbed. One day in 1933 he failed to return to the San Francisco law office where he worked. Inquiries were made and a search was begun, which ended when his body was found on a ledge of one of the Minarets, near Mount Ritter. In words written by his father shortly afterward, referring to the guidebook

which he completed from his son's unfinished manuscript, "May the traveler feel the companionship of that eager, joyous, and generous youth who loved the beauty of the mountains and wanted others to share his love."[41]

Starr's *Guide to the John Muir Trail* has indeed served to stimulate hundreds* of lovers of the High Sierra and lead them to pleasant pastures along the high mountain route. The Trail received its name when the California legislature, in 1915, appropriated $10,000 for its construction. The origin of the idea is stated by Colby as follows: "During the 1914 outing of the Sierra Club, a suggestion was made by Mr. Meyer Lissner of Los Angeles that a State appropriation should be secured for building trails with which to make the High Sierra more accessible. After Muir's death, the happy idea occurred of making this appropriation a State recognition of his inestimable service in bringing the mountains of California to the attention of the world." The route was selected by State Engineer Wilbur F. McClure, in consultation with members of the United States Forest Service and the Sierra Club. The major part of the work was carried out by the Forest Service, with Supervisors Paul G. Redington, of Sierra National Forest, and S. W. Wynne, of Sequoia. In subsequent years additional appropriations were made, sponsored by State Senator Arthur Breed, a Sierra Club member. Successive supervisors of the national forests continued to take charge of construction. For a while temporary routes were followed until ways could be found to cross certain key passes, particularly Muir Pass from Evolution Basin to LeConte Canyon and the Middle Fork of the Kings, then Mather Pass from the Middle Fork to the head of the South Fork of the Kings, and finally Foresters Pass, completed in 1931 from the head of Bubbs Creek to the head of Kern River.[42]

With the completion of the John Muir Trail the exploration of the Sierra Nevada may be considered to have been completed. Every canyon and every pass has been made available. Moreover, every major peak has been climbed, and in Yosemite, where the "inaccessible" points had long ago been proved accessible, the "impossible" faces of El Capitan, Sentinel Rock, and Half Dome have been scaled after long sieges by the aid of mountaineering "hardware." These later achievements, however, belong under the heading of "Current Events" rather than "History."

* *Thousands;* 40,000 copies are in print.—Ed.

NOTES AND REFERENCES

1. Sierra Club, *Publication No. 1,* 1892; Joseph N. LeConte, "The Sierra Club," *SCB,* 1917, 10:2.

2. The origin of the Sierra Club and its achievements are mentioned only briefly here; they are treated more fully in Holway Jones, *John Muir and the Sierra Club: The Battle for Yosemite,* San Francisco: Sierra Club, 1965.

3. "Journals of Joseph LeConte" (MSS in Bancroft Library).

4. Joseph Nisbet LeConte (1870–1950); University of California, B.S., 1891; Cornell, M.M.E., 1892. A charter member of the Sierra Club; President, 1915–1917; Honorary President, 1931–1950. (Memorial, *American Alpine Journal,* 1950, 7:4.)

5. Hubert Dyer, "Camping in the Highest Sierra," *Appalachia,* January, 1892; J. N. LeConte, "Journal of a Camping Trip Amongst the Highest of the California Sierra, Summer of 1890" (typescript in BL).

6. Many of these photographs were published in the *Sierra Club Bulletin,* in *Sunset Magazine,* and in *Alpina Americana* (published by the American Alpine Club), 1907, No. 1.

7. Helen M. Gompertz, "A Tramp to Mt. Lyell," *SCB,* May, 1894, 1:4, and "Up and Down Bubb's Creek," *SCB,* May, 1897, 2:2. (In the early days of the *Sierra Club Bulletin* there seems to have been an obsession for putting an apostrophe before an *s* even though the *s* was part of the name and not a possessive.)

8. Joseph LeConte, "My Trip to Kings River Canyon," *Sunset,* October, 1900, 5:6, reprinted in *SCB,* June, 1902, 4:2.

9. William Edward Colby, born at Benicia, May 28, 1875; attended University of California and Hastings College of Law, LL.B., 1898. He became the leading practitioner of the country in the field of mining law and a lecturer on that subject at the University of California. He joined the Sierra Club in 1895. He became its Secretary in 1901 and held that position for forty-six years, except while President from 1917 to 1919. From 1950 until his death in 1964 he was Honorary President. Colby was the initiator of the Sierra Club Outings in 1901 and their leader for thirty-seven years. In 1927 he became the first Chairman of the newly established California State Park Commission.

