WILDLANDS IN OUR CIVILIZATION

SIERRA CLUB BULLETIN • JUNE 1957

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To explore, enjoy, and preserve the Sierra Nevada and other scenic resources of the United States and its forests, water, 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 especial scenic beauty and to enlist public interest and coöperation in protecting them.

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Sierra Club Bulletin

VOLUME 42 JUNE, 1957 NUMBER 6

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Wildlands in Our Civilization is the theme of this number as it was of the Fifth Biennial Wilderness Conference from which the contents are drawn. The cover photograph, by Cedric Wright, is of the John Muir Trail in High Sierra wilderness country near a pass named for Gifford Pinchot.

THIRTY-TWO PAGES OF PLATES

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Sierra Club Bulletin

VOLUME 42 June 1957 NUMBER 6

Wilderness—Conflict and Conscience

By DAVID R. BROWER

YOU LIKE wilderness, let's suppose, and you want to see some of it saved. Not just a thin strip of roadside with a sign saying "Don't pick the flowers." Not just a wild garden behind the hotel or a pleasant woods within shouting distance of the highway. But *real* wilderness, big wilderness—country big enough to have a beyond to it and an inside. With space enough to separate you from the buzz, bang, screech, ring, yammer, and roar of the 24-hour commercial you wish hard your life wouldn't be. Wilderness that is a beautiful piece of world. Where as you start up a trail and your nine-year-old Bob asks, "Is there civilization behind that ridge?" you can say no and share his "That's good!" feeling.

Yes, a place where you can rescue your *self* from what Ortega calls the *other*—all the extraneities that pile on you too deep. So deep, to quote my wife Anne's *bon mot,* that "the life you lead is not your own."

So you want a place where you can be serene, that will let you contemplate and connect two consecutive thoughts, or that if need be can stir you up as you were made to be stirred up, until you blend with the wind and water and earth you almost forgot you came from.

You like wilderness, then, and need it. And suddenly you encounter a practical man who never learned that he needs it too, or doesn't remember. It doesn't take you long to encounter him, because there are a lot of him, many of him in places of influence, all adding up to a political force that can jeopardize wilderness if it chooses to, and choose it seems to.

You can malign him, and insure that the conflict will continue over the need for wilderness. But let's assume you'd rather align him, get straight to his conscience, end the conflict, and save the wilderness. Then what?

At the Fifth Biennal Wilderness Conference, on March 15 in San Francisco, I tried to develop one approach and I have drawn upon it fully in what follows, adapted from my remarks there. Let's call it a starting point, and let us hope that it will suggest to you a different and better approach to a goal that happily still remains and should persist.

* * * * * * *

To start with, let's address ourselves to a very important question. How much right does one generation have to another generation's freedom? Can we of this generation, in conscience, pay for our freedom by mortgaging the freedom of our children? Is it our ethic that we are privileged to write the rules to which all the subsequent generations of our civilization must be committed, and by which they must abide, irrespective of their own wishes?

Thomas Jefferson, long ago, said that one generation could not bind another; each had the right to set its own course. Go out across this land and try to find someone to argue that he was wrong. You won't find a taker. It is the national consensus that we don't have this right.

But deeds are not matching words. This generation is speedily using up, beyond recall, a very important right that belongs to future generations — the right to have wilderness in their civilization, even as we have it in ours; the right to find solitude somewhere; the right to see, and enjoy, and be inspired and renewed, somewhere, by those places where the hand of God has not been obscured by the industry of man.

Our decisions today will determine the fate of that right, so far as people of our time can pass opportunity along to our sons. Apathy here can mean that we pass them a dead torch. Or we can keep it aflame, knowing that this is a very special torch that man cannot light again.

Belatedly we are becoming generally concerned about our scenic resources and about resolving conflicts that must be resolved if we are to retain islands of open space in the sea of tomorrow's civilization. The early history of civilization dealt with the problem of finding enough enclosed spaces — caves in the beginning, then crude shelters, then walled cities, followed by the early beginnings of suburbia when there was not longer room enough within the walls for all the people of the cities. Only recently have we begun to change our concern. The problem seems no longer to be one of enclosing space, but of leaving enough of it open to meet our needs for greenery and for every man's "slice of sky" Wallace

Stegner speaks of. We know we need some of this in our own garden for the edges of our daily existence — something to look out upon at breakfast, or before dinner. We need more space near by for our weekends, where on a March day a boy may fly a kite, or a family may picnic and stroll. For our holidays we need accessible open space within range of our faster transportation, and better roads, bearing in mind that we shall soon have more three-day weekends than we have now. For our lengthening vacations we'll need the big spaces of national parks and wilderness.

These outdoor spaces — daylight-saving *plots,* weekend and holiday *areas,* and vacation *regions* — won't set themselves aside. We have to plan for them as the population avalanche flows over the land, and plan generously if civilization is not only to improve living standards, but also to sustain man's standards for life.

The Sierra Club has been concerned with man's use of wildlife, wilderness, and national parks ever since John Muir founded the club in 1892 with the general purpose of exploring, enjoying, and protecting our scenic resources. In none of its 65 years has the club been free of the controversy that results when one seeks to protect what another would exploit. That has meant 65 years' experience in trying to resolve a crescendo of conflicts — experience that we can draw upon as we consider today's major controversies and the still more critical contests that tomorrow will inevitably bring.

These conflicts will underline the need for conservation education; more than that, they will require the education of conservationists. There's quite a difference.

On the one hand, *conservation* alludes to management of the commodity resources, to using them wisely that they may last longer. We all approve of conservation, even as we approve of motherhood — even while we go on expending our nonrenewable resources at a constantly accelerating rate (more in this century than in all previous history). We intend to do better. In the end, however, we know that no matter how well we manage our commodity resources and our raw materials, time will catch up with us. Conservation means spreading a given resource over a given period of time. Time finally runs out and the resource is gone, or at best, is a rarity.

On the other hand, the *conservationist,* and I stress the *-ist,* has come to be known as the man who is concerned with preserving for all our time certain important scenic resources — our resources of wilderness, parks, wildlife, and the recreation and inspiration man may always derive from them. Always, that is, if each generation, including ours, takes care of the few places we have left where those resources still survive.

To use a figure, there are two sides to conservation just as there are two sides to a coin. On one side, tangible quantities; on the other, intangible qualities. Each side is presently oriented to look in opposite directions. Yet each must live with the other. We may need a coin of transparent material, so that each side can look in both directions.

The conservationist, then, is the man more concerned about what certain natural resources do for his soul than for his bank balance. Every man is a conservationist part of the time in his thinking, if not in his action.

There are a great number of people who are conservationists in their action also — more than 11,000 in the Sierra Club, and about two million who are loosely organized in the Natural Resources Council of America. The numbers are growing more rapidly than is our population. Every time a scenic hill is bulldozed for a new tract of houses, or a new freeway blots out more acres of green quietude, or a new dam inundates a trout stream, or there's a vacant space where a great tree was, or another whooping crane turns up missing — every time one of these things happens, the conservationist force grows stronger as more people realize the need to protect a rarity from extinction. Theirs is not a force of blind opposition to progress, but of opposition to blind progress. Theirs is a force determined to see that progress does not take away important things from mankind, forever, in order to benefit a few men now.

The conservationist force, I submit, is not a pressure group. It merely demonstrates the pressure of man's conscience, of his innate knowledge that there are certain things he may not ethically do to the only world he will ever have, and to the strictly rationed resource of natural beauty which still exists in that world. The conservationist force does not need to be pressed into action. It needs only be made to realize what is happening, and its voice of conscience speaks.

That sounds simple. It isn't. I need not go into any detail to convince you of the difficulty of making people realize something — of their making it real to themselves, not imaginary, but actual. You know how hard it is to be heard in the clamor around us. And we all know how hard it is to get the voice of conscience to speak audibly enough to have effect. For example, how many times a week do you feel something needs to be done for the public good — and how many of those times can you find the few minutes to do something about it yourself?

So the conservationist force, for all its conscience, still needs to realize more, and to speak more. Conservation controversies, like prefabricated telephone booths, are ubiquitous. All of them are conflicts for space. The resolution of these conflicts should depend upon the answer to the ques-

tion — Who needs the space most? Unfortunately, many of the decisions are being made now, and irrevocably, not on the basis of who needs the space most, but on who got there first with the most dramatic plan of development and the biggest earth-moving equipment.

It would be helpful, in resolving the coming conflicts for space, "to have on hand a battalion of men with the wisdom of Solomon." Not having even one Solomon, let us nevertheless see what we can do to: consider a few of the conflict types in some detail; list the tools we have for resolving conflicts; try to arrive at the criteria for decision; and suggest some courses of immediate action. This is a big order. If in the course of this I make noises like an oracle, please forgive me. To be brief, I'll stick to direct sentences. In your own mind please add "it seems to me" to each sentence.

What Are Some of the Conflicts?

Man Against Numbers.—Man has demonstrated, as clearly as he has demonstrated anything, that he is prolific enough to explode across the land — not with the rapidity of an epidemic, of course, but more thoroughly and with far more lasting devastation of the natural resources of the only world he has yet contrived to live upon. We can label this statement "neo-Mathusiasn," but the labeling solves no resource problem. The members of what we could label "the Science-Will-Save-Us-Society," will have quite a burden to prove that science really can save us. Science can do wonderful things, but our scientists can only begin to gather data on the new problems civilization presents every year, and in turn can only begin to publish and interpret their data.

A serious problem confronting scientists, and one upon which no conservation organization I know of has adopted a policy, is the population problem — an especially touchy cat to put a bell on.

Natural scientists know full well what happens when there is an explosion of population in deer; the deer themselves lose vitality and starve by the thousands because they have overloaded their range. Mankind has a range, too, and it has a maximum carrying capacity consistent with a good life — a life with enough resources on hand for all to spare us the final quarrel over them. We may argue about how many people the range can withstand, but we can hardly argue that there is no limit. We have strong intimations, as we watch the sea of smog rise around us, that the limit is approaching faster than we thought, and from a different quarter. It may well be shortage of clean air, not of water, that brings us to a sudden halt in California.

Whatever the limiting factor, and, though our engineers cover the earth

with a mezzanine floor, we know that we shall come to a day when we can no longer double our population, or even add to it, without lasting regret. We could continue to worship Growth until midnight of that last day.

But there is a brighter possibility and it is worth working hard for. When the light turns red, you stop before you hit the car ahead. If you don't, you're in trouble. The margin between us and trouble is our scenic open space and our wilderness. We vaguely sense the shape of this need; later and wiser men will know it surely, in the crowded world we are letting their heritage become. For them, we could choose to skimp a little on gadgets, even our most elaborate gadgets, even as they shall one day be forced to skimp, and with so much less wild world to repair to.

The brighter possibility, then, is to look for substitutes before we have completely used up a given resource. Perhaps we, as present stewards for the natural resources of all generations, could revive the practice of tithing — saving ten per cent for the future. Not ten per cent of what this generation received from the last, but a tithe of what was here, in our best estimate, when white men began to spread over this continent. If that sounds overgenerous, remember how few the generations who have used up the ninety per cent, and how many generations will need what's left, to leaven their otherwise ersatz world.

Water Development.—Where water development and wilderness preservation are in conflict, we can remember that gravity will take water through parks and wilderness and out to places where man wants to use it or store it. Optimum development downstream can preclude irrevocable damage to wilderness values upstream. Quite often it will cost less; but even if it were to cost more in dollars, it would save what dollars cannot put together again.

The conflict with hydroelectric development is more direct, for man wants to get energy from the water that gravity brings down. Alternate sources of energy are coming fast, however, and we can afford to wait for their perfection rather than sacrifice scenically important streams and valleys. We need to remember that our choice to preserve is a temporary determination at best. Our choice to sacrifice, however, requires all future men to living by our choice. We will have written the rules for them, and indelibly.

Wood Products.—The Timber Resources Review recently completed by the Forest Service has demonstrated that our principal opportunity to meet the future's need for timber lies elsewhere than in the virgin forests of our best wilderness and park lands. The National Lumbermen's Association has gone even further. Its recent releases have stressed the need for

expanding the timber market and have stated that we are growing one-third more timber than we are harvesting; they therefore opposed the timber-reserve part of the Soil Bank. Plywood people want much less plywood imported. Moreover, in the immediate future we can see a minor revolution in the wood-products industry in the promise of the chipper, particle board, and alternate sources of cellulose that will have to substitute for virgin-forest timber sooner or later.

In the absence of a policy which provides specific criteria for determining how much wilderness we shall need to preserve, and in the presence of abundant promise of substitutes for wilderness timber, and considering also the many values for mankind the wilderness forest affords — multiple use of the highest, most diverse order, — we should not be hard put to decide the course to vote for in the timber-versus-wilderness conflict.

Highways.—These had better go around our scenic gems, not through them, unless we want the face of our land crisscrossed by high-speed routes to beautiful places that might have been. We have the potential of drowning ourselves with automobiles, of so overloading our hardened arterials that first the pleasure of driving will disappear — and then the motion!

Our children shall need parklike places where they can have a change of pace and mood — where they can spend a good chunk of time and become part of the scene for a while. It will not be enough for them to screech to a stop because of a traffic light or traffic jam, then roll down the window for a quick sniff of the great outdoors before the man behind blows his horn. Many people fear that our engineers are more skillful at moving vehicles than at moving people, and that a lot of space is being too freely used up in the process.

We are enamoured of horsepower, of highways and freeways, of covering more ground more quickly and with greater safety. In our ardor, however, we may well consider that it is very hard to undo a freeway and impossible to redo a wilderness.

Other Conflicts.—There are other conflicting demands for our present scenic open spaces, conflicts brought on by our needs for flood control, industry, mining, food and forage and fiber, by urbanization, and by recreation too. There is no need to go into detail about them now. They all come from real needs for things we want and believe in. But with reasonable restraint we can eat cake and have some too — have conveniences *and* wilderness, so long as we remember that there are some areas where convenience costs too much.

What Tools for Resolving Conflicts?

What tools have we already fashioned, or what can we invent, to resolve these conflicts?

Facts.—First, we need facts about resources. Many organizations are assembling them, and more help is needed. For scenic resources, the organizations prepared to do the best job nationally are the National Park Service, which has a program based upon a 1936 law and Mission 66; the Forest Service, which has now come up with its Operation Outdoors; and the Fish and Wildlife Service, now developing its own Operation Waterfowl. California is off to a good, if late start with its imminent recreation plan now before the Legislature. Many other agencies are involved, and coördination is essential. The proposed national Outdoor Recreation Resource Review will help get this started.

Interpretation.—But facts are not enough. One of our unheralded national surpluses is the surplus of undigested data which, if laid end to end, would reach too far. A fact has meaning only when it gets from producer to market, only when it is published and interpreted well. We are badly in need of equitable interpretation of the facts we are gathering about our natural resources.

Most important, as pointed out in "Scenic Resources for the Future,"* "We must to the best of our ability project all future needs on the same screen with the same projection distance and same focal length of lens for each scene, and also, to the best of our ability, with the same illumination. Let the light be a cool one."

So far we have had quite a disparity in distances, lenses, and light. In California, for example, we know that water development is going to make heavy demands upon what land we have for other purposes. To project that scene, we have elaborate equipment that has been derived from an eight-year effort at a cost of better than $1 million per year. But water isn't all we'll be needing in the year 2,000, it is only one of many things.

What kind of equipment do we have, whether in California or in the country as a whole, to project our other needs. By comparison, we can project our needs for scenic resources with little more than a 19th century magic lantern, lit by a lone flame. Unless we can demonstrate the need for equity, we stand a good chance, so far as this particular conflict goes in California, of having the best-watered, most populous crowded, biggest grossing, state in the union — and the least beautiful one. Our white-water streams will be so fully harnessed for use that you can't see running water; each pleasant little valley in the hills and mountains will be re-

*SCB, December 1956.

placed by a fluctuating reservoir, its water-shed cropped and gravely impaired; and suburbia will spread almost everywhere else. Bear in mind that our State Director of Water Resources, in opposing the current wilderness bill, listed in his reasons for doing so that the bill would hamper California Water Plan hopes for dams or water structures in Lava Beds and Joshua Tree National Monuments and Yosemite National Park, as well as the Plan's hopes to use the Marble Mountains Wilderness as a dumping place for spoil. We don't need water that badly. And no bill would stop these things if the people should ever really need them.

Public Information.—The public needs information, too. All our facts and interpretation will mean little if the public isn't taken into confidence. After all, the public must consent to whatever proposal we come up with. "The engineering of consent" is the concise definition of public relations. Meetings such as the Wilderness Conferences are a starting point. What we do after we leave the meetings will determine how far the cause moves.

Legislation.—An informed public will want a clear statement of policy, which is a statement in law, and will want continuing legislative interest in what happens under the policy. Congress, for example, is the nation's board of directors. It should reserve the power to review irreversible staff decisions which lead to the extinction of a given resource. Right now the federal staff can extinguish wilderness with a pen stroke — and the pen is striking.

Administration.—The executive branch, armed with administrative regulations based upon law, will supply the preponderance of protection, for only this branch of government has staff enough to do the job full-time. Loosely worded regulations, which were adequate for a loosely populated land largely free of conflict, will have to become specific — and must in turn be based upon more specific law if we are to avoid a dangerous overconcentration of discretion. For instance, there will need to be a clearer understanding of the full meaning of multiple use, and of the limitations of multiple use. This has never meant a great number of cooks working over the same pot of broth although many people think so.

Education.—The legislative and executive branches, with help from lay organizations, will then need to continue the effort of public education — the engineering of support. The need for this is stressed whenever any two people discuss the subject of conservation, and sometimes even when the discussion is only a monologue. We have a long way to go, or to say it another way, we have a great opportunity.

These are the tools. They are all necessary. Those named last will be of little use if we don't have equitably interpreted facts to start with.

What Criteria for Decision?

Let us go back briefly to that matter of correctly interpreting facts, for it is from this interpretation that we shall have to derive our criteria for decision.

We must make one decision before we shall know how to sort out our facts. Shall we on the one hand resurrect the rejected philosophy of *aprés moil le déluge,* or on the other hand shall we seek the exact opposite for those who follow us — for them a world as beautiful as ours? I don't think this will be a hard decision to make but we shall need to keep reminding ourselves that we made it.

Since wilderness is our primary concern here, let us list the points we need to consider in weighing wilderness preservation against a potential conflicting use. This weighing will set a pattern for the scenic resources which are less fragile than wilderness. And wilderness conflicts are hardest to solve and most critical.

1. The wilderness we have now is all that we, and all men, will ever have.

2. Much of our wild land which is presently used for its wilderness will be lost to wilderness use. It has not been dedicated, and remains only by accident or oversight, or because of the slight value of its raw materials. When it goes, its human load must be added to that placed upon dedicated wilderness, wherever it is left.

3. We don't know what the carrying capacity in terms of people is or may be, either for accidental or dedicated wilderness — carrying capacity that should be expressed in two ways: (a) What human use will a place withstand and still recover naturally, and (b) how many people will it withstand at a given time without their eliminating its esthetic value at the time?

With respect to recoverability: We must not be fooled by vastness of a total area. The key terrain, or the heartland, or the living space, or the camping base — whatever you may call it — is that rare, scarce oasis that has real scenic appeal, that has water and shade, wood and forage, that is gentle enough in slope to camp on, and that possesses a wild setting (without which one might as well camp in Central Park). There is precious little key terrain, even in the vastest reserves. And what key terrain there *is* is likely also to be a good reservoir site.

With respect to esthetic capacity: Wilderness cannot be false-front wilderness and fulfill what man needs in it — no green-belt fringe obscuring a periodic sea of stumps. There must be assurance that a man's wild slice of sky won't have too many elbows in it, or administrative conveniences either. There must be room enough for time — where the sun can

calibrate the day, not the wristwatch, for days or weeks of unordered time, time enough to forget the feel of the pavement and to get the feel of the earth, and of what is natural, and right.

4. Whatever the carrying capacity turns out to be, we can predict that it will be limited — so limited that wilderness can probably never again be abundant enough for everyman to walk in it. But after all, only the small child must handle a thing to know it; adults need only look. Those in between need a little of both. So some people will be able to walk in wilderness and most of them will be the better for it. Some may wish to but never make it. Some may not think they care to at all, nor expect their sons to care. But wilderness must be there, or the world's a cage.

5. It follows that our expanding population will need more wilderness than exists, and far more than has yet been set aside for preservation.

6. Therefore, we can conclude that any step to discard our vestige of dedicated American wilderness, or to prejudice its protection, is premature at this time. And knowing this, we are obligated to insure its protection the best way we know how—by law, regulation, and understanding.

To those who for materialistic convenience want to extinguish just part of that dedicated wilderness we can cite Solomon's precedent. We all remember his most famous decision, when one mother wanted the child divided, and the other wanted the child spared, even if she herself were not to have it. Let the judgment favor those who want the wilderness to remain whole. A decision adverse to that whole can never be rescinded.

Suggestions for Immediate Action

It will take time to seek out facts and reach decisions in the long-range public interest — three years at the very least. In the interim an immediate holding action is needed, and I have a brief suggestion. Let federal and state executives appoint task forces who can set about promptly to put up three kinds of signs in places where it is the consensus of conservationists that they belong:

"Sample, Don't Sell" should be posted for each of our crown jewels — our parks, dedicated wilderness, or their equivalent in scenic caliber.

"Closed During Inventory" ought to be posted on certain areas in controversy in which the scenic, recreational, and scientific values are probably high, lest we find that the forthcoming inventory of our scenic resources consists of checking off our choicest treasures as they are carried out the door.

"Business As Usual" signs can be posted everywhere else.

In any event, some kind of moratorium is essential. A three-year wait

on some of our development projects is not long compared to the eternity our descendants shall otherwise have to live by any mistakes we make out of premature commitment. For example, consider the tragically premature decision at Hetch Hetchy, in Yosemite National Park, a controversy that is all water behind the dam — the dam in Hetch Hetchy Valley from which San Francisco gets the same water it could have diverted outside the park. There was one unclouded crystal ball four decades ago, and William E. Colby, now Honorary President of the Sierra Club, was looking into it when he wrote the membership on the last day of 1909:

"I predict that long before Hetch Hetchy could possibly be needed for a water supply for San Francisco, the travel thither will have become so great and its needs as a campground, particularly in relation to the surrounding park, so urgent, as to preclude the possibility of its use as a reservoir. What I am opposed to is the determination right now that the Hetch Hetchy shall be flooded fifty years from now. I feel that the decision ought properly to be reserved for those who live fifty years hence. We surely can trust that their decision will be a wiser one than any we can make for them."

The decision, we know, would have been entirely different in 1959. But how many wrong decisions are we rushing to make now that will erase other Hetch Hetchys for all time? Our children deserve better.

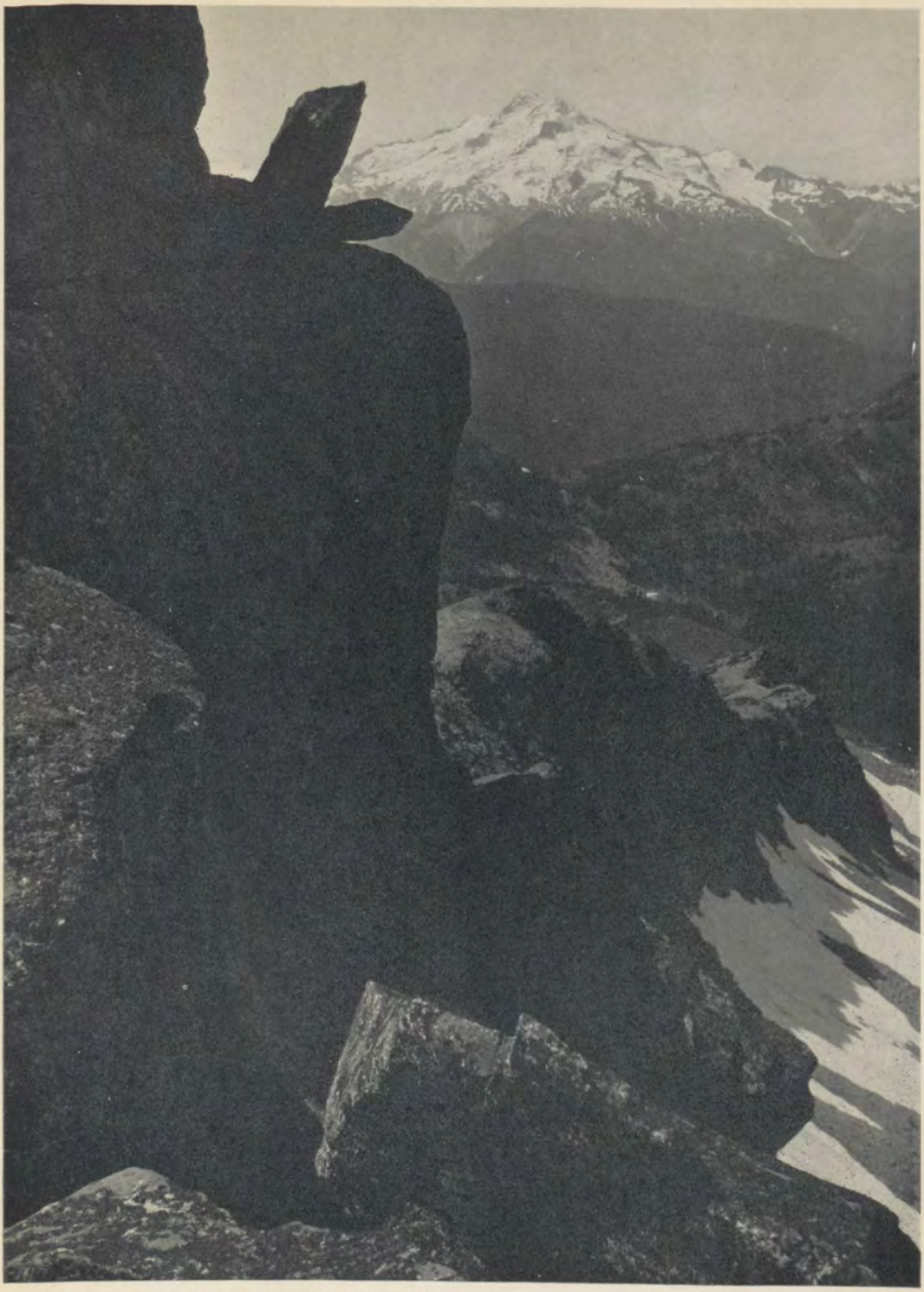
We could sum it all up this way:

This, our civilized world, is the house that Jack built. We like most of it.

And this, our living wilderness, is the garden that Jack hasn't built on, the open space and the wild-land beauty that graces his house. It is his only garden, and we know that there is no more where it came from.

Jack is very capable; he can doggedly expand his house, build a three-car garage, and pave the remaining space except for an outcrop or two of rock in the northwest forty. And we can see that he's on the verge.

If only Jack would pause a moment, to look up and to see! He isn't going to like the end result himself, and his children surely will prefer to inherit a balanced estate, for they will have no place else to go.



GLACIER PEAK FROM NORTH STAR MOUNTAIN. *Philip Hyde*

Our Greatest Wilderness Park-land

Spectacularly rugged yet friendly, America's most beautifully alpine country lives in the national forests of the Northern Cascades.

