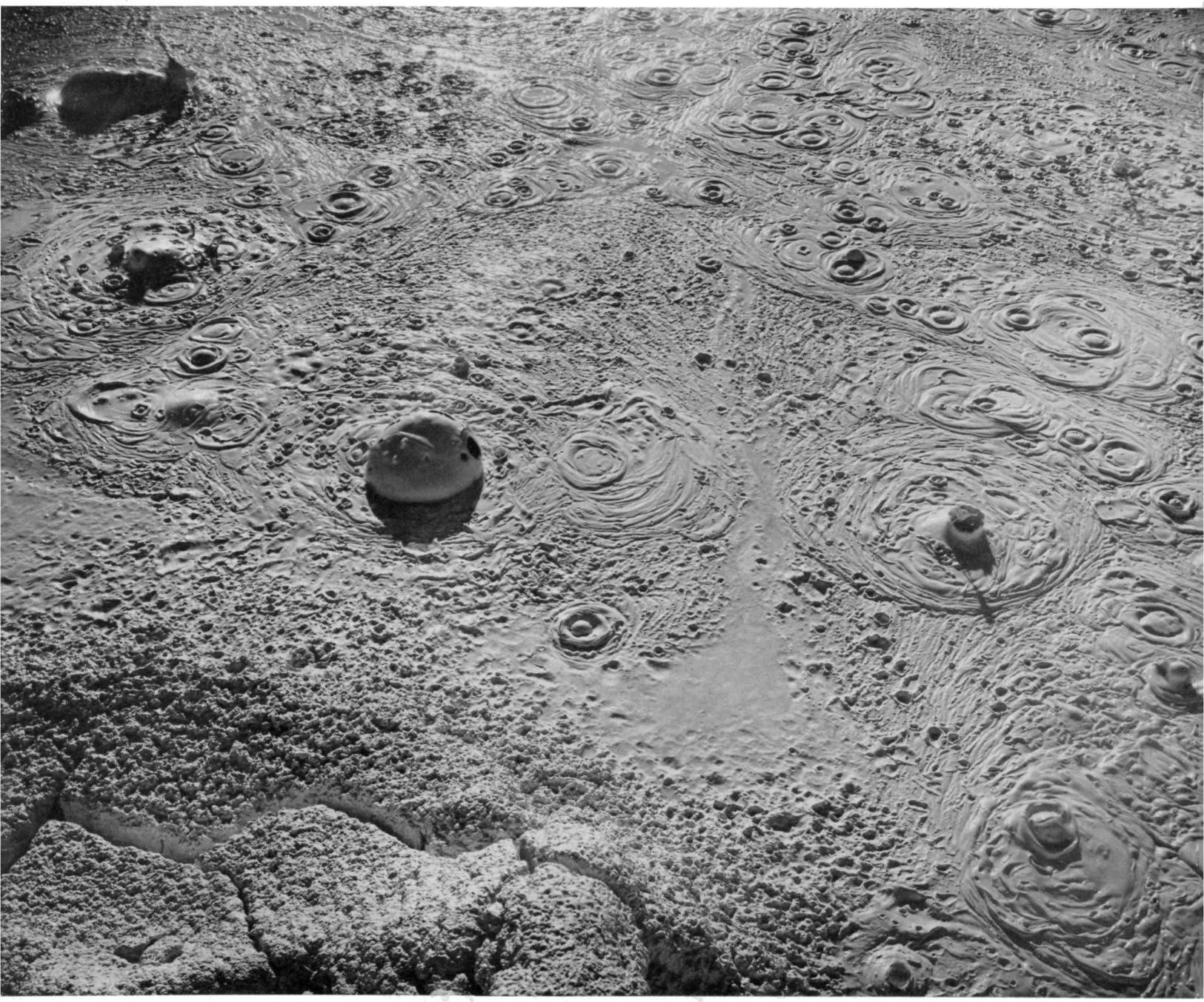
NATIONAL PARKS *Magazine*



Detail of a paintpot: Midway Geyser Basin,
Yellowstone National Park, Wyoming

June 1964

The Editorial Page

The President and the Colorado

THE MORE THOROUGHLY THE PACIFIC Southwest Water Plan of the Bureau of Reclamation is examined, the more glaring its deficiencies are seen to be.

