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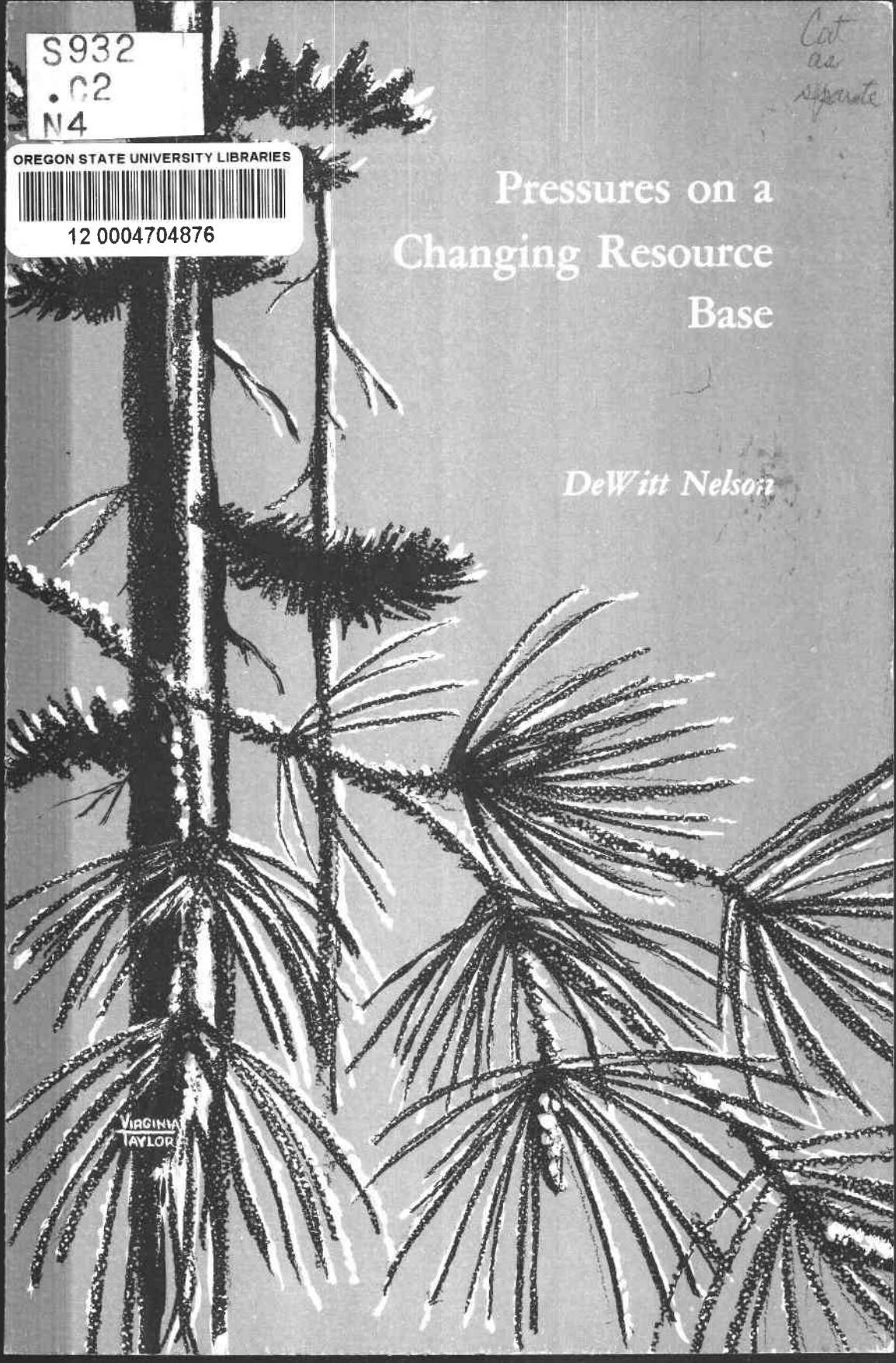
Pressures on a Changing Resource Base

DeWitt Nelson



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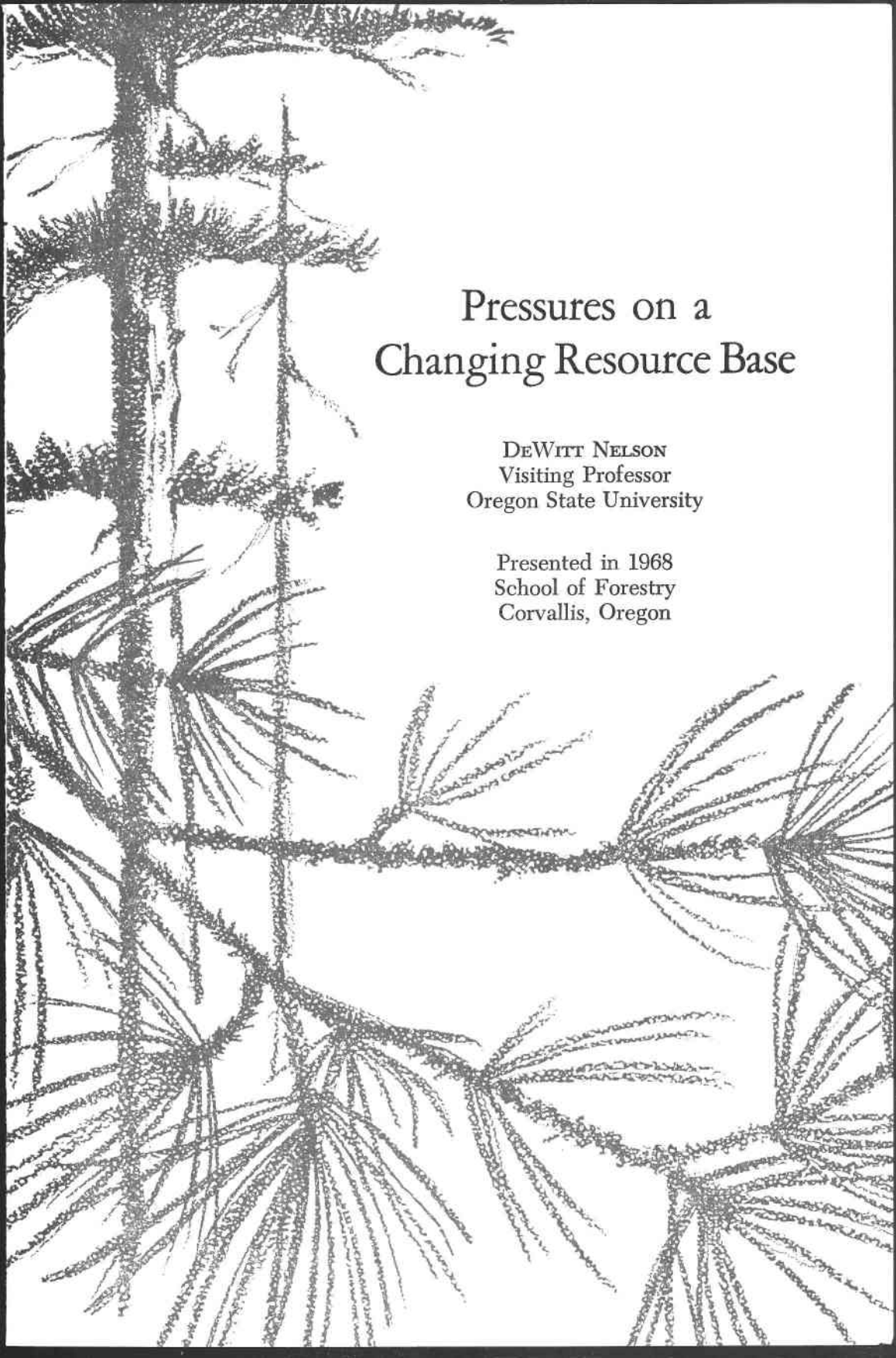

Pressures on a Changing Resource Base

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Visiting Professor
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Presented in 1968
School of Forestry
Corvallis, Oregon

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Preface

CALIFORNIA, to a greater degree perhaps than any other state, has conservation problems. Inadequate water supply is of vast importance to its agriculture and urban communities. Excess smog is a growing menace to the great population centering in Los Angeles. The world-famous scenery of Yosemite, big trees, redwood forests, beaches, national forests with their multiple use, state and national parks, and the well-recognized sunshiny climate have expanded tourism in many areas to the point that elbow room is a disappearing resource. In this most populous state with its rapidly increasing number of people, conservation problems are acute, controversial, and growing in intensity.

Who other than "Swede" Nelson knows so well these many-sided and conflicting conservation problems in their area of greatest intensity? In the course of his two decades in the United States Forest Service, he served as supervisor of four national forests, well distributed in California. Then for an additional two decades he served the State of California, first, as its state forester, and later as the director of the state's Department of Natural Resources; this department, in addition to forestry, includes soil conservation, oil and gas, mines and geology, beaches and parks, small craft harbors, and recreation.

With these four decades of experience, Nelson was an ideal choice to lecture on conservation problems as a visiting professor at the Oregon State University School of Forestry. DeWitt Nelson was born in Madrid, Iowa, in 1901. He graduated in 1925 in forestry from Iowa State University. From 1925 to 1944 he served in the United States Forest Service, and from 1944 until he retired in 1966 he served the State of California. From 1956 to 1957 he was president of the Society of American Foresters, and from 1954 to 1966 he was a director of the American Forestry Association. Since retiring from state work in 1966, he has been visiting lecturer in the Department of Forestry at Iowa State University, and later Regent's Professor, School of Forestry and Conservation, in the University of California at Berkeley. In September of this year he will return to Iowa State University as professor of forestry. In 1953 the Swedish Royal Academy of Science awarded him the Greater Linnaeus Medal.

This booklet presents three lectures given by Nelson in the spring of 1968 in Corvallis. One, "Difficulties in Communication as Illustrated by Water Resource Problems," deals with the many conflicting and overlapping demands for this no longer readily sufficient resource in California. Another lecture, "Conflicts in Conservation," discusses the bewildering array of demands that arises between and within groups of users practicing single or multiple use of the various natural resources of California.