GLACIER PEAK AND IMAGE LAKE
—where the time-worn adjective "sublime" finds a new meaning

Philip Hyde

ELDORADO FROM CASCADE PASS
—where walking has a new meaning, too

Philip Hyde

AT THE FOOT OF THE WHITECHUCK GLACIER
—new alplands are in the making

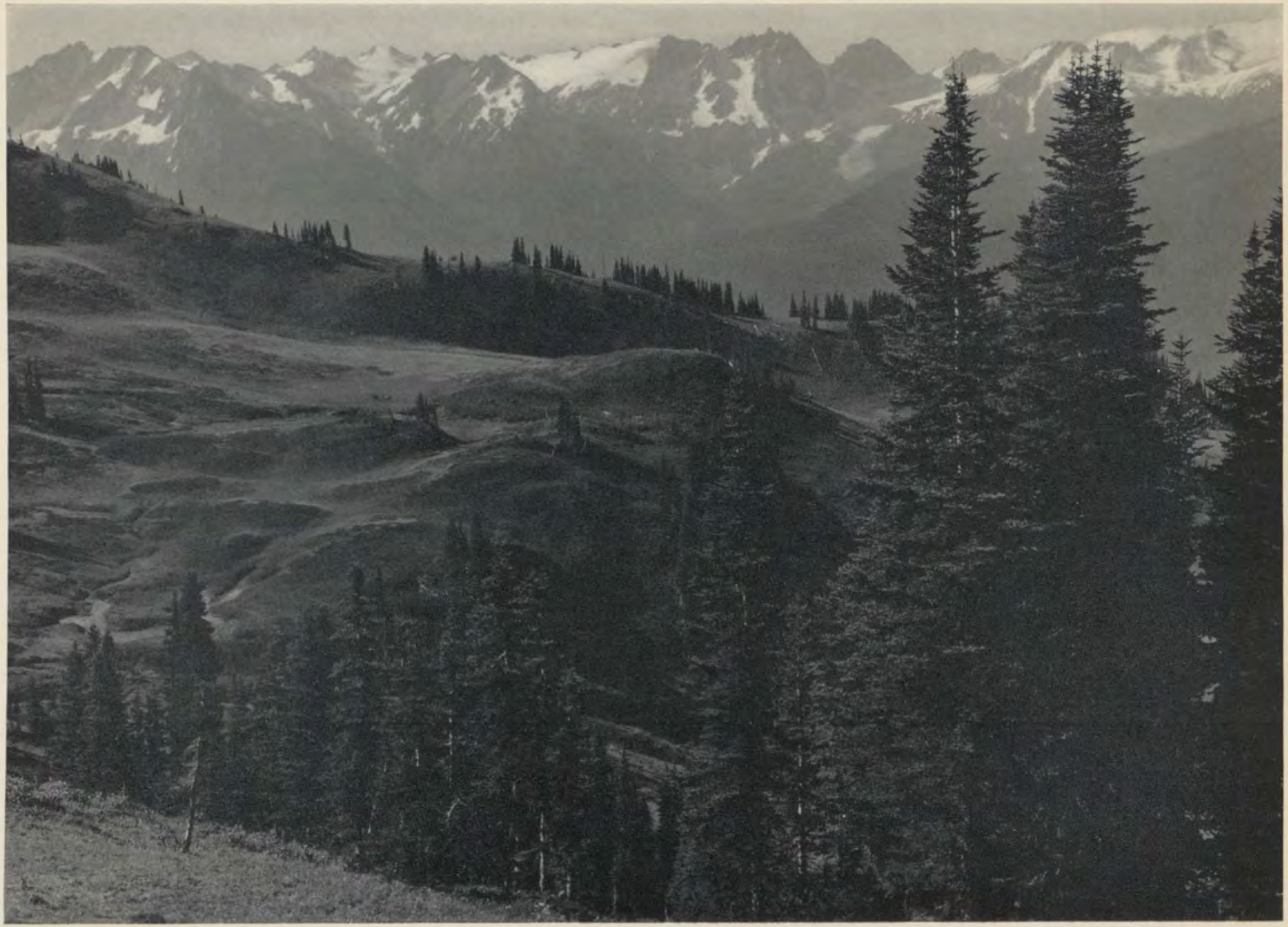
Philip Hyde

LYMAN LAKE
—friendly
country on
the east side,
and a cool draught
from the glaciers

Philip Hyde

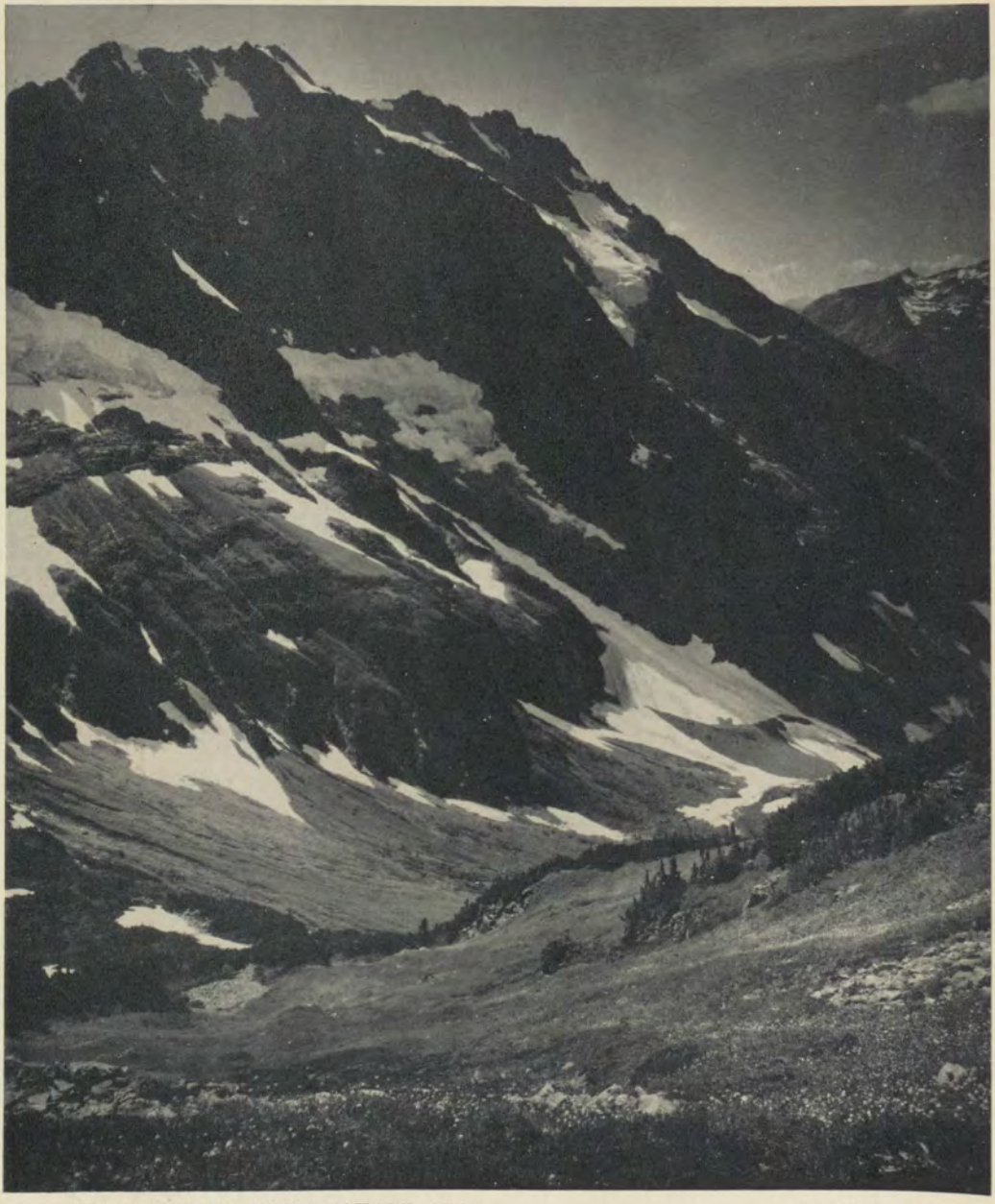
ACROSS THE AGNES FROM CLOUDY PASS
—avenues where winter avalanches roar

Philip Hyde



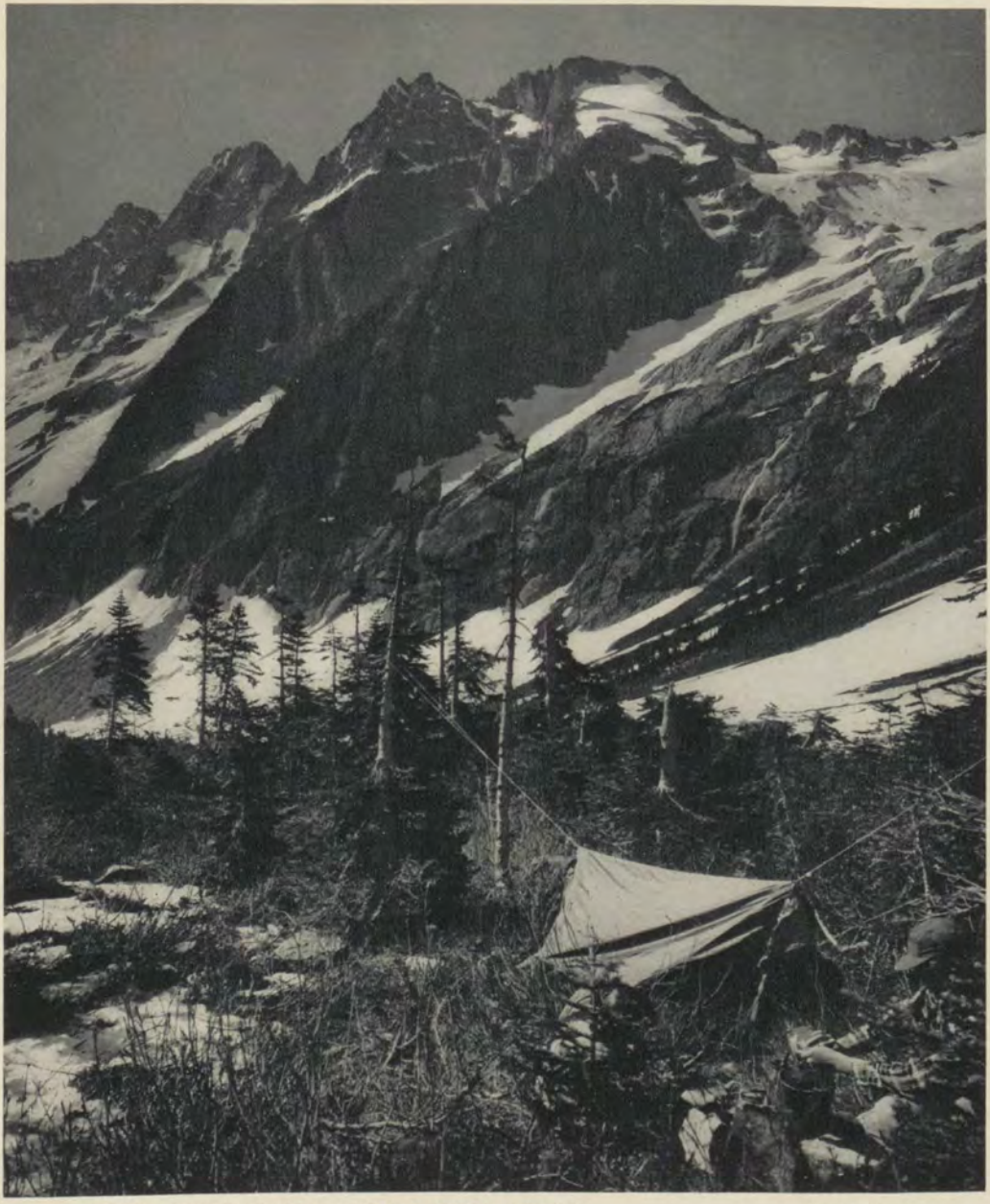
ALPINE MEADOWS ABOVE IMAGE LAKE —all but the cowbells

Philip Hyde



JOHANNESBERG FROM SAHALE ARM. *David Simons*

The north face rises more than 6,000 feet from the North Fork of the Cascade River at its foot. Where else are such low mountains so high?



MOUNT GOODE MASSIF FROM BRIDGE CREEK. *David Simons*

The 9,300-foot summit has long been a challenge to mountaineers, and their tiny timberline campsites in the upper basins are halfway to the stars.

(Next Pages) SLOAN PEAK FROM A WHITE PASS WILDERNESS CAMP.
By Philip Hyde

This Sierra Club commissary set-up served 75 people of all ages for a week, then disappeared. Horses previously staked in the meadow cropped the grass close; everywhere else, a matchless wild garden to explore—waist-high if you're young enough.

WEST FROM WHITE PASS
—Sloan Peak is
in the clouds,
and in the canyon,
a coyote serenade

Philip Hyde

IN THE UPPER WHITECHUCK BASIN
—over the ridge from White Pass, and the glaciers long gone

Philip Hyde

HEADWATERS OF FISHER CREEK
—avenue to the Douglas Glacier on Mount Logan

David Simons

BONANZA PEAK
(IN CLOUDS)
—overlooking upper Railroad Creek Valley and Hart Lake, an easy way in

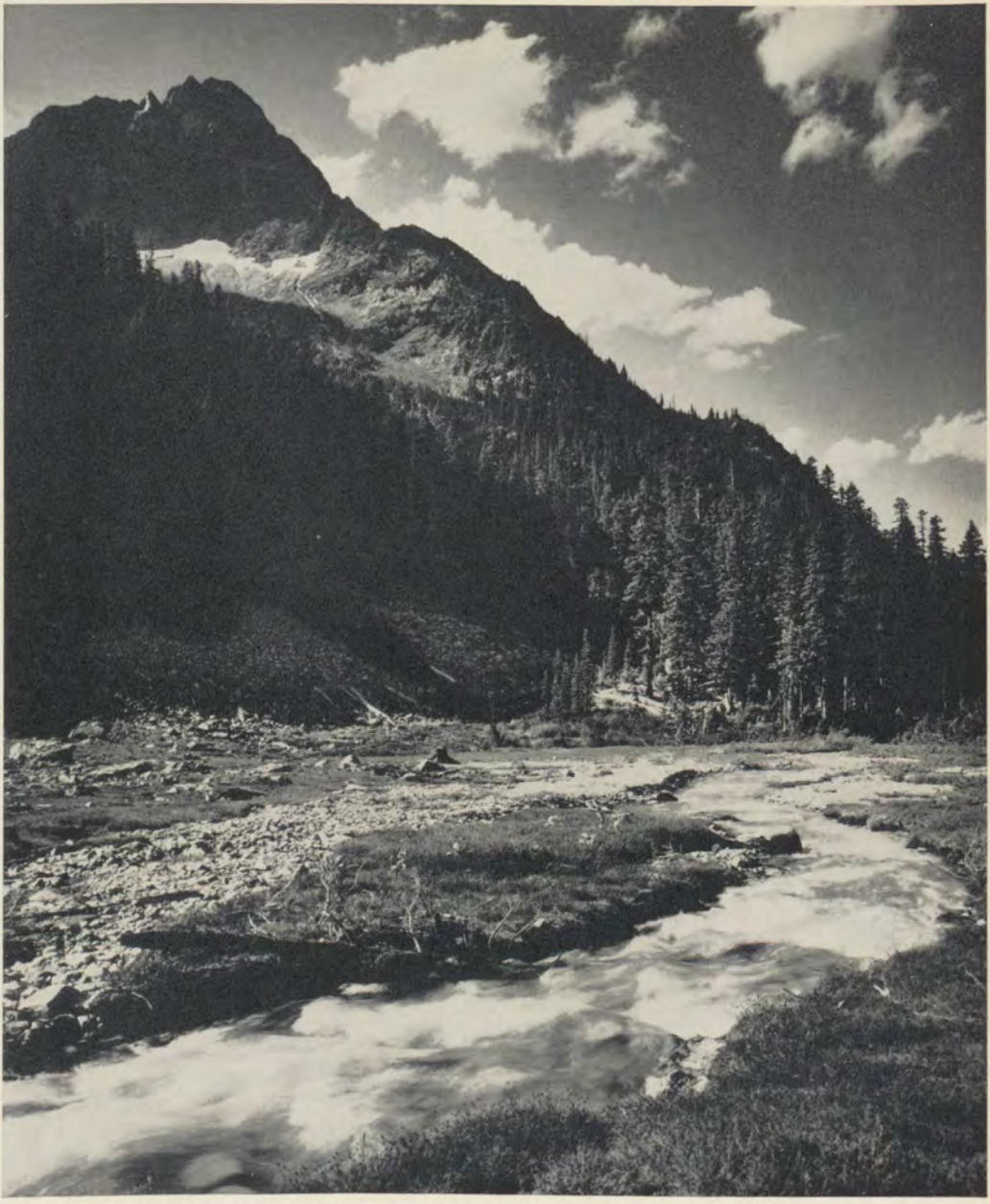
David Simons

UNNAMED GLACIER
—the source of
Swamp Creek, on
a subpeak of
Bonanza, and
still shaping the earth

David Simons

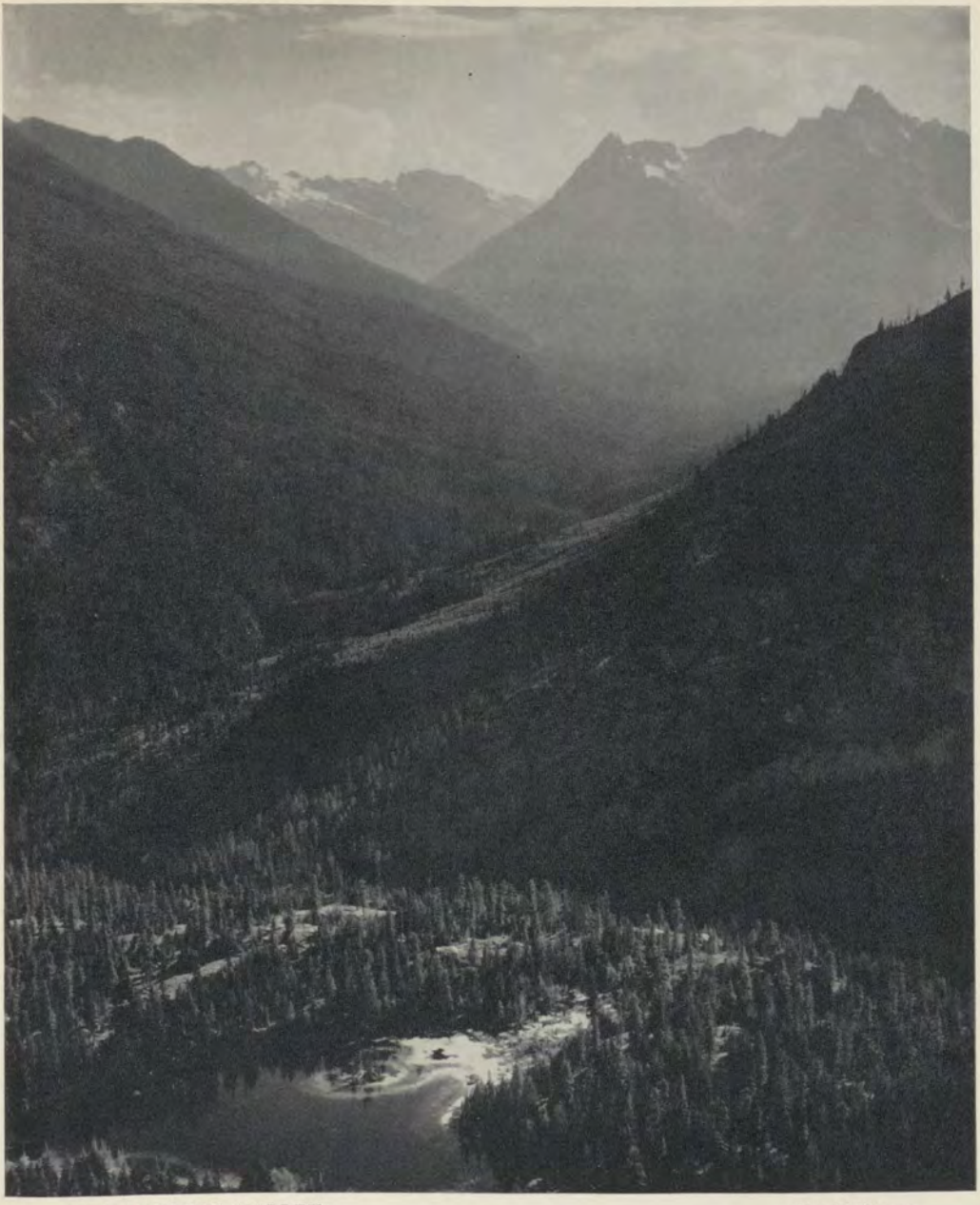
DOUBTFUL LAKE AND THE UPPER STEHEKIN FROM SAHALE ARM
—Magic Mountain on the right,
early August flowers in the foreground,
and nothing to be doubtful about

David Simons



NEEDLE PEAK AND UPPER SWAMP CREEK BASIN. *David Simons*

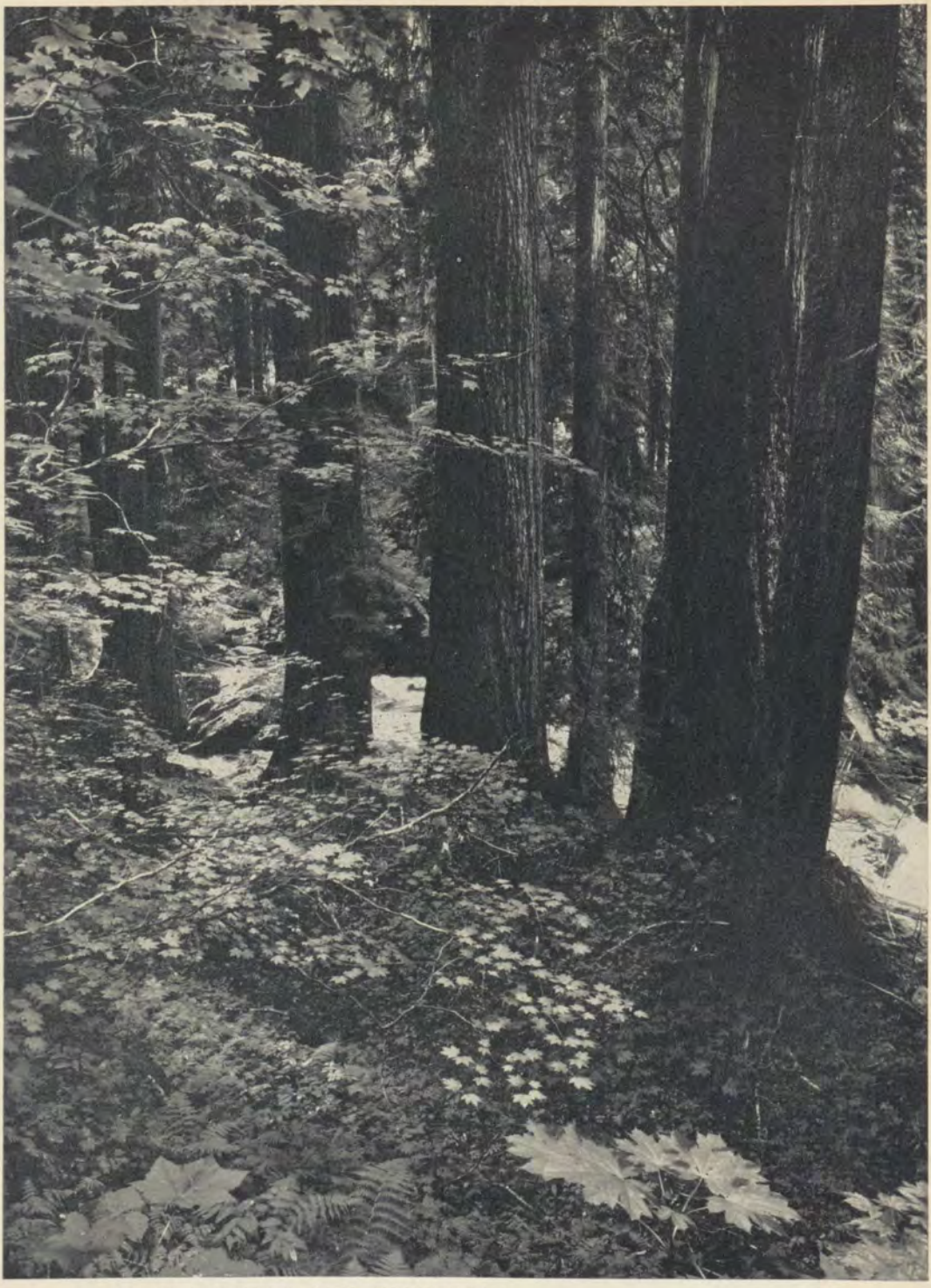
You reach the basin via bona fide mountain-goat trails over a 200-foot rocky bluff, and in August find it rimmed with a fresh fragrance of wildflowers.



AGNES CREEK VALLEY. *David Simons*

A primeval corridor to an alpine wonderland, from McGregor Mountain. Just below beaver-dammed Coon Lake the Stehekin River hurries into America's deepest canyon and Lake Chelan. Agnes Creek flows into it from Bannock Mountain (center) and Agnes Mountain (right).

As long as the magnificent corridors like this one remain primeval, there will be men who would rather exploit the raw materials than enjoy the virgin forest. Wood products for the local mill and its payroll? Or a parkland's primeval forest setting as God made it, for a nation's inspiration? This, above all, is the conflict in the Northern Cascades.



PRIMEVAL CORRIDOR, SAUK RIVER TRAIL. *Philip Hyde*

Cutting would end the conflict

Will We Discover the Northern Cascades in Time?

IN THE MOUNTAIN wonderland of north-central Washington lies a scenic world Americans have forgotten to discover, and they may yet discover it too late. People have known about it, of course, but they haven't let enough other people in on their secret. The time has come for the town crier to drop his bell and go on television with the alarm, "Eleven o'clock, and all is not well."

What kind of country is at stake? The accompanying photographs begin to do it justice; Cinerama could catch the sweep of it, but not the intimacy. To know it, as is always true, you have to be there. If you knew it, and if you also knew the rest of America's best scenic gems, and if you were somehow able to transport yourself back in time to the year 1872, at Madison Junction, where the idea of a Yellowstone National Park was born around a now-famous campfire, and if you could rekindle that fire. . . . That's a lot of ifs, but assume all of them, and chances are you'd choose as the first place in the country to be set aside as a national park, a generous part of the Northern Cascades.

In 1872 the park formula was the only one at hand for preserving the nation's best scenery, and the national-park idea is still an inspiration to other nations around the world. But the National Park System by no means has a monopoly on our beautiful places, and other formulas for preservation have been devised, notably the wilderness idea developed by the U. S. Forest Service. The parks are protected by Act of Congress; the wilderness areas, together with adjoining recreation areas, by regulations the Secretary of Agriculture has been empowered to draw up and enforce.

Why are we suddenly hearing so much about this region? Because a controversy is about to be decided, the major issue of which can be discerned in two recent newspaper excerpts.

In the *New York Times* for May 5, 1957, conservation editor John B. Oakes wrote: ". . . The Cascades wilderness in northwest Washington, 'unquestionably qualified for national park status,' is being studied by the Forest Service with an eye to wilderness preservation, but what this incomparable region really needs is permanent protection in its entirety as a national park."

And a story in the *Chelan Valley Mirror* (Washington) for June 28, 1956, said: "The Lake Chelan Chamber of Commerce has opposed a sug-

gestion to include a big area at the head of Lake Chelan in a 'primitive area.' . . . It added that the large stands of virgin timber in the region are 'necessary to sustain the operation of the Chelan Box Manufacturing Co. . . .' "

Unspoiled scenery? Or apple boxes? Thus exaggerated, the coming conflict could be billed on the marquee. That's the basic element, but the conflicting forces in toto are far from that simple, and great pressures will be brought to bear on the Forest Service as it develops its best proposal for devoting the Northern Cascades area to its highest long-range public use.

Although it isn't widely known, the record is full of various attempts to protect this superlative country; starting with a 1906 proposal by the Mazamas that the Lake Chelan region and its surrounding mountains be made a national park. Of the encompassing area a National Park Service Committee concluded twenty years ago:

"From a national standpoint, the area is unquestionably of national park caliber, is more valuable used as such than for any other use now ascertainable, and should receive park status under the National Park Service as the agency set up for providing highest conservational use and protection. . . . Such a Cascade park will outrank in its scenic, recreational, and wildlife values, any existing national park and any other possibility for such a park within the United States. Establishment of this area as one superb park is an inspiring project to fire the imagination, worthy of the Nation's effort."

It's a challenge, all right. How much area can the Forest Service protect and find enough broad public support to make the decision stick. Will Congress establish the National Wilderness Preservation System to strengthen the hand of the Forest Service in giving to wilderness the protection its regulations seek to give? Will there be brought to the Northern Cascades the varied skills in recreation planning and wildlife protection that now exist in other branches of government, and will these skills be applied soon enough to help the Forest Service form its own planning group under Operation Outdoors? Can the Forest Service develop a new approach in its own recreational-area regulations so as to protect the substantial areas of virgin-forest surroundings which most people prefer in their vacation land? Will the Service be able to reserve judgment on the entire Northern Cascades area until a comprehensive plan has been developed and debated for all the area? We know the enormous obligation placed upon the Forest Service to provide timber for a growing nation, and we know that the training of foresters has concentrated on this

aspect of forest management. Wilderness and recreation have been relative late comers, but their ascending importance is manifest.

Conservationists will be watching how this challenge is met. They were disappointed when 53,000 acres were eliminated in 1957 from the Three Sisters Wilderness for their timber. They are mindful of the nation's need for timber. They also understand that by 1960 the Pacific Northwest Region of the Forest Service expects to have all its timber working circles laid out. They know that once clearcutting starts on them, the disposition of these forests will have been committed for all our time. They therefore hope that evolution in thinking will bring a new approach, a new realization that timber may well rank much lower, and recreation and wilderness much higher, in the demands America places upon its national forests by the year 2,000. They hope that the Forest Service will accept the challenge and plan exceedingly well. They hope that the Service will realize that the only irrevocable mistake it can make is to cut too much and preserve too little.

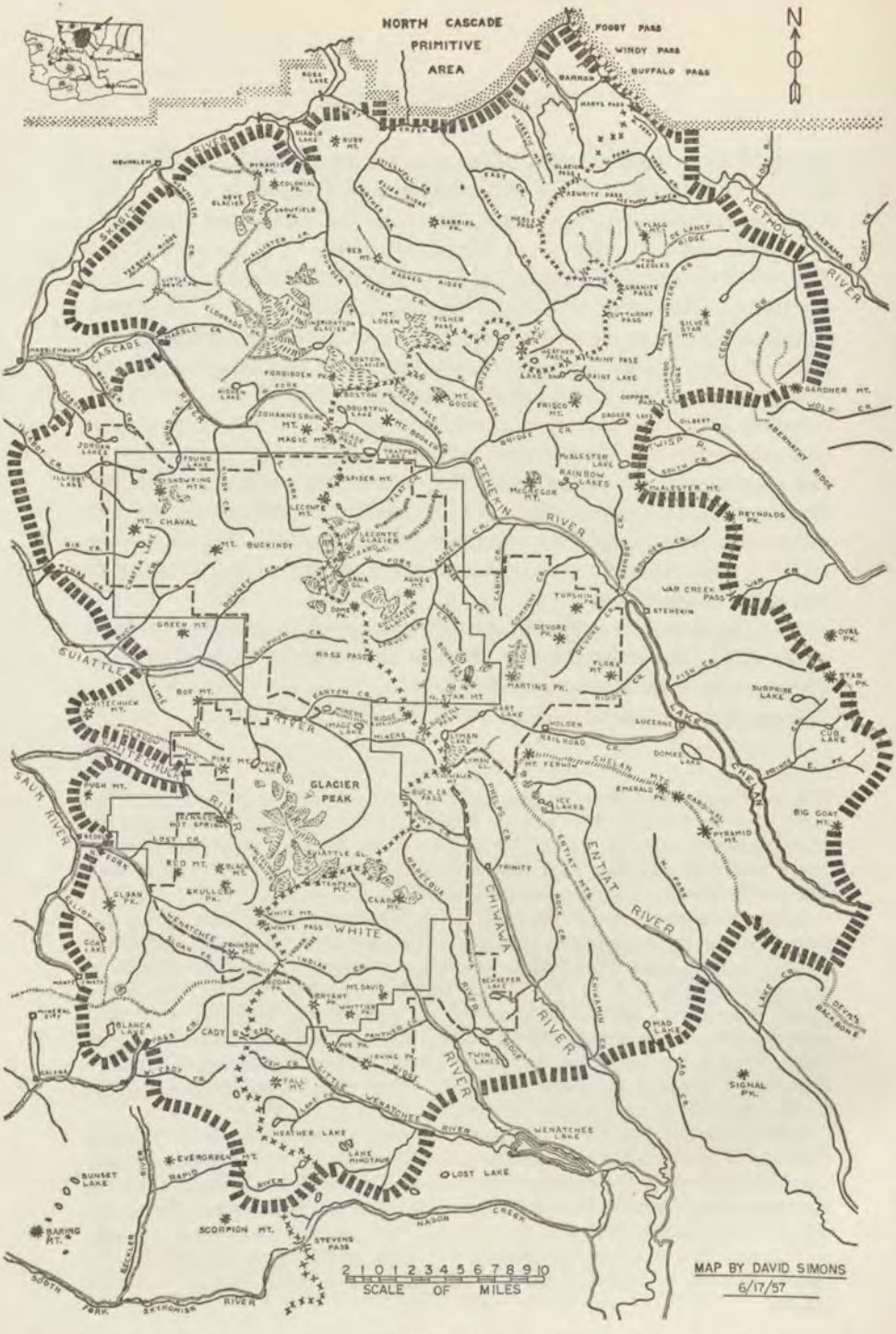
It has been well said that "of the different mountain areas laying claim to the title of the Switzerland of America, the region at the head of Lake Chelan is the most deserving of that title."

It can only be that deserving once.

The chief purpose of the photographs is to show the portion of Northern Cascades country dominated by Glacier Peak and Lake Chelan which is currently of primary concern. The total Northern Cascades area for which comprehensive planning is sought extends from the Columbia River to the Canadian border, and its primary scenic resources are all federally owned.

Some of the scenes are in the present Glacier Peak Limited Area, which the Forest Service is proposing to establish, with some major additions and eliminations, as the Glacier Peak Wilderness. The scenes in the present Limited Area are on pages 1, 2, 4, 6, 11, 12, 13, 16, 18, 20. The other nine (at least, their essential elements) are outside the area, but are part of the scenic unity conservationists are concerned with. For example, a major elimination of the Agnes Valley (19) is contemplated in the interests of timber production. And Sloan Peak, which dominates the view from White Pass (left half of the color photograph, page 10), is outside the area contemplated by the Forest Service.

Exploitation of low grade ore poses a threat to the scenically superlative environs of Image Lake and Miner's Ridge (pages 2, 3) and of Swamp Creek (16, 18), as well as the country that approach roads would penetrate. In the Northern Cascades only Mount Rainier National Park is protected from mining. Conservationists feel that the Glacier Peak country deserves to be protected, and that a future generation, not ours, should have the freedom to choose whether to exploit these mineral resources or to retain this scenic resource.