It is fortunate for the nation that the Plan must undergo drastic re-examination at the Presidential level before advancing farther.

The article by Mr. Stephen Raushenbush in our April issue showed that the purposes of the Plan could be accomplished by building thermal electric power generating plants, dispensing with the proposed Bridge Canyon dam, whose reservoir would flood long reaches of the Colorado River through Grand Canyon National Monument and Park; such plants could be coal or atomic powered, privately or publicly owned.

The revenues from water sales in Arizona can be expected to be far greater than represented by the Reclamation Bureau; payments into the proposed basin account will be adequate, without Bridge Canyon, to finance the projected water developments in California.

Electric power can be produced by such thermal plants and sold at rates so low as to make Bridge Canyon an unsatisfactory proposition financially for basin account purposes.

The Plan does not even offer the people of Arizona all the Colorado River water allocated to it by the recent Supreme Court decision.

Immediately on the heels of publication of the Plan came the report of the special committee appointed to make recommendations to the President's Science Adviser in respect to desaltation and atomic power.

The implications of the special report are examined by Raushenbush in a new article in our current issue. We shall not comment upon them except to say that large dual-purpose sea water desalination and electric power plants could be constructed within a decade on the southern California coast to produce fresh water at lower cost than the dams and diversions can produce it.

Conservationists may move slowly in accepting the atomic energy approach in view of possible deleterious ecological effects from the great quantities of heat generated; also because the atomic waste disposal problem has not yet been solved. But it seems likely that these huge atomic projects will move ahead anyway, and if they do, the entire Pacific Southwest Water Plan must be reconsidered, and probably revised completely from top to bottom.

Under these circumstances, with several efficient alternatives to Bridge Canyon, and perhaps even Marble Canyon, for power production, conservationists will renew the effort for the protection of the recreational, scenic, and cultural values of the canyon country with confidence.

A message from the President is in order, supported by the Budget Bureau, the Council of Economic Advisers, and the President's Science Adviser, to the Bureau of Reclamation, transmitted through the Secretary of the Interior, instructing the Bureau to reconsider its program in the light of the cultural objectives of this nation and the economic and technological realities of the situation. —*A.W.S.*

The President and the Potomac

THE ARROGANCE OF SMALL MEN WITH large responsibility occasionally works to their undoing.

The massive organizations of modern society, including governmental organizations, tend much too often to operate without wisdom as to their objectives, and without mercy as to their impact on the human beings they encounter. Such trends must lead inevitably, in a democratic society, to the reconstitution of such agencies, or their assignments of power, on a more humane basis.

We have watched with something approaching awe the stubborn perseverance of the Corps of Engineers in pressing its Potomac River Basin Program in cool disregard of almost unanimous public opposition, wherever public sentiment has been sounded, in hearings or otherwise, throughout the Basin.

We have listened with amazement to its repeated pronouncements that no other means but its sixteen major deep-drawdown reservoirs are available for water supply and pollution abatement in the Potomac Basin; an amazement intensified by our intimate knowledge of the technological facts, which we have set forth in print and in innumerable hearings and conferences, with the endorsement of powerful farm, labor, and public-interest groups.

The decision of the Chief of Engineers late in April to submit the entire Program, almost completely unchanged, to the Governors of the affected States and the responsible Federal departments for ninety-day review and recommendations moves all the issues closer to the time when the President himself must make some definite decisions.

We call the attention of our readers once more to the crucial consideration that no basic national policy directives were ever laid down by anyone before the operating agencies, under command of the Engineers, embarked on the formulation of this archaic program for the Potomac.

These procedures need to be changed. Provisional policies, and programs for their implementation, based on broad human considerations, including the protection of the life-environment, and including the stability and not the disruption of communities, should first be formulated by commissions composed of policy-minded, not operations-minded, persons.

These commissions should have authority to call upon the operating agencies for technical assistance, and upon non-governmental educational and scientific institutions as well. Their provisional policy and project formulations should then be submitted to the elected representatives of the people in Congress for consideration, rejection, amendment, or approval; only after the basic policies and specific projects have been decided upon by such procedures, the only procedures suitable to a democratic society, should they be entrusted for execution to the operating agencies.