10. Colby, "Early Days of the Sierra Club," a tape recording, 1959 (transcript in BL).

11. Robert M. Price, "The Grand Canyon of the Tuolumne," *SCB,* January, 1893, 1:1. Robert Martin Price (1867–1940); University of California and Hastings College of Law, LL.B., 1896; practiced law in San Francisco and later in Reno, Nevada. A charter member of the Sierra Club, its Secretary 1896–1900, President 1924–1925. (Memorial by William E. Colby, *SCB,* February, 1940, 25:1.)

12. R. M. Price, "Through the Tuolumne Canyon," *SCB,* May, 1895, 1:6; Colby, "Early Days."

13. T. S. Solomons, "The Grand Canyon of the Tuolumne," *Appalachia,* November, 1896, 8:2; and "Grand Canyon of the Tuolumne," *The Traveler,* December, 1896, 4:6. Theodore Seixas Solomons (1870–1947), court stenographer and writer. A charter member of the Sierra Club. (Memorial in *SCB,* March, 1948, 33:3.)

14. T. S. Solomons, "A Search for a High Mountain Route from Yosemite to the Kings River Canyon," *SCB,* May, 1895, 1:6.

15. T. S. Solomons, "Mt. Goddard and Vicinity," *Appalachia,* January, 1896, 8:1; "An Enchanted Gorge," *The Traveler,* November, 1895, 6:6; "Tehipite Valley," *The Traveler,* May, 1896, 7:5; "Unexplored Regions of the High Sierra—Tehipite Valley," *Overland Monthly,* March, 1897, 30:5.

16. W. A. Starr, "From Yosemite to Kings River Canyon, 1896." *SCB,* 1935, 20:1. Walter Augustus Starr, born in San Francisco, 1877; graduated University of California, 1897. President of the Sierra Club, 1941–1943; Honorary President, 1964. Allen Lawrence Chickering (1877–1958); University of California, A.B., 1898, LL.B., 1901; throughout his life a prominent member of the legal profession in San Francisco; a lover of the wild flowers of California, especially those of the Sierra. (Memorial in *California Historical Society Quarterly,* March 1958, 37:1.)

17. Florence Lake is now enlarged by a dam and is a reservoir of the Southern California Edison Company, as is the flooded Vermilion Valley.

18. "Tunemah" is a Chinese word of vilest significance, given because of the expletives of a Chinese cook as he rode along it.

19. Brown's maps and sketches are to be found in the first three volumes of the *Sierra Club Bulletin*.

20. *SCB*, May, 1897, 2:2.

21. Bolton Coit Brown, "Another Paradise," *SCB*, May, 1900, 3:2.

22. Vernon L. Kellogg, "A Stanford Party in the Kings River Canyon," *Sunset*, November, 1899; D. S. Jordan, "The Kings River Canyon and the Alps of the Great Divide," *Sunset*, April, 1900; Jordan, *The Alps of the King-Kern Divide*, 1903 (*Farquhar* No. 19); Jordan, *The Days of a Man*, 1922; Payson J. Treat, "David Starr Jordan," *SCB*, February, 1932, 17:1. David Starr Jordan (1851–1931) was one of the founders of the Sierra Club, and Honorary Vice-President, 1905–1931. He was the author of numerous zoölogical works, principally on the fishes.

23. Dr. Jordan climbed the Matterhorn in 1881. Jordan, "An Ascent of the Matterhorn," a chapter in his *Science Sketches*, 1888 (reprinted 1896, and in *SCB*, February, 1940, 25:1).

24. "Here John Muir studied the water-ouzel in his home, and wrote of it the best biography yet given of any bird." Jordan, *Alps*.

25. J. S. Hutchinson, "Joseph Nisbet LeConte: Some Recollections," *SCB*, June, 1950, 35:6.

26. J. N. LeConte, "The Ascent of the North Palisades," *SCB*, January, 1904, 5:1.

27. J. N. LeConte, "The High Mountain Route Between Yosemite and the King's River Cañon," *SCB*, January, 1909, 7:1,

28. J. S. Hutchinson, "Colby Pass and the Black Kaweah," *SCB*, January, 1921, 11:2. James Sather Hutchinson, Jr. (1867–1959), attended University of California, transferred to Harvard (A.B., 1897), attended Hastings College of Law, LL.B., 1899, practiced law in San Francisco. While still in college became a charter member of the Sierra Club; editor of the *Sierra Club Bulletin*, 1903–1904 and again in 1925. (Memorial in *AAJ*, 1960, 12:1.) Duncan McDuffie (1877–1951), a graduate of the University of California, 1899, developer of fine residential districts in the San Francisco Bay Area. President of the Sierra Club, 1928–1931 and again 1943–1946. (Memorial in *AAJ*, 1952, 8:2.) Onis Imus Brown was not only a good packer but a good cook, and, although packers traditionally "haven't lost anything on the tops of those mountains," Onis Imus was different—he liked to climb. For the origin of his name, see Colossians, 4:9.