The Lake Chelan–Glacier Peak unit of the Northern Cascades

For millenia the cycle of life has continued thus in the delta region. Can man in his wisdom preserve some parts of the Arctic wilderness for the migratory birds?

Arctic Spring

By A. Starker Leopold

The ice jam on the Kashunuk has broken. I stand near the river mouth, watching the floes skim toward the Bering Sea, jostling as they ride the outgoing tide. The ice traffic booms and tinkles as it moves —bass drums and cymbals of the spring symphony.

Rhythmic puffs of sharply exhaled air trace the rapid passage downstream of three balugas, or white whales, retreating with the tide. They have fed in the river and are scurrying to avoid being stranded on the mudflats. Their sleek bodies dodge swiftly through the floes and with a swish of flukes cleaving the water they pass and are gone to sea. In their wake are two lazy swirls, spinning alongside a floe.

Life and activity are returning to the land as well as to the river. Shrinking snowbanks have left in their wake myriad ponds that will be the summer homes for breeding shorebirds and waterfowl by the thousands. Already the old squaw ducks are squabbling over proprietary rights, each puddle being claimed by one or more pairs. The handsome males repeat endlessly in melodious tremolo their individual aspirations of ownership, with nodded agreement from their respective ladies. Unattached drakes fly from pond to pond, eliciting violent reception from the established males, who resent the threat to the *status quo*.

Overhead flutter and soar the shorebirds, shopping about before choosing their nest sites. In order of abundance there are red-backed sandpipers, phalaropes, turnstones, godwits, and black-bellied plovers, regathered from wintering grounds scattered half-way around the world. Their excited calls blend into a vibrating refrain, loudly punctuated by the clear piping of the plovers, who after all have made the longest trip and have the most to tell.

Skimming low over the tundra are the pirates of the bird society, the long-tailed jaegers and glaucous-winged gulls, searching with eager anticipation for the first eggs of the spring feast. Their young will be reared on a diet of eggs, birdlings, and lemmings—the latter exposed after a winter of security under the snow. Even now a jaeger brakes in flight, hovers over a tussock, and pounces on a scurrying lemming whose tiny shriek of death is barely audible in the general hum of life.

But these activities are only background for the main performers of

the Kashunuk concert—the geese and the cranes. Their voices carry the dominant melody. Low over the black swells of the Bering Sea a wavering line of brant comes shoreward, announced by a medley of lilting calls. As they reach the mainland these dainty geese break into an excited gabble of self-congratulation for safe homecoming after the long flight from the eelgrass beds of Magdalena Bay, in sunny Baja California. They settle uneasily with a loose group of Emperor geese that arrived some days ago from their nearby winter quarters in the fog-bound Aleutians. The sedate Emperors are already paired and are scouting for nest sites. They engage in reserved conversation, while the brant continue their noisy but musical chatter, necks bobbing as they talk. Flocks of white-fronted geese and cackling geese mill overhead, adding their voices to the chorus. They will pair and nest some distance inland, the coastal strip being the domain of the brant and Emperors.

The trumpet calls of the cranes are heard long before the birds themselves can be seen. Then a pair appears, trailed by a disconsolate yearling who will not breed this year and is being repulsed by the honeymooning adults. The clear notes of the pair, and the noticeably querulous voice of the young, get louder as the birds approach. The pair alights and so does the yearling, although he keeps apart. Other cranes are always audible in the distance.

Such is the aspect of spring on the Kashunuk—a time of incessant sound, of pairing and love-making and impending birth. The glorious intensity of procreation, continuing through 24 hours of the day (there being no darkness), will soon pass to a summer phase of gangling young and molting plumages. And then the birds will leave again. The tundra lies cold and quiet under the drifts, awaiting another spring.

Are Beavers too Busy?

By Lowell Sumner

Have you been back recently to the place where you spent your early years? Have woods and fields been replaced by suburbs, busy highways, factories? Would you say these new things have created more freedom or beauty in the places you once knew—more tranquility and happiness?

Whatever your opinion on this score, you probably will agree that the changes since your early years have brought more people, more complicated living conditions, more stress. Biologically, these three situations —*more people, more complications, more stress*—are three interrelated phases of a single developing situation—the population increase. Let us consider how they add up to what are commonly called "the pressures of civilization."

Every day there are one hundred thousand more people in the world than there were the day before—four thousand every hour. Every day there are seven thousand more mouths to feed in the United States (*News Week,* June 6, 1955). Every morning in California alone there are 1,600 more people having breakfast (Hugh Brown, 1956, p. 301). Today the world population is about 2½ billion; by the year 2,000 it is expected to be nearly five billion (Harrison Brown, 1954, p. 99).

In 1955 an international symposium of seventy scientists attempted the first large-scale evaluation of "Man's Role in Changing the Face of the Earth." They produced 1,200 pages of staggering evidence (Thomas, 1956) that the results of man's activities are now comparable in magnitude to those of major climatic, ecologic, and geologic forces.

From the Arctic to the Antarctic Circle man has brought about profound changes in forests, grasslands, wetlands, and tundra; in streams and coastlines; in soils and mineral resources. Even the earth's atmosphere has been altered—by the consumption of coal, petroleum, and other fossil fuels which have raised the carbon dioxide content of the air by 10 per cent in the last century—possibly with long-range effects on the earth's climate and eventually even on the chemistry of the ocean (*ibid.,* p. 489).

These findings underline the urgency of protecting our relatively wild areas while there is still time; they may also cause us to wonder toward what destiny our planet-load of humans is drifting.

A biologist looks at the human population increase as he would the in-

crease of other forms of life. All are subject to the same fundamental biological laws governing the availability and rate of use of raw materials. We humans may forget these natural laws, or postpone their consequences by complicated stratagems, but in the end we cannot change them any more than the motion of the earth.

When we are feeling the pressures of civilization and pondering their causes, a visit to a wilderness or natural area helps not only to restore our tranquility, but also to give a better understanding of our place in the scheme of things. For natural-history observations in such places help us to see our civilization as basically similar to the communities of other creatures.

By following the ups and down of other animal populations, whose shorter life cycles swing through changes which require centuries for us, we gain more insight into our own destiny.

To illustrate this point we might take almost any animal community, from ants to elephants; but let us consider a colony of beavers—since they love to conquer nature with feats of industry and engineering—and note how the rise and decline of such a colony parallels the rise and fall of human civilizations. Then if our reasoning appears sound, we may conclude that if wilderness experience and insight are good for you and me, surely they are basic to the education of leaders of nations and makers of public policy.

When the beaver community is young and vigorous but not yet at maximum size there are ample food supplies, plenty of dwelling sites, and enough leisure to provide every family with a gracious living; there is sufficient screening cover to give protection against natural enemies and enough undeveloped but economically justifiable dam sites to keep all engineers happy.

In short, at this stage of the beaver community's history there is for each individual the fullest outlet for his natural inclinations and desires without injurious competition and strife from others of his kind. This situation offers for beavers the happiest and most tranquil way of life. For beavers this is history's Golden Age of self-expression, of freedom from want and fear.

What happens to such a community as time passes? With no more foresight than is usually shown by nations, the beaver community just keeps on conquering nature and multiplying. Let us say that in ten generations the community triples in size. This brings us to the first of the three phases that I mentioned at the outset:

Phase I: More People (Beavers).—As the multiplication continues the

community sooner or later reaches the point where the environment cannot go on supporting more beavers at current multiplication rates. The shortages of basic natural resources begin to be felt. This is:

Phase II: More Complicated Living Conditions.—For the beavers entering this phase the sudden shrinkage in the supply of aspens, alders, and willows is at first almost obscured by what would appear to be the highest peak of industry and prosperity ever enjoyed by the community. If they were human enough to make forecasts and speeches, the top planners and economists of the beaver world would assure the community that with housing starts at an all-time high, unemployment never before so low, foreign enemies effectively held in check by the strongest defenses ever built, and the biggest crop of beaver babies in history, the economy was climbing to ever-higher levels.

But aspens, alders, and willows are as basic to beaver civilization as forests, soil, and farm products are to ours.

Imperceptibly at first, then more swiftly, the complex problems gather. Each month the beavers must travel farther from home and protective cover to get the logs they need for food and shelter. One of the vital canals built in earlier times for transporting raw materials gradually is stripped of its protective defense of willows because now these must be used up for food—thus, when the pinch comes, guns are exchanged for butter. But this renders the canal increasingly unsafe to use because it is close to the habitation of an enemy who, though once not greatly feared, now seems to be constantly lying in wait—a bear that walks like a man.

Some beaver consideration is given to digging an alternate canal in less hostile territory, but by now so much time and energy is required of the workers in the long haul of scarce materials from outlying territories that the community lacks the vitality (the beaver power) to undertake such a costly alternate project. It is decided to wait until the current public-works budget of time and energy can be better balanced.

What the beavers do not comprehend is that the remaining food supplies that a new canal might transport still would be insufficient to maintain the current rate of the population expansion. As events turn out, the increasingly hard-pressed beavers are never able to balance their budget of energy and time against their food requirements. The old canal is abandoned because of the bear and the new one is never built.

With the passage of time and the added complications of the lost canal the pinch presses ever harder. Because repairs on dams in the home area no longer can be made promptly the water level gradually drops, leaving many beaver lodges high, dry, and unprotected.

Family life is disrupted by these widening cracks in the economic and social structure, and there are many broken homes. The old days of easy and gracious living are gone. All members of the community must work harder and longer. A beaver's working day now brings only half the tangible results it brought in the Golden Age; the beaver's dollar has been devaluated.

By now the virgin forest homeland of the Golden Age has changed beyond all recognition into a cut-over wasteland, crowded with dilapidated houses and devoid of the shade, space, and green vistas that a beaver needs for tranquility and health. Discouraged and discontented, some adventurous souls leave the worn-out community forever, hoping to discover fresher, wilder lands where a pioneering beaver can make a fresh start.

More and more apathetically, the balance of the population struggles against mounting odds. Longer hours of work performed on insufficient food take an increasing toll; deaths from exposure, disease, and deteriorated housing mount. Enemies discover that undernourished workers plodding to distant remnants of the aspen groves lack their former vitality and aggressiveness in self-defense. More and more beavers and their badly needed supplies never get home.

As malnutrition is prolonged there is a decline in the fertility of the community. Only a few small litters of beavers are born, and infant mortality reaches an all-time high. So the decline of the community accelerates as replacements fail to keep pace with attrition. These are nature's harsh methods of cutting an over-expanded population back to size.

From here on the fate of our beavers is uncertain. Many may succumb to a new hazard—stress disease—to be mentioned later. If this does not happen, and if they are lucky enough to have a favorable environment and climate, their decline may stop short of complete enfeeblement. If less favorably situated, the community may wither away like ancient Babylon, Greece, the Roman Empire, Persia, and other civilizations whose vitality faded when their forests, soils, and waters were used up.

In our own Phase II—More Complicated Living Conditions—today's civilized pressures become ever more complex because we have invented an accelerating industrial technology not possessed by the beavers or by our own earlier civilizations. Industrialization allows us to get away with the largest populations of all time—for a while.

But since these enormous populations are necessarily concentrated in cities, they lose their feel for the land, and forget that its resources are the only thing that keeps their cities going. In this acceleration of tempo

and complexity, and in this forgetfulness of the land, the biologist sees mankind facing the possibility of more violent and disastrous ups and downs of population than any recorded in history.

Looking almost anywhere we can read the signs that in our own country, once so richly endowed with natural resources, we are in the late afternoon of our Golden Age. The shadow of biological complications and consequences scarcely touches us yet, but we can see it just ahead.

Already we experience large-scale failure to eliminate one of civilization's waste products—smog. The scramble to move away from it is on as the tide of suburban development covers up farm lands, and spreads, at the national rate of 1,000,000 acres a year (*ibid.*, p. 694), far out even into the desert, from Palmdale to Victorville, from Palm Springs to Twentynine Palms.

But the smog keeps following. Last December while camping in an uninhabited desert region northeast of Barstow my family and I saw a new real-estate development sign saying, "Live here and breathe pure air. No smog." Yet the air that day was milky with smog drifting over the mountains and across the desert from the ever-expanding seat of civilization 80 miles away. Today it is not uncommon to see smog creeping even into that remote retreat from cities—Death Valley.

Once upon a time water was taken for granted like air and sunshine. But Interior Secretary Fred Seaton warned last November that soon "water may become this country's number-one domestic problem."

A lot of seemingly unrelated complications and frustrations begin to fit together when we ponder the basic cause in biological terms: the mounting cost of building or buying a home; the overcrowding of our public-school and highway systems; the decline in the bag-and-creel limits allowed hunters and fishermen; the need to teach boy scouts that they must give up scouting's traditional free use of the ax and no longer make a bed of fresh pine boughs; the increase in traffic lights and parking meters; the multiplication of signs saying "don't."

These restrictions on personal freedom, this overcrowding of public facilities, these higher costs reflecting scarcity, are biological symptoms of population saturation. Seen in that light, the same underlying situation explains the rising price of coffee and postage stamps, the deterioration of mountain meadows in the national parks, the battles to save wilderness, and the deadly international struggle for the world's "underdeveloped" regions.

Thus as our civilization speeds ever faster down the highroad of destiny we see a green light up ahead changing to orange, and we know that in

a moment it will flash red. But we have not yet begun to apply the brakes.

If the ups and downs of animal populations and related lessons of the wilderness can give us a better insight into these pressure problems of human civilization, the wilderness may have made its greatest contribution to human welfare. Clearly, for man as for beavers the time inevitably approaches when the world's food supplies, living space, and natural resources will be insufficient to maintain the current rate of the world's population expansion.

When that time comes even the noblest ideals—of helping other nations, of saving wilderness for posterity—cannot hold back the operation of universal biological laws. Then man will either have to learn to regulate peacefully his own numbers or undergo a devastating and possibly irreversible decline.

Our most immediate hope lies in working to bring about a more widespread awareness of this approaching danger and the urgency of a realistic, civilized solution.

But we still have to consider the previously mentioned third aspect of the pressure cycle:

Phase III—Stress.—Emotional stress is aggravated by the difficult times that we have been describing. Modern medicine is attaching great significance to the stress condition in human beings.

Coincidentally, game biologists are finding that when animal communities multiply until they reduce their habitat to a biological slum, normal feelings of security and tranquility give way to mounting irritability toward companions and neighbors. Bickering and strife greatly increase. This lowers the physical health of the entire community and its ability to adjust to the still-mounting pressures brought on by the overcrowding.

Lowering of vitality through the stress caused by overcrowding seemingly occurs in virtually all mammals so far investigated (Christian, 1950; Christian and Davis, 1955, 1956) and is well demonstrated in such socially tolerant species as rats, mice, muskrats, rabbits, and deer.

In extreme cases, particularly among lemmings, voles (Godfrey, 1955), and snowshoe hares in the north (Christian and Davis, 1955), the deadly effects of stress eventually may exceed the combined toll from malnutrition, natural enemies and contagious disease. When this point is reached vast populations die off within a few weeks or months giving rise to the well-known cycles of alternating abundance and scarcity of certain animals of the far north.

Post-mortem examinations of such animals reveal stress damage to the internal organs including inflammation or ulceration of the digestive tract,

and permanent metabolic derangements comparable to those which we shall describe in considering the effects of stress on man.

In our own daily experience can we doubt that the increased congestion, job competition, noise, tempo, and general complication of modern life sometimes disturb our feelings of tranquility and security, our digestion, and the pleasure of having close neighbors? The general concept of stress as unwholesome nervous strain or emotional tension has been clarified and sharpened by the latest medical research which indicates that for human beings as for animals stress is a more deep-seated, prevalent, and damaging condition than had been realized.

Dr. Hans Selye (1956) and others have shown than in man and other vertebrate animals physical or emotional stress causes the body's system of chemical governors—the endocrine glands—to produce powerful chemical substances (hormones) in the proper amounts to adapt the individual to withstand that particular stress. But their research further shows that if the stress is too long continued the chemical equilibrium eventually fails and the body becomes flooded with an excess of hormones.

When this point is reached basic metabolism is upset, the abnormally concentrated hormones attack the body itself and cause severe structural damage to many vital organs. Significantly, the most acute stresses and the ones producing the most profound and long-lasting damage are the *emotional* stresses.

We have long noted the prevalence of high blood pressure, heart and kidney disease, and ulcers of the digestive tract among executives and other conspicuous victims of the hectic life. Now it is demonstrated that these breakdowns result from the hormones concentrated by prolonged emotional stress. It is further revealed that other types of human illness even when not actually caused by emotional stress are made worse by it because the hormonal disturbance caused by the emotional upset prevents the body from building up its normal resistance to the disease.

This relationship explains why so many maladies became rampant during wars and famines (Selye, 1956, p. 204). It also underlies the startling pronouncement of medical authorities that chronic emotional stress now is a major cause of over 50 per cent of all illness (Schindler, 1954, p. 4), and that "an ever-increasing proportion of the human population dies from the so-called wear-and-tear diseases, or degenerative diseases, which are primarily due to stress" (Selye, 1956, p. 275).

As the pressures of civilization continue to mount there is increasing import in Dr. Selye's discovery that each of us appears to be born into the world with an inherited and unchangeable total reserve of adaptabil-

ity to stress. Each exposure to stress, despite the recovery brought by rest, leaves a permanent scar within us and uses up a portion of our total reserve that can never be replaced. So our life reserve of adaptability resembles a nonrenewable bank account: we can needlessly accelerate the rate of spending and throw away the precious years through excessive frustration, worry, irritation, tension; or we can spend life's capital more slowly, wisely, and happily by learning how to avoid or mitigate many of life's stresses—and this brings us back once more to the basic need for wilderness.

The therapeutic value of wilderness and natural areas in relieving or preventing stress, and the philosophic value, have been recognized by some people for many years. It was expressed by Aldo Leopold with unforgettable depth and clarity in his *Sand County Almanac* (1949), and *Round River* (1953); and by John C. Merriam, who helped so many to understand the significance, beauty, and healing power of natural things.

Of course wilderness is not the only antidote for stress, and this is fortunate because few today can spend much of their lives in the wilderness. Doctors now emphasize that relaxation on vacation trips must be supplemented by learning better daily habits of thinking, feeling, and avoiding unnecessary stress.

But though better attitudes and methods of solving life's problems can mitigate the stress of our industrial age, they cannot abolish it. A nationally prominent physician recognizes this as he records (Schindler, 1954, p. 30) that after leaving his own stress-induced pains at the office while enjoying a tranquil vacation, he finds them waiting like a flock of gremlins when he returns. So it becomes clear that as the pressures of civilization continue to increase, the therapeutic benefits of wilderness and natural areas, the philosophy, understanding, and serenity derived from contact with them, will be more and more needed by everyone.

If this need is widely enough recognized—and provided nations learn to regulate their populations in peaceful and humane ways—we can hope to keep and enjoy wilderness for tranquility and healing, always. Perhaps the tremendous awakening of conservation forces in the past year marks the beginning of this wider recognition, as illustrated by the battle over Dinosaur, by current moves for a review of scenic resources for the future and the establishment of a National Wilderness System, and by the sense of urgency in conservation matters.

National planning authorities say that we have possibly 50 years of grace in which to solve our land-use problems before they deteriorate beyond control. During this period of grace machines will give us more

and more leisure time which cannot be satisfactorily spent entirely on gadgets and TV. More and more people will turn to their outdoor environment for recreation. The need of a better and more generally applied land ethic, of which our Sierra Club principles are a forerunner, will be ever more sharply realized. (Thomas, 1956, pp. 904–05, 1004–08). Out of their increased leisure and their desire to preserve a sane and healthful way of life, more and more people will organize on behalf of wilderness. Therein lies our greatest challenge and our greatest hope.

LITERATURE CITED

Brown, Harrison.
1954. *The Challenge of Man's Future.* New York: Viking Press, xii+290 pp.
Brown, Hugh H.
1956. "Population of 58 Counties," *The Tax Digest* (California Taxpayers' Association), Vol. 34, pp. 301–2, 314–15.
Christian, John J.
1950. "The Adreno-Pituitary System and Population Cycles in Mammals," Journal of Mammalogy, Vol. 31, pp. 247–259.
Christian, John J. and David E. Davis.
1955. "Reduction of Adrenal Weight in Rodents by Reducing Population Size." Transcript of the Twentieth North American Wildlife Conference, pp. 177–188.
1956. "The Relationship Between Adrenal Weight and Population Status of Urban Norway Rats." Journal of Mammalogy, Vol. 37, pp. 475–486.
Godfrey, Gillian K.
1955. "Observations on the Nature of the Decline in Numbers of Two *Microtus* Populations." Journal of Mammalogy, Vol. 36, pp. 209–214.
Leopold, Aldo.
1949. *A Sand County Almanac.* Oxford University, xiii+ 226 pp.
1953. *Round River.* Oxford University, xiii+173 pp.
Selye, Hans.
1956. *The Stress of Life.* New York: McGraw-Hill, xvi+324 pp.
Schindler, John A.
1954. *How to Live 365 Days a Year.* Englewood Cliffs, N.J.: Prentice-Hall, xxviii+222 pp.
Thomas, William L., Jr. (ed.).
1956. *Man's Role in Changing the Face of the Earth.* An International Symposium under the co-chairmanship of Carl O. Sauer, Marston Bates, Lewis Mumford. University of Chicago Press, xxxviii+1193 pp.

Wilderness Overseas

By Lee Merriam Talbot

The modern philosophy of wilderness as a public trust is largely American. Most present-day provisions for wilderness throughout the rest of the world stem from the example of our own national parks. Indeed, many charters of wilderness areas throughout the world acknowledge this origin, although their subsequent development and improvement may have no connections with the United States.

Perhaps foremost of the world's true wilderness areas are the National Parks of the Belgian Congo. Their 6,500,000 acres conserve intact the flora, fauna, and topography representative of Central Africa. In 1925, after an earlier visit to the national parks of the United States, King Albert of Belgium established the system. Although national parks in name, they are actually true wilderness areas, with human entrance and activities strictly controlled. Consequently they provide some of the few areas in Africa where one can see examples of land unaffected by modern man. The park system provides a magnificent perspective of Central Africa's environments, from mountains near the equator whose snow-capped peaks rise above 16,000 feet and whose lower slopes are the home of the pygmies and the mountain gorilla, to the true tropical rain forests in whose perpetual twilight dwell Africa's shyest and least-known wildlife, and to the arid northern plains where the fifteen-foot-high elephant grass, perpetuated by annual fires, provides shelter for a varied wildlife. Here is the last safe refuge for the rare northern white rhinoceros.

As Africa becomes more intensively developed these wilderness parks are assuming greater scientific and aesthetic importance. The park system has developed under the powerful leadership of Belgium's Dr. Victor Van Straelen and his international National Parks Administrative Commission (a board of trustees with both Belgian and foreign members). Economic and political pressures to open these lands to "improvement" have been great in the past. They will be much greater in the future.

The one major type of nondesert land in Africa not represented in the parks of the Congo is the open veldt, or plains land. The finest remaining example is the Serengeti Plains of Tanganyika. Here is probably the greatest remaining concentration of plains wildlife in the world, in some of Africa's most spectacular scenery. The old problem of overgrazing is acute.

The most striking topographic feature of the area is the Ngorongoro Crater. Standing on the rim at 8,000 feet altitude, one can look 12 miles

PHOTOGRAPHS BY LEE M. TALBOT

Wilderness Abroad–Living and Dead

Wilderness has shriveled so rapidly in the United States that man has developed a conscience about it and strives to protect its remnants for their own sake and his. Abroad, the wild places have fallen more slowly but farther; a few may be spared extinction only because of man's late realization that endangered species of wildlife deserve a place in the sun and must have wilderness to survive. Thus Kashmir's Dachigam Reserve is set aside as a sanctuary for most of the surviving Kashmir stag. In Assam's Kaziranga Wildlife Sanctuary and its 15-foot grasses (best traversed aboard an elephant), wild water buffalo watch you pass, and a rising white cattle egret may reveal the presence of a great Indian rhino—about 250 of the 300 or 400 survivors are protected here.

"Progress" doesn't always measure up too well when there's a near-by yardstick of wilderness to measure it by. Witness Lebanon (next page).

HOW TO MAKE A DESERT

In and near Lebanon's remote Kammouha Forest, 6,000 feet high in the northern mountains, is evidence that man, and not changes of climate, is responsible for the growth of the desert—man and past practices of forestry and agriculture that forgot the long run, that probably seemed to be producing the greatest good for the greatest number at the time.

Short-term thinking about forests sent most of

THE SIX STEPS

The six steps of desert-making—about which no nation can be smug—are illustrated in Lebanon:

1. Resembling the forest of the Sierra Nevada, the uncut Kammouha forest still contains pine, juniper, and fir, with oaks on the lower flats.

2. Fields are cleared in the forest; cultivation remains on the deep fertile soil of the flats until population pressure or exhaustion of the soil forces use of the slopes. Here erosion is much more rapid; eventually cultivation is no longer profitable.

3. The abused flats are then grazed — and overgrazed—by sheep, cattle, and horses. Bedrock or hardpan appears.

4. Livestock, like cultivation, moves to the

the Cedars of Lebanon out to the sea in ships, and overzealous search for food and fiber sent the soil out to sea after the ships. Adjacent to today's desert and in the same climatic zone is a handsome mixed forest which still exists because it was protected from exploitation by accident. It is a pitifully small island of an Eden, too small to ward off enduring poverty. All around there is the barren stone skeleton of the greater Eden, the Promised Land into which Moses once led his people.

slopes when the formerly better flats are overgrazed. When the poorer feed here goes, branches are pulled down for forage. With seedlings eaten by ravenous livestock, forest regeneration ceases.

5. Goats finish off all traces of forest vegetation and nomads with their flocks constantly move about in search of the meagerest feed. Here in an area famed for its lumber in Roman times timber is now totally unavailable, even for the roofs of buildings, so "bee hive houses" are built of stones and mud heaped up in the fashion of an eskimo igloo.

6. And finally, abandoned terraces, irrigation systems, and cities blend with the sere landscape, to testify silently of the riches the land has lost.

In Tanganyika's Serengeti National Park you can still travel right into (if you stay in the safari car) vast herds of zebra, wildebeeste, and gazelle during the annual migration on the Serengeti Plains.

Muhavura Peak (13,493) lies in the first national park to be set aside in the Belgian Congo. This preserves climax habitat for the mountain gorilla.

The occasional rivers are jungle highways into Java's Udjon Kulon Reserve and its giant banyan trees and a spectacular fauna including the Javan rhinoceros, monkeys, wild pig, and Banteng and Rusa deer. As long as this wilderness survives, the fauna will too.

across to the far side and 2,000 feet down to the lakes and hills on the crater floor. Ngorongoro is in a cluster of ten peaks, some almost 12,000 feet high. Below them to the north and west lie the Serengeti Plains, nearly 3,000 square miles of wild free prairie.

Grandiose though the scenery is, the area is most noted for the annual migration of the plains animals. They come from the thousands of square miles of brushland beyond the plains, joining into great herds en route, eventually filing out into the plains spreading out evenly from horizon to horizon. The animals have no fear of automobiles. Safe in a safari car one can see the whole drama of plains life from birth to death. Once on the plains, all animals, predators and prey alike, drop their young.

Here one can also see the Masai and their vast herds of economically worthless cattle. They have already overgrazed and laid waste too much of the 23,000 square miles of Tanganyika they control, and as they move into the Serengeti they bring the desert with them, and the wilderness and wildlife must bow before their herds. Just last year an American wildlife expedition helped to halt a political move to open the plains to unrestricted Masai grazing.[1] In many ways this area is illustrative of the threats to what is left of the world's wilderness.

Another of the world's outstanding wilderness areas, equatorial again but 5,000 miles east of Africa, is Java's Udjun Kulon Reserve. It is a bulbous peninsula reaching from the western tip of mainland Java into the Sunda Straits. The area was established about 1915 by the Dutch as an "integral nature reserve"—part of an extensive system of parks, monuments, and reserves originally patterned after America's national parks.

The Udjun Kulon protects most of the last three or four dozen Javan rhinoceros left in the world, along with representatives of the rest of the rich Javan wildlife, including banteng (Javan wild ox), rusa deer (similar to our elk), mouse deer, barking deer, wild pigs, monkeys, leopards, and tigers. Deep in the interior are giant banyan trees—Javan equivalents of our Big Trees. High in the sunlight world of the forest's upper branches lives one of the most varied and gorgeous bird faunas to be found anywhere. Among the new governments of southern and eastern Asia, Indonesia alone has established a Nature Protection (Conservation) Department whose duties include maintenance of her parks and reserves.

Although the roots of giant banyans twine around remains of villages destroyed by Krakatoa 74 years ago, today Udjun Kulon is a true wilderness. This, in fact, is the situation as it exists in most wilderness areas in the world. Except for the polar regions and some of the more inaccessible mountain areas, it is extremely difficult to find land anywhere that has not

been altered by man. The history of the world's tropic lands is one of continual shifting back and forth between human occupation and wildness. One doesn't have to look for such evidence as Cambodia's Angkor Wat or Central America's Mayan-pyramid cities, rising through the tangled roots and trunks of otherwise virgin-appearing forest. Throughout most of the world's tropic lands, the trees or grasses are growing out of lands once used and abandoned by man.

The only practical access to Udjun Kulon is by boat; the staff of the reserve lives on a nearby island and the only obvious human modifications are the patrol paths along the coasts and a few openings made in the nearby jungle to provide better habitat for the banteng and rusa.

India has a wilderness tradition at least 2,300 years old. One of her finest, present-day wilderness areas (one of the very few) is the Kaziranga Wild Life Sanctuary in Assam. The Kaziranga lies at the foot of the Himalayas on a broad flood plain of the Brahmaputra River. A 160-square-mile jungle of elephant grass, broken by low, tree-covered ridges, it was set aside some 50 years ago to protect the great Indian rhinoceros. Here the last real concentration of these animals is carefully protected, along with a representative sample of the region's wildlife.[2]

The area can be entered only in dugout canoe or on elephant back. Yet, wild though it is, visible from any high point in the sanctuary are the houses and cultivated fields of the local people. The Kaziranga is typical of wilderness throughout most of the world—it is a small, isolated wild island in the midst of a great agricultural or industrial sea.

Most of us think of threats to wilderness in terms of industrial exploitation. We think of neon, crowds, and machinery; but throughout most of the world the threat, although equally real, is much less spectacular. It is merely another result of increasing population and increasing land use.

A striking example of man's growing impact on the land is the Great Thar Desert in western India. At the time of Christ, Indian rhinoceros roamed in grass jungles in the middle of what is now desert. And for the past 80 years the desert has been advancing into the rest of India at the rate of one-half mile a year along its whole long perimeter. That means that in 80 years, an estimated 56,000 square miles, or an area equal to that of Wisconsin, has been turned into shifting sand.

The mechanics of this land degradation seem clear. The starting point is the mature forest with its wildlife, fertile soil, and abundant water. The lumber is cut, often clear-cut with young growth destroyed. The land is then cultivated for a time, then grazed and overgrazed. There can be no replacement of trees or grass, for everything green is eaten by ravenous

livestock. When there is nothing left for cattle, goats take over, and when the goats have left, nothing remains but sand or blowing dust. This story holds true, with the same plot and characters, but with different stage scenery and costumes, throughout much of the world.