After State and Departmental review, the Secretary of the Army transmits the Report to the Budget Bureau as the representative of the President. The President, with the support not only of the Bureau, but of the Council of Economic Advisers and the Science Adviser to the President, should recommend the rejection of the Program. He should promptly appoint a Potomac River Basin Commission of his own by executive order, and supply it with funds from his general budget. The Commission should formulate an up-to-date plan for the Potomac based on complete de-pollution and the extraction of plant nutrients from treatment facility effluents by distillation or otherwise. The nation will then have an opportunity to choose an up-to-date approach which will have broad popular support and which could move ahead rapidly toward implementation.—*A.W.S.*

NATIONAL PARKS *Magazine*

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Front cover photograph by Franz Lipp

Among the thermal phenomena of Wyoming's Yellowstone National Park are the so-called "paintpots," the fine mud of which, colorfully stained by metallic oxides, is constantly agitated by slowly-rising gas bubbles. Cornelius Hedges, transplanted citizen of Massachusetts who was miner, judge, school superintendent and editorial writer in Montana and a member of the famed Washburn-Doane expedition of 1870 into the Yellowstone country, wrote of the mudpots and their bubbling, odorous contents that: "Hecate, with all her weird band, could never have brewed a more devilish-looking dish. . . "

The Association and the Magazine

The National Parks Association is a completely independent, private, non-profit, public-service organization, educational and scientific in character, with over 28,000 members throughout the United States and abroad. It was established in 1919 by Stephen T. Mather, the first Director of the National Park Service. It publishes the monthly *National Parks Magazine*, received by all members.

The responsibilities of the Association relate primarily to the protection of the great national parks and monuments of America, in which it endeavors to cooperate with the Service, while functioning also as a constructive critic; and secondarily to the protection and restoration of the natural environment generally.

Dues are $5 annual, $8 supporting, $15 sustaining, $25 contributing, $150 life with no further dues, and $1000 patron with no further dues. Contributions and bequests are also needed. Dues in excess of $5 and contributions are deductible for Federal taxable income, and gifts and bequests are deductible for Federal gift and estate tax purposes. As an organization receiving such gifts, the Association is precluded by law and regulations from advocating or opposing legislation to any substantial extent; insofar as our authors may touch on legislation, they write as individuals.

Membership in the Association carries with it subscription to *National Parks Magazine*. School and library subscriptions are $4 a year; individual copies 50 cents. Letters and contributed manuscripts and photographs should be addressed to the Editor at Association headquarters. The Association is not responsible for loss or injury to manuscripts and photographs in transit. Return postage should accompany contributions.

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Water Challenge of the Pacific Southwest

By Stephen Raushenbush

IMPORTANT DAYS AND DECISIONS LIE ahead for conservationists, and for all water and energy users in the nation's Pacific Southwest. The latter are faced with the task of breaking a very old stalemate and providing themselves with adequate fresh water and energy for their growing populations. They are not in a hopeless situation. They can do well by themselves. They can do this without harm to units of the national park system. Indeed, they can provide themselves with adequate fresh water and energy at the same time that they create new recreation and park facilities.

For years the people of the arid Pacific Southwest had been forced to tie their fate and future to the thin stream of water in the Colorado River. Litigation held up growth and postponed decisions and action. Meanwhile the people of Arizona, dependent not only on the outcome of the litigation over water rights but also on the willingness of Congress to invest large sums to make Colorado River water available to them, mined their subsoil for water at high and ever-increasing costs. The end-results of the mining process are yet to be seen.

The first change in the old pattern of water use was made by California. That State undertook to pump water south from its northern rivers across the Tehachapi Mountains into the Los Angeles-San Diego area. The inadequate Colorado would no longer be the only source of water for the southern part of the State. This step was followed in 1963-1964 by a proposal, sponsored by the Department of the Interior, that the old stalemate and the old water shortage in the lower Colorado Basin be broken for the benefit of all the arid States by common financing and the use of water from northern California. The Department proposed a joint Development Fund to which all profitable water projects in the area would contribute, and from which all projects would be able to draw. The basin concept was to be broken in favor of a wider, regional concept. The need for new water called for such a change. This seemed like progress—at least for a little while.