The third lecture, "What About the Redwoods?," describes developments of the past five years or so of efforts to create a "Redwood National Park"—probably the most controversial and confused natural resource issue to come before Congress in modern times. These efforts to secure congressional action, through the introduction of several bills, have involved violent emotions, exaggerated statements, charges and countercharges, with National Park proponents—some quite extreme—on one side and on the other the dependent forest industry, local business, and county economy—with the more or less confused general public in between. Nelson speaks of the 115,000 acres of state redwood parks, containing most of the superlatively fine redwood, which since 1918 have been brought into existence largely through the action of the Save the Redwoods League and its many private contributors acting in cooperation with the State of California. He points out that no national park in the redwoods, worthy of its name, can be created without including as its most impressive feature some important part of the existing state redwood park system. This present redwood park controversy in its nation-wide disturbance is in great contrast to a similar situation in 1925, which was peacefully settled through mediation and arbitration, and which resulted in establishing a substantial part of the present state park system.

Anyone who is concerned with conservation will find these lectures deeply interesting and significant.

David T. Mason
Portland, Oregon
July 30, 1968

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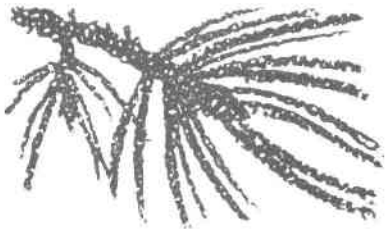

I. Difficulties in Communication As Illustrated by Water Resource Problems

THREE GENERAL PAPERS on natural resources and the pressures and politics which envelop them were presented by the author at Oregon State University during the 1968 spring term. This first paper concerns water *per se*, as a resource. Because it is such a universal commodity, probably the characteristics and values of water use problems are better known than those of other resources. The priceless magic of water in an arid land is of the utmost significance. In desert and semi-desert areas it is primarily the regulator of all life. Its national role is just as significant, but less publicized or understood, in the cities.

So this universal resource is considered not only intrinsically but to illustrate some common attributes of natural resource problems in general, particularly in the realm of communication.

The interesting title of this year's water seminar series at Oregon State was "People and Water." Every activity we pursue is for, of, and by people, whether to meet market demands, to utilize resources for profit, or to provide the amenities of life. For example, over 60 percent of our recreational activities are water oriented. In every such activity water plays a dominant role. Water is required in almost every facet of production and processing. It must be of suitable quality, quantity, and utility.

Water is one of our two most precious and possibly most sensitive resources. The other is air. All life depends on water and air. There are no substitutes. In each we require both quantity and quality. We have suddenly discovered that water must

be something other than just wet, and that air must be something other than a celestial garbage can.

The subject of water and people is three dimensional—social, economic, and political. Each of these provides its own built-in conflicts of interest which range from industrial survival to esthetic protection and enjoyment. Between both ends of the spectrum, pressures and counter pressures develop as we begin slowly to take stock of the quality and quantity of water available for a growing population.

The water problem no longer can be examined or solved if we allow each industry or locality to dump its waste in a river for the next industry or community to restore the water to usable quality. We are now studying the present and future needs of entire basins, involving interstate regions. As some arid regions foresee the end of formerly adequate water supplies, the problem becomes interregional and even international in character.

With each progressive step from local, to basin, to interstate, to interregional, and to international considerations, the social, economic, and political issues become more entangled and complex. The "have nots" reach out for new sources of supply, and the "haves" do not want to relinquish any of their resources even though they may appear to have an abundance at this time.

Since these are the present facts of life, as far as people and water are concerned, we are naturally confronted with the difficult problem of communication. In the area of "need to know" what are the facts, what are the needs at each level of use, and what can be done to meet those needs? How can we share the resource with others? How can we assure an adequate future supply for ourselves? How can we use the resource for its many beneficial purposes and yet protect its quality for repeated use as streams flow on to the ocean?

These are some of the critical water and people problems confronting us. They involve water control and regulation through impoundments and transportation from areas of abundance to areas of need. These diversions serve needs both local and far removed from the source.

Frank Graham, Jr., in his recent book *Politics and Water*, states, "Rainfall on America is estimated to be about 4,300

billion gallons per day, yet only a minute fraction of this total is available to us. Seventy-two percent evaporates and most of the rest runs to the sea before we can retain it. Scientists believe that by prodigious engineering feats, we can retain 650 gallons per day, which must be made available to us by 1980, but that is the limit." In addition to this total limitation, water is poorly distributed both seasonally and geographically. Consequently man has been forced to harness streams and build new rivers to meet new distribution requirements.

The current California Water Project is a prime example of water management for flood control, for hydroelectric power development, and for domestic, irrigation, and industrial purposes. This state-wide project is designed, financed, and built by California. It will serve two thirds of the people of the nation's most populous state in the 1970's, at a cost of over two and three-fourths billion dollars. It is projected to meet needs until 1990 when expansion will bring in additional waters from the north coastal region of California. Surveys and plans for that expansion are being made presently by both federal and state agencies.

In cooperation with federal and industrial agencies, the Pacific Northwest has accomplished the herculean task of harnessing many of its streams, including the mighty Columbia River. The Pacific Northwest's total water discharge of about 300 million acre-feet annually stimulates the more arid regions of the West to look upon this area as a "have" region.[1] This apparent abundance of water is very enticing to the hungry and thirsty land and people of the arid Southwest.

Like it or not the Pacific Northwest will continue to be the target of a potential source of water exportation. In the face of the predicted 300,000,000 people by about the year 2000, this is no longer a regional or a river basin problem. It is national in scope and fortunately is recognized as such.

Here is the need to know where we must relate people and their total needs for an adequate water supply for the future in all regions of need, for both the "haves" and the "have-nots." Here we have the most difficult problems of communication, with problems of interregional communication involving strong social, economic, and political forces on each side.

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[1] OSU Water Resources Research Institute Seminar Report of 1967.

The problems encompass interdisciplinary relationships and the dependence of one resource on another. We are concerned with the total environment of all areas as they relate to social and industrial developments of the nation. We must be concerned with the total consequences, both beneficial and detrimental, to the areas of water export and import. These elements affect all people. Therefore, before any precipitate action is taken, we need to know all of the available facts on what the resources are and where they are located, what and where are the needs, and what are the alternative solutions? Studies are now in progress at state, regional, and federal levels. When they are completed we should have a sound basis for projecting future needs and developing alternative solutions.

As these studies go forward it is important that progress reports be made so that people will know and understand the problems and what is being done to solve them. Knowledgeable and concerned people must be kept advised and permitted to participate in every possible way. Most people resist change. This resistance is strongest when people are confronted with a sudden change. Therefore, regardless of the final solutions to any of our water problems, those solutions will be many times more acceptable if the people most affected are kept informed as the studies progress.

Not all water problems center around the exportation of this precious commodity. One of the most critical problems is water quality.

Throughout history, the cycle of civilization has been influenced by man's use of the land. Here the term "land" is used in its generic sense, including all natural resources, of which water is one. Time after time, abuse of the land has marked the fall of governments and cultures. The better we understand the laws of nature and learn to work with them, the more nearly we will achieve the ideal of living. Aldo Leopold once said, "Men too wise to tolerate hasty tinkering with our political constitution, accept without qualm the most radical amendments to our biotic constitution."

If we have no understanding of these resource and people relationships, we will have little concern for the consequences of our actions. Historically, Rome has drained its sewers into the Tiber. Two thousand years later, with our modern love of

plumbing and technology, we have not ceased dumping raw sewage and other wastes into our rivers and estuaries. Not until 1948 was a national effort made to cope with water pollution. It was only in 1965 that Congress passed the Clean Rivers Restoration Act which focused attention on water quality, threatened federal intervention in all interstate waters, and forced the states to establish water-quality standards on their interstate streams and to pledge enforcement of their cleanups.

To establish water-quality standards, we must first determine the beneficial uses to be served and protected and then explain them. These uses may be municipal, industrial, or agricultural or they may concern fish and wildlife, esthetic values, and recreational purposes. Some of these uses require higher quality water than others in purity, mineral salts, hardness, turbidity, and dissolved oxygen. We must determine the parts per million of the various minerals, nutrients, and pollutants acceptable at the final points of diversified uses. From there we must work back up the streams and establish quality standards at control points on all reaches of the streams and their tributaries. Stream-flow management through dam construction and waste water reclamation and treatment can help maintain adequate quality control and assimilative capacity of streams, particularly during periods of low flow.

Industries and cities have long been charged as pollutors, but only recently has agriculture been recognized as a major factor also. The leaching of fertilizers and pesticides and drainage from feedlots and dairies are now pollution sources of major concern.

These pollution problems are extremely complex. Science and technology have made great progress in recent years and as a result considerable progress has been made in pollution control. But in most areas control measures have not kept pace with growth and development, and so we continue to lose ground in overall pollution control. There is a need to know more about the intricate chemical combinations that cause pollution and to develop solutions for controlling them.

It is easy to pinpoint and identify the source of pollutants from a community or an industry. It has now become evident that it is just as important to build the necessary treatment facilities into an industrial plant at the time of its construction as

it is to build the plant itself. It is just as important for a community to build a sewage treatment plant as it is to build a sewage collection system. These factors have now become matters of law and certain agencies are charged with their enforcement. There are cases where communication has failed in the past and where the waste contributors have not been sensitive to the public need. The result is a law and provisions for its enforcement. This form of communication, regulations and their enforcement, is always repugnant, but sometimes it is the only available means to obtain the necessary results.

Where agricultural wastes leach or drain into mile after mile of a stream, we have another and more difficult problem. How does one pinpoint the responsible contributor? In the San Joaquin Valley of California this problem is requiring the construction of a long and costly drainage canal. Intense debates now concern where in the San Joaquin Delta the drainage outfall will be located and how the costs will be reimbursed and by whom.

Another situation arises from the fact that nearly every treatment process creates another problem. Wastes may be extracted from the water, but how is the waste material itself disposed of? If used as land fill, it may introduce harmful chemicals into the soil and back into the water supply. If the waste is burned, then it creates an air pollution problem. Unfortunately, curing the first problem is seldom the final answer.