To illustrate the effect of this land-use pattern on wilderness, let us consider Kashmir, the ancient Moguls' "paradise on earth." This is a lovely mountain land in northernmost India, lying at about the same latitude as San Francisco, and bordered by Tibet, China, and Pakistan. The British with the local maharajah set aside magnificent wild areas here. But when independence came, here as in most former colonies, the tendency during the first burst of nationalism was to reject all that smacked of the previous "imperialism" or "colonialism." Parks and wilderness areas were thought of as something kept away from the people by the former rulers rather than as a resource maintained for them, so the first reaction was to destroy them, to take "what was rightfully ours." On top of this came political and military unrest with a side effect of a large population suddenly armed but with little discipline. Among the results have been large-scale poaching leading to the virtual extermination of the Kashmir stag, heavy forest cutting, and overgrazing.

Through much of Kashmir up to and above timberline one runs into herders and livestock. In less than ten years much of this land changed from dense conifer forest or park lands like the best of our Sierra or Rockies, to what are approaching high-altitude deserts, with the vegetation pulled apart, cut, overgrazed, and burned out—and the soil too.

Economic need, destructive land use, and destructive nationalism form a constantly recurring pattern deadly to wilderness. Until all three of these factors are somewhat ameliorated it is hard to be optimistic about the future of wilderness lands throughout the world.

As my last example I would like to mention an area not usually thought of as living wilderness—the Middle East. Much of it is arid desert, but when Moses led the children of Israel through the Sinai wilderness, it was a live wilderness with wildlife and trees. Today one can go for days through that country and never see a living thing. The mountains above the Promised Land were cloaked with dense forest, with pine, oak, and cedar; and in the more open areas, Asiatic lions stalked abundant wildlife. Today these mountains are largely dead stone skeletons, and the last small remnant of the Asiatic lions is to be found 3,000 miles to the east. There are still two more or less living wilderness areas left—in northern Lebanon and western Syria. Until recently, protected by inaccessibility and unsettled conditions, the forest here remained intact; but within

the last few years, lumbering and cultivation have begun to move into these last forests. When the land's fertility has been cropped out and the trees have been cut off, the crops will give way to grazing. Once overgrazing has gone far enough, the starving animals preventing grass, brush, and tree reproduction, the area will assume the desert aspect of most of the Middle East.

This remnant biblical wilderness illustrates one of the very real economic values of wilderness that, perhaps, is not often thought of in our country. It would be easy to say, looking at most of the desert Middle Eastern lands, that this area never did support much life, or that the old records of forests and crops are wrong, or that if there were trees here once there has since been a climatic change. But in these remaining wild forest areas we have the living proof that this was not the case. North Lebanon and western Syria provide a point of reference by which one may judge the condition of the land as it was, see what man has done to the rest of the land, and therefore see what can be done with what land is left.

For the United States, wilderness is a powerful diplomatic weapon. Most of us are aware of the often less-than-friendly attitude toward the United States in many countries, and we are aware of the fact that all too often we are considered an industrial nation with a dollar sign for a heart.

I have found in a number of countries, especially those of Asia and Africa, that one of the most effective answers to this belief is our system of wilderness areas and national parks and what they stand for to us.

About three hundred years before Christ, India had what corresponds to a system of wilderness areas and national parks. This was established by India's beloved Emperor Ashoka. The fact that our allegedly materialist country has led the rest of the world in the re-establishment of this idea is a deeper bond with Indians than millions of dollars in aid.

The United States has been a modern day pioneer and leader in wilderness areas. But with this leadership comes responsibility. What we do with our wilderness areas may determine what others can do with similar areas in their countries. We have pioneered also the international approach to parks and wilderness areas, and this seems the only effective way to assure wilderness in many parts of the world.

In the international view, our wilderness is a great responsibility; but it is also a great opportunity.

[1] The expedition was sponsored by the Wildlife Management Institute and the American Committee for International Wild Life Protection, backed by Mr. R. Arundel and organized and led by the author.

[2] Cf. Lee Merriam Talbot, "Stalking the Great Indian Rhinoceros," *National Geographic Magazine,* March, 1957.

Wilderness and Culture

By A. Starker Leopold
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In search of security, comfort, and ease, man has labored in the past few thousand years to conquer and civilize the wilderness. Having done so, and while enjoying the fruits of physical well-being, he developed a taste for activities that satisfy his soul as well as his body. To these activities we apply the collective term "culture." The relationship between culture and the original wilderness is perhaps worth exploring.

Historically speaking, the relationship has been an inverse one—culture and the humanities have flourished as the wilderness was conquered. This is easily understandable in the early stages of social advance. The cave dweller, faced with the daily task of gathering fresh food, had scant time for letters and arts, although all primitive people have left expressions of these. But as man institutionalized the exploitation of the earth around him, his daily bread became assured, and leisure time, at least among the upper social classes, permitted more indulgence in the pleasures of cultivating the mind.

Periodically through the pages of history we meet indications of surges of liberal thinking about man's activities and social relationships. The term "humanities" means the study of human values throughout history. Beginning with the Renaissance and the revolt against religious pedagogy, men of learning looked back to the philosophers of earlier eras for leads to what is important and what is worth knowing. But not often were man's relationships to nature seriously explored. When at last the study of natural phenomena was accepted as worthy of the dignity of the sages, the objectives were principally practical, not philosophical. Modern medicine, engineering, and agriculture are a few of the applied fields of natural science that have flourished and have accounted for much of the recent advance of civilization, without, however, any commensurate advance in the philosophy of man's relationship to the world around him.

It is only in very recent years—less than a century in fact—that an attentive attitude toward undisturbed and unutilized nature has begun to emerge. It is surprising that in the long history of man's conquest of the earth there is no evidence of sustained effort on the part of any people to preserve native landscape for its own sake, until our own national park system began to take form late in the nineteenth century.

There were of course elaborate programs of preserving and culturing

certain elements of flora and fauna for purposes of man's use. For example, one of the most complete plans of wildlife management ever devised was observed by Marco Polo in the realm of Kublai Khan. The Great Khan maintained fields of grain and adjoining shelters for the use of partridges and other wild animals, so that he might find good sport when he went afield to fly his falcons. Most of the so-called parks and forests of mediaeval Europe were similarly managed for specific purposes—usually game and forest products combined.

Throughout history there are records of zoos and botanical gardens maintained by rulers and men of means, proving that people had an avocational interest in natural history even if they lacked appreciation of the undisturbed wilderness *per se*. Curiously, two of the most elaborate zoölogical parks were on this continent in the capitals of the Aztec and Tarascan empires in Mexico, although these peoples were not far advanced by European or Asiatic cultural standards.

But there is a world of difference between the creation of a zoo or a botanical garden and the maintenance of an undisturbed natural area. In a zoo man is rearranging and managing nature for his own interest and amusement. In the wilderness he is showing respect for nature as it existed in the first place. It is the emergence of this element of *respect* that deserves special attention, for it marks a turning point in man's view of the earth.

That the peoples of the world were receptive to a philosophy of nature preservation was manifested by the way the national park idea swept from continent to continent once it was announced in the United States. In a few decades natural preserves of one sort or another were created in many parts of the earth. European countries that had no wilderness left at home applied the idea to their colonies and dependencies. The British Empire was outstanding in this regard, but Germany, Belgium, Holland, and some others followed suit. Many Latin American countries and even some independent nations of Asia and Africa joined in the new movement. The dedicated areas went by many names—parks, game refuges, crown forests, or simply nature preserves. But the basic idea was the same—the preservation of unexploited and more or less unmanaged natural areas.

The implications of this new look toward the outdoors can scarcely be overemphasized. From a tradition of conquest and subjugation of nature and the wilderness, extending back to the earliest pages of history, man suddenly finds within himself a desire and an obligation to preserve untrammeled some remnants of the natural scene he has labored so long to bend to his material needs. That all nations have not succeeded equally

well in bringing about this reform is beside the point. The issue is one of intent and acknowledgment of something that is right, even if it is not completely attainable.

Coming back to the origin of this idea in the United States, I have difficulty in seeing any logical reason for the sudden and inexplicable emergence of so sweeping a reversal in traditional philosophy at the time and place where it occurred. One would have supposed that appreciation of wild country would have emerged first in some overpopulated region where wildness was at a premium. Instead, Yellowstone National Park was created in 1872 when the United States was still considerably underpopulated and major effort was being directed to the conquest and settlement of the West. Yet the Congress and the people readily accepted the idea of setting aside this large block of country for recreational needs which at that time scarcely existed. Thinking as a biologist I see this emergence of a new idea as comparable to a macromutation in organic evolution—one of those sweeping shifts of evolutionary direction that come suddenly, and without forewarning, like the emergency of the flatfishes from the normal teleost line. There is no gradual approach.

Once born, the concept of nature preserves spread rapidly, and at the same time evolved. Let us consider the evolution of thought regarding the national parks of this country—prototypes of all to follow. The initial idea in the first half dozen parks was to preserve for public access such natural geologic features as geysers, hot springs, spectacular mountains, and canyons. Fauna and flora were less seriously considered. The first botanical features to be emphasized were the big trees on the west slope of the Sierra Nevada. Consideration of native animal life came later, and then on a classified basis. The "good" species like deer were protected, but the "bad" actors, including wolves, coyotes, and mountain lions, were controlled in accordance with the common-sense policy of the day. Bears were fed garbage and elk were fed hay. There was a carry-over of the outdoor-zoo idea which took some years to die out, during which period wolves and lions unfortunately were exterminated in many Rocky Mountain parks. This event has led directly to the difficult problems of overpopulation by deer and elk that plague the National Park Service today.

Likewise, the idea of leaving substantial blocks of park land undeveloped and in true wilderness status came long after the parks were created. The initial hope was to build roads, railroads, and hotels anywhere within the parks that people wanted to go. But this utilitarian concept of park development and management gave way gradually to the informal zoning idea that guides park programs today.

In short, the national parks as preserves of unmanaged nature did not spring forth in full bloom. They tended always toward naturalness, except in the heavily developed centers of activity where, unfortunately, the trend up to now has been strongly in the other direction.

There is still one striking exception in the trend toward naturalness in park preservation—the complete exclusion of fire from all areas, even those that burned naturally every year or two before becoming parks. Fire is declared evil and destructive, just as coyotes and mountain lions were designated as evil and destructive in the parks 25 years ago. Yet many forest types that are to be perpetuated developed with fire as a dominant molding element. I am convinced that ground fires some day will be reinstated in the regimen of natural factors permitted to maintain the parks in something resembling a virgin state. Both esthetic considerations of open airy forest versus dense brush, and assurance of safety from conflagration of accumulated fuel will force this issue sooner or later.

Even as the National Park Service was being created, other types of natural areas were coming into being in this country. Some of the national wildlife refuges were created. The great system of Forest Service wilderness areas came soon after, along with state and municipal parks, and various types of national preserves controlled and operated by a host of agencies, organizations, and even individuals. We take for granted that preserving native associations of fauna and flora is in the public interest and is to be encouraged. The basic concept is scarcely open to challenge any more in this country—we disagree and wrangle only over what areas are to be preserved, by whom, and how it should be done.

And so it is in much of the rest of the world. It is agreed that most renewable natural resources are to be used, wisely and with due provision for sustained yield. But some areas are to be excluded from this plan and kept for the wonder and edification of the citizens. These two concepts are not always realized, but they are recognized, on an international level. The natural scene now commands respect. Its preservation is accepted as moral and proper. From the Serengeti Plain to the Great Smokies, from the Brooks Range to Tierra del Fuego, conscientious people are struggling to preserve samples of native landscape. Often the pressures of economic need and human populations make the cause seem almost hopeless. Yet my over-all impression is that the effort is gaining in strength, not losing.

Wherein lies the appeal of this movement? What forces motivate its spread?

The need is not solely for recreation in the sense of new playgrounds for people to get some fresh air. In many countries the preserved areas are

used scarcely at all for recreation by the citizens. Nor are the educational and scientific values of wilderness, of which we often speak, weighed heavily into the equation.

The only possible force that could be motivating the effort to preserve natural areas is the moral conviction that it is right—that we owe it to ourselves and to the good earth that supports us to curb our avarice to the extent of leaving a few spots untouched and unexploited.

When one considers the spread of this idea over the earth in sixty-odd years it is cause indeed for wonder. Here is an addition to the accepted mores of people in all continents, imposed suddenly on codes of ethics that have been evolving for many centuries.

And so when we find cause for alarm and discontent with the progress of the wilderness movement it may help perhaps to take the long view—to see how astonishingly far the idea has progressed in the few decades of its existence.

I think that when future philosophers scan back through the records of human history and human thought they may put their finger on this century as a time of outstanding advance in man's feeling of responsibility to the earth. Whether man can succeed in preserving an attractive and livable world is the problem that lies ahead.

Wilderness Fungi—The Silent Scavengers

By William Bridge Cook

> The last word in ignorance is the man who says of an animal or plant: "What good is it?" If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.
>
> —Aldo Leopold, in *Round River* (Oxford, 1953)

When we evaluate wilderness and its meaning to man, it is easy and natural to think first about the broad vistas of forest and mountain, or the beauty of streams and flowers, or the vitality of birds and mammals, for it is the impression of these things that is most pervasive if we have little time for the little things. We may not notice at all the smallest of little things, the silent scavengers of the wilderness forest —fungi.

Few people would think of a fungus as beautiful. It is apt to connote unpleasant things—parasitism, disease, decay. It may even be a little frightening, as strange objects often are. Fear, however, often breeds curiosity, which is a fortunate thing. For curiosity about the enemy, mold, has discovered the friend, penicillin. This discovery alone opens up a broad and promising prospect, and suggests that the fungi and their tiny relatives may be more beneficial to man than he has ever dreamed. Some of them may continue to be very troublesome, but who is to say which? Who knows what seed of blessing may be encased in what husk of trouble? Mindful of these things, let us look anew at our wilderness, wherein undiscovered seeds surely live still. Let us contemplate what beauty of function we may discover in them, function which we or later men may consider to be beautiful in form, too, once we know it better.—D.R.B.

* * * * * * *

I would take you for a walk in a wild forest, hardly disturbed but for a man-made trail. At this particular point there has been no disturbance to the trailside woodlands because there is no special incitement here for such tourist depredations. The trees are unscarred by the boyish knife blade or the messages of young lovers. The flowers have been left alone since they are just like those unthinkingly picked down the trail. The berries appear to be inedible so the bear and the deer may eat their fill. Only the occasional chirp of a hidden bird, or the song of a warbler

from a small opening in the woods by the creek, or the chatter of a squirrel scared up by our passing, break the silence.

But these things are visible and audible as we wander along. Let us stop by this log beside the trail. We can see that it fell a very long time ago. The space this tree took in the forest canopy is being rapidly filled by saplings arising from the cavity it left in the forest floor and by the branches of its former neighbors.

Growing on the end of the log are little shelflike projections. These have concentric rings of varicolored hairs; the under side is pure white with many holes like a sieve. There is another shelflike structure but here the white growing margin is bordered by a red belt. Farther along the log is a cluster of delicate, bright orange mushrooms, and where the trickle of a spring keeps the wood moist a group of small scarlet cups with fringes of brown hairs adds color to the darkened day. A piece of transplanted coral shows yellow against the dark-brown decaying wood, and near the upper end of the log, where the mosses have moved onto the wood from the neighboring soil, a crust of grey-green scales with bright red-tipped fingers covers part of the old wood.

Over on the forest floor, apparently growing on the litter which has accumulated from the falling of leaves and needles, twigs, and bits of bark, we can see the shapes of numerous kinds of mushrooms. Maybe some of these are toadstools but we will not try them to find out. These are sometimes very colorful. Some are pure white, others have splashes of red, yellow, brown, purple, green, and blue. Near a few sticks are some black fingers protruding from the soil, some with a thin coat of white flour on their pointed tips.

If we were to look with a magnifying glass at the decaying wood, or litter, or bits of material in the soil, we would see still other growths actively working on these materials, producing variously colored or colorless, delicate or coarse fruiting structures which are very small in size and which may be distorted by the crowded conditions in which they live.

As we wander over to the creek along which willows, alders, and many herbs and grasses are growing, we discover that the willow leaves are supporting a rusty growth which does not appear to belong to the leaf. Most of the cones on the alder bushes appear normal, the scales of others have become distorted into numerous little purple tongue-like processes. One patch of pretty yellow monkey flowers appears to be stunted, and on its leaves are olive-colored spots half the size of a dime. A sedge growing along the creek has peculiar catkins of fruits, for every once in a while the single seed in the ovary is replaced by a large grey ball which, when

broken, sheds its many black spores. In the flowers of some of the grasses along the miniature meadow are large purple hornlike structures which do not appear to be natural for the plant.

These organisms, the fungi, are most ubiquitous. Many species are world-wide in distribution and carry on the same life processes whether found in New Zealand or in Nova Scotia. Let us go back to the log. Bracket fungi are among the best known of the wood-decay fungi. They work relatively quickly on the cellulose and lignin in the wood and reduce them to their body tissue, or to substances they cannot use but which are readily used by other fungi, bacteria, and other organisms of the habitat. The fungi, themselves, of course, are prey to other organisms as are all living things at one time or another in the period of their existence. Thus we see moldy mushrooms, mushrooms and bracket fungi covered with incrusting yellow and orange fungus growths, and mushrooms with maggots, beetles, springtails, and other organisms eating them away. The tiny varicolored bracket-producing fungus is using the lignin in the immediate vicinity of its fruiting body, the bracket, while the larger red-belt conk is using the cellulose. The vegetative part of the red-belt conk probably inhabited the heartwood of the tree before it fell, and its fall may have been caused in part by the weakening of its structure as the fungus used up the cellulose in the heartwood, leaving only brown cubical chunks of lignin.

It is certain that the vegetative parts of the fungus producing the little orange mushrooms and the scarlet cups are using some of the materials left in the rotting log but it is not certain just which of these materials is their choice food. The same is true of the coral mushroom which was growing on the wood and of which other species grow on the forest floor.

The gray-green scales with the red-tipped clubs belong to a lichen which grows on soil and decaying wood. Other species of lichens are hanging like long gray, black, or green beards on the tree branches or clinging like bright yellow-green antler complexes to the bark of the tree trunk and to its branches. The bark of the trunk also supports other tiny hidden lichens, and still others are to be found on a rock outcropping up the trail. These lichens are made up of a fungus and an alga growing in close harmony, and in some situations they may help to pave the way for the growth of other organisms.

The most obvious fungi of the forest floor are those whose fruit bodies are large, colorful, fleshy, and of diversified form. Many of these live directly upon the decaying litter on the ground. Others have a more complex design for living. They form a union with the roots of the trees of the

forest which is called a mycorrhiza, or "fungus root." The tree benefits from this union as well as the fungus, because the fungus in decomposing materials obtains for its nourishment some substances which are also taken in by the tree. In many areas they are a critical source of nitrogen and other nutrients for the tree. On the practical level, forest nurseries in central Oregon need such fungi; Monterey pines planted in New Zealand had to be imported as started seedlings with the proper mycorrhizae attached; a forest plantation started in Brazil failed because after planting the seeds it was found that the proper mycorrhiza-producing fungi were not present.

Mushrooms are to the fungus organism much as apples are to the apple tree. The main body of the growing organism lies buried or otherwise concealed in the soil, the duff, or the litter where it is continually obtaining its nutrients, and only under the most favorable conditions does it produce the mushrooms which are the fruits in which are produced the structures on which the tiny spores are produced. Together with these mushrooms, which may have fruit bodies looking like the conventional mushrooms or toadstools, pieces of coral, cups, heads of cabbage, or other more peculiar shapes, are many other types of fungi whose fruits are less obvious. Some of these fruit underground, either singly or in "hills" like potatoes; these are the truffles and the false truffles. To attract the rodents which use them as food and in this way help to spread them through the forest, they produce different odors, some of which are vague and others as strong as garlic or rotten eggs.

Besides these two types of fungi, there are many whose size makes them invisible to the naked eye. These can be seen only after samples of the soil or litter are placed in special nutrients in which those fungi present can grow luxuriantly and then can be studied with a microscope. They are known best as the molds which get on bread, damp walls, damp paper, cloth, shoes, or any other place which can get moldy or mildewed at any time of the year under proper environmental conditions. Some of these fungi cause our greatest losses. They produce molds in seed bins and in bales of clothing dropped to a jungle battalion; when their spores are present in the air in large enough quantity, they are the cause of some of the different types of allergies people suffer. Yet at home in the soil or in the decaying log and litter on the forest floor they are extremely beneficial because they constantly remove various parts of the organic matter as their food supply.

Long before man came to this earth and started to domesticate the wild animals and the wild plants, they were subject to various diseases. Few

animals suffered from fungus disease so far as is known, although bacterial and viral diseases may have been common, but most plant diseases known up to a half century ago were caused by fungi. It is now known that many plant diseases are also caused by bacteria and viruses. The fungus diseases of plants which we find in nature at the present time may not be of too great importance to the plant pathologist interested in protecting his field crops. These crops have become highly specialized, and with them have developed fungi whose methods of attack and the types of resulting diseases are also specialized. In the forest we still have a number of fungi capable of attacking different kinds of plants or restricted to one plant. These restrictions are inherited and may even result from genetic barriers between species which appear otherwise to be identical with each other.

Man's methods of classifying these organisms have led to at least two different points of view about what constitutes a pathological species. The rusts which we find on the leaves of willows and poplars are difficult to interpret. Several species are known and when we can find the second plant on which part of the rust's life cycle occurs the classification or identification of a species is less difficult. It appears to specialists that there are many different kinds of fungi which cause leaf-spot types of disease in wild and cultivated plants. Usually, because of the large numbers and the difficulty of experimental studies, it is assumed that each species of fungus-producing disease is confined to one special host, or at most to its nearest relatives, regardless of the similarity between it and a disease on an unrelated host. The smuts on sedges are not important since there are no economically important sedges in use in the United States. However, a novel use has been made of them by an investigator in Canada who has tried to derive a scheme of relationships between sedges based on the smut fungi to which they are host. The ergot-producing fungus on grasses is the most important fungus mentioned. It is now generally believed that there is only one species of ergot-producing fungus on grasses. It appears to be of different sizes on different grasses depending on the size of the flower and its ovary in which the fungus develops. This fungus is the only plant disease cultivated for its use as a drug. When rye flour is prepared with too much ergot, it produces the toxic condition known as ergotism, which can result in an acute nervous disorder or a disorder of the blood vessels.

In the forest which may be subject to the woodsman's ax there are many fungi which are undesirable elements in the population. These fungi cause heart rots in the standing timber, so that after a tree has reached

the age of 150–200 years, it can be assumed that the heartwood is infected and the usefulness of the tree as a part of the timber crop has been reduced. There are many types of such fungi and many conditions under which their effects may be rendered more or less severe. In the forest itself, and in primitive areas where there is no danger of active logging, such fungi become important in only isolated instances. For example, logs of subalpine fir used as guardrails along high-altitude roads can become quickly rotted by a fungus found commonly on decaying logs in the area. In making such guardrails the wood usually is not treated to prevent such degradation.

In any natural community the ecology system is very delicately balanced. If one member of the community is removed (even with the best intention), the balance may be upset and the end result may be harmful. The practicing forest pathologist is interested in preventing the spread of wood-decay fungi in the forests from which the timber crop is being removed. It is difficult for him to understand that in an adjacent area, set aside for complete preservation of the forest type as a natural museum, the older, potentially infected, trees should not be removed. To him their removal would lessen the chance of infection occurring in the harvestable timber, although conks of infecting fungi occur throughout the nearby unprotected areas. An epidemic of spruce budworm is itself subject to an epidemic of a bacterial disease which eventually eliminates the budworm, sometimes in a dramatic manner. The removal of lodgepole pine in one area by a rust parasite or a mistletoe need not be controlled or sanitized since the natural removal of this tree can give living space to other trees in the climatic climax for the area. The indiscriminate removal of currant and gooseberry bushes from the region of a white-pine or a sugar-pine forest by the use of hand grubbing, bulldozing, or 2,4-D application may help to control the white-pine blister rust to which both plants are host, but at the same time it also eliminates potentially important members of the understory communities, and plants which are completely innocent of "wrong doing" may thereby be needlessly destroyed. Such plants may have been important forage plants for the larger mammals of the region, or they may have been host to insect members of food chains whose existence had been little suspected until the balance was upset.

The fungus microbe can thus be seen to play one of two important roles in the development, and continuance of the forest. It is either a parasite causing disease in plants, removing whole populations by destroying them, and thus eliminating its own food supply; or it is a saprobe, policing the

forest as a scavenger, removing the dead organic matter, making way for the following year's layer of needles on the forest floor, or removing the results of yesterday's wind storm. In the wilderness there is room for both types of activity; in the wilderness both types of activity can be studied from beginning to end of each type of cycle; in the wilderness we can learn principles to apply in more satisfactory types of land management.

In the forest primeval the pines and the hemlocks bearded with moss and in garments of lichens stand like Druids—but the unknown diseases of age will remove the older trees, and as the younger trees come to maturity the trunks of the dead trees will be removed gradually to make room for more. With changes in climate, and the changes accompanying man's intensifying use of the land, the character of the forest may change, but that of the parasites and the scavengers which accompany it will probably continue indefinitely.

Fungi may not be the wheels that Aldo Leopold cautioned us about, but if not, then they are surely the cogs that help move the wheels. As we tinker, we can be thankful that in wilderness we can keep both.

The First Ascent of Spider Rock

By Don M. Wilson

In Canyon de Chelly National Monument in northeastern Arizona is a great sandstone spire. According to the Navajos, who call it Spider Rock, its summit is the home of the Spider Lady. Navajo children are told that Speaking Rock across the valley informs the Spider Lady of their misdeeds and that she will take them to her home and devour them. The bleached rubble on the summit is supposed to be the bones of bad children.

Since the truth of this last statement is testable, it was possible to disprove the legend of Spider Rock by examining the rubble at close range. Of the three tried means of reaching a summit two were impossible here. It was too small for an air drop and too far away to throw a rope over. It could be reached only by classical mountaineering methods in a long climb from the valley floor.

Jerry Gallwas, Mark Powell, and I planned a visit to the canyon during Easter week of 1956. We had written to Superintendent John Aubuchon for permission to climb but had not yet received an answer when we began the drive from Los Angeles to Four Corners. As we walked into park headquarters we half expected to be turned away, fearing the Navajos living in the monument might not want us to walk upon their legend. But it turned out they were curious to see how rock climbers operate and permission was granted.

We made camp that evening at the overlook near the spire. As we walked to the view point Jerry and I, who had been there before, held back allowing Mark to reach the rim alone so that he might get the full effect. In the moonlight the sight presented by the 900-foot shaft chilled the heart. As tourists, a year before, we had been impressed; now when we thought that in the following days we would be trying to climb it, it was thoroughly awesome. We felt that we would not only be pioneering a new route but also writing a new chapter in the history of rock climbing in the Southwest. The rock had no record of previous attempts which would give us information on routes, equipment, and difficulties. Such information, of course, increases morale and efficiency of climbing parties and its lack is a major reason why first ascents usually take much longer than succeeding ones. The unknown is challenging, but it is also frightening. We knew almost nothing about climbing on sandstone. Long climbs on soft rock requiring extensive use of pitons and direct aid had been avoided

in this country. Climbers had been aware of the large number of fantastic towers in the desert canyons of the Four Corners area; however, except for the volcanic plugs, Shiprock and Agathlan, which are more mountainous than spirelike, the desert was an undeveloped climbing district. Now with nearly all granite summits climbed we were accepting the challenge. In addition we had added a desire to live up to the faith of those Indians who believed we could climb Spider Rock, or to show those who believed we couldn't.

In the morning we made a reconnaissance into the valley by way of the Bat Trail. A little later in the season we could have ridden up the canyon in a jeep, but only a week before a vehicle had been lost in the quicksands of the river. It was clear from the base that the most feasible route started on the north side, in chimneys which led toward the notch between the two towers of the rock. A very blank wall, however, separated the notch from cracks on the main spire. These cracks approached the chimneys lower down, and above ended in a dark recess which we named the Black Hole. The roof of the Black Hole overhung horizontally and the overhanging bottomless chimney that followed looked as if it might be the crux of the climb. Beyond this, the distance prevented a good judgment of the probabilities, although it was encouraging to see that a large ledge about 200 feet from the top provided possibility of a comfortable bivouac. We returned to park headquarters and informed Mr. Aubuchon that we would try the climb.

Monday we packed our gear into the canyon and made a camp at the foot of the dirt slope around the rock. The muddy river served as water supply; this early in the year the Indians had not yet moved their animals into the canyon. Our packs were heavy with climbing equipment. This included nearly a thousand feet of nylon line, pitons, carabiners, bolts and hangers, and bivouac clothing. When it was later assembled at the bivouac ledge we were amazed how much we had carried up. Much of the hardware was never used. The bolts were star drive-ins, two inches long and three-eighths in diameter—a large size appropriate in sandstone. It took only a few minutes to place one. All of them were left with hangers except a couple that fell out.

In the afternoon we started the climb. Two pitons got the leader off the ground and into the initial narrow chimney. This chimney, although technically easy, turned out to be one of the miseries of the trip. It wore out our shoes and abraded our knees so that they were still sore and tender a week later.

Above the chockstone ending the first pitch, the chimney narrowed to

about eight inches and overhung a trifle. As Jerry on the ground encouraged me to try it, Mark and I sized up a ledge around the corner and on the face. This looked like a more comfortable way out and Mark reached for a handhold from which he might swing to the ledge. The hold fell off, leaving smoothness. Now a bolt was necessary. Above the ledge was no real crack, but tough steel pitons made one. Higher a second bolt was needed and Mark chipped away a square surface about an inch deep in order to get less weathered rock. The hole drilled fast, and when the nail was driven in Mark was able to pull it out with his fingers. A second one held better, and we came down leaving a fixed line. The climb had begun, but so far our ropes spanned only an insignificant fraction of the spire.

The following morning Jerry and I prepared to continue the attack. Mark was to hike to the car for food. Our milk was frozen in the river but we neglected to accept this warning and started up in our usual tee shirts and light parkas. We were surprised to find that we were still cold when we reached the top of the prusik lines. After gaining about 30 feet we were so cold that we could hardly hit the drill holder. A belay stance was established with bolts, and we roped down and ran out into the sun.

Our morale was now very low and our vacation half gone. We were unable to forget the climb and appreciate the day off. While we were feeling lonely we heard the faint sound of an engine in the distance, and a little later Aubuchon arrived with our first jeep load of visitors. The canyon was now open to jeep travel, and although it was about 10 miles and took an hour and a half, spectators came from Chinle to watch the climb. Today we disappointed them, but our ropes showed that we had been where it didn't look possible to go. One Indian asked if we would leave our ropes fixed when we finished the climb; he would like to climb Spider Rock on them. We said we were sorry, but that it would cost a hundred and fifty dollars to do so. We entertained the Indians with a demonstration of the use of pitons—the kind which hold a person's weight but pull out when jerked. Later in the day news reached us that it would get warmer, which raised our spirits. We enjoyed and photographed the beauty of the canyon in the late afternoon.

Wednesday was a big day. We reached the Black Hole and worked to the top of the overhanging chimney above. A fixed line was needed here even for the final descent, for without such a guide line a rappel would have ended on the blank face 30 feet to the left. We were now high enough that hours were lost in prusiking up in the morning and rappelling down in the afternoon. Tomorrow we would reach the big ledge and spend the night there.

Since there was snow in protected corners on the ground and the river froze every night, we knew we would need lots of clothing. In the evening we prepared bivouac items, placing them in a duffle bag with a heavy zipper and braced with nylon line. This is better for hauling than an angular pack which gets stuck in every corner. With sweaters, nylon overalls, food, a headlamp, and one gallon of water the sack weighed about forty pounds. The plan was for Jerry and Mark to signal me to bring up the sack when they were sure they could reach the ledge the next day.