Need For Cooperation

The Department's proposal, which was presented for the first time in August, 1963, in the form of many studies, tables and charts, stressed that long-range advance planning is necessary in the solution of large problems involving water and energy, and that advance agreement between affected peoples and areas is vital. One of the proposal's main assumptions was that such agreement was possible. Perhaps Interior was a little too "fast on the draw" in this assumption, for the shortage of water in the Pacific Southwest has frightened some people and embittered others. What happened after release of the proposal was that California (in particular, its northern portion which has the available river water and which is concerned with its own future water needs) refused to commit itself to a program which depended on furnishing northern California water to the neighboring State of Arizona. Thus it was that a quickly revised proposal appeared in January, 1964, which eliminated all of those impoundments and California canal extensions which would have assured Arizona's water future. Within a few months $960 million of construction was chopped from the originally proposed first and later steps of $4.1 billion. This did nothing to solve either immediate or future water problems in the Pacific Southwest.

Meanwhile, a new element has projected itself into the Pacific Southwest water picture to ask for more complete consideration. It is an element which may make it possible for the concerned States to consider water-problem solutions without calling on northern California for water from its rivers. In March of this year a task force appointed by the President's Of-

fice of Science and Technology published an analysis of the potentials, under present techniques, of desalting sea water in dual-purpose nuclear energy plants; that is, plants which not only would convert sea water to fresh water, but also generate a large surplus of electrical energy. Publication of this document, titled *Large Nuclear Powered Sea Water Distillation Plants*,[1] was stimulated by the writings of scientists at the Oak Ridge National Laboratory; scientists who felt that something was happening in technology of concern to those arid areas of the world which lie close to oceans. The Bureau of Reclamation, in the Interior Department, contributed to the study; among other things, it recast the publication's figures into the pattern of Bureau projects, with half of any investment—that part devoted to irrigation—receiving non-interest-bearing loans and that part devoted to electric power or municipal and industrial water, carrying interest.

Some Task Force Findings

The task force, chaired by Dr. Roger Revelle, applied 1962-1963 technology to 18 different types and sizes of nuclear energy plants using the distillation process for obtaining fresh water from sea water; such plants also would produce a large surplus of electrical energy which would be available to the energy markets. It found that further research and plant engineering was desirable; it recommended a gradual escalation from small to very large plants. Federal investment in both would be required.

Under the present technology, without improvements, the prices of desalted water are still high. Yet even now they are not high compared with the costs of moving and delivering new water from northern to southern California. These costs were placed in the Interior Department's report of August, 1963, at between $48 and $66 per acre-foot. The task force on the nuclear distillation plants described one plant which, operating under Bureau of Reclamation financial criteria, could deliver water in 1975 at $58 per a/f. This is 17.8¢ per 1000 gallons.

This $58, although high, is a challenging figure. It may allow regional cooperation in the Southwest Pacific looking toward future water supplies through the desalting process; it would eliminate objections from the northern California counties. The figure represents only the technology of 1962-1963, and there is the possibility of reducing costs still further.

That improvement in technology is a reasonable prospect may be indicated by a figure in the task force's report on a different conversion process—that of "reverse osmosis." It was indicated that, with expected 1975 technology, water could be produced at the plantsite by the reverse osmosis method for 21¢ per 1000 gallons; that by 1980 the costs probably would be 16.4¢—a 21% reduction. Hardly was the report off the press when Dr. Glenn G. Havens announced from the San Diego reverse osmosis pilot plant that the costs already could be put at 15¢ ($48.90 per a/f at plantsite). Year 1964 had overtaken Year 1980 very quickly!