Here, again, is the need to know. The public has a right to know what can be done, what cannot yet be done, and what is being done. If people know the facts, they will be more understanding and tolerant while scientists develop answers to old and new problems. Too often scientists talk only to other scientists, using a language that most of us do not understand. One way to improve communication and understanding is to make a genuine effort to disseminate the facts in understandable language. People are interested, concerned, and most of them want to know. There is a great lack of sensitivity as to what people want to know and should know. It seems sometimes that the experts intentionally avoid the responsibility of keeping the public informed of the many resource problems and their complexities. It is difficult and time consuming to translate complex technical language into everyday terms so the public can under-

stand it, but otherwise, for example, it would be difficult to convince the voters to approve a sewage treatment bond issue. It takes time, hard work, and good communication to get public support for this kind of project.

Lake Tahoe, which lies astride the California-Nevada state line, is a good example. Politically it is situated in five counties and two states. Tahoe is the jewel of the Sierra, in Mark Twain's words, "the fairest picture the whole earth affords." Tahoe has a water surface of about 120,000 acres and a maximum depth of over 1,800 feet. It is situated at an elevation of 6,225 feet above sea level. It is world famous for its clarity.

On the California side Lake Tahoe abounds in resorts, subdivisions, and recreation homes, with the necessary supporting communities. On the Nevada side are more resorts, subdivisions, homes, high-rise apartments, garish neon signs, and thriving gambling casinos. Both year-long and seasonal populations have grown under inadequate planning controls, and large portions of the landscape have become polluted with unsightly developments and scarred hillsides. Because of the topographic setting, all sewage, in one form or another, ultimately finds its way into the lake. The inevitable result is pollution, the beginning of an algae bloom in the warm shallow waters. There goes the clarity of the lake. This waste material from many sources is rich in nitrogen and phosphates—the nutrients on which algae thrive. Ten years ago the presence of algae was scarcely detectable, but now one can gather handfuls almost anywhere in the shallows, and waves pile it up in mats along the shore.

In recent years, planning commissions from all five counties and the legislatures of both states have become concerned. Studies have been made, groups have been organized, hearings have been held, legislators and governors have met, local bond issues have been passed, and state and federal loan and grant funds have been made available.

At last, after too many years of debate, sewage from the southern end of the lake will be pumped out of the basin. After tertiary treatment it will be pumped over the mountain into a man-made lake where its quality will permit recreational use. From there it will flow into Nevada's Carson Valley. Nevada soon will be pumping its waste over the mountain to the east. On the north and west shore a collection system is under way

for disposal into an old volcanic crater and ultimate percolation into the Truckee River.

Efforts are now under way to create a Lake Tahoe Regional Authority through the enactment of an interstate compact. If Lake Tahoe is to be saved from premature eutrophocation, a regional administrative agency must soon be formed. It must have the authority and ability to establish and enforce strong controls not only on sewage but on solid waste disposal from the great amount of development erosion taking place from subdivisions, ski resorts, road construction, logging, and so forth.

Lake Tahoe is only an example of what can happen in a very short time. Even worse conditions are being repeated through the length and breadth of the land. We have read about the degradation of Lake Erie in one short generation. It can happen and is happening elsewhere.

People need to know what is happening, most of all what is taking place in their own localities. We are all contributors to the pollution of our waters, and we must all share the responsibility for water protection and treatment so that downstream users may also enjoy water of good quality.

In the area of people-to-people communication, there is no perfect and controllable system, for there is no reliable formula for predicting peoples' reactions. A computer's response is predictable. The technology of communication by the use of computers to record all kinds of complex data, to predict needs, to make decisions, and even to implement those decisions at remote control centers is becoming commonplace in industry, in managing stream flows, and in power generation.

Human reactions vary between people and even from time to time with the same people. They vary between communities and within communities; they vary between the different environments in a region; and they vary with different social and economic groups. Human nature and its unpredictable response to various social, economic, and political impulses is probably the most complex of all the variables with which water management must deal.

In America we as a people have been slow to act before a crisis is upon us. Once the crisis has been recognized, the people have understood the problem, and its potential consequences

have been properly assessed and interpreted, generally we have moved aggressively to take the necessary actions to solve the problem.

When problems are localized, as may be the case for flood control or water for domestic and irrigation uses, it is relatively simple to marshal support for an action program, particularly if the necessary funding can be obtained from some higher level of government.

An entirely different problem may exist in marshaling support for funding a waste-treatment project. After all the clean water has been used, it is easy to dump the polluted fluid into the stream and let the next user or community worry about it. This has happened across the nation.

Suddenly we begin to realize that something must be done if we are to have usable water for our many needs. Treating costs for domestic and industrial uses are rising, fish and wildlife habitats are being endangered or destroyed, wells are producing a head of foam because of nondegradable detergents in underground basins, recreation waters are being downgraded or closed because of contamination, and esthetic values are being destroyed.

When several or all of these situations become apparent, we find that various interest groups may band together in support of corrective action. Usually the first reaction is to find a culprit, someone to blame. Even the interest groups themselves may be contributors. It is always easier to blame someone else, especially if corrective measures will be costly.

However, when the situation reaches this point, it at least opens up lines of communication. Frequently the parties concerned spar at arms' length with charges and counter charges. Under these conditions, little progress can be made. Satisfactory solutions seldom are developed until all the parties of interest admit that they have a common problem which must be solved for the common good. When this point is reached, it is possible to work together in analyzing the problem, developing alternate solutions, and finally agreeing on a plan of action. This is not a simple or rapid formula for solving complex water problems, whether water supply or waste disposal, whether local, basin, or interbasin in character. However, in solving these problems, communication is the first step in any procedure.

We must determine *what* is the problem, *where* is its source, *how* can it be corrected, *how* much will it cost, *who* must share in its correction, and *when* it must be accomplished.

There is a need for all concerned parties to know and understand each of these elements. All of those concerned should be kept informed progressively as studies and plans proceed and possible solutions develop. This can be done through various political subdivisions and user groups.

Developing sources of water supply and controlling and preventing water pollution are much more than physical or technological problems. They are people problems. It is the people's right to know what, how, when, and where corrective and preventive measures must be taken. If they do understand these factors, they will more willingly provide financial support for implementing the necessary action programs.

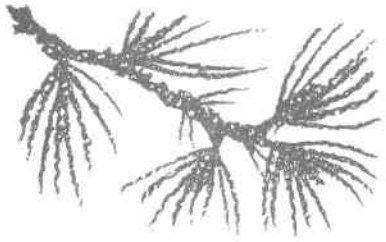
In summary, there has been an almost universal lack of communication between year-around professional resource managers and part-time, vocal, nonprofessional users of the same resources (often without respect to ownership).

Small groups of zealous partisans occupy adamant positions at both ends of the resource spectrum. For these strongly opinionated spokesmen, a trickle of fact does not preclude a Niagara of belligerent opinion.

Between these indefensible extremes is a large area of middle ground. Here, men of conscience may engage in factual, tolerant, constructive discussion for the common weal.

Some hopeful citizens think that resources are still available in vast amounts. Not so. No longer may individuals or groups make prescriptive use of resources for their exclusive benefit without impairing the equally valid rights of other users. There are simply not enough resources to allow all men to have all they wish of any resource.

In this paper, the water resource was used to illustrate the cold circumstance that some rationing of resources is already in prospect. Where facts are not carefully collected and carefully communicated, conflict is certain. This situation leads us directly into the second paper, a general statement on "Conflicts in Conservation." The final paper illuminates this subject by the analysis of a specific angry controversy, the Redwood National Park issue.



II. Conflicts in Conservation

THE PRECEDING PAPER dealt with the need for better communication in the broad field of conservation. using the water resource as an example. This paper considers some of the conflicts which arise because of inadequate communication concerning resource needs and uses.

Oregon is one of the nation's most beautiful states, richly endowed with natural resources. Fortunately you have not yet felt the full impact of population growth that has produced a multitude of problems in some other states, but times are changing. We cannot afford to be complacent either here or in other states.

First, we will consider the situation from the general viewpoint: increasing population, a decreasing resource base, and the types of conflicts which these facts engender. This material will set the stage for consideration of specific resource conflicts presently affecting us: (1) water development, (2) agriculture, (3) forestry, (4) outdoor recreation, (5) air pollution, and (6) people and environmental management.

Oregon is confronted with resource conflicts similar to those which also bedevil other western states. People are coming to the Northwest in droves, bringing their abilities, prejudices, hopes, and problems. Always problems. What will be their impact on the land and resources? What will be their interactions with each other? Will Oregon's planning and control mechanisms be ready to prevent the unplanned, uncontrolled suburban sprawl that seems to be an inevitable result of a rapidly expanding population? If plans and programs are not made to meet the problems of more people, unreasonable amounts of prime lands will be lost to production. Most of the roads leading

out of western towns have become streets, some of them of such low order as to constitute ribbon slums. If sound, comprehensive long-range plans are not developed in advance of this heavy immigration, a leapfrog type of urban sprawl will result. The planning, if any, then will be done on speculation by subdivision developers. This type of unplanned and uncontrolled development will place enormous strains on every level of government and on the taxpayers. There are already indications of such growth taking place around many of Oregon's communities.

Here is conflict in conservation because public planning and controls may impinge on certain individual property rights. Like it or not, as populations grow, more restraints will be placed on what we do, where we do it, and how we do it, if we are to protect the basic economic and social opportunities of the majority.

I have had the privilege of discussing people and resource problems and opportunities with the Oregon Legislative Public Lands Interim Committee. We spoke of some of the planning needs which I have previously mentioned. I hope I can get over to my students the importance of being people oriented and the interdependence and interrelationships between our many natural resources.

The controversial nature of such subjects as "Conflicts in Conservation" and "What About the Redwoods?" is fully recognized. I accept the pitfalls and hazards that await anyone who dares question some inflexible programs and projects and the philosophies and emotions that exist on both sides of practically every issue dealing with the broad subject of conservation. This is inherently true because the term conservation is "a many splintered thing."