29. J. S. Hutchinson, "First Ascent: Mount Humphreys," *SCB*, January, 1905, 5:3.

30. E. C. Andrews, "First Ascent of Mount Darwin—1908," *SCB*, 1924, 12:1.

31. *Town Talk*, Pasadena, December, 1896–February, 1897, vol. 9, nos. 8–14 (copy in BL).

32. Stewart Edward White, *The Pass*, New York: Outing Publishing Co., 1906 (*Farquhar* No. 20).

33. William E. Colby, "Twenty-Nine Years with the Sierra Club," *SCB, February*, 1931, 16:1.

34. For nearly every year of the long sequence of Sierra Club outings there is an article by a participant in the *Sierra Club Bulletin*. Notable among them are: Bertha Clark Pope, "The High Trip of 1925," *SCB*, 1926, 12:3; Marion Randall Parsons, "The Twenty-Eighth Outing," *SCB*, February, 1930, 15:1; Ansel Easton Adams, "Retrospect—1931," *SCB*, February, 1932, 17:1; Hollis T. Gleason, "The Outing of 1932," *SCB*, February, 1933, 18:1; Ruth R. Currier, "Sierran, 1914–1934," *SCB*, February, 1935, 20:1; David R. Brower, "Tripping High—1939," *SCB*, February, 1940, 25:1; Weldon F. Heald, "High and Dry in 1940," *SCB*, February, 1941, 26:1; Charlotte E. Mauk, "The *N*th Itinerary," *SCB*, August, 1942, 27:4; also articles by Charlotte Mauk in *SCB*, 1947, 1949 [Brower, 1948].

35. *Sierra Club Outing Announcements* (a set in BL).

36. Walt Wheelock, "Norman Clyde," chapter in Norman Clyde, *Close Ups of the High Sierra*, Glendale, Calif.; La Siesta Press, 1962.

37. *SCB*, February, 1932, 17:1, Mountaineering Notes.

38. Robert L. M. Underhill, "Mount Whitney by the East Face," *SCB*, February, 1932, 17:1.

39. Richard M. Leonard, "The Cathedral Spires" (Mountaineering Notes), *SCB*, February, 1935, 20:1; Bestor Robinson was President of the Sierra Club, 1946–1948, and Richard M. Leonard, 1953–1955. Marjory Bridge became Mrs. Francis P. Farquhar in December, 1934.

40. Francis P. Farquhar, "Muir Gorge in Tuolumne Canyon," *SCB*, February, 1932, 17:1; Louise Hildebrand, "Cathedral Creek and Muir Gorge, 1934," *SCB*, February, 1935, 20:1.

41. Walter A. Starr, Jr., *Guide to the John Muir Trail and the High Sierra Region*, San Francisco: Sierra Club, 1934, and subsequent editions. "The Search for Walter A. Starr, Jr." (Mountaineering Notes), *SCB*, June, 1934, 19:3.

42. "The John Muir Trail" (Notes), *SCB*, January, 1916, 10:1; Walter L. Huber, "The John Muir Trail," *SCB*, February, 1930, 15:1, Francis P. Farquhar, "Northward Over the John Muir Trail," *SCB*, January, 1920, 11:1.

IDENTIFICATION OF COLOR PHOTOGRAPHS

Glen Canyon:

Unnumbered page 17, From Music Temple bar; 18, River's edge, Star Bar; 19, Above entrance, Balanced Rocks Canyon; 20, Twilight Canyon; 21, First swim, Hidden Passage; 22, Plunge pool, Lost Eden; 23, Willow reflection, Mocqui Creek; 24, Escalante River; 25, Seeps, 7 Mile Canyon; 26, Plunge pool, Hidden Passage; 27, Wall, Moonlight Creek; 28, Trailside detail, just below Music Temple.

Grand Canyon:

Unnumbered page 33, Willows and dune, near Nankoweap Creek, by Philip Hyde; 34, Schist and pink granite, Granite Gorge, by Clyde Childress; 35, Detail of wall, Granite Gorge, by Clyde Childress; 36, Vasey's Paradise, Marble Gorge, by Philip Hyde. The photographer does not remember the river mile for the rock-detail photographs, but all four in the Grand Canyon series typify the kind of scenic resource, dependent upon a living river, that the proposed Grand Canyon dams would destroy, even as Glen Canyon dam has destroyed what Eliot Porter's photographs show of Glen Canyon.

Facets of Wilderness

MARGARET OWINGS

THESE TWO DAYS we have been turning over in our hands a great rough rock with many facets. It is a treasured rock. We call it "wilderness." Each facet is one variety of this wilderness, and the reflection from each facet is a human response to that experience.

There are those of us who look at wilderness primarily as a dimension—an immensity, a grand proportion. These may be people who work by expansion and think by expansion, fanning out their interests. It's the broad, deep picture they find rewarding.