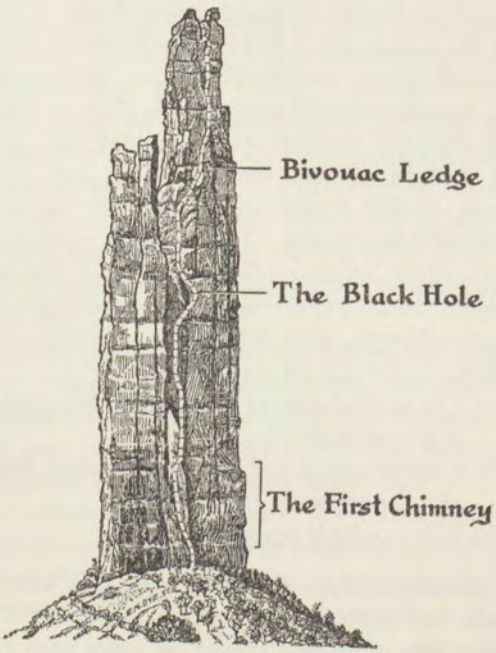
The following day, the pitch above the overhang turned out to be a long crack, too wide for pitons and too narrow to get into. At the top, a rotten gully entered a tunnel under a block on which we hoped to bivouac. I reached the top of the lowest rope and pulled up the pack hand over hand. I realized that I could not do this for several hundred feet. In addition, at each anchor a rope must be coiled and added to the load, as well as hardware which had been left behind. Someone left me a coat for good measure. With this weight I was worried about dropping everything. Also, if it got stuck I would not have the help necessary to free the load. The only safe thing was to attach it all to my waist and let it hang down a few feet. Then, with half my own weight added to me, I prusiked 300 feet to the Black Hole where Mark took the load with a rope from above. We all got to the ledge, and as the day ended Mark made a fifth-class lead on the wall above.

After some canned sausages and gumdrops, we put all our clothing on, and tried to sleep as much as possible, not so much for rest as for shortening the period of consciousness of the cold. But as large as our ledge was, it was not smooth and a comfortable position was not possible. We were tied in, of course, to prevent rolling off, and it was this fact that later became dramatized in the newspapers to "they spent the night lashed to the cliff." We watched the sunrise and then waited for the sun to hit us before breakfasting. It was only 200 more feet now.

The remaining face was very smooth except for a fracture zone to our right. The crack divided nicely into four pitches, with spacious belays in caves formed by falling out of rotten rocks. The price was paid for these belays in the overhanging roofs which had to be passed to start the succeeding pitches. It looked as if it would be difficult to get back into these holes on the rope-down; and we were happy to see a small ledge halfway to the summit on the otherwise blank face above the bivouac spot. Jerry later placed two bolts on it and we had the thrill of slipping from a seated position off the ledge and into the rappel. The last pitch was fifth-class,

the easiest on the climb. At three o'clock Mark did the last pull up to the summit.

During the hour spent on top we built cairns, piling the "bones" into two little monuments—not worried about our disturbing an old legend. For some time we enjoyed watching the spectators on the rim watching us. Meanwhile Aubuchon drove to Chinle, telegraphed our families, and informed the newspapers. Spider Rock had been climbed.



Trail Song

AN ARTIST'S PROFESSION OF FAITH*

By Cedric Wright

Suddenly, along mountain trails, one becomes conscious of the impression of music. There is no sound, yet one feels music of grandly simple structure, its themes like sculptured mountains. Silent sound? Yes. Perhaps the impression of sounds is because of values held in common by mountains and great music.

Beauty haunts the high country like a majestic hymn, sings in cold sunny air, the brilliant mountain air—makes of sunlight a living thing—floats in cloud forms—filters changing floods of light in patterns ever clothing the mountains anew. Beauty arrives in deep voice of river and wind through forest, swelling the chorus, giving sonority universal proportions. As a deep sound, beauty flows from out the heart of mountains, infinitely soothing, majestic. Oh to emulate the quality of this communion! It is Bach, Handel, Beethoven, Brahms—or rather, they are its equivalents. Amidst mountains all we think, see, or feel arrives through this matrix of transcendency. It comes with an interpretive power, a richness, an elasticity, a tonal quality which glows. The music of man, without moods similar to those of the mountains, is without character—it is merely noise. In this thought, Walt Whitman has written:

> Others may praise what they like;
> But I, from the banks of the running Missouri, praise nothing,
> in art or aught else,
> Till it has breathed well the atmosphere of this river—
> also the western prairie scent,
> And fully exudes it again.

When mountains wake a thought, a melody, one realizes how urgently man needs that spiritual leading from the heart of nature. Across high green lakes this something speaks, in wave lines of checkered sunlight and shimmer of wind rippling. Or suddenly, while beholding mountains, there comes an eerie effervescence in the heart, an impression that for a moment one has experienced the infinity of time, of space—intimations which before had remained beyond human imagining. These concepts are, I believe, the core of the music spirit. In listening to an artist like Fritz

*This is the Introduction to my forthcoming book, *Words of the Earth*, dedicated to William Edward Colby.—C.W.

Kreisler, in his prime, the same impressions are experienced. Great art thus takes its place beside the mystic alchemy of nature, in importance to human life.

* * *

After some twelve years of so-called "education," I read Vincent Sheean's book, *Lead, Kindly Light,* a book about Ghandi. Here, for the first time, I found something reassuring to a conviction long dimly experienced. I learned that the people of India recognize, as a sort of national religion the kind of truth and beauty that is revealed through nature, especially their great mountains. I discovered that they even have a *word* for this recognition. They call it *Darshan.* Imagine—popular acquaintance with an experience in which meanings and feelings blend!

And I began to realize that this kind of experience is the beginning of cosmic knowing—something which concerns so many in the Orient, and in the Occident so few. We of the Occident are so frantically absorbed in so-called practical matters that we have rarely a glimpse of perceptive living. We have, I believe, no inclusive word for this Darshan experience —little reverence or grasp of it whatever. Of such concerns we have much to learn from the Chinese, the Japanese, the Indians and other peoples, who, knowing more than names, have found wondrous meanings in the solitary places. I believe we have much to learn from peoples who have become articulate of nature values. These are directions of understanding which are essential to world peace.

From wilderness living comes basic resourcefulness, native instinct, a glowing state of being. After such days, how one rests, how one is renewed in spirit! Later, at home, how simple tasks seem, after plugging mile after mile along a trail, in sun, in rain! How poised one feels, what a momentum of desirables has been established, a momentum like that of a great ship! Such is the harvest when consciousness lies fallow, when for hour upon hour delicious laziness and meditative dreaming fill one's horizon! The distillations of the wilderness are essential to a community which has been withered by resonant despoilers of the human spirit.

* * *

In my life, the source of highest understanding has been the environment and influence of mountains, a particular range of mountains. Certain experience connected with this range has determined and created there a magical association. Much dreaming, much reflection over this experience has brought the important things into my life. Intangible subconsciousness has thereby given up many secrets, much revelation. There is a kind of love which stirs vast awakening in the soul. Through tran-

scendent love new awareness arrives in bewildering glow. So appear the important extensions in human understanding. Through the experience of great love, dreams are converted to tangible beauty and wisdom. The human soul, through love, is like an aerial, achieving community with the life of peaks, of clouds, of stars. Here are found the far-reaching impressions of a lifetime. They leaven the being through every stratum of consciousness. In such manner I came under the spell of the earth's words. Thereafter—dreams of the oneness of life, the stars and I, the singing undercurrent, the song of mountains, the emotion of sunsets, leaves of grass—all arose, a paean of praise, satisfying the soul. Through memory arises an endless sublimation—a yearning for response—a yearning for oneness with the great intangible things that dream and sing.

* * *

Lace patterns of pine needles on the snow, design of subtle natural law, fragrance of old wood—these words of the earth are imbued with direct meaning, their existence is eloquent; from every foot of earth, laved in light, they sing. As in fine music, there is that deviation from metronomic rigidity known as rubato, an elasticity so subtle that it cannot be expressed in notation, so also there are meanings which escape the common connotation of words. As I use it here, *song* refers to something between a flowing life quality and musical sound. We come to gain this quiet symphony, this flowing life quality. Here the human spirit is magically renewed through intimate contact with the carefree instinct of forest, wind, gravitation—with deep momentums past understanding. There results from this environment, a trend away from the kind of "thinking" which does not involve seeing, feeling, being. The human consciousness has been deeply rutted with cut and dried concepts, there are few bridges from one territory to another, the interrelatedness of things is lost sight of. In reality, there are countless intermediate shades between black and white, good and bad, introvert and extrovert, and so on. The idea of universal relatedness is, I believe, something sadly lacking in educational influence. In the realm of human affairs, this shallowness causes tragic results. In reality, things blend, modulate. The freely meditative and intuitive thought habit builds the beginnings of true understanding.

Shattered trees tell a stern story of time of snow. Trees tragically broken, yet each fulfilling beauty. Here the great river, Life, is seen, felt, known. The liquid river symbolizes man's life. Inherent in waterways is an example of adaptibility, plasticity, momentum, which man might well emulate, through long dreaming beside streamsides. We depart from the highlands not without these important impressions, the intangible essence of nature values.

Chords from a Trail Song

PHOTOGRAPHS BY CEDRIC WRIGHT

High on the
Ritter Range

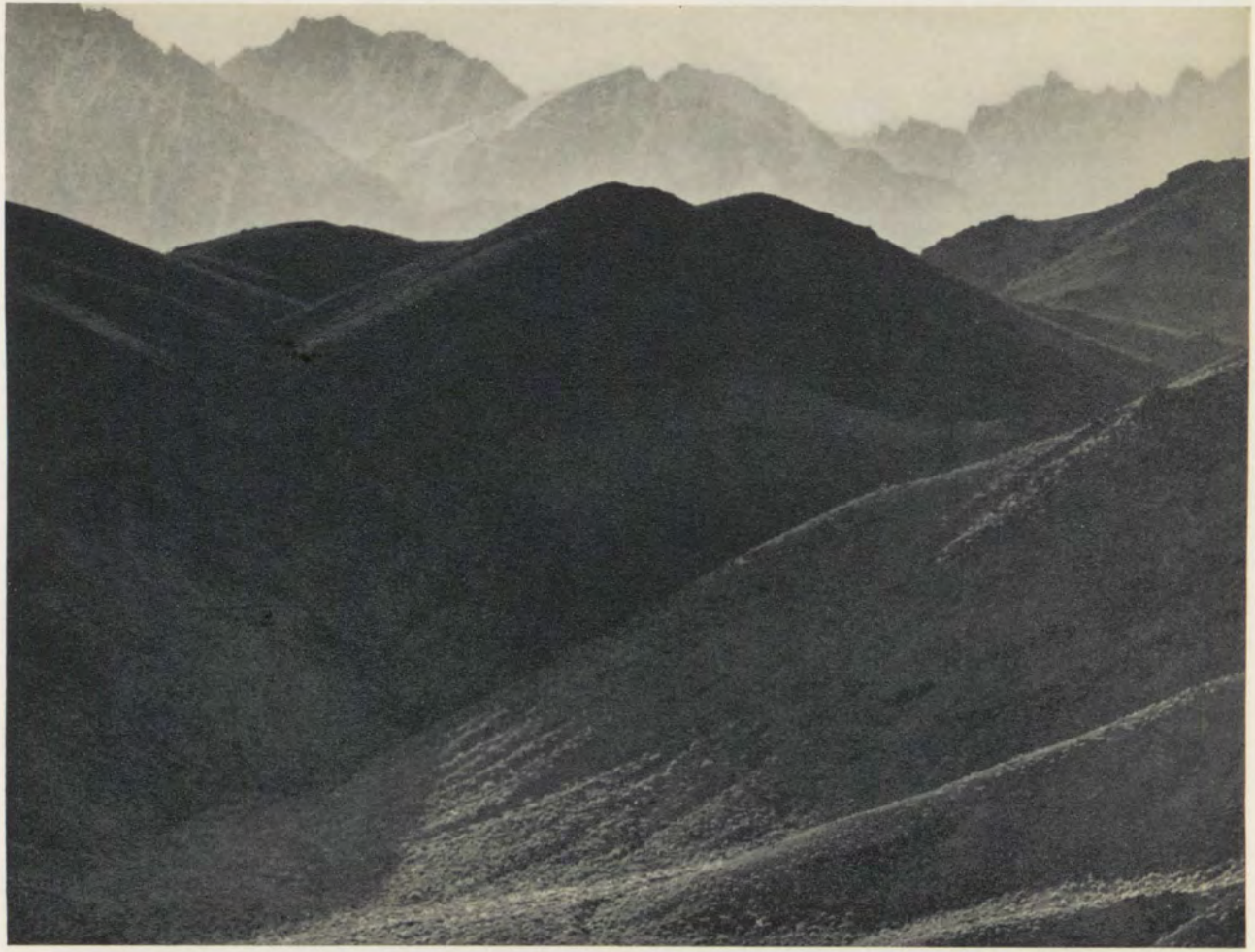
. . . and across from it

Weather

. . . and
weathered

East-side violence

. . . and
serenity



THE PICTURES IN MY ROOM ARE WINDOWS. They are the best of all my Sierra photographs. What do they mean to me? They mean reality and beauty, which arise like a song from the heart of the mountains. I believe that there is a spirit in these original and elemental "Words of the Earth" which can help man solve his greatest problems. I believe that the power which created this fundamental reality and beauty is the power that can save mankind.

In my room are also portraits of my favorite people. The love of them helps to carry me through bad times. So, a sort of personal philosophy or religion is very much alive in my days.—Cedric Wright, May 1957

Extermination and survival are destinations. Of mighty importance then, are the directions determined by intuitive awareness. It is imperative, therefore, to divert the more factual impact of man and nature toward emotionally perceptive channels. Man should feel the charm of intimate rivulets, their moss gardens, their little separate worlds. Emotionally perceived, such things are leaven, expanding magically within the human consciousness.

* * *

The shimmer of wind over mountain lakes—the sadness of distant mountains—the brilliance of quiet waters—these, as moods, interpenetrate the lives of those who love mountains. Mountain moods sometimes appear in human personality—as wistfulness, as faraway dreaming. How deeply this process reaches, vanishing through psychic and emotional planes!

Under the spell of wilderness dreaming, listen to the birds on these high ridges—feel this sundown fusion. How similar their song and the sunlight. The beauty of light, low-filtering in sunset hues through the forest, is mirrored in song of robin and thrush. Both are like streams of elastic gold weaving through the forest. The light seems to gather overtones, a strange extra livingness—transfusing light with sound. And so the light, the bird-song flow, in minor shades and intervals—all music, through the forest, through the magic of space.

But one must be greatly alone, for except with finest friends one is closed to the subtle impressions. To rush in garrulous procession through the forest is a crime. You cannot dynamite your way. You are receptive only as things fuse with you. For this, nature must not be a mere procession of names, but a sequence of feelings and qualities.

It is through awareness of feelings and qualities that from these mountains and cloud haloes ascend eternal meanings—that at night profound mystery arises from dim silhouettes against huge stars—set in a depth of silence no lowland ever exhibited. Tuned to the beloved mountains—fairly humming their key and clef—one returns to a mild and petty civilization. But eternally, from one's inner being arises a greatful murmuring —some faint echo of forest ridges and gleaming granite heights—like the memory of distant thunder.

This fusion with the wilderness remains. This fusion remains emotionally, within its shroud of mystery—as if eyes had seen the universal rafters of the world—linking other planes, and ours.

Arthur H. Blake

(February 19, 1892–February 12, 1957)

It must have been some time in the course of the battle to make a national park in the King's River High Sierra that Art Blake said it, and I still chuckle whenever I think of it: "She's not afraid to call a spade a steam shovel." He was referring to an evangelical supporter of conservation who was too willing to go overboard too often.

Looking back over the twenty-three years that I knew Art Blake, I can think of no occasion when he failed to recognize a spade for what it was and to call it just that.

I knew Art Blake well, as you are likely to know anyone who has taught you for two decades.

I was enrolled in his unscheduled conservation class some time in 1936, in the course of his gently pointing out to me that precedents are consequences hurrying to happen. I was living in Yosemite at that time, was becoming an ardent skier and in the course of some ski-mountaineering ventures in the back country I became enamoured of the winter grandeur of the High Sierra country. What a fine idea, I thought, to take all the effort out of it, so I became an advocate of a tramway from Yosemite Valley to the top of Mount Hoffmann.

Briefly.

Art straightened me out and bent me the other way. Even though I was no twig at the time his influence was permanent.

I happen to remember especially well his role in the King's Canyon campaign, notably his efforts to change the minds of some Eastern conservationists who at the time could not see the park for the damsites; rather than see Tehipite Valley and Cedar Grove omitted from the proposed park, they preferred to see no park at all—no park protection for the much more important high country. His letters straightened them out, tactfully, too. I was getting interested in editing then and he would ask me to look over some of his letters from time to time. Although I found an occasional dangling participle, there were no dangling thoughts. He knew how to get his facts straight and how to apply them where they belonged.

Bouquets are fitting but too often are sent late. I am glad that Art got as many of them as he did when he was on hand to enjoy them—glad that among them was a piece in appreciation in the June 1946 *Sierra Club Bulletin* entitled "Art Blake":

> No, we give no inclusive dates along with this man's name. Happily, this is not an obituary; it is just a credit line, duly authorized. For at the May meeting of the Directors it was moved, seconded, and unanimously voted that special thanks be extended to Arthur H. Blake for his efforts during the war years toward keeping "several committees' heads out of water," that a resolution be spread on the minutes, and that a copy be sent to Mr. Blake.

But, by leave of the Directors, we'll skip the WHEREAS and BE IT NOW THEREFORE RESOLVED, and instead will try to tell you what we mean. Furthermore, we'll not send Mr. Blake a copy; he'll simply have to read it in print.

Art Blake came out of World War I with troubles that dog him yet, and in no mild manner. He found the Sierra his best salve. He had known it well before that war; now he learned it better, and knowing it intimately, knowing what the Sierra had done for him, he looked around to see what he could do for it.

He found so much to do that he has been busy ever since. The Sierra Club has not been alone in claiming his time. Locally, he has been particularly active with the Mountain Play Association, the Tamalpais Conservation Club, and the California Alpine Club. He knows the National Park Service, Forest Service, and State Park men who best know the out-of-doors. He is a past president of the Federation of Western Outdoor Clubs, is now editor of the Federation's *Quarterly,* has been a vice-president of the American Forestry Association, and has been consulted many times by the Wilderness Society and the National Parks Association. In the Sierra Club he has been called on to aid any number of projects. At one time or another he has served on the Editorial, High Sierra Trails, Lodge, Visual Education, Mountain Records and Place Names, Winter Sports, Clair Tappaan Lodge, and National Park and Forest Policy committees. He did the spade work on the recent land acquisition on Mount Shasta and at Donner Summit. He gave the names, and helped the production of the two Sierra Club films, "Sky-Land Trails of the Kings" and "Skis to the Sky-Land." During the war, in spite of the press—the hard press—of many other duties, he kept four of those committees, as was said, "with their heads above water"; Lodge, Mountain Records, Trails, Mountain Sheep. Yet he still managed to keep up an enviable record as correspondent with Club men in the Service. Presently he is, among many other things, chairman of the Conservation Committee. That should by no means suggest that his conservation activity awaited the formation of that committee. He has been a continuous source of facts, of proper methods of procedure, and withal has continually been a man of well-advised action. Somehow, in addition to all this, and as a perpetual source of amazement, he has managed to work for a living, too. He finds time, as well, to get into the mountains now and then, on foot and on skis.

These are such random notes on Art Blake as any person who knows the man well could jot down in no time at all, without resorting to research. They tell nothing of his ready wit, his occasional tiffs with *Fowler,* or his constant self-effacement (no one would be quicker to destroy this manuscript). They are recorded here, in extension of the minutes of the Directors' meeting, both to remind those who know Art Blake not quite so well of how much he has already accomplished, and also to demonstrate to those who do not know him at all, but know only the mountains he serves so devotedly, that when he looked at the Sierra, he saw what he could do for it, and went to work.

These are still just random notes. The biographical work is yet to be done to let people know what the beginnings were, how the interest was kindled; to tell about the friends enlisted, the defeats suffered, the achievements won by Art Blake, conservationist, whose heart failed him last February, but never failed his mountains.

D.R.B.

Mountaineering Notes

Edited by JOHN I. SHONLE

How Good Were Their Pitons?

Rock climbers have a sense of humor all their own, and that was why they laughed about what happened at Seneca. It was one of those classes in assault climbing where G.I.s from the mountains of Kansas and Iowa were learning how to handle the really respectable cliffs not far from Petersburg, West Virginia. Some of the pitons they placed are still there in spite of the piton-mining that has gone on at Seneca since the war. Some are still there because they are hard to get at; others because they are hard to get out, having been driven well.

At any rate, one day we were having a practice session in holding piton falls and this G.I. gathered his loop of slack rope, made sure his belayer was ready down there 30 feet below, and duly went through his signals. He hollered *"Falling!"* and peeled off. He didn't get hurt, but he did get surprised. You see, he had forgotten to snap into his piton. Clear sailing all the way, and no wear and tear on the belayer. The class laughed. We instructors laughed. Later classes laughed when we told them. Even this G.I. laughed, and went back up and did it right.

Another thing he did right, and most of the rest of them too, was to place a piton with skill. We tried to pound this subject in and they did likewise. We had a selfish interest, we'll admit. We wanted to set and keep a safety record, and ended up with no fatalities for the 10,000 men who were given a two weeks' course, day in and out, of intensive climbing. Sloppy piton work wouldn't have produced that record. Happily, the taxpayers were buying the pitons, so we usually had enough to drive and pull out and drive and pull out until we had a fair idea of what it took to make a piton stick. The essence of what we learned was written into the field manual (FM 70–10), and was later worked into the *Manual of Ski Mountaineering* and the foreword to *A Climber's Guide to the Teton Range.*

We had names for the guys who didn't learn, two of them printable. An "Alp" was a man whose technique was too abysmal to pass customs but who had had experience; and a "hot rock" was a man who just had one experience after another. The Good Lord knew there would be a lot of people like them, and that's why He made so much of this country flat.

The Sierra Club, which forsakes the flat country often, has a notable record of mountaineering safety, but it would be better if those whom Providence has spared sudden death on the cliffs (that includes me) had only contrived to share better what they learned the hard and chastening way. Still, the record is not so poor as it can become, along a road paved with pitons placed with a prayer, and the prayer unheard.

Two years before the Seneca School started building its record an air-raid warning sounded in San Francisco; when the mayor was criticized for the resulting fiasco he replied, "No bombs fell, did they?" And it's true likewise that in the slips which show in some of the following notable achievements (or which don't show, but happened anyway), no climbers fell either — at least not far.

Now go way back to the Stone Age of local rock climbing in the Sierra Club — back twenty-five years ago this spring, when the first section was formed, Dick Leonard, its founder, profited fully from the analyses of accidents so expertly written up by

Robert L. M. Underhill, who had himself come West from the Appalachian Mountain Club the summer before to encourage Sierra Club people to learn the ropes of rockwork. Leonard had a subtle way of instilling respect for good technique in those whom he taught. He'd implant the idea this way: "If I ever fall, my last thoughts will probably be 'What will Underhill say about this in *Appalachia?*' "

Perhaps the man whose pitons merely kiss the rock has proved only that he doesn't worry about his obituary or himself. If so, maybe this slogan would help: "The life you save may be someone else's." D.R.B.

YOSEMITE

RÉSUMÉ OF CLIMBING IN YOSEMITE

With the exception of some severe ascents pioneered in 1956, rock climbing in Yosemite Valley has been for the most part confined to the more popular climbs. There were four attempts and two ascents of Kat Pinnacle; several ascents of Lower Brother via Southwest Arête and one via the West Face, Middle. El Capitan East Ledge was climbed for the second time in October and there was one ascent of Middle Brother via its Southwest Arête. Lunch Ledge and Arrowhead Spire are still the most frequented, because of their accessibility and easy climbing. The second ascent of Rixon's Pinnacle was accomplished this past fall. The Royal Arches are attempted frequently but seldom entirely completed. There were two ascents of the Piton Traverse; two of Fat Man Chimney and one of the Direct Route; one of Dinner Ledge; one of Glacier Point Terrace; one of West Arrowhead Chimney; two of the Potato Masher; and one of the Circular Staircase on Sentinel Rock. There were four ascents of Lower Cathedral Spire and about the same of the Higher Spire. Penny and Nickel Pinnacles are becoming increasingly popular, as is Northwest Face Overhang Bypass of Lower Cathedral Rock, all being ascended several times. There was one ascent of Northwest Buttress of Middle Cathedral Rock; two other groups were turned back unable to negotiate a pitch without resorting to direct aid. There were two or three ascents of Pulpit Rock and three known ascents of the Rostrum. Sentinel Spire was ascended a third time, and Church Tower several times.

Among the more difficult climbs were the second and third ascents of Phantom Pinnacle in five and six hours and the second and third ascents of El Capitan Tree. Also, the Lost Arrow was ascended for the twelfth time, in four and a half hours from the notch. Nine unnecessary expansion bolts were removed as cracks were adequate, and pitons were used instead. However, all original Salathé bolts are still in place. There were two attempts to repeat Salathé's route up Southwest Face of Half Dome and neither was successful.

Of the greater climbs, more ascents were made in 1956 than ever made before. Royal Robbins and Mike Sherrick made the third ascent of North Face of Sentinel Rock in a day and a half. There was a second ascent of El Capitan East Buttress in October, 1955—it was climbed for the third time in nine and a half hours of roped climbing in June, 1956. Kat Pinnacle was first climbed directly from its base on December 31.

The big climbs pioneered in 1956 were the East Buttress of Lower Cathedral Rock on June 12; South Face of Liberty Cap in early September; Arrowhead Arête, October 13; and East Arrowhead Chimney on December 28. Mark Powell

ARROWHEAD ARETE

On October 13, 1956, Arrowhead Arête was first ascended by William Feuerer and me. This is the arête which, when viewed from Camp Four and Yosemite Lodge, rises in a striking profile above Arrowhead Spire; or seen directly from Government Center, it is deeply cleft on both sides by West and East Arrowhead chimneys. Our approach was by the route to the South Arête of Arrowhead spire. We rappelled from the arête's summit to a point approximately 50 feet below the notch on the west side. The next four severe and exposed fifth-class pitches, each of about 100 feet, ascend directly up the high-angle arête. These four pitches bring one to a small tree horizontally just to the right of the overhangs below the first step. The following pitch goes up a difficult crack in a huge white flake noticeable from the valley floor. The top of the first step is reached after an additional 50 feet of easy climbing. Two moderately difficult pitches lead to the highest gendarme of the arête, where a small register was left. The next 200 feet is a traverse along a spectacular knife-edge a foot or two wide with the walls dropping vertically into the shadowy chimneys more than 500 feet below. Although the traverse is very exposed, the climbing is not difficult and leads to easy ground. There follows a thousand feet of bushwhacking and talus to the Yosemite Falls–North Dome trail.

The real crux of this climb is the bottom four pitches behind the spire. It is high-angle face climbing on very small holds requiring great finger and toe strength with excellent body balance and faculties keenly tuned to withstanding exposure. To the advanced rock climber this would be a very difficult test; to the less competent, a nightmare. This is possibly the most continuous difficult fifth-class climbing in this country.

MARK POWELL

THE SOUTH FACE OF LIBERTY CAP

To viewers looking from the top of Nevada Fall, Liberty Cap presents an imposing and formidable face. On September 1, 1956, the first ascent of this face was completed by Mark Powell, Joe Fitschen, and me. The climb is about 700 feet long and was completed in fourteen pitches. We spent a day and a half on the rock and used approximately sixty pitons of which about forty were for direct aid.

The route lies near the left-hand side of the face as seen from the top of Nevada Fall. Starting at the top of a rocky, tree- and brush-covered slope, we traversed diagonally for four pitches to a point 100 feet above a 300-foot overhang. Twice on this traverse it was necessary for the leader to climb up and place a piton high and then descend and work his way across the face on tension. A descent of this route would probably be difficult.

At the end of the traverse lies the crux of the climb. It is a 150-foot wall broken only by a few long and barely connected cracks. Mark led the two very difficult pitches on this wall. Near the top of the second pitch Mark placed a thin knife-blade piton. Although driven into the crack not more than a quarter of an inch this piton held his weight and enabled us to make the climb without expansion bolts. This crucial wall is followed by a difficult open chimney with direct aid used at the top and then by a moderately difficult fifth-class pitch which goes to the left and up a lie-back crack to a gully containing some bushes and small ledges where we spent the night.

The next day we followed the gully on maximum fourth-class climbing for 100 feet

and then, with pitons for protection, traversed across the face to the right for about 40 feet to a crack wide enough for the use of chimney technique. The next 250 feet of ascent followed this crack to the summit and required moderate but strenuous fifth-class climbing. ROYAL ROBBINS

LOWER CATHEDRAL ROCK: EAST BUTTRESS

Early in the summer (1956) Jerry Gallwas, Mark Powell, and I met in Yosemite to try a neglected route. Often from the El Capitan bridge we had looked across the meadow at the sharp corner of the Lower Cathedral Rock and wondered whether the line between bright and dark produced by the morning sun might be climbed. The profile view of the cliff was discouraging. Near the middle of the 1,000 fee tof the potential route was a section of 200 to 300 feet which appeared to be dead vertical. From the base of the rock there could be seen no way around this bulge, but some cracks were visible up the middle.

Preparation was complicated by the conflict between outfitting ourselves for a night on the rock with the result that we would certainly experience one, or going very light, in the hope of going very fast, risking an uncomfortable night. Comparing the route with two other long one-day buttress climbs in the valley (Yosemite Point and El Capitan East Buttress), we decided it might be done without bivouac. We began at dawn with two climbing ropes, hardware, and the bare minimum of equipment specified by the Park Service for safe climbing. The shortest talus approach in Yosemite, followed by several gentle fifth-class pitches with one rope traverse, brought us to the base of the steepest part. After three moderate pitches Mark began the first of two leads which had seemed most questionable from below. Out of sight above an overhang and up 90 feet on direct-aid pitons he reached for a good handhold near the end of the pitch. The piton he stood in fell out as he shifted weight to his hands, thus committing him to move up without hesitation. The next lead was messy sixth-class in a crack choked with ferns. We were now about halfway up with the hardest behind, but it was late in the afternoon and seemed very unlikely that we would enjoy the lodge that evening. With increased speed we swung leads up the rock and moved about 100 feet left onto the East Face, reaching the summit after 13½ hours of climbing. No expansion anchors were necessary and no pitons were left. Descent via the Gunsight was completed before dark. DON WILSON

EAST ARROWHEAD CHIMNEY

Mark Powell and I were in Yosemite after Christmas enjoying the unseasonably mild weather. Mark and another fellow had made an attempt on the East Arrowhead Chimney the previous weekend and had succeeded in getting over the huge chockstone before time ran out. He seemed confident that the remainder of the chimney would "go" upon application of a reasonably determined effort.

On December 28, 1956, early in the morning, we headed up the talus toward the Arrowhead. The base of the East Arrowhead Chimney was reached in good time. Needless to say, we were well aware of the importance of speed on this climb.