Gifford Pinchot, the first chief forester of the United States, and President Teddy Roosevelt, at the turn of the century, popularized the term conservation as meaning wise use. Today many articulate people interpret conservation as meaning preservation. The latter definition is now newsworthy. As one writer put it a short time ago, "Conservation has become somewhat of a fad, and has gained prominence as a popular political issue."

The national ground swell for preservation is timely. However, we cannot be blind to the original conservation concept

of wise use. We must meet the demands both for preservation and use and for proper balance; we must continually improve management practices for all forms of land and resource use, including the field of preservation, if we are to provide adequately the food, fiber, services, and amenities for a growing population. More people will mean a greater demand for all types of commodities and for more open space and recreational opportunities. As lands become allocated to limited uses, the different demands result in conflicts of interest and philosophies and in rigorous competition for available land, resources, and public dollars.

Much of what we hear and read uses the scare approach, insisting that technology is destroying not only our environment but our very chances of survival. There are some indications that this could be true, if we look at only one side of the coin. Technology has given us tools with both beneficial and harmful consequences; but they have made for a richer and longer life for people as well as for better protection, management, and utilization of resources. Technology is also devising the tools and methods of combating many of the undesirable consequences of early conservation developments. Our great universities and research organizations have achieved miracles. They will continue to solve both the new and old problems of mankind. The real problem is this: Can men work together to use properly the miracle tools which have been developed? That which is detrimental to one may be beneficial to another. We must analyze the good and the bad and make our choices.

The scare approach in many of these problem areas has been beneficial. The message is getting through. Business and all levels of government are reacting. Often the response is not as rapid and the changes as revolutionary as we would like. This, too, is a people problem because they react differently, usually from a personal point of view. As a people and as a nation we must strive for balance. Too often our information is not sufficient to measure long-term consequences. When maladjustments result we must recognize them and then move to counteract them. Both people and technology appear to be moving in this direction.

It has been well recognized that "all that glisters is not gold," but many of us do not recognize that what is conserva-

tion to one is not conservation to another; or that there are really conflicts and competition that arise within common-interest groups, such as recreationists. If you do not believe this, see what happens when a water skier slaloms his way through a group of fishing boats on a lake or river. If the fishermen could catch up with him, the skier would be in no condition to give an encore performance. These diverse interests exemplify many other mutually incompatible activities in the recreation field. There are many mutually incompatible activities in other areas, too.

Before considering other present-day conflicts, we should take a backward glance to see how we got where we are. From the day the Pilgrims landed at Plymouth Rock until the turn of the last century, our citizens were engaged in a battle to conquer the wilderness. Following the Civil War and with the discovery of gold, the task was to win the West and build an empire. As a policy, the nation gave away its natural resources free, or nearly so, to those who would risk their lives and fortunes to develop them. Underlying this attitude of conquest were certain elemental facts which our grandparents accepted without questioning and on which they acted accordingly.

Looking back to the pioneer period, we find our national resource policy was implemented by the General Land Office. It was one of the world's greatest give-away programs under a variety of land disposal laws. It was literally the foundation of our free enterprise system.

In order to open the West, Congress provided that alternate sections of land, 10 to 40 miles in width, be given to railroad companies to encourage and hasten the westward push. These grants covered an area larger than France, England, Scotland, and Wales. The Homestead Act and many other land-grant laws were designed to encourage the westward movement. Many fraudulent and speculative methods were used to gain footholds and to consolidate large land holdings.

The land and resources were abused and overused. Carelessness and greed were mixed with heroism and the spirit which built a great nation in one short century. The only technology was the rough and tumble of conquer and take. Few recognized that the laws of nature are not subject to repeal, even though responsive to manipulation.

This was a period of movement and growth affecting the whole western half of the nation. Included were the annexation of the Louisiana purchase in 1803, Texas in 1845, and the Oregon Territory which included Oregon, Washington, Idaho, and part of western Montana in 1846. To these were added the lands from Mexico in 1848 now comprising California, Nevada, Arizona, Utah, western Colorado and New Mexico, and the southwest quarter of Wyoming. With such vast territory it is easy to understand the philosophy of superabundance that dominated the thinking of that time. It was casually assumed that there would be enough land for all time, but conflicts such as the cattle and sheep wars immediately arose. So conflict is not new.

During this same period a few leaders recognized what was taking place and realized the necessity of bringing law and order out of a very slippery situation. Starting with the late 1800's and continuing to current times, we find an ever changing and improving philosophy of stewardship and husbandry. During this period great strides have been made in knowledge and understanding of how to develop, manage, and protect the resources upon which we are so dependent. Counter to this progress has been a rapidly growing population with new demands for goods and services and with more time, money, and mobility to wear out resources all over America.

Research has shown how to use our resources more wisely. On the other hand, many of the findings and their implementation have created reactions and new problems that enter the picture of conservation conflict.

The prevention or cure for some of the adverse reactions to presumably good conservation practices will be difficult to accomplish. Among the issues under current debate are air and water pollution control, the movement of water between regions, the harvesting or preservation of the redwoods and other forests, and the buildup of DDT concentrations in the food chain. In spite of this alleged buildup, eminent physicians have cited DDT and its uses as the greatest contribution of science to man. Other conservation conflicts are rarely mentioned, admitted, or recognized as having far-reaching consequences. We shall examine a few of them.

Water development

We require the control and management of our water supply and its distribution to areas of need for domestic, industrial, and agricultural use and for river bank protection, recreation, transportation, power, and flood control. What are some of these developments?

Many stream channels below dams are flushed out inadequately. It has been necessary to scarify some of these stream beds to loosen the gravels for the improvement of spawning grounds. Sediment buildups also destroy existing spawning beds because of inadequate flushing action. The mortality of fish is regrettable and stirs up conflicts. However, would we eliminate these dams and their beneficial values of flood prevention, production of power, supply of irrigation and domestic water, and recreational sites? Since 1955 we have suffered two devastating floods, and more will come. Their impact must be minimized.

In southern California practically every stream is harnessed for flood control and water conservation purposes. The dams no longer permit the movement of large quantities of sand and gravel to the sea; consequently, superb beaches are being starved. Sea walls, jetties, groins, and harbor developments prevent the littoral drift of sand down the coast line and it is ultimately shunted off into subterranean canyons. The result—starvation of the beaches. I am advised that the sand accretion to Oregon's magnificent beaches is also suffering a similar depletion. This is a slow but inexorable process and no one seems to be seeking an answer to this problem.

Plans are now being made to dam the northern California coastal streams to the detriment of the beaches. The runs of anadromous fish, particularly salmon and steelhead, will be endangered. Some of the loss to commercial and sport fishing can be reduced by the development of hatchèries below the dams. But here is a prime example of how one vitally important conservation practice can adversely affect other conservation needs. I am sure that Oregon is also facing the same sort of problems.

These types of conflicts will compound when we get down to the business of seriously planning and negotiating the movement of water between regions, for example, from the Columbia

Basin into the Colorado Basin. Just thinking about it has already stirred up partisan debates and regional animosities. Arizona residents are accusing Californians of taking their water. In spite of the Supreme Court's decision of 1963, there are still unsolved problems of who gets what out of the Colorado River. Some Oregon people say, "You don't expect us to give California any of our water do you?" So far California is in the process of developing and distributing its own water, but it is impossible to predict what the water needs of the various states may be after the year 2000.

Farming

Farming has become big business. Technological developments now make it possible for only 6 percent of our population to produce the necessary food for our 200 million people and still export large quantities of essential foods to countries in need. Here, too, many excellent conservation practices have impinged on other conservation needs and programs. To illustrate: larger farms mean larger fields with fewer fence rows. This, plus clean cultivation, has reduced much of our wildlife habitat.

Modern pesticides with low degradability characteristics have improved farming techniques and the quality of agricultural products, but these tools for modern pest control may have serious consequences on the food chain for all animals, including man. The very widespread use of DDT has altered the metabolism of pests to a point where some insects now tolerate doses which once were lethal. Regulations for insecticides are being developed and applied but among them DDT is still an important control agent. It is anticipated that less harmful but effective pesticides can be found, and recent reports indicate that progress is being made. Better still would be the prompt development of biological controls, but this requires time-consuming, meticulous research.

It is easy to condemn the use of these modern devices, but who will give up the abundance and variety of foods which modern agriculture makes possible? How long has it been since you found a wormy apple? World-wide, the food situation is becoming increasingly precarious and requiring increased agricultural production, both in quantity and quality. In this area some of our most serious conservation conflicts exist and there

are no ready answers. We cannot afford to foresake modern methods and produce less food of poorer quality. To strive for better answers, research is moving forward in the development of effective regulations, more discreet use, and the development of chemicals and herbicides which are tolerated by man but lethal to insects and weeds.

The use of more and more fertilizers is causing some of our most serious water quality problems. It is relatively simple to identify domestic and industrial waste disposal problems, and great strides have been made in developing clean up and control measures. But there is no easy or inexpensive control of percolating mineral salts and nutrients into streams running through agricultural lands. There is also a build-up of natural mineral salts leaching into streams throughout the irrigated valleys. The fatal chemical accretion is a great threat. These are examples of good conservation practices for one vitally important sector of our economy which seriously disturb other conservation needs and programs.

It may be interesting to explore how some of our conservation programs can work both ways. It is possible, at least theoretically, to secure federal grant-in-aid funds to drain a pot-hole, swamp, or marsh for agricultural purposes at the expense of desirable wildlife habitat. Subsequently it would be possible to secure federal grant-in-aid funds to reconvert this same area back to a pot-hole, swamp, or marsh for habitat improvement purposes. Each action or project would be based entirely on good conservation practices. It seems obvious that we need a national land use policy.

We build thousands of stock ponds and small reservoirs for water conservation purposes but lose millions of acre-feet of water through evaporation. The ponds are a good form of conservation for the individual property owner but how about the downstream users?

Forests

Historically, forests were managed for the major purpose of producing a great variety of essential wood products. The United States Forest Service did build a great number of modest camping areas, mostly through the CCC program, but the forest industry did not consider itself in the recreation business. Hunting and fishing were allowed on both public and private

lands but this was about all. In the early years of the industry some of the timber operators were not sensitive to public opinion or public reaction to their practices. This circumstance is understandable. Around the turn of the century, logging was a railroad operation and tourists were simply not able to get to operating areas. In consequence there were few, if any, complaints about land management methods.