Then, there are those who turn primarily to the intimate savor of landscape: the detail, the scent of nettle and mint, the lazy buzz of a mountain fly, the careless grace of a flower opening. These people are selective and concentrate their attention, finding their reward in infinite detail.

But neither approach seeks confinement. Both pursue the sense of the unexplored landscape. For each man is his own eager explorer.

It was Rachel Carson who unrolled the long vistas before our eyes and described man's place as a mere moment of time. "This particular moment of time that is mine," she repeated again and again to help us see our place and our role and the perils of our future in the long view.

It is the perceptive explorer who can glimpse this view, who can uncover the links and bridges of history and find his own particular place in the moment of time.

Having a landscape to oneself is an exclusive pleasure. Many of us stumble upon this by surprise. Suddenly it is there—unshared, solitary. One may well experience a reckless moment of freedom, a penetrating moment of understanding. A meaning that was elusive is suddenly clear! And in the words of Freya Stark, one can carry long afterwards "a secret sense of exile."

Promise is a word I associate with wilderness. Promise and independence are rare qualities found deep in solitude. Promise renews faith. Independence is found only when the sense of belonging is understood.

Sigurd Olson spoke of "the animal oneness with the earth," the sense of close relationship, of belonging.

How can we recapture this relationship?

How can we return to this "oneness"?

What kind of a ceremony can lead us back: The Mountain Chant of the Navajos in their dark circle of branches? The Hopi Snake dancers at Walpi, stamping on the Sapupai—the door to the inner earth?

Sigurd Olson quoted Pierre Teilard de Chardin (that rare soul who could make an experience flare with a presence) as saying that only if man is receptive, contemplative, and aware can he open these doors to what the universe and life really mean—can he open these doors to belonging. But for most of us, under the pressures and conflicts of human society, it is only in the setting of wilderness that this revelation can unfold.

I, myself, experienced a form of revelation one autumn morning. In an unexpected moment, I witnessed a thin slice of wilderness, fleeting and brief, but filled with a meaning somehow intensified by the counterpart of its setting.

I was on the sidewalk of 55th Street in the heart of New York City. Around me was the noise and confusion, the frantic strain of traffic, horns and whistles. Tall buildings cast their shadows over the deep chasm of the street. It was the essence of the man-made world.

At that moment, as if by signal, every city sound about me was suddenly hushed. All mechanical uproar was arrested abruptly, as if the power had been shut off. And in the silence of that instant, I heard but one thing—the delicate honking of geese high overhead. I looked up through the slot of buildings to another dimension, as a V of geese moved south, calling to one another as they passed out of view.

One world gave way to another.

It was one of those "burning instances of truth," referred to by Sigurd Olson, "when everything stands clear."

Now Loren Eiseley admonishes emissaries returning from wilderness to record their marvel, not to define its meaning. But I am tempted to call your attention to several potent words used by Sigurd Olson: timelessness, majestic rhythms.

Each of you alone can read your own symbols into the incident I have tried to describe. But it seems appropriate, with the dedication of the Dag Hammarskjold Memorial Grove of redwoods, to close with these lines from his diary:

A wind from my unknown goal
Stirs the strings
In expectation.
Shall I ever get there?
There, where life resounds
A clear pure note—
In the silence.

Without any remaining wilderness we are committed wholly, without chance for even momentary reflection and rest, to a headlong drive into our tehnological termite-life, the Brave New World of a completely man-controlled environment. We need wilderness preserved—as much of it as is still left, and as many kinds—because it was the challenge against which our character as a people was formed. The reminder and the reassurance that it is still there is good for our spiritual health even if we never once in ten years set foot in it. It is good for us when we are young, because of the incomparable sanity it can bring briefly, as vacation and rest, into our insane lives. It is important to us when we are old simply because it is there—important, that is, simply as an idea.

We simply need that wild country available to us, even if we never do more than drive to its edge and look in. For it can be a means of reassuring ourselves of our sanity as creatures, a part of the geography of hope. — WALLACE STEGNER

JOERN GERDTS: Redwoods of Northwestern California
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We are waking now from the American dream to realize that it was a dream few Americans lived in their waking hours. The history of the New World has turned out to be not so different from that of the Old. The peril that threatens the last of the American wilderness arises not from the reckless dream, but from the same historic forces of rapacity and cruelty that laid waste the land in the Mediterranean Basin, in Arabia, India, and the treeless uplands of China.

The wilderness is there, however, to recall the dream. And lately we have won a reprieve through the advance of scientific understanding.

The frontier of understanding has no limits, and the curse of want and poverty may yet be lifted from the life of our species. That frontier cannot be exploited on the same selfish terms as the frontier that lies behind. — GERARD PIEL