The lower part of the chimney is merely a scramble to the point where the approach to East Face of Arrowhead Spire traverses out of the chimney to the south. Roping up, I led the initial pitch. Though deceptively easy looking, it was about all I could handle—extreme fifth-class difficulty with meager piton protection.

This was followed by about 150 feet of third-class dirt and loose rock to underneath the huge, overhanging chockstone, 250 feet above. Then, easy to difficult fourth-class chimneys led to a ledge on the chimney wall directly under the chockstone.

I attempted the next short but difficult fifth-class lead up the chimney wall, but got nowhere with it and returned to the ledge in a "controlled fall." Mark took over and beautifully negotiated this and the next pitch, which goes out under and over the overhang, utilizing some dubious sixth-class pitons and a "sneakily" placed sling.

More dirt climbing brought us to the final problem: the overhanging upper face. Mark nailed up the first pitch, about 40 feet to a flat ledge on the left-hand wall. He then led up the wall on an unusual and difficult fifth- and sixth-class pitch. Another 100 feet of fourth-class and we were at the last pitch, a nasty fifth-class face climb.

In late afternoon we reached the top of East Arrowhead Chimney. A few hundred feet of scrambling to the rim of the valley and the Yosemite Falls trail remained, so we took time out for lunch and back-slapping. From rope-up, the climb had taken six and a half hours and eighteen pitons, eight for direct aid. WARREN HARDING

KAT PINNACLE

The first direct ascent of Kat Pinnacle from its base was made on December 31, 1956, by Don Wilson and me. The route was up the northwest corner. The first pitch was a 70-foot fifth-class lead to a block on the corner. The 80-foot second pitch went up a small crack which was overhanging in two places, and required about eighteen pitons for direct aid. This put us at the large ledge where the usual route starts. Total time from the base was four hours. MARK POWELL

RIXON'S PINNACLE BY THE EAST CHIMNEY

Probably most climbers would agree that the East Chimney of Rixon's Pinnacle looks more hopeful than the face that Chuck Wilts and his wife climbed in 1948. It has been the scene of a number of attempts, some before and some after the Wilts's climb, which was, as far as we have been able to determine, the only ascent until October 1956. One of the early attempts on this route was made by Ax Nelson, who judged, correctly, that bolts would be necessary to get beyond his high point at the Bay Tree.

In the spring of 1952 we made the acquaintance of Rixon's Pinnacle without knowing its identity. Gary Lundberg and I thought we had found a nice afternoon's climb and gave it a try which got us to the Bay Tree; a couple of days later Jerry Smith and I went a little higher, coming back when our only drill broke. At this time we were certainly at the highest point yet reached in the Chimney, for no bolts had been placed before, and without them it would have been virtually impossible to get to that point. Only later did we read Wilts's article and discover where he had been.

Of the people we know, Frank Tarver and Ron Hahn were in the chimney next. Acrobatic maneuvers, which are the best part of the climb, enabled Ron to get somewhere from my top bolt, and they left a fixed rope from the lip of the first overhang. Soon after that, about in January 1954, Ron and I prusiked up this rope and went on to the next overhang, from which we left a very long fixed rope dangling down the face to the ground. But that rope never served us as more than a rappel and it was later taken down by other climbers. Prusiking up a hundred feet and climbing two fifth-class pitches had taken us two days.

Last fall Dick McCracken and I were able to do the climb in less than eight hours. Just below the black, horizontal overhang, about halfway up, which is prominent from the road, we found a piece of sling rope around a tree. It is in a position that makes it unlikely that someone put it there while rappelling from above; we wonder whose it is and if he went on to the top. This black overhang itself appears from below to be a formidable obstacle, but one is surprised there. The necessary bolts are all in place; those which don't have hangers are quarter-inch Rawl-drives taking a hanger held on with a nut. We think this is an excellent climb. DONALD GOODRICH

THE BLOCK

Just below and to the east of Sentinel Dome a blocklike mass may be discerned. Its first ascent was on June 22, 1955, by George Whitmore and me. The route is on the southeast corner where a tremendous flake with a chockstone on top lies against the main mass. Climb up 30 feet into the large corridor between the flake and the block. About halfway through the corridor, chimney up until you can climb onto the flake and ascend to a ledge. Then traverse to the left, climb directly up and across the chockstone and scramble to the summit. The climb is difficult fourth or easy fifth class. MARK POWELL

CALIFORNIA, GENERAL

GRAND DIKE, KINGS CANYON

On August 11, 1956, Russ Hoopes and I made a first ascent of Tower ½ via the east face. The route follows the standard route to the ledge on the northeast corner of the summit tower. Follow the ledge left (southeast) around to the east side of the tower. From the end of the ledge, an airy and difficult step must be made to a fourth-class crack which leads to the base of the easy summit pitch. The climb is fourth to fifth class. On August 12, we climbed what we believe to be a new route on Tower 2. From the notch between Towers 2 and 3, we ascended the chimney on the northwest face to the summit. By working to the rear of the chimney from its base, we found the ascent and descent to be virtually third class. It appears that the easiest way to the notch between Towers 1 and 2 is to climb the third-class pitch to the notch between Towers 2 and 3. Then it is possible to walk to the notch between Towers 1 and 2 by following the ledge left (south) around and behind Tower 2. The traverse appears to be first or second class. JOHN OHRENSCHALL

BALCH CAMP FLAKE

The first ascent of the Balch Camp Flake on the North Fork of the Kings River was made on February 16, 1957, by Merle Alley, Jerry Beatty, Wayne Kincheloe, and me. The Flake is approached on the Trimmer Springs road; continue past Balch Camp about 4 miles until a flume crossing the road is reached. From here the Flake may be discerned against the cliff as a fan-shaped yellow slab dissected by several vertical cracks. From the curve directly below the rock, a path has been chopped through the dense brush which follows, generally, a watercourse immediately west of the rock.

The Flake is an exfoliation slab standing approximately 300 feet high, 300 feet long, and 20 feet thick. From within the immense corridor between the slab and the wall, several attempts were made to climb the fractured face to the right of the west chim-

ney. Progress was soon halted 40 feet up by smooth vertical rock and the absence of that indispensable requirement—the piton crack.

The upper part of the east ridge looked promising, but the lower 90 feet had no cracks. A 200-foot light line was used to throw over a horn at the top of the unclimbable section, a rappel rope was hauled over, and a prusik was rigged.

From the horn the second pitch led up fifth class for about 35 feet where three bolts were used for direct aid. From the highest bolt, a traverse was made left and up on a steeply sloping ledge to a large foothold where another bolt was placed. From here, the route continues to the right, then generally straight up to the summit ridge on high-angle nubbins. This pitch is 110 feet long with the highest bolt at the 60-foot mark. A bolt was placed at the end of this pitch for an anchor and rappel point. From here, the summit was reached by an exposed traverse 40 feet along the narrow ridge.

A second ascent was made one month later by Mark Powell and Bill Reid. After completing the prusik pitch, they were able to climb the second pitch entirely without direct aid. GEORGE S. SESSIONS

PINNACLES NATIONAL MONUMENT

East Yak.—The first ascent of East Yak from the ground was made by John Whitmer, David Sowles, and Craig Holden on March 5, 1956. Using direct aid from bolts and pitons, Whitmer led 15 feet up a face on the northern side of the pinnacle and then traversed to the left (east) to a belay point on an outward-sloping ledge. From here a shoulder stand put Sowles on the upper part of the route by which he reached the summit using three fifth-class bolts over the 90 feet of exposed climbing. All previous ascents of this spire had been made by a Tyrolean traverse from the nearby West Yak. FELIX KNAUTH

Disintegration Point.—On January 1, 1957, R. Edwards, T. Hovey, H. Lewis, and I made the first ascent of Disintegration Point. This pinnacle, directly north of The Wedge, was climbed by the northeast ridge on very rotten rock without pitons or bolts. JAMES SMITH

UNITED STATES, GENERAL

BOSTON PEAK, CASCADES

On September 7, 1956, Keith Anderson and I ascended Boston Peak by what is believed to be a new route. From the Boston Mine trail we bushwhacked up to just west of Sahale Peak. The tongue of snow leading up to the Boston Peak–Sahale Peak col was crossed diagonally up to the left (north), where the rock was gained at the lower of two prominent gullies. Starting from this gully, we climbed the west face of Boston Peak. The climbing on rotten rock was easy fourth class. We rappelled to the Boston-Sahale col and descended the snow tongue. JOHN SHONLE

GRAND TETON

The early morning light of September 5, 1956, saw a party of four climbers—Julie Griffin, Bill Briggs, Bill Williams, and myself—gathered at the base of what was presumed to be the Petzolt Ridge of the Grand Teton. With Williams and me sharing the route-finding responsibilities, the party worked up a series of open chimnies and faces to the summit of the ridge. There, somewhat to our chagrin, it was

discovered that we had ascended the Underhill Ridge rather than the Petzolt by what was apparently a new or at least previously undescribed route.

The climbing was excellent: high-angle but firm granite, adequate and well-placed holds, and a fairly obvious route which bore in a westward as well as upward direction. The most challenging pitch was a 15-foot face which bypassed a huge chockstone. I clawed my way up here only to be wholly deflated by Briggs's discovery of an easy thread-the-needle variation behind the chockstone. Basking in the summit sun we all agreed that in spite of frustrated glory and mistaken ridges, the climb provided that rare combination of technical difficulty, fine weather, success, and companionship so essential to a good day's mountaineering. FELIX K. KNAUTH

CLEOPATRA'S NEEDLE

For several years we had known about a spectacular spire in New Mexico through pictures advertising a bus company. As we became familiar with sandstone climbing, we began to inquire where that spire was, how high, how fractured and how soft the sandstone. We found an article stating that the needle (they called it Spider Rock, possibly confusing it with the one in Canyon de Chelly) was 265 feet high and was in the Valley of Thundering Water near Fort Defiance, Arizona. Mark Powell visited the valley last spring and brought back an excellent report.

On Labor Day weekend, Jerry Gallwas, Mark Powell, my wife Nancy, and I piled with climbing gear and four days' camping supplies into our Volkswagen for the 900-mile drive. The best approach is through Gallup to Window Rock and Fort Defiance. From there we took a dirt road north past Red Lake, then east and south into the valley. One can drive right to the spire.

On the afternoon of our arrival we obtained water from the Watchman's spring and then began looking at Cleopatra's Needle. It looked very good. A single crack split it from bottom to top and it appeared to be climbable on either side. On the west side the crack was wide and rounded and there was a small ledge about halfway up. On the east the crack seemed small from the ground and the whole face overhung a little, but the ledge on this side was large and comfortable looking. The ledge on either side seemed accessible from the shoulder on the north. Our choice of route was based on which of these traverses was easier. I led fifth class to the east ledge and brought Jerry up while Mark collected firewood. From the base of the crack I could see that it would take angle pitons all the way to the sharp little overhang near the top, but the crack got larger the higher one looked. Now the work began. In a couple of hours I ran out of carabiners about 40 feet from the summit. The pitons had not seemed so bad as one might expect in soft sandstone; each had driven with a solid sound, and I felt quite sure we would make the summit the next morning.

I unsnapped from my top piton and descended onto the next. It began to pull out. Quickly I lowered myself to the next. It also shifted. The fourth held my weight but now I could not reach back up to unsnap from the loose ones. I came down to the ledge knowing that tomorrow's leader had no pleasant task.

When the sun had warmed the rock Jerry started up the piton ladder. Much to our horror none of the rungs would hold him; he had to replace each one. The last three or four were beside a hollow-sounding flake and would not support his greater weight. A bolt seemed to be called for. Before accepting this necessity Mark and Jerry traded places. Mark placed a bolt, drilling the first half-inch by twisting the drill in his hand. With this comfort below him he pulled my last piton with his hand and

began placing his own. Above the flake the pitons again seemed sound and Mark led past the overhang and to the summit. I followed on shifting pitons. Two or three fell out behind me. The sandstone was so soft that standing and shifting one's weight on the pitons was enough to loosen them.

Jerry had no problem taking pitons out. Few of the thirty even needed pounding with a hammer. His problem was reaching over gaps where pitons were now missing. It seemed strange for a third man to place pitons. Meanwhile on the summit, a ridge 10 feet long which we straddled, we became aware of a new annoyance. All around us thunder showers were brewing and we sat on a lightning rod over a plain. But the clouds dissolved and we had the late afternoon sun as we built a cairn and prepared our rappel anchor.

DON WILSON

CANADA

BELLA COOLA

On July 31, 1956, six eager men emerged from the civilized world to seek adventure in the little-known area of the Coast Range southeast of Bella Coola, B.C. Richard Houston, David Rynin, Will Siri, George Whitmore, James Wilson, and I had the previous day arrived by boat at a lumber camp near the mouth of the Noeick River. After five miles of transportation generously furnished by the lumber company, we reached the end of the road—five miles up the Noeick River. Six days later we arrived at the headwaters of the Noeick River, having averaged approximately 3½ miles a day through the "Canadian jungles." We camped at one of the sites used by the only other party to visit the area—a well-chosen spot near the end of the Noeick and Fyles glaciers with an unforgettable view of the twin peaks of Mount Jacobsen.

We waded through the icy waters of the Noeick River and after a brief thawing-out stop, headed back in a westerly direction toward the main objective of our trip, Snowside Mountain. As we made our way across the War Drum Glacier, we were joined by two familiar Coast Range companions, rain and fog. Late in the afternoon we arrived at the foot of the southeast ridge of Snowside Mountain, but owing to the fog we did not realize our good fortune.

Nearby were several crevasses, one of which had a little stream of water flowing into it. This fact plus the somewhat sheltered area around the base of the rock ridge made an ideal spot for our base camp.

We were greeted the next morning by the sun and the weather was much improved, so we made our first attempt on the mountain. Since we had arrived in a fog we were not sure from our vantage point which mountain was "it." By noon we had found out, but time did not permit more than a good look at the southwest ridge.

The following day we made a second attempt, this time by way of the northeast ridge. All went well until we neared the summit where we were stopped by a steep, sharp snow ridge. After climbing part way up the ridge we decided it was too dangerous and too late to continue, so, disappointedly, we turned back, reaching the base of the ridge after sunset. It was at this point that Will Siri, who had been wearing dark glasses, found that he had left his regular ones back at camp. This situation made it impossible for him to continue so he and three others spent the night at the foot of the ridge. The other two, using flashlights, reached camp about one o'clock the following morning.

The next day was spent licking our wounds and preparing for a third and final attempt to conquer Snowside Mountain. It was unfortunate to waste a day of such good weather, but we needed the rest since we had been on the march continuously for the past nine days. Saturday, August 11, was another perfect day and four of us left camp early to try our luck by way of the first route tried—the southwest ridge. By 10 A.M. we reached the high point attained the previous Wednesday. The climb to the summit ridge was mostly fourth class, interspersed with a few fifth-class pitches. Five or six pitons were used in this part of the climb and we reached the ridge around 1 P.M. It took us until 2 P.M. to reach the summit at the other end of the ridge. We spent another hour eating, taking pictures, building a small cairn and enjoying the feeling of having reached our goal. At the foot of the southeast ridge we could see the tiny speck that was our base camp, and on a snow field to the east we observed two slowly moving and almost invisible dots, Houston and Siri. Reluctantly we left the summit and retraced our route back down, arriving at camp in time for supper.

We broke camp the next morning, and all tied together in one long chain hiked back across the War Drum Glacier and its northeastern tongue, the Noeick Glacier. We headed north from the headwaters of the Noeick River and over a ridge to the beginning of the Nusatsum. The valley of this river was similar to that of the Noeick but our progress was faster. We reached a lumber road near the northern end of the Nusatsum on the afternoon of Thursday, August 16, and within a couple of hours were back to Bella Coola and civilization. JOHN M. DORSEY

PURCELL RANGE, BRITISH COLUMBIA

During the latter part of August and early September, 1956, Jac Lasner and I packed into that part of the Purcells known in the old guide book as the "Bobbie Burns Group," just north of the Bugaboos. There were no accurate maps of this area so the trip was exploratory, and all elevations given are approximate. We left our car about 6 miles from the end of the road into the Bugaboos, ascended 4,000 feet to the top of a ridge (on an old mining trail), then dropped 3,000 feet (bushwhacking) to Vowell Creek, fed by the Warren Glacier. Continuing upstream, we set up our camp at the end of the third day (meanwhile waiting out a storm en route) in a cave on a tree-covered bench about 500 feet above the tongue of the glacier. We remained here 6 days and in spite of a 3-day snowstorm, made the following ascents.

Peak 9,400, north and east of the Bugaboo Spire across the Warren Glacier, was ascended via a snow field on its east face, then north on its rocky ridge to the summit. A cairn was found on the summit. Descent was via the west face.

Peak 9,200, located at the northern tip of the ridge from Howser Spire, was ascended via its northeast snow and rock buttress, and descended by traversing south along the summit ridge to its lowest point and rappelling over the bergschrund to the glacier below. This was an apparent first ascent as no cairn was found.

Peak 9,600, near Mount Conrad, was reached by traveling north along the Warren Glacier, descending 1,000 feet into the East Creek basin and following the snow-covered south face to the rocky summit. This was also an apparent first ascent.

We returned to the car in one day by going over the pass just east of Northpost Spire, and after descending through heavy brush, came out on the Bugaboo Trail.

BARBARA LILLEY

Reviews

Edited by VIVIAN G. BRECKENFELD

TRAVELER IN THE WILDERNESS. By Cid Ricketts Sumner. Harper, New York, 1957. 248 pages, map and end papers. $3.50.

Even for a seasoned wilderness traveler whose experience beyond the road's end totals many months or years, it would be a considerable achievement to participate in such an expedition as Charles Eggert got together to retrace (and photograph) Major Powell's 1869 route down the Green and Colorado rivers. For a woman in her sixties who had never before seen sagebrush, who had never slept outdoors in a tent, and who recoiled overwhelmed from her first view of "the ghastly breach" that was the river canyon, it was a triumph and a revelation.

Powell's own accounts of hardship and disaster, some gloomy Indian legends, and the casualties suffered even recently by ill-prepared river runners leave no doubt that the river presents real hazards. But it also offers awesome beauty, genuine inspiration, and—for some—the chance to know one's inner self as never before.

Cid Ricketts Sumner is "Southern born, . . . gentle, delicate-seeming," and tougher than she looks; perceptive and receptive, sensitive to humanity, well read, a long-ago medical student, a grandmother, and a novelist—in perhaps roughly that order. Oh, yes—and courageous. Her irresistible letters persuaded Charlie Eggert that she should be allowed to join the expedition, consisting otherwise of males from a mature seventeen to fiftyish. She could ask (or, one gathers, be asked) to leave the party at any one of the occasional contacts with civilization that divided the trip into sections. She didn't (and she wasn't). They wouldn't let her run Cataract Canyon, though. "You're too precious to risk," Don Hatch, head boatman, told her with a gesture of affection. Instead, they sent her ahead in a tiny plane that took less than an hour for what was a four-day trip on the river—and scared her worse than the rapids would have. But for every other part of the trip, from Green River, Wyoming, to Lee's Ferry, Arizona, she was right there with the rest of the party—equally tossed and shaken and drenched by the rapids, sun-baked and stifled or wind-blown and chilled, weary and hungry, sand-blasted or bruised or insect-plagued. Also equally inspired by the power of the river and the grandeur of the cliffs, moved by the peace of a quiet night, absorbed in the uncomplicated tasks of maintaining life, touched by the threads of understanding between people.

Her book is a true adventure story honestly told, charming and compelling. It makes the reader as dissatisfied as she is with a civilization that, in the name of progress, is moving to destroy the unearthly beauty of side passages in Glen Canyon. But it warms the reader, too, with humor and humanity. Through the narration emerge the characters of her companions on the river journey and an estimate of what they are seeking and what they are finding.

To have met Cid Sumner, even briefly, is to have sensed unusual warmth and sparkling fun and deep thoughtfulness; such a book as *Traveler in the Wilderness* is rich fulfillment of the promise. C.E.M.

STARLIGHT AND STORM. By Gaston Rébuffat. Translated by Wilfred Noyce and Sir John Hunt. E. P. Dutton & Co., New York, 1957. 189 pages, photographs, diagrams, map. $5.50.

At first glance this is a book on climbing. There are magnificent descriptions of climbing six great north faces—the Grandes Jorasses, Piz Badile, the Drus, Matterhorn, Cima Grande di Lavaredo, and the Eiger—told with detail graphic enough to satisfy any climber; the illustrations are not only beautiful photographs, but there is a diagram beside the photograph of each north face, showing the route. The book contains a fine section on a technique of mountaineering.

But this is more than a climbing book. There is a joyousness throughout its pages, an enthusiasm, a philosophy of life which has at its heart Gaston Rébuffat's love of the mountains, and his appreciation of the fellowship of climbing. The translation is obviously well done but the poetry of expression, beauty of phrase, and liveliness must be in Rébuffat's original French. Each climb shows his kinship with the mountains and the rocks and brings out the special happiness found in the comradeship of the climbers: "the cream of their combined effort is their friendship."

The gay lightheartedness which seems to be a characteristic of French climbers is very apparent. The book ends as the author and his party come down from the climb of the Eiger north face. "We descended the ordinary route at a run, with life singing through our veins as it had done that morning, the day before, and the day before that. Life, the luxury of being!"

As John Hunt says in his foreword, "Gaston Rébuffat, one of the great climbers of all time, is first and foremost an intensely human person, who has discovered through the medium of mountains the true perspective of living."

HARRIET T. PARSONS

A PICTURE HISTORY OF MOUNTAINEERING. By Ronald W. Clark. The Macmillan Company, New York, 1956. 350 illustrations. $5.95.

It is unusual to find a picture book which subordinates mountains to the remarkable and picturesque men and women who invented and maintain the sport of mountaineering. The best feature of the book is the pictures of people and dogs.

Muir, Gardner, King, Brewer, and Cotter represent the Sierra pioneers. Leslie Stephen and Melchior Anderegg are beaux in comparison with Hillary and Tensing. The party which made the first ascent of the Eigerwand—the date should be 1938, not 1935—is shown exhausted, but exuberant after the four-day ascent.

The photographs of mountains are poorly reproduced and generally dull. They are also distributed with a heavy emphasis on British participation in the Alpine phases. The eccentricities of national and geographical imbalance are massive. The only Andean photograph, for example, is a bad one of the summit of Aconcagua, and the Andean ranges as a whole are mentioned only three times in the index. Coolidge's dog, Tschingle, is cited five times, including a sketch of his grave.

Many readers will be misled by the picture of El Capitan and the implication that the face was ascended by mechanical means between World Wars I and II. The mistakes of fact are numerous although less important than the distortions of emphasis. Clark's book is valuable because its particular strength is not duplicated in other texts.

A. W. BAXTER, JR.

GIVE ME THE HILLS. By Miriam Underhill. Methuen & Co., Ltd., London, 1956. 252 pages, illustrated. 25 shillings.

As Miss O'Brien, the author had many opportunities in her younger days for visiting the Alps. Climbing with guides the great peaks, and later the rock towers of the

Dolomites, she acquired such skill in techniques that, coupled with her natural abilities, she found herself able to dispense with guides. Yes, she even dispensed with men, at least on the mountains. With Jessie Whitehead, a former member of Sierra Club outings, and one or two other women, she undertook a series of "manless" climbs, including the Matterhorn and Grépon. But one summer she joined Florence and Dean Peabody and Robert Underhill, "for some guideless—not manless—climbing." After that, her "constant companion on every climb was Robert Underhill. Manless climbing is fun for a while, but this other arrangement is better."

There is a great deal more in the book than spectacular Alpine climbing. The chapters on skiing—early days of the sport in New England, especially—are delightful. Of special interest to Sierra Club members will be the chapters on pioneering in Idaho and Montana. There, besides making a number of first ascents, the Underhills had many experiences not to be had in the Alps, including adventures with mules and bears. How they longed to induce one of their Alpine guides to come to Montana that they might see what he would do in the face of a family of grizzlies!

From 1914, when Miriam began her climbs in Europe, to 1953, when she returned to some of the same scenes to climb with her two sons, her book is full of exciting and delightful events, told with humor and intimacy. It is a treat to go along with the Underhills by reading the book. MARJORY B. FARQUHAR

AUDUBON WESTERN BIRD GUIDE. By Richard H. Pough. Color illustrations by Don Eckelberry; line drawings by Terry M. Scott. Doubleday, New York, 1957. 316 pages, 32 color plates, charts, bibliography. $4.95.

No wonder identifying automobiles hasn't become the popular hobby birding has. Once the make, model, and year have been determined, you are at a dead end. But identifying birds is only the first step in an endless game replete with exciting discoveries.

The Audubon guides by Richard Pough, of which the present volume completes the trilogy, are designed to take birding beyond the first step of naming the species into observations on behavior patterns, food, voice, nesting activities, migratory habits, range, etc. With the two previously published books, the *Eastern Land Bird Guide* and the *Eastern Water Bird Guide,* we finally have a complete guide to the birds of North America from the Mexican border north to the Arctic, with color illustrations of every species.

This new Western guide covers only the 203 exclusively Western species. The remaining 411 Western birds are included to the extent of giving their range, but the illustrations and descriptions are in the Eastern guide. Because the Western guide must be used in connection with the two other volumes, it is hardly manageable in the field. R. T. Peterson's *Field Guide to Western Birds* remains the book for field identification. With Peterson in your pocket when you're out in the field, you can learn the name of the bird; with Pough in the car or back home, you can have the satisfaction of getting more fully acquainted. Herein lies the fun of birding.

The arrangement of the book deserves special note. The table of contents constitutes a check list of the 614 species of Western birds, and the division by family is helpful to the beginner. All descriptions and illustrations are conveniently cross-referenced for quick use, and the range information covers the entire range for that species, not just its extent in North America. The index includes the gamut of common names for the many races of a given species, while the book is based on the

fifth edition American Ornithological Union check list order. The standardized use of boldface type, indentation, and abbreviation make these guides the handiest ever for quick and easy reference.

Birding is an insidious occupation. The "make, model and year" will not satisfy for long. Once you get started observing rather than watching birds, you'll want the Pough guides. PHYLLIS LINDLEY

ON THE TRAIL OF VANISHING BIRDS. By Robert Porter Allen. McGraw-Hill, New York, 1957. 251 pages, illustrated. $4.50.

Here is a "true-life adventure" story, whose impact is to rouse anyone from a let-George-do-it attitude toward conservation causes. For sixteen hours Robert Porter Allen and his companion stood waist-deep in icy water under gales holding their light-weight plane off the rocky shore of a remote lake in the Arctic wilderness. In the insufferable humidity of the Everglades mangrove swamps, Allen wallowed through a tangle of roots and network of branches as his legs sank to above the knees in treacherous mud. Buffeted about by a Caribbean hurricane in a 21-foot sloop, he counted as many as four waterspouts in sight at one time, two of them dangerously near. All this and more in the course of field work to collect information that would help in the preservation of the whooping crane, roseate spoonbill, and flamingo.

Allen is a member of the research staff of the National Audubon Society. *On the Trail* is an exciting and entertaining account of his adventures while doing the field work for three exhaustive monographs on these vanishing long-legged waders. His easy-flowing style and humor, the fascinating descriptions of bird behavior, and the wilderness setting of his travels combine to make this a rapidly read and long remembered book to which one is likely to return.

Throughout the book runs the thread, never explicitly stated, of concept-developing in conservation techniques. It is not enough to understand the ecology of organisms threatened with extinction. It is insufficient to pass laws for their protection and set aside refuge areas having suitable environment for their reproduction. We, the people, must be taught to appreciate the fact that we are part of the natural world and learn to live in harmony with it. This is a vital part of conservation.

The book is, in some ways, a history and forecast of the development of the Audubon Society's educational program. This development parallels a similar evolution within the Sierra Club that changed our original statement of purpose, "to explore, enjoy, and render accessible," to the present "explore, enjoy, and preserve." Allen recounts how a group of photographers, not hunters, caused a colony of flamingos to desert, and therefore allow to perish, many small young and unhatched eggs—this in a remote wilderness of Yucatan. While we are being educated to the marvels of nature and stimulated to make our way into difficult wilderness areas, we must also learn a proper respect and humility that will put us in harmony with the organisms that make wilderness their home.

Bob Allen's enthusiasm for his work is certainly a contribution toward this sense of humility and harmony. PHYLLIS LINDLEY

THE BIRD BIOGRAPHIES OF JOHN JAMES AUDUBON. Selected and edited by Alice Ford. The Macmillan Company, New York, 1957. xv+281 pages. $10.

Without pretension to literary or scientific polish, Audubon took pride in field documentation and technical detail, hewing out five volumes of *Ornithological Biog-*

raphy for a text to go with his *Birds of America.* From this mass of material difficult of access, the editor has chosen accounts of 80 species, deleting anatomical detail and the irrelevant and repetitious. Errors of detail and of classification—as of immature bald eagles as a new species—are corrected. Present ranges are given for the birds described.

The result is a lively, detailed story of Audubon's encounters with birds and his synthesis of their lives, habits, and character. Birds described in this selection include those rare or extinct species, the passenger pigeon, Carolina parrot, ivory-billed woodpecker, and whooping crane. Pictures of the first three are included among the 12 fine reproductions in four-color gravure from Audubon's originals in watercolor and chalk. They are notably less stiff than the engraved reproductions of the *Birds.*

I need hardly add that ornithologists today know a great deal more about birds than Audubon did; his work is now considered mainly of historical or academic interest. This selection is nevertheless a fine souvenir of our foremost pioneer naturalist, whose character and tastes it displays well along with his birds. At the price, which is not unreasonable, most of us interested in natural history will enjoy *borrowing* it for hammock reading. WILFRED WARD

AUTUMN ACROSS AMERICA. By Edwin Way Teale. Dodd Mead and Company, New York, 1956. 363 pages. Photographs by the author. $5.75.

For twenty thousand miles, from Cape Cod, Massachusetts, to Point Reyes, California, naturalist Edwin Way Teale and his wife traveled by automobile through the North American autumn. From mid-August to December 20, which the country people of England used to call winter's eve, they zigged and zagged westward across the country in search of nature's autumnal manifestations.

They watched masses of migrating swallows on Cape May; paddled a stretch of the Au Sable River in northern Michigan where in 1903 was found the long-hunted nest of the Kirtland warbler; they reveled in the "painted hardwood forests" of Minnesota; saw their first pika (cony) in Yellowstone. In Washington they remembered sadly how John Muir foresaw that Olympic National Park would be attacked again and again by those to whom trees are only board feet or locked-up dollars. They lingered in Pacific Grove to study and photograph the fabulous hordes of Monarch butterflies hibernating there. In the kelp off Point Lobos State Park they watched sea otters, and Teale's family-life details and "table manners" of these nearly extinct mammals are captivating.

Those who have read the earlier book, *North With the Spring,* will know what to expect in this one: a leisurely pace, an observant eye, a joyful sharing of his own keen pleasure in the living world. There is always the solid factual background of the trained ornithologist and entomologist, but the foreground is never cluttered with data to bewilder the lay reader. It is definitely for the nonscientist that this pleasant travelogue of autumn is written, believing that, "whoever stimulates a wider love of nature for its own sake accomplishes no small thing. For from these is formed the enduring component of the conservation movement." V. G. B.

THE CALIFORNIAN WILDLIFE REGION. By Vinson Brown. Naturegraph Co., San Martin, California, 1957. 125 pages. $1.50 paper, $2.75 cloth.