Truck roads changed all of this. Now vocal tourists drive everywhere. This has brought about a growing recognition by private owners that their management objectives must take all major uses into account, and there is real evidence of improving land stewardship. On most lands there is one principal use which defines the primary objective. It is the owner's or the manager's responsibility to implement it efficiently and with minimal impact on other values.

The recent widespread recognition of the esthetic qualities of the landscape has altered many forest management practices. Now, many operators are accepting their responsibility to protect these values and provide for multiple-use in their management plans. A freshly logged area is never a thing of beauty when compared to an untouched stand of timber. Neither is a field of stubble compared to the uncut grain, but laymen do not appreciate these parallels. They think that a forest once cut is gone forever. But they do not cry over the grain field which is fallow part of the time, while managed forests are busily growing all of the time.

A well-managed forest, whether publicly or privately owned, is operated on silvicultural principles which stem from many years of research and experimentation. These principles are tested against alternative methods to secure the highest recovery of the resource and to assure the best results in establishing another stand of timber for future harvesting. Different species respond to different forms of silvicultural treatment. Each has its own biological and environmental characteristics which must be considered in its management. No single form of silvicultural treatment will produce desirable results in all situations with all species.

To these problems are now added the maintenance, or at least the regeneration, of the esthetic qualities demanded by the public. Progress is being made in this direction. We read

and hear about logging damage to streams and fish, but few people realize that the only major wildlife habitat improvement is found on the logged-over areas or following severe forest fires. Here the native plant succession which follows logging or fire provides forage values not found in dense timber stands.

Resource management for water production in quantity and quality is rapidly approaching. It is not inconceivable that the time may soon come when water will be one of the prime wildland crops. It is vitally important now. The United States Forest Service is already moving in the direction of managing its lands for quantity and quality water production. So, too, are some private operators, particularly the power companies. This action may one day be required of all lands, whether publicly or privately owned and whether used for agriculture, timber, grazing, or recreation purposes. When that day comes there will need to be some form of compensation to the land owner for a specified type of management for water production as well as for his particular crop. If some form of compensation is not provided, the legal and constitutional question of confiscation without due compensation will be raised. Problems of this sort can become quite sticky.

Outdoor recreation

Outdoor recreation is a subject in which most people are naturally interested for it is a personal thing. The President's Outdoor Recreation Resources Review Commission recognized twenty-three major recreation activities, each further broken down into a number of specialized types of activities. They were grouped into five categories: (1) passive outdoor pursuits, (2) physically active recreation, (3) water sports, (4) winter sports, and (5) back-country recreation.

Within these activities are many conflicts of interest, as well as competition for lands and facilities. Water skiers and fishermen have been mentioned. How about motor-bike riders on riding and hiking trails, jeepsters churning their way into virgin country and tearing up the fragile vegetation of the desert or timberline, and how about power boats in swimming areas? There are also some people for whom the day is spoiled if they meet any other person or group on back-country trails.

Mass recreation is generally found at popular beaches, picnic and camp grounds, winter sports areas, and around lakes

and reservoirs. It is fortunate that most people are happy and willing to seek recreation with others. Many people have an innate desire to go where other people are gathered. This is good, for we certainly cannot provide everyone with his exclusive fun area or inspirational point.

There is a need for wilderness areas—places of solitude, mountain peaks, fresh air, and sparkling lakes. This environment provides for many an experience that can be obtained nowhere else. To some it is an opportunity to relive some of the experiences of the mountain men and the rugged pioneers who opened and built the West. To others, it is a chance to gain inspirational and spiritual values from being close to nature.

As a result of the herd instinct, a great many people are found in such areas as Yosemite Valley and certain high-population areas of Yellowstone National Park. The dilemma of the National Park Service today is that of trying to carry out its statutory charge to "conserve scenery . . . and wildlife . . . in such a manner . . . as to leave it unimpaired for the enjoyment of future generations." Park management is a problem of public use without destruction.

This is the objective toward which we are all striving in the management of renewable resources. This same charge is also appropriate to our nonrenewable resources of metallic and nonmetallic minerals and fossil fuels. Here the necessity is for maximum recovery with minimum waste and damage to other resources.

All of these problems are easily discussed in generalities, particularly so if we are not responsible for solutions.

Air pollution

Fortunately federal, state, and local governments are actively moving into the air pollution problem area. It is generally accepted that the prime pollutant of the air in the Los Angeles and San Francisco Bay areas is from automobile emissions. If this pollution cannot be corrected, there should be a great future for electric or steam-driven automobiles.

Recently a new dimension has been added to the pure air problem. LaMont C. Cole, professor of ecology at Cornell University warns that we are perilously close to clogging our oxygen supply system. The prediction hinges on the world's growing population. Burning of all kinds and breathing consume oxygen

from the air and return carbon dioxide. The carbon dioxide in turn is broken down to make oxygen by photosynthesis of the earth's plants. Obviously, air has a certain assimilative capacity before it becomes unusable. We hope that the world-wide circulation of air will continue to replenish our local danger spots until we can develop the essential pollution control measures.

People and environmental management

So far some conflicts and competitions in natural resources currently before us as local, state, and national issues have been discussed. The common denominator of people has been stressed throughout the presentation. A common thread ties all people together, people from every walk of life with their needs, wants, and demands. There are pressures of people on people as well as pressures of people on resources. With our population increases we will have more demands for farm and forest goods, all of which come from nature's abundance. As more and more people begin to live in high-density areas, recreational use will conflict more and more with the increasing demand for production uses on these same areas. How to arrive at acceptable solutions and provide for escape areas from the tensions of close living will require the wisdom of Solomons.

It is well that we are beginning to recognize and identify the problems involved. We should be able to generate and implement the solutions at least as speedily as we created the problems. However, I doubt if the solutions will come as easily or as naturally as did the problems. Why? Because an ever-growing population keeps compounding the problems, and more people make preventive and control measures more difficult.

The simple solution being offered today is to discontinue many of the resource development and management programs which provide the essential commodities of our civilization. The popular appeal is for preservation, but this is not an adequate answer. We must do a much better job of managing, husbanding, and renewing our resources; we must work more efficiently with nature and realize that her laws are rigid and cannot be repealed. But nature's laws can be manipulated to help serve man's needs. We must learn how to produce more goods and services from a fixed land area. However, as urban complexes

and their attributes sprawl over the landscape, resource-producing land areas are constantly dwindling.

Gifford Pinchot, chief of the United States Forest Service over a half century ago said, "From birth to death, natural resources, transformed for human use, feed, clothe, shelter, and transport us. Upon them we depend for every material necessity, comfort, convenience, and protection in our lives . . . therefore, the conservation of natural resources is the fundamental material problem."

No matter what resource we examine—forests, water, air, minerals, or wildlife—the manner in which we manage, develop, harvest, or preserve it must be people oriented. As Dr. Joseph L. Fisher, President of Resources for the Future, has observed, "It is easy for enthusiasts for forests, pure water, and wildlife to become so engrossed in the preservation and conservation of these resources that they forget the human resources side. But it is primarily for people that resources are conserved and developed; and it is people who do the conserving and developing insofar as these do not take place through the processes of nature—." He continues, "I'll have to insist that ideas about natural resources and their conservation cannot even be expressed apart from people and their values, capacities, needs and cultures.

"If these general comments seem obvious, then one should recall the fixation that the devotees of the various natural resources seem to have for their particular resource, and their extreme reluctance to concede that others may see things differently. Stereotypes like the bird-watcher, the string saver, the nature lover and others are well known. Overdrawn as it frequently is, nevertheless the picture conjured up carries a clear message: People! Don't destroy, deface, use, or in any way mess up this precious thing."

With more leisure time, more money, and greater mobility available to an exploding population there is an obvious need to provide more recreational areas, to set aside choice and unique seashores and wilderness areas, and to provide open space within and around areas of population density. There is an underlying need to produce more of the products of our natural resources to meet the day-to-day consumptive demands of people. Therefore, we find ourselves in a paradoxical situa-

tion with a multitude of built-in conflicting interests and objectives.

Growing demands for products today not only conflict with demands for services but create political issues of use versus preservation, of mass recreation versus wilderness, of open space versus subdivisions, and of industrialization versus air- and water-quality control. With these and many similar issues involving our complex resource base, it becomes imperative that we all develop a keener appreciation of the relationships between the resources and the interdependence of one resource on another. For example, farming, grazing, and logging can impinge on fish and wildlife. Conversely, heavy wildlife populations can damage agricultural and forest crops. How one resource is managed or mismanaged can produce beneficial or detrimental effects on one or more other resources. Therefore, it becomes essential to break down the parochial barriers which constituent groups have cherished over the years. As Laurance Rockefeller once pointed out, " . . . many resource agencies (and I include disciplines and their supporting groups) are competing with each other, or even worse, ignoring each other."

We must improve communication and understanding between the various interest groups. We sorely need better dialogue between competing interests. The resources with which we are concerned, combined with climate and topography, form the environment in which we live. Whether we manage them as a *community of resources* or independently as single resources determines the quality of the environment that we fabricate for ourselves. Under this concept we must build for environmental management.

Environmental management means using and manipulating our resources for the benefit of man, for both goods and services. In this context we must recognize that social and political aspects are more difficult and complex than biological factors.

Nature is extremely vigorous in recapturing an area that has been impinged upon by either man's actions or natural disasters. Disturbance is a great stimulator of biological action; it brings many new and virile organisms into play; it provides for a new succession of plants and animals that are ecologically important and important to man.

Nature is not static. It is constantly changing. Many of the changes are not discernible to the individual as he visits or even revisits an area; nevertheless change is taking place. Because of nature's vigorous vitality, with the proper skills man can use and manipulate the resources to his advantage. If he is willing to work with nature, he can accelerate responses or productive capacities for the required products. This is true whether we want timber for forest products, forage for domestic livestock and wildlife, water impoundment for conservation and flood control, vegetation for esthetic values on highways and in parks. Untouched preservation can and will, over time, hide or change the conditions we want to preserve. Starker Leopold tells of an Indian camp site that has been "preserved"—now so overgrown with vegetation that the visitor cannot recognize it, if he is successful in locating it.