One interesting fact about the nuclear salt water distillation plant which could, in 1975, produce desalted water for $43 per a/f at plantsite or $58 per a/f delivered (17.8¢ per 1000 gallons) was that it generated a really huge supply of surplus electrical energy. It would be a very large plant, requiring an investment of $840 million, including conveyance facilities for getting the water into canal or aqueduct for delivery. Its costs were figured on a water delivery of 542,000 a/f annually. However, its surplus energy sale was 9,900 million kilowatt-hours annually. This was to be sold at 3.1 mills per kwh. That surplus energy would be 184% of all the yearly energy sales from a Bridge Canyon powerplant on the Colorado River (which would not be operated so much for energy as for peaking power).

Possibly a combination of the nuclear distillation plant and the reverse osmosis plant might be made sometime. The former produces great quantities of surplus and low-cost energy. The latter uses great quantities. A potentially practical combination of the two is shown in the box on this page. An interesting question for the citizens and officials of the arid areas is whether, even under the present technology, such a combination may not require less investment per a/f of water delivered than new water from any other source.

This task force report from the Government scientists lends weight to some of the doubts that have been expressed over the advisability of constructing the $511 million Bridge Canyon dam and power system, largely for peaking purposes. (This construction was questioned at length in a preceding article in this Magazine).

Some Pertinent Questions

At present there appear to be six reasons for questioning the advisability of constructing a Bridge Canyon dam—questions which seem to deserve the consideration of citizens and officials of the Pacific Southwest.

1. Bridge Canyon dam would be an exceedingly costly way of obtaining power. When interest during construction is included, that dam and its power system will require at least $511 million of investment—a potentially risky investment, because in view of the long period of payout (50 years) important future changes in technology may further bring its profitability into doubt. Nuclear plants are expected to reduce the present power rates in the area to 3 mills long before the payout period has expired. Such rates, or even lower ones, will probably make obsolete the 6-mill peaking power rate without which the Bridge Canyon invest-

ESTIMATES FOR A POSSIBLE COMBINATION OF REVERSE OSMOSIS AND NUCLEAR DISTILLATION PLANTS

	Investment	Output	
Reverse Osmosis Plant	$430 million	1,120,000 a/f	Energy use, 8.8 billion kwh
Nuclear Distillation Plant	840 million	542,000 a/f	Energy surplus, 9.9 billion kwh
	$1,270 million	1,662,000 a/f	Energy surplus, 1.1 billion kwh

[1] Available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402: 35¢.

ment cannot make any substantial contribution to the growth of the Southwest Pacific area. Large-scale nuclear sea water distillation plants already promise to meet many of the area's power needs at much lower costs.

2. A Bridge Canyon dam is not necessary to the success and profitability of either the Central Arizona Project or the balance of the Southwest Water Plan. The alternative program without Bridge Canyon, presented in the previous article [*National Parks Magazine*: April, 1964], would provide a payout for the Central Arizona Project and also contribute $1.3 billion to help finance the larger area program.

3. A high dam at Bridge Canyon would flood the river-reach of Grand Canyon National Monument and intrude reservoir waters into Grand Canyon National Park itself; it would provide few new recreational opportunities. Alternatively, a low dam at Bridge Canyon would produce at best only a marginal return.

4. The lake which would form behind Bridge Canyon dam would be responsible for the loss by evaporation of 50,000 a/f annually out of a very short water supply. This water could better be used for a series of constant-level lakes in the Central Arizona area. The alternative provides 60,000 a/f annually without cost for that purpose.

5. The water deficiency in the Colorado River Basin in recent years makes it doubtful whether a Bridge Canyon dam could begin to function on schedule. The necessary release of water from Lake Powell behind the Glen Canyon dam this spring—a release forced by the low level of Lake Mead, several hundred miles downriver—lends emphasis to this question. Will there be enough water to fill two additional reservoirs below Glen Canyon—Marble Canyon and Bridge Canyon—without much undue and costly delay? Each year's delay in filling would add at least $30 million to each $1 billion of interest-bearing construction already in place, and require increased water or power rates. A five-year delay could raise water rates for the whole 50-year period by more than $1.25 per a/f. Such a delay would, in addition, increase the costs to the United States Treasury by prolonging the period before which the non-interest-bearing loans could be repaid.

Mr. Raushenbush, author and educator, has for many years been an internationally-recognized expert on natural resources management, having served in advisory or executive capacities with the United States Department of the Interior and the United Nations. His experience included river basin developments on the Columbia and the Missouri Rivers.