A revised and enlarged edition with more than 500 black-and-white illustrations. Gives basic information about the common plants, mammals, birds, reptiles, amphi-

bians, and fish of lowland and foothill California, with their principal habitats. An elementary handbook.

THE AMERICAN OASIS. The Land and Its Uses. By Edward Higbee, Foreword by Fairfield Osborn. Alfred A. Knopf, New York, 1957. 262 pages. $5.00.

Edward Higbee is a soil conservationist and agronomist, but although *The American Oasis* is primarily a book on farm practices in the United States, he still has something definite to say to conservationists. In the West he is particularly concerned about the farmers' cry for bigger and better reservoirs and about watershed management.

In his chapter on deserts and irrigated valleys he points out the rapid rate at which silt is collecting behind some of our dams. "Hoover dam will have been paid for by the time it becomes useless. But money alone can never buy back a natural canyon that has been lost. . . . Water production must be subordinated to watership management." Good watershed management means adequate supervision of the forests on our mountain slopes where the worst enemies are overgrazing and reckless timbering.

It is up to the general public, Higbee emphasizes, as well as to legislators, to understand and help make these vital decisions if America is to remain an oasis of plenty.

V. G. B.

THE NATIONAL PARKS: What They Mean to You and Me. By Freeman Tilden. Alfred A. Knopf, New York, 1955. 417 pages. $5.00.

This is a reprint. It contains 36 illustrations and a map showing National Parks and National Monuments in the continental United States, Alaska, and Hawaii, discussed in *The National Parks.* The book was reviewed by Weldon Heald in the *Sierra Club Bulletin* for 1952.

JOHN MUIR. Father of Our National Parks. By Charles Norman. Julian Messner, Inc. New York, 1957. 186 pages. $2.95.

This biography of the founder of the Sierra Club was written for young people. It could also serve as an introduction to John Muir for old people still unfamiliar with his life and writing.

From the rugged Wisconsin boyhood under the thumb of a fanatical father and the hard-won college education, Charles Norman takes Muir through the wandering years which finally led to Yosemite Valley—his spiritual home. The chapter on Muir's inventions, including the alarm-clock bed which tipped him out onto the floor in the early mornings, will certainly intrigue the mechanically minded. The storm experiences on Mount Shasta and on the Alaskan glaciers make more exciting reading than most fiction. But the core of the book, as the subtitle makes clear, is Muir's fight to have Yosemite, Grand Canyon, and other irreplaceable parts of America rescued from the "despoilers" by being declared national parks.

Unquestionably the most vivid bits in this slim volume come unadulterated from the pen of the great man himself. And this is what the author intended—that for those in whom the vision and philosophy of John Muir strike a responsive spark the short bibliography may prove a trail leading to a finer view both of the man and of the world we live in.

V. G. B.

THE GREAT CHAIN OF LIFE. By Joseph Wood Krutch. Illustrations by Paul Landacre. Houghton Mifflin Co., Boston, 1956. 227 pages. $3.75.

This is a book to read twice, first for the whole picture of upsurging life which shines through the book, and then again, thoughtfully, to absorb the stimulating ideas and to enjoy the refreshing style for which this author is famous. The neat, cold theories of Darwinism do not fit the world of life as Joseph Wood Krutch sees it. If fitness for survival is the only criterion, why did the line of evolution bypass the efficient and complex insect to favor the vertebrate whose development so often seems to have been in spite of crude simplicity and bumbling inefficiency? Some other factor is involved in developing life. Why would you choose to be a robin rather than an ant? Because, says Mr. Krutch, the robin seems to have more fun. He is more aware of his world and of other lives besides his own. Is awareness, consciousness, the supreme goal of nature? One of the most intriguing chapters of the book is that on undeveloped potentialities, dealing with the extraordinary emotional development of which animals are capable under free and friendly association with man. This leads Mr. Krutch naturally to a profound reverence for life and an intense feeling concerning casual destruction of life. His dislike of hunting is well set forth, but here we wonder how he would deal with the pitiful results of unlimited reproduction in the absence of the predator. The epilogue sums up the book. The long chain of evolution has brought to the animal an emotional awareness expressed in joy of living, in play, and in the curiosity which in turn enlarges the mental capacity. The developing intellect is now so complicated that it is in danger of losing its way. The understanding mind will turn again to learn from the animal that joy in living is real, instinctive, and our most precious heritage. CICELY M. CHRISTY

THE HERITAGE OF EVERY AMERICAN. The Conservation Activities of John D. Rockefeller, Jr. By Nancy Newhall. Prologue by Fairfield Osborne. Epilogue by Horace Marden Albright. Alfred A. Knopf, New York, 1957. 179 pages. $13.50.

This is an exceptionally handsome volume, to be admired and enjoyed almost as much for its format as for its content. It is illustrated liberally with photographs—many in superb color—of some of the finest scenery in America.

That this scenery has been set aside as a permanent part of the American heritage is due in no small measure to the foresight and generosity of John D. Rockefeller, Jr. How Rockefeller has quietly—and often anonymously—gone about making many incalculably valuable gifts to all of us is the story told by Miss Newhall in this book.

The author points out in the prologue that, from early childhood on, Rockefeller has cherished the American land and its history. He is also the sort of man who has always felt a responsibility—even an obligation—to use his great wealth "for the benefit and the enjoyment of the people." Fortunately for all of us, he has chosen the field of conservation for many of his good works. In doing so, he has helped to acquire for everyone some of the magnificent lands he has loved, and he has recreated some of our more inspiring history.

How remarkably encompassing Rockefeller's choice has been emerges early in this book. His conservation activities have ranged from city parks to national parks; from Acadia, Maine, to the Virgin Islands; from the Hudson Valley with its mighty Palisades, to the towering redwoods of the West; from the Great Smokies to the Grand Tetons. His restoration of Colonial Williamsburg is one of his better known projects,

but how many of us have been aware of his deep love for trees? Of his great interest and participation in road planning in parks? Of his meticulous care for the details of each project he has undertaken? Of his help in establishing invaluable museums in Mesa Verde, the Grand Canyon, and Yellowstone?

In all his conservation activities, Rockefeller has stressed the participation of many people—not only in the use and enjoyment of an area, but in acquiring it. While he has made many magnificent gifts outright, as in the Great Smokies, the Grand Tetons, and Colonial Williamsburg, to name a few, much of the time he has worked with other groups in determining and developing valuable areas. He believes that a worthy project should be the concern and responsibility of the many rather than of a single person.

As Albright notes in his epilogue to this volume, we can thank Rockefeller for this philosophy as well as for his abounding generosity. Certainly we—and the generations to come—owe him an immeasurable debt for his vision and his expression of it. As much as any one person, he has enriched the heritage of every American.

PEGGY WAYBURN

FOREST AND RANGE POLICY. By Samuel Trask Dana. McGraw-Hill Book Co., New York, 1956. ix+455 pages. $6.50.

The policy which guides the various governmental agencies managing or regulating the use of land for forest or range purposes is of concern to Sierra Club members both as users of this land for recreational purposes and as persons helping to formulate the policy under which this land is administered. This book describes this policy, its historical development, and the public needs and pressure which brought it about. The book is oriented toward conservation, and policies are judged accordingly. It becomes apparent that it is difficult to judge in the heat of the immediate argument what constitutes wise use of resources. This book serves both as a means of giving a perspective on conservation problems and as a reference for information needed in approaching these problems. An interesting and sound contribution to conservation literature.

The author, formerly dean of the School of Natural Resources at the University of Michigan, led that institution with a philosophy of wise and integrated use of natural resources—a philosophy apparent in the book. PAUL J. ZINKE

AMERICA'S NATURAL RESOURCES. Charles H. Callison, ed. Ronald Press, New York, 1957. v+211 pages. $3.75.

Here, readably for the amateur, are presented eleven essays on conservation of the renewable natural resources of the land. Each, whether on soil, water, wildlife, or wilderness, traces the history of one field of the American conservation movement, assesses its present status, and points, sometimes hesitantly, sometimes confidently, to the future. Everyone knows some of what he reads here, but few have the breadth of knowledge to know all of it. Look particularly at chapters on grasslands (David F. Costello), fish (Albert S. Hazzard and William Voigt, Jr.), parks and wilderness (Howard Zahniser) for some things you never knew and some that you have always known but which aren't so.

Throughout you will find, repeatedly emphasized, the need for coördination of activities of different agencies in the same field, in bordering fields, in competing fields. It seems that the technology of many of the simple problems is well in hand but,

where problems impinge on each other, we have a welter of unresolved controversy. Consider: salmon vs. street lights, suburbs vs. walnuts, parks vs. dams.

In chapter after chapter the wilderness is justified without the need of recourse to economics. It is rather too bad, after this, to have sport fishing justified by the money spent on it. Why not a plug for the boll weevil which carries a half-billion-dollar insecticide industry on its back and at the same time stands as Secretary Benson's most stalwart ally in limiting the crop?

Despite much attention to detailed problems, virtually nowhere in the book, even in the chapter by Fairfield Osborn on population—the common denominator of resources problems—will you find much about long-range objectives. For conservation, in this country and this decade, has become its own objective. This may be for the best. When the simple problems are solved and the conflicts of details are resolved, we may be ready to examine the principles antecedent to all of our accomplishments and to ask ourselves whether a conservation policy without a population policy makes sense.

One target is, however, clearly specified. Edward H. Graham ("Land Use Principles and Needs") says: "When the farmer farms on the contour because it no longer occurs to him that there is any other way to do it, as many of our young farmers now do, then conservation has become a reality. It has then become the right and ethical thing to do; it is part of the mores of our society." D. B. LUTEN

IN SEARCH OF THE GOLDEN WEST. The Tourist in Western America. By Earl Pomeroy. Alfred A. Knopf, New York, 1957. 232 pages. 25 halftone illustrations. $5.00.

The West has attracted tourists from Europe and the American East since long before the Civil War. A few even joined the pioneer wagon trains. Why did they come? And what did "the West" mean to the tourist then, and during the successive phases of tourism, from the first railroad excursion parties west of the Missouri in 1866 to today's hordes of motorists? After consulting an amazing number of sources, Earl Pomeroy answers these questions. The titles of his source material, which appear as footnotes, are provocative in themselves and should be helpful to future writers about the West.

The hunter and sportsman had an obvious motive for western travel. Some, like Theodore Roosevelt, bought land for permanent camps on their first trips, or became gentlemen ranchers. Invalids set up tent colonies in Colorado, and, later, Santa Barbara and Pasadena were full of invalids who came for the climate. But neither these tourists, nor the rich Pullman excursionists, were attracted to *wild* scenery. They wanted oddities and places which by their familiar standards, were "picturesque." Hence, great luxury hotels were built beside the ocean, near geysers, or by rock formations usually called "Garden of the Gods," to which elaborately overdressed women drove in carriages.

Interest in Indian culture and cowboys came much later, and the desert's beauty was not recognized until recently. Although Lord Dunraven wrote in 1871 of Fort McPherson, Nebraska, "We found ourselves plunged in the wild and woolly west," the romantic appeal of the West did not strike most tourists until authors like Owen Wister had written about it.

Even Westerners who had made their cities as Eastern as possible began to create

"the myth of the West" only as a result of trying to lure tourists into becoming settlers. By that time the pioneer West, and the remnants of the Spanish culture it had not valued, had gone, and the wilderness was fast disappearing.

In Search of the Golden West contains tales of early travels in Yosemite and other national parks, and the author is clearly aware of the present conflict between recreation and the preservation of the wilderness, though he does not explore the problem deeply. His conclusion that "the introduction of women and family groups to outdoor camping probably did much to civilize and refine it" may even be a bouquet for some unsung members of the Sierra Club.

Pomeroy's book would be more interesting if he had let the nostalgic photographs and the entertaining facts he has gathered speak for themselves, instead of weaving theories about them—theories which often seem unrelated to the material. He is right, though, in his conclusion that El Dorado would not be as golden without tourism past and present. But if the West is to continue to be worth touring, nature lovers will have to teach and practice a new concept of civilization. RUTH COLBY

AMERICAN WATER AND GAME BIRDS. By Austin L. Rand. E. P. Dutton & Co., New York, 1956. 239 pages, 127 photographs in full color, 40 photographs in black and white, 35 bird silhouettes. $11.50.

Until recent years, art books on birds were reproductions of the paintings of artists like Audubon, Menaboni, Fuertes, and others. But now the camera has come of age and given us this handsome volume on North American water and game birds. The accompanying text is excellent and readable. With the companion volume, *Land Birds of America,* published in 1953, we now have a beautiful photographic record of North American birds in an outsized edition that is bound to yield many hours of pleasure.

Since the photographs are the mainstay of the book, it is well to mention that, at least in the copy reviewed, a few pictures were out of register and one was even printed upside down.

Austin L. Rand, chief curator of the Chicago Natural History Museum, sets the tone in the introduction: "Birds may be the special concern of the bird watcher, the sportsman and the scientist, but they belong to all of us and no one needs any special excuse to enjoy them." Certainly, *American Water and Game Birds* will add a great deal to that enjoyment. PHYLLIS LINDLEY

ON CLIMBING. By Charles Evans. Countryman Press, Vermont. 191 pages, 32 plates, 6 maps. $5.00.

The techniques and equipment used in mountaineering are continually changing and, though a great amount of mountaineering literature has appeared in recent years, little has been said about these subjects, particularly regarding equipment.

Nearly three-quarters of Dr. Evans's book consists of an informal discussion of the techniques of rock climbing and mountaineering, the selection of the proper equipment for the type of ascent to be attempted, travel on glaciers, and establishment of mountain camps. Ice and snow craft is covered in detail, though the maneuvers used in tension climbing are only briefly mentioned, the author feeling that they are too advanced to be included. Only a few pages discuss mountain rescue and these are concerned with first-aid problems. No mention is made of the possible techniques for rescuing injured climbers, a lamentable exclusion of some important mountaineering

information that has not as yet appeared in translation from the German and Austrian Mountain Rescue Service manuals.

Evans's advice on equipment selection is detailed and sound. However, regarding the choice between nails and Bramani-type soles, he suggests that the Bramani sole "allows slovenly climbing" on the part of the beginning rock climber. That the beginner should begin climbing in nailed boots, even, apparently, on clean rock, does not appear to be reasonable advice. The author points out that nails are desirable because of the wet, greasy rock often found in England and Scotland.

Interspersed with his discussion of technique and equipment is a thread of personal reminiscence about climbs in the British Isles, Alps, and Himalayas. Even while describing these impressions, which are pleasant reading, there is always a word of advice for the beginning, as well as for the experienced, mountaineer.

ALLEN STECK

LONELY CHALLENGE. By Hermann Buhl. Translated from the German by Hugh Merrick. E. P. Dutton & Co., New York, 1956. 318 pages, 19 photographs, 3 maps. $5.00.

Buhl writes about his early climbing experiences on the limestone cliffs of his native Tirol where he first became a companion of difficulty and danger. These early chapters show Buhl's restless, youthful determination to become a competent climber in spite of a frail physique and ridicule by some of his contemporary fellow climbers. His perseverance is of such a high degree that he soon accomplishes a number of hazardous climbs under severe conditions in the eastern Alps, and eventually completes many well-known north-face climbs in the Swiss Alps and Chamonix district. He writes well of his climbs; the joy of sunshine and physical effort, the despair of biting wind and cold, the beauty of a Dolomite sunset, the pleasure of hard-won success — all find their way into his description. A little arrogance shows through here and there, and one suspects occasionally that Buhl's struggles with Dolomite cliffs are the result of some overwhelming inner conflict.

In 1953 he joins the German-Austrian Nanga Parbat expedition and completes his spectacular ascent of that peak. His account of his 41-hour solo ascent of Nanga Parbat, upon whose flanks so many skilled mountaineers have perished, is worth reading for it is one of the most improbable achievements in all mountaineering. Buhl climbs to the summit of Nanga Parbat as a man "possessed." He is able to return, after an ill-equipped bivouac at 26,000 feet, only because of an extremely rare combination of weather conditions.

We all climb for the simple pleasure of using our physical and mental resources to overcome obstacles presented by nature in the form of rocks, ice, snow, and harsh weather. Buhl, it would seem, has pioneered the limits of his physical and mental abilities to overcome such obstacles. Mountaineers with a tolerant attitude will understand him, though they may not seek the same sort of mountaineering experience. Others, possibly through misinterpretation, will label his mountain pursuits a pathological desire for notoriety or death, whichever may come first. No one can question, however, that he is a great climber.

ALLEN STECK

Supplement

Fifth Biennial Wilderness Conference

Summary and Recommendations

The Fifth Biennial Wilderness Conference

SAN FRANCISCO, MARCH 15 AND 16, 1957

Edited by GEORGE MARSHALL

A DECADE ago Norman B. ("Ike") Livermore, Jr., then a Director of the Sierra Club, urged a joint meeting of the administrators (Park and Forest Service officials) and users (hikers, riders, campers, packers) of Sierra Wilderness areas. In the spring of 1949 the Sierra Club sponsored the High Sierra Wilderness Conference at the Claremont Hotel in Berkeley. This brought together nearly 100 officers and individuals from the federal and state services, the Packers' Association, and outing clubs.

Probably the most important result of that first Conference was the discovery—not entirely unexpected—that the concerns of each of the groups were shared by a number of the others. Just realizing that someone else was "helping them worry" seemed to encourage people, and the approaches to some of the problems suddenly became less difficult. The groundwork was thus laid for coöperation between various workers who had not until then recognized from what quarters help might be expected. One of the best of the decisions reached by the first Wilderness Conference was that others should be held.

The Second Wilderness Conference, in 1951, took cognizance of the findings that whatever threatens a wilderness in the Sierra is essentially the same as what threatens unaltered lands in any other part of the world. More people came to this meeting than to the first and from farther afield. The nature of the threats to natural lands was more clearly recognized and defined, and it was urged that conservationists work for a national wilderness-preservation system, with legislation to strengthen the protection of our preserves from destructive exploitation, by either inappropriate or too intensive use.

The 1953 Wilderness Conference drew 145 participants from all over the West and from such distant places as New York, Washington, Alaska, and Bavaria; it was remarkable for the great fundamental agreement among the majority of the participants. It was characterized by a search for ways to express the values of wilderness in noncommercial terms; it was clear that the esthetic and spiritual worth of wild country is recognized.

An important accomplishment of this third Conference was the recognition that some of the values of wilderness are to be found even in city parks, although those values are more numerous and more significant as we get farther from urban centers and closer to the heart of true wilderness. Clear statement of this concept illuminated the possibility of beginning education for proper wilderness use even on city playgrounds and progressing as the user's experience progresses from the familiar to the new —from the city to the unaltered wilderness. The place to *start* wilderness education is wherever receptive subjects may be found.

THE 1955 Conference, again the biggest yet, pressed for clear administrative policy on wilderness and for expression of concepts in a form suitable as a basis for legislation. It was obvious that the individuals and groups present were ready to say "O.K.—we understand one another now and we have a pretty good idea of what we want. Let's go after it!" As this conference met, the struggle to protect the wilderness and park values of Dinosaur National Monument was nearing its climax, and served to postpone the following through of many of the recommendations. However, the first draft of legislation creating a National Wilderness Preservation System was introduced in the 84th Congress, Second Session, by Senator Hubert Humphrey, Representative John P. Saylor, and others, and was ready for unveiling at the first Conference on Northwest Wilderness held in Portland in 1956.

THE Fifth Biennial Wilderness Conference brought 400 conservationists and resource administrators from 19 states, Alaska and the District of Columbia who were affiliated with some 120 conservation agencies and organizations.

The potentialities of the Wilderness System and Recreation Resource Review were the subject around which the Conference was conducted. It was the fifth such Conference organized by the Sierra Club. This year it was co-sponsored by the American Planning and Civic Association, the Federation of Western Outdoor Clubs, the Izaak Walton League of America, the National Parks Association, the Wilderness Society and the California Academy of Sciences. Directors of the principal federal land administering agencies presented five of the 16 papers and participated in the discussions.

The Conference voted all recommendations at its closing session, as in previous Conferences. All votes were voice votes and all but a minor one of the eight resolutions were voted unanimously. Federal agencies were considered as abstaining inasmuch as they had not yet determined the relation of the recommendations to the President's program. The recommendations follow:

The Eight Recommendations

1. Outdoor Recreation Resources Review

A satisfactory and well-rounded standard of life for our growing population calls for enhanced appreciation of outdoor scenic and recreational values.

Exactly what acreage is required for fulfillment of the various needs is unknown, but it is known that numerous superb areas, small and large, have been lost, or have been whittled away during the past decade, and more are slated for destruction. It is also known that areas not specifically set aside for protection with strict boundaries and with strict standards of quality have little chance for survival in our civilization.

The valid pressures for raw materials (including water); agricultural products; military requirements; transportation; growing urbanization and industrialization; and commercial, mechanized recreation, and mass entertainment are of such great intensity that in our preoccupation with them, we could lose sight of scientific and inspirational values. This great and prosperous nation can afford to give attention to the values which are more than the material and are indispensable to the welfare of our people.

Developmental and resource surveys have been undertaken for land and water uses, including forest products, minerals, water, highway, military and urban development. However, these surveys have to date given scant, if any, consideration to wilderness and other scenic and outdoor recreational needs.

It is essential to know before it is too late that wilderness, wildlife, scenic, and other outdoor recreational resources still are available, where they are, and what is the type and quality of each, and their relation to the preservation of wilderness. It is also essential to estimate how many and what types of each we shall need in fifty and a hundred years, and how we may best save those selected for preservation with high standards of size and quality in perpetuity. If the opportunity remaining to save these outdoor recreational resources is lost now, it will be lost forever.

To this end, we recommend in principle the Outdoor Recreation Resources Review Bill (S. 846, H.R. 3592, and others).

We further recommend legislative provision for temporary protected status, pending completion of the inventory contemplated in the Outdoor Recreation Resource Review, of certain lands of probable high scenic, recreational, and scientific potential as determined by the Commission; on lands so protected there should be no intrusion or development that would preclude their subsequent use in the highest public good in accordance with criteria developed in the course of the inventory.

We urge that the legislation establishing the survey not be misinterpreted so as to interfere with the adoption of other legislation to provide for the immediate protection of wilderness and of resources in need of such immediate action.

2. Basic Wilderness Protection

In accordance with proposals made, studied, and developed in 1951 and 1953, during the second and third biennial wilderness conferences, the *Fourth* Biennial Wilderness Conference meeting in Berkeley, California, two years ago on March 19, 1955, adopted a "major recommendation" urging basic Federal legislation for wilderness preservation. This resolution was as follows:

"We recommend basic legislation, or a joint resolution of Congress, to establish a system of

wilderness areas and to provide for their protection specifically by law regardless of what agency they may be under at present. However, we recommend that the agencies at present administering these areas continue to administer them."

The Fifth Biennial Wilderness Conference, meeting in San Francisco, California, on March 16, 1957, is encouraged to note that such legislation has now been introduced in the Congress of the United States.

Commonly known as "the wilderness bill," S-1176 in the Senate, and a series of similar measures in the House of Representatives have been sponsored by a number of legislators—in the Senate by Hubert H. Humphrey of Minnesota and a group of co-sponsors of both political parties from coast to coast: Senators Margaret Chase Smith of Maine, Joseph S. Clark, Jr., of Pennsylvania, Frank J. Lausche of Ohio, Paul H. Douglas of Illinois, Alexander Wiley of Wisconsin, Karl E. Mundt of South Dakota, James E. Murray of Montana, Warren G. Magnuson and Henry M. Jackson of Washington, and Wayne Morse and Richard L. Neuberger of Oregon; in the House by Representatives John F. Baldwin, Jr., and George P. Miller of California, Lee Metcalf of Montana, Henry S. Ruess of Wisconsin, Barratt O'Hara of Illinois, and John P. Saylor of Pennsylvania.

We commend these legislators for their leadership in sponsoring this measure and, supporting the bill in principle, we urge that it be further studied through adequate hearings, clarified, perfected, and enacted.

We believe that large-size wilderness should be protected in perpetuity under true wilderness conditions, and that its preservation is essential to the cultural, historic, esthetic, recreational, and scientific needs of the country, and to the physical well-being of all its people. To provide therefor, we conclude that:

1. A continental wilderness system representing all major types of wilderness must be established firmly, to include units of such quality, size, and variety as to provide adequate scope and space.

2. Most of the units that qualify for this system have either already been designated by the Forest Service, or exist without specific designation on national forests or on lands administered by the National Park Service and by other government agencies, and these agencies should continue to protect the areas of wilderness on the lands under their jurisdiction.

3. Inasmuch as the mounting pressures for raw materials and development are predictably capable of encroaching upon and modifying all the remaining natural land of the country, it is now necessary: (a) to make the clearest possible statement of national wilderness policy, (b) to reinforce it with full public understanding of wilderness values, and (c) to provide maximum legislative and administrative protection.

4. Administrative agencies are to be commended for advancing the concept of wilderness protection. Without specific legislative authority and review, however, some agencies cannot now withstand mounting pressures for commodity development on lands that should remain wild, and other agencies are becoming progessively less able to do so. A clear legislative basis for wilderness protection is needed.

The *Fifth* Biennial Wilderness Conference accordingly endorses the National Wilderness Preservation System Bill, realizing that this generation's decision to preserve wilderness will be subject to each succeeding generation's review, but that it will not have this choice unless an adequate preservation program is now developed.

3. Arctic Wilderness

Virtually all of Northeast Alaska lying east of the Canning and upper Chandalar rivers and Old Woman Creek and north of latitude 65° 15′ N is still a primeval Arctic wilderness not elsewhere duplicated in our nation, and studies indicate that the highest and most productive and sustained economic, scientific, and cultural use of this area, for Alaskans and for the entire nation, will be as a perpetual wilderness.

We recommend that the Bureau of Land Management formally designate and administer this area as an Arctic wilderness; that the assistance of appropriate sister agencies be invoked where advisable, and that suitable regulations be established to recognize and perpetuate its primitive conditions and to encourage all types of economic and cultural use that are compatible with the paramount objective of maintaining unimpaired the ecological conditions within the area.

We further recommend with regard to other areas in the Brooks Range that a coöperative investigation be made by Alaskans, by the Bureau of Land Management and appropriate sister agencies and by wilderness organizations looking toward the establishment of additional wilderness areas in the Brooks Range.

4. Three Sisters Wilderness, Oregon

In order to permit further consideration of the wilderness terrain of the Three Sisters region before irreversible action has been taken to destroy it, we recommend that the 53,000-

acre portion not included in the Three Sisters Wilderness Area be allowed to continue in its present primitive condition, without roads and without logging, at least until the completion of such studies as contemplated in the proposed Outdoor Recreation Resources Review, including an evaluation of the relation of the Three Sisters to the national requirement for wilderness preservation.

5. Northern Cascades of Washington

We recommend that the Forest Service invite the participation of other public agencies and qualified representatives of the public in a continuation and broadening of the land-management study of the wild and superlatively scenic areas of the Northern Cascades of Washington between Stevens Pass and the Canadian boundary, to the end that the highest public use of this area may be assured in the long run.

6. Nonconforming Uses in Wilderness

We are disturbed by the existence of certain nonconforming practices within certain wilderness areas which now undermine and which, if not checked, will destroy the wilderness values of these areas. Among these practices are prospecting and mining, the building of access roads to mines and other inholdings, and the landing of private planes on inholdings and in wilderness areas.

We recommend, therefore, that wilderness, wild, primitive and roadless areas be withdrawn from mineral entry, the landing of airplanes within these areas be terminated, and vested rights and inholdings be purchased so that nonconforming uses may be excluded from these areas.

7. Wilderness of the Olympic Strip

We recommend that the Ocean strip which is part of Olympic National Park and which contains the last primitive beach in the United States, should be preserved as wilderness, and that in order to provide for this preservation the National Park Service should acquire sufficient land adjacent thereto to accommodate any coastal highway constructed in this region.

8. 1959 Conference

We recommend that the continuity of the Wilderness Conferences over the past years be continued for the future under a chairman to be named by the Sierra Club as the sponsoring organization.

Summary of Proceedings

Alexander Hildebrand, President of the Sierra Club and presiding officer of the Fifth Biennial Wilderness Conference, called the conference to order and welcomed the participants.

Father John Duryea (San Jose, California) gave an Invocation.

George L. Collins, Division Chief of Recreation Planning, Region 4, National Park Service; and Chairman 1957 Wilderness Conference, outlined the plans and procedures for the conference.

First day: Our Scenic Open Spaces—A Review

Session Chairman: David R. Brower, *Executive Director, Sierra Club, and chairman of the Natural Resources Council of America*

Introduction

Mr. Brower warned that "this generation is speedily using up, beyond recall, a very important right that belongs to future generations — the right to have wild lands in their civilization . . .; the right to find solitude somewhere; the right to see, and enjoy, and be inspired and renewed, somewhere, by those places where the hand of God has not been obscured by the industry of man."

[See also pages 1–12.]

We now need to look ahead and know what we have as parks, wilderness, wildlife, and incidental recreational opportunities; how much space we need for these purposes and who else would like to have this same space; and where there are conflicts for space, who needs it most. To give the answers, we need a scenic resources review.

The Pressures of Civilization

Lowell Sumner (Biologist, National Park Service) spoke on the effects of increasing pressures of civilization on man and on wil-

derness as a result of population increase. He referred to the international symposium of seventy scientists, *Man's Role in Changing the Face of the Earth* (1955), which produced "staggering evidence that the results of man's activities are now comparable in magnitude to those of major climatic, ecological, and geologic forces. . . . These findings underline the urgency of protecting our relatively wild areas while there is still time."

[See Mr. Sumner's remarks, here entitled "Are Beavers Too Busy?" on pages 19–27.]

Discussion

Olaus J. Murie (President and Director, The Wilderness Society) said he would not deny a certain esthetic awareness by the beaver, but felt man has a more complex problem than the beaver — he not only wants to keep alive, but also craves certain esthetic experiences which enrich his life. He wants quality in living, not merely existence.

Sigurd F. Olson (President, National Parks Association) believed the human mind, which has made possible our living standards of today, will be able to correct the population explosion before it is too late. He was appalled at the rapid industrial and suburban development in formerly rural areas.

Fred Packard (Executive Secretary, National Parks Association) believed that too many American businessmen do not comprehend the problems of conservation, but think rather in terms of expanded units of business. He was encouraged, however, at the progress being made in bringing conservation information to the industrial world.

Father Duryea stated that we have a trusteeship over our land and that as custodians there is imposed on us a need for discipline in all things. Many people use resources only for material gain thus not carrying out the full trusteeship which has been given to us.

Pat Thompson (former Regional Forester, California Region) said he is a supporter of wilderness. Some industries, he added, believe in conservation, which means wise use — something more than locking up certain areas. Too much population will sooner or later destroy wilderness, he predicted.

John W. Spencer (former Regional Forester, Rocky Mountain Region) believed that the same forces which threaten wildlife populations also threaten man. He hated to think the future of the human race would be to commit suicide and felt confident that human intelligence would solve its problems. He spoke highly of the educational work of the Sierra Club, Izaak Walton League, and other conservation groups.

Wilderness and Culture

A. Starker Leopold (Associate Professor of Zoölogy, University of California, Berkeley, Member or Wilderness Society Council, and President of Wildlife Society) speaking on wilderness and the humanities, pointed out that until about a hundred years ago "culture and the humanities flourished as the wilderness was conquered and left behind." Then a remarkable thing happened to men's attitude toward "undisturbed and unutilized nature" which was equivalent to a "macromutation" in organic evolution. Zoos, botanical gardens, and hunting preserves existed previously; but philosophically there is a great difference between them and a respect for nature as it originally existed. From an age-old tradition of conquest and subjugation of nature and wilderness, suddenly came a sense of "obligation to preserve untrammelled some remnants of the natural scene."