The Yosemite Valley presents a current example of environmental management for the production of goods and services for the benefit of man. Presently there are three obstacles to this type of intensive management or manipulation. The first is money. It will be costly but we should at least embark on research to develop the essential techniques. The other two obstacles go hand in hand. They are social and political understanding and appreciation of the fact that living things do not last forever and that change is constantly taking place, even in giant trees and timber stands.

To explore the biological question further, how can Yosemite Valley be managed to provide enjoyment for ever-increasing numbers of people and yet be retained in a desirable and presumably natural state? Here is probably one of the best examples of use and change and yet it is still one of the nation's most unique and beautiful spots. If it were not for all of the crowds there, most of us would accept it as an undisturbed area of pristine glory.

Here we have a one-hundred-year record of many forms of use and over use, a history of use and vegetation changes from 1851 to 1961. We find it to be ecologically healthy. An ecological study made by Robert P. Gibbens, an assistant specialist, and Professor Harold F. Heady of the School of Forestry, University of California, under a National Park Service contract, gives us the following information:

Yosemite Valley, an area of approximately 2,240 acres at an elevation ranging from 3,880 feet to 4,084 feet was the home of a small tribe of Indians before the white man drove them out. It then supported a small settlement which had uncontrolled grazing and some farming with the necessary fences and roads. In 1870 John Muir operated a sawmill in the Valley to clean up insect-infested and windthrown timber to meet the local demand for lumber. There was a slaughterhouse to provide fresh meat. Most of this type of use took place between the time of the first permanent settlement in 1859 until about 1890.

Sightseeing began early with an estimated 653 tourists in 1864, 1,000 a year by 1869, 10,000 a year by 1905, 100,000 by 1922, 1,000,000 by 1954, over 1,000,000 by 1961, and 2,238,000 in 1967. In the past 100 years probably 50,000,000 visitors have used this seven-square-mile valley and have been thrilled by its grandeur. This is a history of mass recreation in the extreme.

Yosemite Valley and the Mariposa Big Tree Grove have been under some form of recreation management since 1864 when the land was granted to the State of California as a public trust for public enjoyment. In 1905 it was granted back to the United States Government (Department of the Interior), with the same objectives of public enjoyment and preservation. With the creation of the National Park Service in 1916, it became a National Park. Practices for 100 years have included burning, plowing, seeding, mowing, grazing, clearing brush and trees, logging, pulling of young trees to avoid the growth of thickets, filling meadows, drainage by tile and ditches, deepening the river and stabilizing its banks, construction of fences, roads, walkways, trails, hotels, campgrounds, and even a slaughterhouse; trees, crops, weeds, wildflowers, and elk were introduced; deer, rodents, Klamath weed, thistles, and forest insects were controlled.

An eminent ecologist points out—"were all these things done in the name of continued enjoyment? If so, then the public load of 1961 (the year of the study) of a million and a quarter people in Yosemite Park indicates a job well done." He raises two more questions—"Can planned management for public enjoyment maintain the natural landscape? In other words, what is the relationship between public enjoyment in a natural setting and the naturalness of the landscape?" He answers his

own question, "You might want to put the word 'primitive' in this question instead of 'natural.' This Yosemite story indicates that the natural setting is much more important than the naturalness, or the primitiveness. Yosemite Valley is a wonderful place. It has retained a high degree of the natural while absorbing tremendous pressures for its change."

The Yosemite problem is again under study and more change is inevitable. New controls of people and their use of the Valley are on the horizon. In spite of new plans and control programs of people, it will be necessary to continue to control and manipulate the flora and fauna if the naturalness of the landscape is to be retained.

Both man and nature have a great capacity for change and adaptability. If man is willing, he can work with nature for the social and economic welfare of the nation.

All good intentions, competence, and tolerance will be needed to resolve the complex issues at stake in the Redwood National Park Proposal in northwestern California. The situation is explored in depth in the following pages under the title "What About the Redwoods?"

III. What About the Redwoods?

COMMUNICATION, GOOD OR BAD, and conflicts, rational or otherwise, are both illustrated to an extreme degree by a current land use problem in the coastal redwood country of northern California. This issue, the Redwood National Park Proposal, is one of the most controversial and confused resource questions to come before Congress. The many ramifications of the struggle make it imperative that the issue be explored thoroughly. Even though I have followed it closely, I certainly lay no claim to predicting its outcome or to proposing an acceptable solution. I doubt if it is possible for most of us to rearrange our prejudices so that we may be completely satisfied with any final decision on the issue.

This proposal is now entering its fifth year of debate in public and political arenas. However, the problem is basically ecological. Can we preserve for future generations the superlative groves of virgin coastal redwoods found on the alluvial bottom lands without providing some management techniques?

In the first place, a redwood is a living organism. Despite a long life expectancy, it does have limitations. Each year we lose a few to old age or windthrow. Many of the old-timers have dead tops. When openings are made in the forest new redwoods and other species of trees and vegetation come in to fill the gap. The young redwood must compete for its survival. Down through the ages the survival of this species has been helped by occasional floods and fires which eliminated its competitors.

We try to exclude fire from the redwood forest for a number of very good reasons. As the streams are dammed, we will exclude flooding on which the redwood thrives but other species do not. Fires and floods exposed the mineral soil and destroyed

the pathogens which attacked the seedlings. This provided an environment for the redwood seed to germinate and grow.

The problem of preservation should really be the task of perpetuation. We must help nature to keep producing new redwoods to fill the gaps as the aged sentinels fade from the picture. If we cannot use the old natural devices of fire and flood, we can use artificial manipulation with modern tools and herbicides. The perpetuation of these magnificent redwood groves will require careful management and manipulation. This is also true of our wilderness areas as more and more people wear them down.

I can think of no better introduction to the redwood park problem than a quotation from Stuart Nixon's book, *Redwood Empire*. He opens his discussion of the controversy with: "Like floods and fires, conflict seems inevitable in the Redwood Country. In its larger than life setting, trappers battled the wilderness, settlers fought the Indians, engineers assaulted the mountains, sailors braved the sea.

"Strong men with strong opinions tamed the land of giants. Now in the old arena their descendants face a new kind of strife, a battle whose causes are only dimly perceived, but whose effects are feared like a Yurok (Indian) raid. This conflict has many names: vandals against trees, poetry versus economics, sentiment against fact."

Redwood forests, both for production and for parks, play a dynamic role in the economic and social life of California. There must continue to be a place for both. But not until this controversy is settled and a decision made, can the people, industries, and governments of the redwood region settle down to orderly development.

This communication problem is not confined to California or the redwood region. I have spent the last year and a half in the Midwest and have traveled extensively throughout the United States. When people learned that I was from California their first question was—"What about the redwoods?" or "Why are they cutting every redwood?" These people had no knowledge of the fact that the State of California in cooperation with the Save the Redwoods League has acquired some 115,000 acres of redwoods. More than half are the superlative virgin forests found only on the alluvial bottom lands, benches, and

lower slopes. They do not realize that these choice redwoods are preserved in perpetuity in 30 magnificent and efficiently managed state parks. Very little of the redwood information so widely and effectively published makes any mention of these facts. Consequently, the issue has become one of national concern and confusion. This has increased the difficulty of arriving at an acceptable solution. In my presentation I shall focus on some of the hidden elements in this issue and discuss the facts as I see them.

There is no simple, direct answer to the question of how much and where a redwood national park should be established. At least five major proposals have been submitted to Congress and several others have been suggested. I know of no other resource issue that has gathered as much debate, as much emotion, or as many charges and countercharges, as the Redwood National Park Proposal.

The charges and countercharges from both extremes of the spectrum—the dependent industries, businesses, and local governments on one hand and the preservationists on the other—have made it impossible so far to find an area of reasonable agreement or even a climate for rational discussion. This is understandable, for of the three major redwood proposals before Congress in 1967, two would have eliminated at least one major wood-processing plant and its tax base and payroll for at least one county. The promise to offset this loss with in-lieu taxes for five years and to make economic adjustment payments to displaced persons and affected allied or service businesses held little appeal for the people who would be uprooted.

It is easy for those far removed from the area of impact to make an emotionally motivated decision that ignores the hurts and heartbreaks of the little people who will be the major sufferers of any decision on this issue. Much of the publicity attached to the proposals by both the proponents and opponents has been emotionally based, and it is difficult to separate facts and nonfacts in preparing a brief discussion on the subject.

For many years I have been close to the problem from both a forest use and a forest preservation point of view. I think I can see some of the strengths and weaknesses of both sides.

Congressman Wayne Aspinall, chairman of the House Committee on Interior and Insular Affairs, stated at recent hear-

ings that Congress has already authorized for park and recreation purchases more than $350,000,000 for which money is not available for appropriation. He raised the question—how can we continue authorizing such expenditures in light of our present domestic and international economic situation?

On November 1, 1967, the Senate passed S. 2515. This bill is now before the House Interior and Insular Affairs Committee. Hearings were held in Crescent City and Eureka in mid-April of 1968. S. 2515 is wholly different from any of the bills previously introduced. Because it is so different, we have an entirely new ball game and I have found no one who is happy with the new approach. Any way one views it, there are social, political, and economic issues with strong opinions and emotions on both sides. Because of the many demands and the critical needs for the public dollar, economics will play a vital role in the decision.

It is my fervent hope that a decision will be made during this session of Congress. If not, both the proponents and opponents will suffer materially. This unsettled issue has depressed the local economy and will continue to preclude orderly development of the area until a decision is reached. The longer the delay, the less chance there is for establishing a really acceptable Redwood National Park. I am also of the opinion that none of the proposals in themselves will create an acceptable national park unless they are combined in some manner with the existing adjacent state parks, for the state parks constitute the keystone of any genuine redwood park display.

In this discussion the following questions will be considered: What proposals have been made? Should there be a Redwood National Park? How much will it cost? What are some of the impacts on the local economy? Is the redwood a vanishing species?