6. The more than one-half billion dollar investment in Bridge Canyon would absorb funds which might be far more productive for the people of the arid region if invested in other ways. Devoted to research on, and construction of, a series of progressively larger nuclear plants to obtain fresh water from sea water, the funds might add significantly to the area's water supplies. Bridge Canyon, even *if* it succeeded in holding its high peaking rate for 50 years, could only produce funds for the region toward the very end of that 50 years. Long before that time all Colorado River water will be used, and each State will be seeking new water supplies. Congress might reasonably be expected to approve only the most efficient and least costly program; Bridge Canyon might retard, instead of advance, the entire program for the area.

Significance of Changing Costs

The choice between nuclear energy plants and hydro-plants will have to be made after thorough consideration, for costs are obviously going to change greatly during the 50- or 78-year payout period. Marble Canyon dam and power system, an investment of almost $300 million, doubtless will be examined more critically than it has been so far. If any public or private utility in the area could provide pumping energy by 1970 or 1975 for the Central Arizona part of the program at an average cost of 5 mills per kwh, the $300 million investment in Marble Canyon might seem unattractive. At such a rate the Central Arizona Project, devoting most of its water to municipal and industrial growth, could repay its lowered construction costs ($700 million) within 50 years and still make a contribution of more than $700 million at the end of 78 years to the proposed Joint Development Fund of the area—hardly a negligible sum. The main point to be borne in mind by the various interested agencies is that the advent of the nuclear powerplant increases available alternatives and changes costs over the very long payout period. Advantage comparisons made only on the basis of present costs and alternatives may be far off the mark by the time conventional construction is ready for use.

Since the new ways of obtaining energy for the region also include means for obtaining new supplies of water, the long-range water-supply and energy future of the Pacific Southwest seems reasonably bright. Possibilities for interstate cooperation centering around new sources of water are better than those centering around division of the limited supplies in the Colorado River.

But the whole area needs more water now. The tangled web of delay and frustration in respect to the water needs of the area was mentioned in the first article. Three important political entities are in conflict—California, Arizona and the Republic of Mexico—and the other American States of the Colorado River Basin must wait for their small share of water until that conflict is resolved. Arizona has unused rights to mainstream Colorado River water of 1,829,000 a/f yearly. These rights are useless without aqueducts and a power source for lifting water from the river and transporting it into the Phoenix-Tucson area. No plan proposed to the present by either Arizona or the Interior Department offers Arizona more than 1,200,000 a/f of its entire rights. It stands to lose the use of 629,000 a/f. California water users, in turn, have been putting the water to which Arizona is entitled to their own uses, since it has flowed downstream without restraint or price-tag. California users would suffer severely if that water were cut off all at once by Arizona. In a few years water from northern California will in any event flow into southern California by way of State construction, if not in quantities as large as southern users deem desirable. Meanwhile Mexico, guaranteed 1,500,000 a/f annually from the Colorado, has been receiving reused, "retread" irrigation water, charged with salts from the lands upriver in the United States. Occasionally the water is too salty to put on Mexican land

without destroying its productivity. Mexico wants clean water. Our Government would like to see Mexico receive cleaner water.

An alternative to the present impasse that seems to delay all action and which leaves Arizona in the prolonged role of Cinderella without a godmother, was presented in the earlier article. It proposed a major economy, the elimination of Bridge Canyon dam and power system—an economy that would amount to $400 million, since the difference between this figure and the $511 million cost of Bridge Canyon would be used to beef up the projected Granite Reef Aqueduct and pumping plants between the present Parker dam on the Colorado and central Arizona. This would enable Arizona to draw its full share of water from the river, if users wanted and needed it, either immediately or in future.