This new idea was symbolized by the establishment of Yellowstone National Park, and it soon swept from continent to continent. However, this idea has had its own development. Starting with a preservation of geologic wonders, it spread to the preservation of extraordinary plant life — the Big Tree. Consideration of native animals came later, and at first just the so-called good species like deer were included. Wolves, coyotes, and mountain lions were considered bad actors to be rigidly controlled in accordance with the common-sense policy of the day. The idea of leaving substantial blocks of the national parks undeveloped and in true wilderness as a matter of policy also came long after the parks were first established.

There is one striking exception to the trend toward naturalness in park preservation — "the complete exclusion of fire from all such areas, even those that burned naturally ev-

ery year or two before becoming parks. Fire is declared evil and destructive, just as coyotes and mountain lions were designated as evil and destructive in parks 25 years ago.

[See Professor Leopold's remarks in full, pages 33–37.]

The future philosopher scanning human history will see this century as "a time of outstanding advance in man's feeling of responsibility to the earth. Whether man can succeed in preserving an attractive and livable world is the problem that lies ahead of us. But the general acceptance of this as an objective is certainly step one in accomplishment."

Discussion

Richard M. Leonard (Sierra Club officer) said that he was on the side of the optimists concerning the future of conservation and the welfare of mankind. "The fact that man does have the unique mental capacity to be concerned with the future, gives him the opportunity to do something about it. The very fact that the explosion of population in recent decades has intensified dramatically the damage to our natural resources, makes it possible to recognize the injury as being the result of mistakes by man, and not the unfortunate whim of changes in climate or 'acts of God.' This knowledge enables man to plan corrective action."

The accomplishments of the past several decades in the preservation of our natural resources, Mr. Leonard went on to say, indicate that we are gaining more than we are losing. He pointed as examples to the increased strength or relatively recent concepts of formal programs for conservation of forests, water, soil, and wildlife, and the control of water and air pollution; and to "the unique American National Park System and formal dedication of wilderness areas" which is spreading with "increased strength to every continent." "The fact that mankind will so strongly defend intangible values of his natural resources places him far above the 'social animals' such as the ant, the bee, and the beaver, who do plan ahead, but primarily for their own material benefit."

Charlotte E. Mauk (Sierra Club Director) said that people learn to appreciate nature by contact with it; and that among other things we need to educate our children to appreciate scenic values close at home, including those in our city parks.

What's Left?

Harlean James (Executive Secretary of the American Planning and Civic Association) as session vice-chairman opened the discussion of "What's left of our scenic open spaces?" by briefly reviewing the background of the creation of our National Park System, our system of National Forest Wilderness Areas, and the preservation of wilderness and wildlife by the Fish and Wildlife Service, by the Bureau of Land Management, and by tribal control on Indian lands.

Miss James spoke especially of the work of J. Horace McFarland and Frederick Law Olmsted which resulted in the establishment of a federal agency to administer the national parks. When Stephen Mather and Horace Albright were brought to Washington, the work of the combined forces resulted in the passage of the National Park Act of 1916 which created the National Park System.

Locally

Harold S. Wagner (Metropolitan Park Board, Akron, Ohio) discussed problems of the preservation of municipal, county, and state open spaces. "The preservation of open spaces on all levels," he said, "is just as much a steady job as is the right to liberty and the pursuit of happiness." When you build a public park through acquiring the land and developing it, too often when the public arrives the scene changes and in place of building for the people, "the task seems to become one of preserving the park against the people." However, there are many fine examples of open-space preservation in large and small cities in America and abroad.

Establishing county parks in suburban areas is made difficult by a feeling of those who come out to the areas that they do not need such public facilities. Their preservation is made difficult by suburban and state services seeking "free land, meaning land acquired by another public agency." The problem of highways is especially serious.

The referendum in New York State which defeated the attempts to build Panther Mountain Dam and which protected the Adirondack Forest Preserve for the future was one of the most important preservation victories on any level of government.

"It's in the towns and the cities and in the suburban fringes," Mr. Wagner concluded, "that the support for open space and wilderness preservation is to be found." He felt furthermore that "the knowledge and the appreciation of a majority of the people will be developed more largely out of pleasant experiences and contact with fine examples of scenic open space and wilderness. . . . The boys and girls, the young men and women, who find the value of scenic open spaces of a local and even mediocre character will grow up into the job of preserving the superlative areas. First of all we've got to believe that "nothing succeeds like successors."

Nationally

Joseph W. Penfold (National Conservation Director, Izaak Walton League of America) said that in order to answer the question, "What's left of our scenic open spaces?" we must develop and agree to definitions and criteria for "scenic open spaces," must gain general public acceptance of them, must inventory and evaluate scenic open spaces, and recognize their relation to all our other resources. Then, perhaps we can develop plans and programs by which they may become an enduring part of the entire resource-use pattern.

"If scenic open space means space relatively untouched by man, our nation certainly had an abundance from the start"—about 600 acres per capita. The acreage dropped to 60 in the ensuing 77 years, Alaska included. Today there are only 13.8 acres per capita. This figure will decline still further to 10 for our children and 8 for our grandchildren — 8 acres each to satisfy all their wants, necessities and luxuries, and within which they must satisfy their longings for space, for beauty, for natural grandeur, for adventure, for all opportunity." "There is no synthetic substitute for space."

The problem is made more complex by the large amounts of space taken by airports, modern highways, suburbs, parking areas; 500,000 acres alone is taken up by America's automobiles and trucks just bumper to bumper. Pressure on limited resources increases also through economic betterment — higher wages, shorter hours, longer vacations, better roads, and faster transportation all contribute.

In one state the number of fishermen has doubled since the war and they fish twice as often. Hence fishing pressure has quadrupled. Similar pressure patterns can be noted on all types of use of scenic open space. Technology is also diminishing open spaces. More efficient farming uses up the field corners to avoid "waste"; but it was these corners and fence lines which produced upland birds and game. Trends in resource management before long will give wildlands more of the characteristics of cultivated lands, "whether the objective be grass for livestock, forage for deer, optimum yield of timber, watershed management for optimum water production, or trout hatchery programs.

To meet the obvious demands of the people, science has been efficiently applied to resource management. "We use more paper, so we plant and harvest more pulpwood. There are more fishermen, so we plant more fish. More people, more bathrooms and baths, more water-using gadgets, so we divert more streams. In none of these efforts do we attempt to meet the total needs of the people. Hence, too frequently in achieving one desirable objective we've been equally successful in thwarting others.

We can recognize then that no resource use is independent of all others. "Protection of parks, wilderness, wildlife refuges, and other dedicated areas is no more independent of what happens on all other lands than *they* are of a vastly increased population with more time and inclination to make use of them. . . . Maybe there's truth in the thought that preservation of wilderness will depend far more on what we do outside of the wilderness than what we do with wilderness." Wilderness preservation is an integral part of the overall land-management pattern.

"We must develop a conscience toward all scenic potentials if we are to hope that any of them may endure."

"David Brower and the Sierra Club," Mr. Penfold continued, "have brilliantly conceived and proposed a 'Scenic Resources Review.'" The Anderson-Aspinall Bill, now before Congress, would set up a Commission to make a broad study, inventory, and evaluation of all outdoor-recreation resources encompassed in the club's proposal. It would be important, in this connection, for conservationists to develop a set of definitions and criteria which would result in refining standards for evaluation of scenic resources with greater accuracy and precision. Mr. Penfold referred to his suggestion at the Third Wilderness Conference of using the word "isoprim" to designate the level of primitiveness or wildness, just as isobars and isotherms depict the "contours" of barometric pressure and temperature on a weather map. He suggested a new concept, *isoscen,* to help depict the peaks of scenic quality in America.

In conclusion he spoke of the "tremendous opportunity to demonstrate and secure understanding of the truth that our scenic resources are very few in relation to our ability to diminish or destroy them, and very extensive if we have the will to discipline ourselves in accordance with our total needs."

Internationally

Lee M. Talbot (Graduate Student in Wildlife Conservation, University of California, Berkeley, who recently studied endangered species for the International Union for Conservation) said there are remarkably few truly wild areas left in the world. They have slipped away from most of the world so slowly that they have gone largely unnoticed. In the United States the process has been so rapid that it brought about an awareness of the need to save wilderness. In Europe, Asia, and Africa the land often has had a continuous history of intensive land use and development for six thousand years. The world's arid lands are strewn with remains of past civilizations, reminders of times before man cut down, overgrazed, and eroded away the last life from these lands. In the tropics, nature quickly covers abandoned fields and cities with dense foliage.

[See Mr. Talbot's remarks, illustrated; pages 28–32.]

Discussion

William C. Yeomans (Alameda County, Calif.) thought that too many people are unable to discover wilderness except by chance.

John Barnard (Mill Valley, Calif.) asked whether there are any preserves in Europe equivalent to our national or state parks. Mr. Talbot responded that there is no true wilderness as such, but there are some old hunting areas which once belonged to royal families.

[Mr. Brower's remarks are adapted on pages 1–12.]

Appraisal of the Day's Program

Marshall N. Dana (Chairman, Recreation Subcommittee, Columbia Basin Inter-Agency Commission), after appraising the day's discussion, spoke of the need to secure the support of informed, sympathetic, and active public opinion.

When the 100 million who visited our national parks and national forests last year "pick up their beer bottles, their paper plates, their uneaten food, and their Sunday supplements, I will be prepared to believe they are genuinely supporters of the wilderness program. We are compelled to meet the test of our fitness for our wilderness. We are called upon to think of wilderness in relationship to common lives and common happiness of a great many people."

Mr. Dana posed the question of whether highways and airports which appropriate areas needed for wilderness do not take men into space which leads to exaltation of mind.

In conclusion, he pointed out that wilderness is more than "a chunk of terrain"; it is "a state of mind, of heart, and soul. One may have a beautiful bit of wilderness in his own spirit. Thus, he can enjoy a zone of calm which protects him from the strains and stresses of life."

Discussion

Martin Litton (Sierra Club and Travel Editor, *Sunset Magazine*) said that you only can have wilderness in your mind if it exists somewhere on the ground; he likened this relationship to a dollar bill, which has value not in its paper and ink, but in what exists to back it up.

Mr. Olson thought people are learning fast to cherish wild places and not to despoil them. He felt much more educational work was needed and spoke of what Keep America Beautiful and other groups are doing in this direction.

"We are children of the earth," he added, and therefore must see tangible evidences of wilderness to comprehend what wilderness really is.

Edgar Wayburn (Chairman, Conservation Committee, Sierra Club) pointed out that changes are being made to wilderness day by day at hearings, by legislatures, and by administrative bodies regardless of philosophies. Broad philosophies are not enough; it is the little things that count in the fate of wilderness.

James P. Gilligan (Associate Professor of Forestry, Oklahoma A. & M.) suggested that if we want wilderness we must face the following practical questions: 1. With the Forest Service tending more toward mechanization, are we willing to keep out mechanization and let sizeable acreages of wilderness burn? 2. Are we willing to let large populations use wilderness? 3. Are we willing to pay higher prices for minerals and accept lower-grade wood products? 4. Are we willing to resist mass demands for better and shorter transportation routes? 5. Are we willing to have less water available in wilderness areas than might be possible.

Miss Mauk said that although the actual cost per day for a wilderness trip has tripled in the last several years, we are willing to pay this increased amount for a true wilderness experience; but that we are unwilling to pay more for an impaired resource that we no longer want.

Evening: Waning Wilderness of the Seashore

Toastmaster: Bestor Robinson, *Director, Sierra Club, and chairman of the Secretary of the Interior's Advisory Committee on Conservation*

Following the banquet, a group from the California Academy of Sciences discussed the "Waning Wilderness of the Seashore."

Robert T. Orr discussed the effect of pollution from dumps and sewage, and the filling in of land for houses, roads, and airports, on ecological relations and animal life on mudflats and tide-grass areas, and urged that more areas be set aside for preservation in their natural condition, and that better antipollution laws be passed.

Allyn S. Smith, speaking on "Seashells and Serendipity," presented some similar problems and described the overcropping of underwater fauna on the ocean bottom near the seashore. *Earl S. Herald* told how the increase of underwater spearing in certain areas has done away with certain species and is threatening others.

Robert C. Miller told of seashore reserves on the Pacific Coast, the program of the California Division of Beaches and Parks, and of the need for legislation to curb the depredations of skin divers. Certain underwater areas must be set aside where the water, seabottom and shore are left undisturbed. He also spoke of national seashore reserves, including the wilderness beach with no roads in Olympic National Park, and of his alarm that if shoreline roads are built in Olympic Park they will destroy that wonderful shoreline area.

Second day: The National Wilderness System

Session Chairman: Howard Zahniser, *Executive Secretary, The Wilderness Society*

Dr. Jacob Long (San Francisco Theological Seminary, San Anselmo) gave an Invocation.

Bureau of Land Management

Edward Woozley (Director, Bureau of Land Management) described the expanding work of the Bureau of Land Management in administering 178 million acres of unreserved public domain lands in continental United States and more than 290 million acres in Alaska. He spoke of the impact of the $250 million range-rehabilitation program in overcoming objections to the re-

moval of potential recreation sites from grazing lands and in reducing pressures for extension of livestock grazing into wilderness and other recreation areas. He added that it was his feeling that "the more we control erosion, grow grass and ranges, raise more timber and husband and make optimum use of the minerals in proven districts, the more land there will be that can be added to the already extensive areas devoted to outdoor recreation and wilderness use." An inventory of present and future needs, including recreation, would be helpful.

Unlike some other agencies, Mr. Woozley pointed out, the Bureau of Land Management has no large areas specifically reserved for wilderness purposes. However, some of the lands withdrawn from the public domain in the past are now a part of wilderness. When these lands were withdrawn they went under the management of the agency requesting the reservation.

Bureau of Indian Affairs

Don C. Foster (Portland Area Director, Bureau of Indian Affairs) commented that most of those in the Indian Service "appreciate the public benefits that would result from the establishment of a national wilderness system. In fact, wherever Indian lands can and should be properly set aside as wilderness areas without violating the rights and prerogatives of the owners, I am sure you will find us among the ranks of the many agencies and organizations coöperating to achieve the purposes that have been emphasized at this conference."

He pointed out that his agency, unlike the Forest Service, National Park Service, and Bureau of Land Management, is not the custodian and administrator of public lands. The agency acts as trustee for lands which belong either to Indian tribal groups or individual Indians, and must give full consideration to the desires and interests of the Indian owners.

The principal problem facing the Indian Bureau today is "too many people and not enough land." This has led the Bureau to place greater emphasis on broader opportunities for Indians. Its three-point program includes a better health program, improved educational facilities, and economic development, including the development of reservation resources.

Mr. Foster spoke of the fine wilderness territory of the Four Corners area where Utah, Colorado, New Mexico, and Arizona meet. Because of its great oil and gas potential it is now being "developed," returning large sums of money to the Navajo Tribe. However, he pointed out that not many Indian lands have such great economic values.

In conclusion he said : (1) no Indian lands should be set aside for wilderness purposes unless the Indians approve such action; and (2) if lands are set aside for wilderness areas, the Indians should be fully and fairly compensated for loss of any other values that may be involved.

Fish and Wildlife Service

Daniel H. Janzen (Director, Bureau of Sport Fisheries and Wildlife) said that "wilderness is absolutely essential to a number of our interesting and important species of North American wildlife." Natural areas on many National Wildlife Refuges are kept free of habitat manipulation. They are not only important to those animal species depending on such an environment; they also contribute to the preservation of unique forms of plant ecology. They also are valuable for comparing fauna and flora characteristics with those lands subject to multiple use and management for game production.

In conclusion Mr. Janzen stated, "'Wilderness areas are wildlife reservoirs which often aid in the natural stocking of more accessible areas that are heavily used by sportsmen, and they furnish very high quality hunting and fishing for those who are willing to earn it. . . . It would be a disservice to the people to provide easy access to these wildlife resources, since the capacity of many of the present wilderness areas, particularly those in high mountain country, is limited in their ability to produce wildlife. . . . Because of the rather limited and fixed capacity of these remote areas to sustain wildlife populations, they cannot support the greatly increased hunting and fishing pressure that would follow in the absence of strict control over access by the airplane and

other mechanized transportation. In other words, easy access to a wild area is often akin to killing the goose that laid the golden egg. The hunting and fishing areas that remain accessible only by trail or canoe will become of great value to the public as our population expands. The value represented in these areas can be quickly destroyed through making them too easily available."

Discussion

Luella Sawyer (Sierra Club, and Editor, *Western Outdoor Quarterly*) asked Mr. Woozley what was planned to be done to rehabilitate lands in the southwest taken by the military during the war but now abandoned. Mr. Woozley answered that some have not been returned to the public domain, and others which have been returned have not been decontaminated and that it is up to the military to do this.

Mr. Packard asked Mr. Janzen what the impact is of what the military is doing on land use and wildlife. Mr. Janzen answered that his bureau was under constant pressure, but it has succeeded to date in warding off encroachments of the military.

Dr. Murie complimented the Bureau of Land Management on its program to fight forest fires in interior Alaska — a matter which for many years has been ignored by Alaskans with the result that much of interior Alaska has been burned up.

Turning to an issue on the Crow Indian Reservation, Dr. Murie said that a number of years ago the Bureau of Reclamation decided to build a dam in Bighorn Canyon, on Indian lands, naming it "Yellowtail Dam." The Crow Chief, Robert Yellowtail, said to him several years ago, "They thought they would win our approval by putting my name on the dam." However, recently the Bureau of Reclamation has put before the Indians the bait of several million dollars to be paid to them for the privilege of building the dam. Unfortunately, the younger Indians have fallen for this bait, and want those millions of dollars at the expense of losing one of the beautiful canyons of our country. The older Indians, and Robert Yellowtail, still stick to the principles involved. This is another instance of the unpreparedess of the Indians to cope with the wiles of the white man, especially where exercised by a well-financed bureau of our government.

Dr. Leopold asked whether it would be feasible, in planning for wilderness preservation in Alaska, to develop an interagency handling of resources for parks, wilderness, and recreation. Mr. Woozley replied that there is need for coördination of the five federal land-management agencies in Alaska to prepare an overall land-management plan including full recognition of the need for the establishment of large wilderness areas to preserve various species of fauna and flora and the scenic values of Alaska.

Clarence Rhode (U. S. Fish and Wildlife Service, Alaska) agreed that we should work toward a coördinated program to plan for wilderness preservation in Alaska.

Seth Gordon (Director, Department of Fish and Game, California) asked Mr. Woozley whether all coastal lands are now withdrawn from further disposal. Mr. Woozley replied that his bureau had suspended action on all applications for disposal of any land bordering the Pacific Ocean until the completion of a seashore study.

Forest Service

Richard E. McArdle (Chief, U. S. Forest Service) said that the Department of Agriculture has recognized the desirability of protecting and preserving wilderness for a long time, and will continue to do so. The Forest Service believes that wilderness is a valuable use of national forest resources.

Mr. McArdle traced the development of the National Forest wilderness system from the first formal recognition of wilderness as a significant national-forest use in the early 1920s to the present, which finds us with 12 wilderness areas totaling 3,969,000 acres; 23 wild areas totaling 815,000 acres; 3 roadless areas totaling 814,000 acres; and 43 primitive areas totaling 8,252,000 acres — a grand total of 81 units with 13,850,000 acres. He also mentioned three new wilderness areas which have been proposed: Tracy Arm-Fords Terror area in Alaska, Jarbridge area in Nevada, and Glacier Peak in Washington.

He continued, "Use for wilderness purposes of large areas of national forest is an

important use, a desirable use . . . but it is only one of many important uses of a national forest. . . . There is not enough national forest to satisfy *all* the needs of our growing population. . . . That is why we stress multiple use and sustained yield of resources and services" for the greatest good of the greatest number in the long run. "Wilderness is a special problem because use for this purpose does not lend itself to sharing an area with many other uses."

"Wilderness areas must be managed and protected in order to remain useful as wilderness. That is a difficult and often rather costly job. Although legislation might be helpful in resolving some of these difficulties, many of them are administrative problems which can't be solved by legislation."

"Formal establishment as a wilderness area does not guarantee preservation of resource value. Fire, insects, disease, and windthrow are constant threats not only to forests in the wilderness area, but there is also the ever-present danger that big fires or disease or insect epidemics may spread to adjoining lands outside the wilderness." "Quick access is the key to fire control"; but you don't have it if you have wilderness.

Mr. McArdle added that wilderness costs something and these costs are increasing. Part of them is "measured in terms of what you can't have if you do have wilderness — less timber, less forage, less water, less opportunity for people to enjoy the best scenery, and so on."

"Practically every wilderness area contains timber, minerals, water, and vast opportunities for mass recreation which in time may be needed by our growing population. If the need for these resources becomes critical there will be public demand to modify the wilderness so that these resources may be used. The time may come when there will be a showdown between fully appraised wilderness values versus other values."

"The best way to avoid that pressure on wilderness," Mr. McArdle suggested, "is to provide an adequate supply of other resources by good multiple use in nonwilderness areas." Similarly, to meet growing pressure for mass recreational use, including greater accessibility to motor transport, the best job is needed to develop and protect all the mass-recreation opportunities on all land ownerships. The Forest Service's "Operation Outdoors" is a part of this program.

In regard to the wilderness bills introduced in Congress, Mr. McArdle said he is "In sympathy with the general objectives of these proposals and believes that it would be helpful if Congress were to enunciate a policy on wilderness so that administrators of public lands would have some direct guidance from Congress as to the protection and preservation of wilderness and the objectives of wilderness management. This statement," he added, "should not be construed as specific approval by me or by the Forest Service of the [present] specific legislative proposals. . . . We are studying them carefully. The Department has not yet made its report, and I am not at liberty to discuss the bills except in very general terms."

Discussion

Mr. Brower, referring to Dr. McArdle's major concern with fire protection in wilderness and the limitations of smoke jumpers, asked if the Forest Service could develop a research program in the use of "tamed fire" as opposed to wild fire, and could also develop figures relating to fire roads *vs.* helicopters with respect to present relative costs and trend in relative costs. He urged that the Service not limit its concept of the use of wilderness to those few who actually set foot on it, and pointed out that wilderness, like the rare California condor, was of value to many people who were content merely to know that it still existed. He urged the Service to make an appraisal of the long-range value of all the multiple uses of the forests that were compatible with wilderness, and that the Service undertake to learn the human carrying capacity of wilderness.

National Park Service

Conrad L. Wirth (Director, National Park Service) said "an adequate National Park System should have plenty of room in it for wilderness." The idea of wilderness and its preservation, however, involves "far more than mere roadlessness, although an import-

tant element of a wilderness preservation program is the retention of large roadless areas. As we build a road into Wonder Lake in Mount McKinley National Park that does not mean that the park is no longer a wilderness. The road is a wilderness road, to bring people into the wilderness, as John Muir advocated. Some magnificent wilderness can be seen from our roads."

"Wilderness preservation is complex and positive." In the national parks we try to preserve the integrity of the intricate interrelated mechanism of nature — the wholeness or completeness of nature. "Under this concept, the building of a road or trail into it may be far less destructive of the natural character than are such activities as hunting, predatory-animal control and the grazing of domestic livestock."

Muir "was not one who urged that wilderness should be preserved for wilderness' sake. Far from it! He worked tirelessly to preserve wilderness and to bring people into it for the pleasure and good they would get out of it. This, to my way of thinking, is the very essence of the park conservation program."

The Park Service recently has prepared a statement on preservation of natural and wilderness values in national parks. It explains that "preserving the natural character and integrity of the parks means protecting them from logging, grazing, mining, water storage projects, hunting and trapping, and, if possible, acquiring the inholdings of private lands before they are put to uses utterly destructive of park values."

To learn how to use wilderness best, Mr. Wirth continued, is difficult and the many different views "over the kind of facilities to be provided for park visitors are growing pains in the slowly evolving art of wilderness use." Therefore because of the intangible values involved and diversity of reaction to them, our approach to the problem must be a cautious one."

In general, different parks with different characteristics require different plans of development. The Park Service therefore has no set formula or plan of development for all parks, just as it has no one master plan for trails and architecture or road systems.

Mr. Wirth went on to discuss briefly some of the opportunities of Mission 66, and of the perfecting of a more adequate interpretive program. "Educational or interpretive programs, properly carried out, are the crowning achievement in wilderness use for they help bring the understanding, appreciation, and pleasure in wilderness that Muir must have had in mind . . ."

Mr. Wirth also spoke of the Park Service's coöperative efforts which he hoped would lead to formulating and publishing "a national outdoor recreation resources plan" by 1961. It will include "a systematic and comprehensive analysis of the wilderness and wild land needs of the country, and a systematic plan for the preservation of the wilderness and wild lands required to meet those needs." He asked for coöperation in formulating and working out such a plan. The need for this recreation survey to National Parks was due to their being faced "with a flood-control project," he concluded. "The flood pouring in on us is people. It must be controlled or it will leave a ruined National Park System in its wake. We cannot meet our responsibilities for park protection by meeting the flood at the park gates and trying to control it from there. We need dams and diversions upstream and this will call for action on the part of many agencies."

Discussion

Discussion time was devoted to the completion of the Park Service statement.

Summary of the Day

Howard Zahniser, as summarizer, pointed out that the day's discussion had brought out certain assumptions about wilderness. 1. All our wilderness is in lands serving some other purposes. 2. Our civilization is such that it is destined to occupy for its purposes all the lands we have unless it is checked. 3. Only those areas can be expected to be preserved as wilderness which are deliberately so set aside for preservation. 4. Our best practical opportunity for wilderness preservation is through the Federal Government, although in some states wilderness may be preserved by state governments. Lands in private own-

ership are not areas available for such planning in perpetuity. 5. Our wilderness preservation purposes include perpetuity. "We are trying to keep unchanged by man areas that have grown through the eternity of the past and, although we stand in awe at our presumption, we dare to plan that they may so persist through the eternity yet ahead."

"In the United States, wilderness for the future depends on our success in developing a policy and program that provides for the preservation of wilderness as such, by our Federal Government, with a presumption of perpetuity." We understand, however, that "there can be no sound program for the preservation of something that does not include provision for addition, modification, elimination. The best we can do is to perpetuate to opportunity for perpetuity."

In wilderness we are dealing with a human concept. "We describe an area as wilderness because of a character it has — not because of a particular use it serves. Retaining that character, it can still serve varying and various purposes. Wilderness is not only land with a certain character that *can* be preserved in varying circumstances. It *has been* so preserved, for the areas of wilderness we now have are all areas which serve some stated purpose other than the preservation of wilderness as such."

For example, the wilderness of each national park is back country, or foreground, to some unique scenic splendor or complex of wildlife or flora. "We owe the leaders of the National Park Service a great debt for the way in which they have fostered the wilderness idea, but we must recognize that the wilderness concept is compatible with, not identical to, the national park idea — an enrichment certainly of the national park purpose, but not the genesis." Similarly, while wilderness, wild, primitive, and roadless areas serve essential purposes in the National Forests of which they are a part, they have retained their wilderness character to a great extent because the administrators of national forests have so managed them. A further example of the secondary reasons for which wilderness areas are preserved is the Okefenokee National Wildlife Refuge in which wilderness is kept in connection with the administration of the area for wildlife protection.

Despite the difficulties facing wilderness continuance, we still have a remarkable heritage of wilderness available for our use and preservation. There are about 164 units of our federal wilderness preservation resources comprising some 55 million acres. In addition there are a dozen or so state areas of wilderness aggregating about three million acres.

Mr. Zahniser spoke briefly of the discussions at previous Biennial Wilderness Conferences that had to do with the development of Federal legislation to protect a National Wilderness System. He quoted the resolutions adopted by the Fourth (1955) Conference and then gave an account of development during the past two years which led to the introduction of bills for this purpose in both House and Senate.

Mr. Zahniser went on to describe the main types of units under various agencies in our wilderness system, and then analyzed the main features of the National Wilderness System Preservation Bill which has been introduced in the U. S. Senate by Hubert H. Humphrey and co-sponsored by Richard Neuberger and eleven other Senators of both political parties from coast to coast (S.1176), and by John P. Saylor, Lee Metcalf, and five other Congressmen in the House.

Discussion

It was observed from the floor that the Conference might consider broader problems of natural-resource conservation than just those related to wilderness.

Mr. Leonard said that "a complex civilization of two and one-half billion people, increasing rapidly every day, makes a certain amount of specialization necessary in order to give thorough consideration to each of the myriad parts of the whole. While there have been a number of broad conferences, such as that conducted by Resources for the Future in 1953, most conferences on conservation of natural resources are devoted to an intensive study of a particular part of the whole. Thus we have had the hearings of the President's Water Resources Policy Committee, the annual National Watershed Con-

gress, the American Mining Congress, the North American Wildlife Conference, and a number of conferences on water- and air-pollution control, petroleum conservation, and regional timber conferences. Most of those meetings on specialized phases of conservation of natural resources have concentrated on commodity and economic values, and have only incidentally touched wilderness and other intangible values.

"That is the reason why the Biennial Wilderness Conferences have concentrated on an intensive study of the problems of preservation and use of Wilderness, with contributions this year by more than 400 experts from all parts of North America. The broad conservation of the commodity and economic values of all our natural resources is essential to enable mankind to afford to preserve a substantial portion of the intangible values. But unless at least one of the many resource conferences gives special attention to those intangible values, they may be lost in the apparent urgency of trying to live by bread alone."

More Books from the Sierra Club

For the convenience of members, the Sierra Club office carries a few books by other publishers which pertain particularly to the club's fields.

A Sand County Almanac, by Aldo Leopold (Oxford, $4). As the author writes in his foreword, "There are two kinds of people; those who can live without wild things and those who cannot. These essays are the experiences and dilemmas of one who cannot."

Round River, by Aldo Leopold (Oxford, $3), is more of journal than of essays and reveals more of the experience out of which Leopold wrote; of how he came to notice "that a deer's taste in scenery and solitudes is very much like my own."

Arctic Wilderness, by Robert Marshall (Univ. Calif. Press, $3.75). Exciting travels in Alaska by one of the originators of the wilderness-system idea, beautifully illustrated. Foreword by A. Starker Leopold.

The Singing Wilderness, by Sigurd Olson (Knopf, $5), re-creates the sights and sounds and meaning of the Quetico-Superior country, where the trails are for canoes. Beautifully written, illustrated, and designed.

This Is Dinosaur: Echo Park Country and Its Magic Rivers, edited by Wallace Stegner. The great controversy over the proposed Echo Park dam has brought wide recognition to Dinosaur National Monument. *This Is Dinosaur* will let you see why there has been furore. The book puts you there, through the ages; it gives the place meaning and perspective. (Knopf, $5.)

Birds and Mammals of the Sierra Nevada, by Lowell Sumner and Joseph Dixon ($7.50); *The Incomparable Valley: A Geologic Interpretation of the Yosemite* ($1.95); and *Sequoia National Park: A Geological Album* ($1.95), both by François E. Matthes; and *The Sierra Nevada: The Range of Light* (various authors, $6.00); *Sunset Sportsman's Atlas: The High Sierra and Its Environs,* maps by C. E. Erickson ($1.75)—all these add greatly to an understanding of the Sierra scene.

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