Orientation

By way of orientation, the coastal redwood occurs naturally only along the northern California coast from southern Monterey County north for 500 miles to just over the Oregon state line. It is a broken strip of irregular width interspersed with other coniferous forest and open grassy glades. Very few coast redwoods occur more than 30 miles east of the Pacific Ocean. It is a very old species; some believe that it has been in

California for perhaps 40 million years. Fossil remains have been found in eastern Oregon, other parts of the United States, and western Europe. Even in California, petrified specimens occur.

Is the redwood a vanishing species?

The redwoods are best known for their great size. Emanuel Fritz, a recognized authority on redwoods, points out that there is no correlation between the age and the diameter of the large redwood trees. The oldest recorded redwood was 12 feet in diameter at 2,200 years, while many other specimens of the same diameter ranged as low as 550 years. Contrary to popular belief, the redwood is not a slow-growing tree. It has the power to grow very slowly and stay alive in the brutal competition for food, light, and moisture, but when released from competition it is one of our fastest growing species.

Most people visualize all redwoods as towering giants growing in dense stands on the alluvial flood-plain bottom lands. But up the mountain sides in shallower soils and away from the fog-drenched coast, redwoods become smaller and mixed with other coniferous and hardwood species. By an early definition, any timber stand containing a minimum of 20 percent redwood is classified as a redwood forest type. This definition tends to distort the public concept of the 1.9 million acres of original redwood stands of which 1.6 million acres remain in either a virgin or cut-over condition.

The great dense redwood stands—the kind that are always photographed, are found primarily on the river benches and lower slopes. The superlative groves, most of which are presently in state parks, grow on the bottom lands.

I know of no species that has as much vitality as the redwood. It reproduces abundantly from both seeds and sprouts. It is not subject to tree-killing insects or diseases. It has the ability to withstand flooding and siltation. In fact, we find the best groves on the bottom lands where down through the centuries floods have continually deposited heavy layers of silt. The redwood is not a vanishing species.

The magnificence of the redwoods and the importance of preserving a significant portion of the best stands has been recognized for more than 60 years. In 1901 the California Legislature authorized the establishment of Big Basin Redwood State

Park in Santa Cruz County. In 1908 President Theodore Roosevelt established the Muir Woods National Monument north of San Francisco in Marin County.

Save the Redwoods League

In 1918 a small group of public-spirited citizens who saw the need for acquiring and preserving choice redwood groves created the Save the Redwoods League. In 1928 they were instrumental in getting public approval of a state bond act of $6,000,000 for park acquisition on a matching fund basis. During the past 50 years, the League has raised nearly $14,000,000 for this purpose. It has been the catalyst which made possible California's redwood state parks. To the League we owe a deep debt of gratitude. It should also be noted that for years a number of timber companies have retained thousands of acres of choice redwood groves, awaiting the time when League and public money would be available for their purchase. The League, the State, and several redwood companies, working together, have produced the present magnificent system of redwood parks for all to enjoy.

During this period of heated debate (1963 to the present time), the Save the Redwoods League has continued to raise money through contributions and has gone about the business of quietly purchasing key parcels of redwood lands. League purchase dollars are matched by state bond money and federal land and water conservation act funds. Since January 1963, over 22,000 acres of redwoods have been acquired by this method and added to existing state parks through this cooperative procedure.

What are the national park proposals?

From the National Geographic Society's study of 1963, the National Park Service in 1964 designed several preliminary alternative proposals for a redwood national park. Since that time, a number of bills have been introduced in Congress for the creation of a national park by combining the adjacent existing state parks with the purchase of additional areas. These proposals are reviewed below.

(1) *The Redwood Creek Proposal* of 1965 (the 89th Congress) was sponsored by the Sierra Club and introduced by Congressman Cohelan in the House and Senator Metcalf in the

Senate. Similar bills were again introduced during the 90th Congress as HR 2849 and S. 514. This proposal encompassed 90,000 acres, including the spectacular Prairie Creek Redwood State Park and the acquisition of about 77,540 acres of redwood land, mostly located on steep slopes. It would add 32,260 acres of old-growth timber. It would include the National Geographic Society's tall trees, 22 miles of scenic river, 19 miles of scenic highway, and the Prairie Creek State Park with its herd of Roosevelt elk and its 18 miles of Gold Bluff beaches plus Fern Canyon.

This bill provided for in-lieu taxes and other economic aids for a period of five years since it would eliminate a major timber operation and impose severe hardship on two others.

The estimated cost of acquisition ranged from $150,000,000 to $250,000,000. At the recent hearing in Eureka, one witness placed the estimated cost of this 90,000-acre proposal at about $335,000,000. Senate Report No. 641 (October 12, 1967) states, "the committee decided that the 90,000-acre proposal in S. 514 (Metcalf) was too big and too expensive to be feasible."

(2) *The Mill Creek Proposal* was sponsored by the National Park Service and supported by the Save the Redwoods League. It was introduced during the 89th Congress by Senator Thomas Kuchel in bill S. 2962 and reintroduced as S. 1370 in the 90th Congress. It envisioned the combination of two beautiful state parks, Jedediah Smith and Del Norte Coast, with the purchase of all the remaining upper drainage of Mill Creek for a total of 43,434 acres, of which 24,000 acres would be from private lands.

This combination would add 9,190 acres of virgin redwood and include an entire drainage area, making a complete ecological unit. It would have 8 miles of coast line with 2 miles of usable beach, 8 miles of frontage on the Smith River with swimming and fishing, as well as 12 miles of scenic highway and 24 miles of scenic back country roads. It also called for the 1,400 acres in Redwood Creek for access to the Tall Tree Grove.

The estimated cost ranged from $45,000,000 to $100,000,000 plus in-lieu taxes and economic adjustments for a period of five years. The Mill Creek Proposal would remove the one major industry from Del Norte County with the county's largest

single payroll and tax base. Seventy-three percent of Del Norte County is presently in public ownership.

Congressman Aspinall recently introduced a bill similar to this proposal; the major difference is that it does not provide for in-lieu taxes and economic adjustment for a five-year period.

(3) *The Redwood to the Sea Proposal* was introduced by Congressman Don Clausen in Bill HR 7742 and by Senator Murphy in S. 1526 of the 90th Congress. This concept provided for a gross area of 53,000 acres and included five state parks—Jedediah Smith, Del Norte Coast, Prairie Creek, Patrick's Point, and Dry Lagoon, plus the 1,400 acres for the Tall Tree Grove. This proposal would add 19,806 acres of private land with 2,706 acres of virgin redwoods. It would include 46 miles of coast line, 25 miles of usable beaches, 54 miles of scenic highways, and 3 fresh water lagoons.

While no detailed cost appraisal was made, the cost of this proposal has been estimated at about $25,000,000. Its economic impact would not seriously affect any single industry and would spread the tax loss over two counties.

While this proposal offered opportunities not included in the other bills, it did not catch fire because some opponents said it did not provide for enough additional virgin redwoods, nor did it encompass a single drainage.

Two other suggestions were made, one by the American Forestry Association and the other by Conservation Associates. Neither of these was put in bill form.

(4) *A new Redwood National Park Bill*, S. 2515, was introduced in the Senate by senators Jackson, Bible, and Kuchel on October 10, 1967. This bill was passed by the Senate on November 1, 1967, by a vote of 77 to 6 as a compromise Redwood Park Bill which would authorize the creation of a 64,000 acre park estimated to cost $100,000,000. This bill is now before the House Interior and Insular Affairs Committee. It would add 13,030 acres of old growth and would acquire 32,144 acres of private land.

This bill, S. 2515, by itself does not provide an entity which will measure up to national park standards. Without considering local impact problems, the most logical proposal was that of taking in all the headwaters of Mill Creek and adding those lands to the Jedediah Smith and Del Norte Coast redwood

state parks. That was the proposal of the National Park Service as set forth in Senator Kuchel's S. 1370 of 1967.

The measure introduces a number of new concepts and it seems that relatively few people or groups are happy with it. Not only are there conflicts between opposing interests, there are conflicts between the park proponents and between federal agencies. What are these conflicts? In an attempt to lessen the local economic impact, the proposal establishes two widely separated national park units adjacent to three existing state parks and provides for a coastal corridor to tie them together.

The northern unit includes part of the upper Mill Creek drainage adjacent to Jedediah Smith and the Del Norte Coast redwood state parks. The south unit includes the lower reaches of Redwood Creek, and a corridor to the Tall Trees, Lost Man, Little Lost Man, and Skunk Cabbage creeks adjacent to the Prairie Creek Redwood State Park. The bill provides that the three adjacent state parks could become a part of the national park only if donated by the State of California to the federal government. While the local economic impact is not as severe as in two of the previous proposals, there is no provision to lessen the impact through in-lieu taxes and other economic adjustments.

One of the most controversial aspects of this proposal is that it provides for exchanging the 14,567 acre Northern Redwood Purchase Unit of the United States Forest Service for some of the private lands to be included in the park. The primary purpose for this procedure is to reduce the cash outlay in the total acquisition cost.

This purchase unit was acquired by the Forest Service between 1939 and 1945. It is only a fraction of what was then proposed as a redwood national forest. Of this area, 935 acres plus a larger parcel owned by a timber company are used as a cooperative research area. Findings are applied to the remaining lands for demonstrating improved management practices. This forest is being managed on a sustained-yield basis to provide timber, watershed, and esthetic protection and for public recreation.

Senate Report No. 641, 90th Congress, 1st Session, states, "Exchange of the purchase unit amounts to no more than shifting the federal redwood holdings (which are now being cut by

private operators) to a different location (containing magnificent stands now in danger of being cut) and changing management from cutting to preservation in a park."

We should examine some of the consequences of this exchange. What is the public interest losing if the exchange is accomplished?

The precedent can be far reaching. Already as a result of this proposal two strong moves are under way, one to trade off national forest lands to establish the Big Thicket National Park in Texas, and the other to trade off national forest lands to create the Voyageurs National Park in Minnesota. The Senate Report No. 641 states, "The adoption by this committee of language authorizing such an exchange should not be construed as in any way establishing a precedent for exchanging National Forest land to acquire lands for national parks." From my experience in public administration, I can place little confidence in such a cautionary statement. This exchange action would be nothing but a precedent for future exchange transactions.