At the same time the article took note of the fact that, in spite of the high growth rate of municipal and industrial water demand, Arizona would not necessarily use all of its water rights during the first 10 years. It was suggested that unneeded water during those first 10 years be offered to both California and Arizona users on a competitive price basis, differentiated by cost considerations, since the water pumped high into Arizona would cost more to deliver. California thus might be helped through its prospective water-shortage period. Before the end of that 10 years—or roughly in 1980—California and perhaps the whole Southwest would have time to choose between investment in water from desalting plants or water from northern California. It also was suggested that Arizona make a major contribution to the proposed Development Fund for the region from the revenues of its own project. Using conservative calculations, these revenues (after paying out the costs of the Central Arizona Project with only Bridge Canyon excluded) would produce more than $270 million in aid for the region by the end of 50 years, and $1,340 million by the end of 78 years. The costs of the water projects in neighboring New Mexico, Utah and Nevada could largely be repaid from this surplus by the end of 50 years.

Such a large contribution becomes possible when the rising demand for municipal and industrial water in Arizona is considered. M and I users are to pay $45 per a/f, while irrigation users are to pay $10 per a/f. There seems no question but that the higher price will pull the water to M and I use, and produce revenues far above those which the Interior Department has estimated. The revised Arizona project, slimmed down in cost but increased in volume of water used, is an extremely profitable one for all concerned. The total investment—including interest during construction—in the Central Arizona Project as revised, including Indian reservations, water salvage and other projects, would come to $1 billion. The interest-bearing half could be retired in 31 years, the irrigation half in 42. The surplus, which could be used either for Arizona's own benefit and later investment in desalting plants, or for the regional good, is large. A summary of the payout is presented on this page.

The contention of the National Parks Association that a Bridge Canyon dam not only threatens Grand Canyon Monument and Park but is not necessary for the development of the water resources of the Pacific Southwest seems to be amply supported; given certain favorable cost developments, Marble Canyon might also be displaced. The question for the people of the area now in terms of water and power is whether or not they can break the old stalemate which has been nourished by limited supplies and enter into regional and national cooperation in respect to the new sources which will become available soon. ■

ALTERNATIVE CENTRAL ARIZONA PROGRAM

(Payout Summary)

All figures in millions

Year	Gross Revenues	Operation Costs *	Net for Capital Charges	Interest Payments (3%)	Interest-Bearing Capital $500	Non-Interest-Bearing Capital $500	
1 – 1970	$22.93	$8	$14.93	$15	$500.57	$499.5	
5 – 1975	25.45	8	17.45	14.96	496.52	497.5	
20 – 1990	40.08	8	32.08	10.68	335.08	490.0	
30 – 2000	45.08	6.4	38.68	.64	21.18 **	485.0	
40 – 2010	45.08	6.4	38.68	0	0	248.6	Surplus
50 – 2020	45.08	6.4	38.68	0	0	0	$ 272.38
78 – 2048	45.08	6.4	38.68	0	0	0	1,341.42 ***
			Totals:	$332.28	$500.00	$500.00	$1,341.42

* Including purchased energy, operation, maintenance and replacement costs.
** The interest-bearing $500 million is retired in Year 31, the remaining $500 million in Year 42.
*** The 78-year surplus is estimated after contingency allowances of $85 million to provide for increased costs of construction and operation.

Needed: A Permanent Refuge for California's Tule Elk

Close to extinction for nearly a century,
rare mammals now present wildlife management problem

By Maxine A. Rock

WHEN THE WHITE MAN FIRST landed in the New World he found one of the richest and biggest botanical and zoological gardens on earth. Before him was a great abundance of plants and animals, existing as an ecologically perfect unit in a vast land swelling with forests, plains, and mountains. To anxious, land-hungry settlers, these resources seemed endless. Albert Gallatin, Thomas Jefferson's Secretary of the Treasury, reflected early thinking about America's majestic size when he stated proudly that: "The happiness of my country arises from the great plenty of land."

The myth of never-ending lands and inexhaustible resources has long since been shattered, and Americans are now faced with a totally different land situation than that which confronted their forebears. Wild land is now scarce —so scarce that some of the wildlife species that once formed part of the natural scene have become extinct, both because of ruthless commercial exploitation and the short-sighted destruction of environment. Many more species are on the brink of extinction even now; among them are the rare and beautiful tule elk.