In the new Redwood National Park Bill some public values will be lost, particularly two miles of frontage on the Klamath River. This is the only public land access near the mouth of the river, one of the nation's finest fishing streams. The frontage has not only high scenic values, which are now being protected, but Forest Service plans call for the development of four picnic and boat-launching facilities plus seven campgrounds for public use. These too will be lost. Protection is being given to 10.75 miles of salmon and steelhead spawning streams within the unit, and this up-stream protection is vital to 12.5 miles of the same streams below the purchase unit. The general public has not been apprised of these losses. It is difficult to understand the philosophy of some park proponents who are willing to sacrifice these public values in order to accomplish their objectives.

Even though S. 2515 passed the Senate by a vote of 77 to 6, 33 of the senators expressed disfavor with the exchange proposal.

In a minority report, Senator Anderson of New Mexico, a staunch friend of national parks and a supporter of the establishment of a redwood national park went on record in opposition to the trade-off concept. He stated in part, " . . . regardless of the efforts to distinguish the creation of a redwood national

park from other federal projects we will not successfully keep down the pressures to use national forest lands as trading stock for other federal projects whose sponsors will claim that they, too, are uniquely significant. . . . To provide for it [the purchase unit] to be conveyed to operators who will convey their lands for inclusion in the national park, will single out these grantors to make them whole at the expense of the others who are now dependent on the purchase unit as a source of part of their log supply. This is a kind of 'robbing Peter to pay Paul'." (Senate Report No. 641.)

S. 2515 provides for a maximum of 64,000 acres. The exterior boundaries as presently defined encompass 61,469 acres. The bill authorizes the Secretary of Interior to "revise the boundaries from time to time . . . . but the total acreage within the park shall not be increased to more than sixty-four thousand acres, exclusive of submerged lands." These provisions give the Secretary some flexibility within a range of 2,346 acres. Proponents are urging that the acreage be added to the southern unit in Redwood Creek area. In addition, I understand that they are urging the enlargement of this addition to make a total of at least 70,000 acres.

The battle lines. The three original and distinctly different proposals may have lost some of their momentum with the introduction and passage by the Senate of S. 2515. At least one more hearing on these proposals will be held in Washington, D. C. Additional bills may be introduced or compromise proposals may be developed within and between congressional committees.

While Senate Bill S. 2515 endeavors to lessen the local economic impact by extending the life of some of the large operators, it pulls down the curtain on a number of small operators. Report No. 641 suggests that part of this impact can be lessened by making more timber available from the Six Rivers National Forest. However, no provision is made for the $11,000,000 for the required access road development before such timber can be placed on the market. These and other factors are part of the whole problem.

Both proponents and opponents have had economic analyses made by nationally known firms skilled in the business. Their short-term findings on the loss of tax base, payrolls, and

service businesses, based on the originally introduced bills, are quite comparable. However, their projected long-term benefits based on increased tourist travel resulting from the creation of a national park are far apart. The north coastal area needs more tourist travel to help diversify its economy, but one cannot avoid the fact that this is largely a seasonal business, limited mostly to three or four summer and fall months.

The timber industry has been charged with exploitation and devastation. It is not entirely blameless for its public image. A better job must be done in land management, particularly in the area of erosion control and stream protection. Some operators insulated themselves against public opinion. Until recently, they have failed to be sensitive or responsive to public pressures in a number of critical areas. But let us not condemn everything they have done. If it were not for their recognition of public values, the acquisition of many superlative groves would not have been possible. Some of the companies have held these choice areas for as long as 30 years, awaiting the time when public funds would be available for their purchase. There still remain from 4,000 to 5,000 acres in this category, and these should be acquired promptly.

Should a redwood national park be established?

I support the concept of a Redwood National Park because of the unique characteristics of the redwood forest. But without one or more of the existing state parks, it cannot measure up to the standards that we expect to find in a national park. Really the great need, in my judgment, is for rounding out some of the existing state parks, acquiring the remaining private land in-holdings and purchasing the 4,000 to 5,000 acres of superlative groves presently being held for public purchase by industrial owners. In addition, several of the existing state parks should be joined by a corridor.

Such a plan, covering about 45,000 acres, was presented by the State Department of Parks and Recreation in 1965, but it was put on the shelf pending the outcome of the national legislation.

During the period from 1963, new problems have come to the nation. There are a number of new aspects that must be considered in this and other park and recreation proposals now

before the public. At the center of the maelstrom of proposals and counter proposals lie certain indisputable facts which should be considered by conservationists, industry, and all interested citizens.

In view of the economic problems confronting the nation, another alternative could very well be an expansion of HR 7742, the *Redwoods to the Sea* concept of Congressman Clausen. This could be done by acquiring the cathedral-like groves along Smith River, plus all the land between Highway 101 and the Pacific coast from Prairie Creek to Patrick's Point. The key groves near Prairie Creek which would fall in this pattern were offered by the owner's representation at the recent Eureka hearings. This would also have a minimum impact on any major company and would not result in any immediate loss of jobs. In reality it would be an enlargement of the Clausen plan.

This combined with Jedediah Smith, Del Norte, Prairie Creek, and Patrick's Point state parks would embrace about 50,000 acres, of which nearly 31,000 acres are presently in public ownership. It would add about 4,400 acres of superlative old-growth redwoods. Acquisition costs have been estimated at $50,000,000.

This plan would have the virtue of recognizing the public demand for an excellent national park with nearly 50 miles of coast line, 25 miles of usable ocean beach, 25 miles of scenic rivers, and 54 miles of scenic highway.

A comparison of user preference indicates that people stay longer when water is a primary or added attraction. For example, during the past four years, 63 percent of the visitors to Patrick's Point camped or made other daily use of the park. Only 37 percent were tallied as sightseers. This state park has ocean frontage.

In contrast, 79 percent of the visitors to Prairie Creek Park and 69 percent of the visitors to Jedediah Smith State Park were sightseers. In these two parks redwood trees are the primary attractions.

Channeling user activities to ocean beaches also will lessen the soil compaction by large numbers of visitors in the redwood groves.

As I have stated, this is a social, economic, and political issue. To my knowledge, no one has examined these factors separately. I think this should be done.

From a social point of view, the Redwood National Park Proposal has been caught in the national ground swell which recognizes the need for preserving more open space and unique areas. The question is where is the greatest need for open space lands? Open lands and their amenities are critically needed in and adjacent to metropolitan areas where most people can have access to them on a day-use basis. If we really support the public interest, the public need is near the populous areas. Little more than lip service is now being given to the needs of the great mass of people in congested areas. Potential open space and recreation lands are being swallowed by sprawling suburbs, highways, airports, and industrial parks. We make beautiful talk about saving something for future generations—I hope we can give the present generation a chance for a future.

How much will it cost? The economic consideration is becoming increasingly important with each passing day. We talk of both "guns and butter." We should be talking about "bread and butter" in some parts of this nation. We are closing Job Corps camps in order to save dollars. We are failing to provide job training and adequate educational facilities for millions of educationally handicapped persons. Poverty and crime go hand-in-hand, but we are not meeting the issue because of the dollar gap.

The estimated cost of the current Redwood Park Proposal is placed at $100,000,000. In my judgment it will cost considerably more. A witness at the recent hearings placed it at more than $200,000,000. Severance damages and other costs apparently were not included in the original figure. The proposal recognizes the need for millions of dollars to offset local economic problems but does nothing about them. This project could very well follow the pattern of the Point Reyes National Sea Shore, which in 1962 was estimated to cost $14,000,000. It is now estimated that nearly $60,000,000 will be needed to complete the project.

Have we misplaced our national priority of meeting the needs of the majority of our citizens who live in highly con-

gested areas for the relatively few who can enjoy remote areas? With our present national financial problems, we need to take a fresh look at our dollar priorities in a more realistic fashion. We need to look at people problems, for people are the future of our country.

Politically a Redwood National Park Proposal in some form appears quite certain to pass. The public-opinion shapers have done their work well. A politician can more safely vote against a poverty program than against the redwoods at this stage of the game.

This problem and many others like it are intertwined in the web of our national welfare. We cannot package each problem neatly by itself. We must examine them all in relation to the total consequences. The major response to date has been to activate pressure groups. Someone needs to speak for the great majority of the people who for various reasons are misinformed, uninformed, or unconcerned. They have their own problems and they are not organized.

I know of no one who is not concerned about the many national problems confronting us on every side. This being true, let us equate all of these problems and place our energies and wealth where the critical human needs and long-range welfare of the nation are at stake.

Before we commit X millions of dollars to this or any other similar program, let us be sure that the estimated cost is both realistic and attainable. Let us measure it against consequences today, as well as in the future.

Addendum

Since these lectures were presented, Congress has acted. A Redwood National Park has been authorized. The bill, S2515, as worked out by the Committee of Conference was signed by President Johnson on October 2, 1968.

As finally approved, the park is to contain 58,000 acres, 28,100 acres of which were held by four major lumber companies. The conference version of the bill authorizes the Secretary of the Interior to exchange national forest lands in the Northern Redwood Purchase Unit for some of the private timberlands to be included in the park. The 935-acre Yurok Experimental Forest on the purchase unit has been excepted from the trade provision.

Also included within the boundaries of the new Redwood National Park are 27,500 acres now in three state parks—Jedediah Smith, Del Norte Coast, and Prairie Creek. An additional 2,400 acres may be added to the park at a later date.

The bill provided legislation for the acquisition of private land. This provision vested in the United States, as soon as the bill was signed by the President, title to all the lands within the park boundaries which were owned or operated by the four major lumber companies concerned. The bill provided that the United States "will" pay just compensation for the property and authorized the appropriation of $92,000,000 for the acquisition of land.

The three state parks included within the boundaries will be included only by donation from the State of California. Donation of the state parks will be strictly a state decision. If the state decides not to do so, the National Park Service is expected to cooperate with state officials to minimize administrative problems and to offer the American public a full opportunity to enjoy the beauty and grandeur of the redwood country.*

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* From Report No. 1890, Redwood National Park, 90th Congress, 2nd Session, Conference Report (to accompany S2515), House of Representatives, September 11, 1968.