Until about 1850 this diminutive elk was present in abundance all through the San Joaquin and Sacramento Valleys of California. Since that time it has been hunted for meat and hides until now there are only approximately 350 individuals left. A fenced area in the California Tule Elk Reserve State Park near Tupman, Kern County, holds thirty-five elk, and there are about eighty in the Cache Creek herd in Colusa County. But the only wild, free herd of tule elk is comprised of about 250 animals which roam in tiny bands over the southern part of California's Owens Valley, east of the Sierra Nevada in arid Inyo County. There they compete with domestic cattle for feed, are resented by local ranchers, and are anxiously watched by many conservationists and scientists.

Separate Race of Elk

The tule elk, *Cervus nannodes*, is a separate race of elk, distinguished from its more abundant cousins by bright color and comparatively small size. The average bull weights about 425 pounds and stands only four feet high at the shoulder; females are smaller. Known also as the dwarf wapiti, these elk have light golden-brown bodies, dark brown neck and legs, and a startling tawny patch on the rump. Their necks are heavily covered with a thick ruff of hair, or mane, and the males sport large, pronged antlers which branch ponderously outward from a single beam. From mid-August to September the older bulls select a harem and defend it from intruders by fighting with their antlers and occasionally rearing up on their hind legs, striking adversaries with the front hoofs. At this time the elk call, or bugle, reverberates throughout the Valley. Wobbly calves with speckled brown coats are born in April or May.

The history of the tule elk is the story of an American wildlife species which was brought to the edge of extinction during and after the Gold Rush days of the mid-1800's, to teeter there ever since. From 1850 to 1872 the elk were shot, speared from horseback, and even hunted by boat in the tule marshes north of Buena Vista Lake, in Kern County, where a small band had fled for survival. There were then only a few elk left of the once-great herds; it was this last stand in the tule reeds of Kern that gave the elk their name. Theodore Roosevelt, in his book *The Deer Family*, noted the observations of one conservationist on the elk:

"By 1885 only one band (of tule elk) was left, and that on the immense ranch of Miller and Lux in the upper part of the Valley, some twenty miles from Bakersfield. In 1895, when I last saw this herd, it was under rigid protection of herdsmen of the ranch, and though even wilder than in the years gone by, and roaming . . . where the grizzly yet laughed at his pursuers, no one ventured to trouble them. They then numbered about twenty-eight . . ."

Later, when the Miller and Lux ranch was subdivided into small ranches and farms, the remaining free elk in the Valley became the focal point for a three-way controversy between ranchers and farmers, the California Department of Fish and Game, and conservationists. Ranchers and farmers now complain that the elk devour their

Distinguished by thick mane and heavy antlers, a bull tule elk, standing only about four feet high at the shoulders, peers through a tangle of tall vegetation.

Photo by Ashley Browne

U.S. Fish and Wildlife Service photograph

A small band of tule elk browses in the Owens Valley with the rugged Sierra Nevada rising majestically above them. Conservationists have suggested the Valley as a possible refuge for the elk.

crops, compete with their cattle for forage, and trample their fences. Conservationists, led by the Los Angeles-based Committee for the Preservation of the Tule Elk, want to establish a permanent natural refuge for the elk in the Owens Valley. The Fish and Game Department, caught in the middle of the long-raging controversy, has established a policy of periodic controlled hunts to thin out the tiny herd, on a cull basis, to a number "compatible with available forage and consistent with other land uses."

Conflict of Interests

The core of the problem is that the open land which the herd occupies—land once so abundant, and now so rare—is also occupied by humans, whose interests conflict with the survival of the herd. If the tule elk is to remain a part of the American wildlife scene it will need a portion of natural habitat set aside as a refuge where it can live in a wild, free state. Stated simply, the tule elk needs a home.

Abortive attempts to provide a natural home for the elk have been going on since the early 1900's, when a band of cowboy volunteers under the direction of the supervisor of the Miller and Lux ranch chased 145 elk through an alfalfa field, caught and tied eight of them, and tried to transport them to Sequoia National Park. Only one calf survived the trip. Successive attempts at elk transplants were failures until 1933, when G. Walter Dow, builder and owner of the old Dow Hotel in Lone Pine, California, suggested moving the surviving elk into the Owens Valley. The Valley's climate and natural conditions were ideal for the elk, Dow believed; and to back up his contention he financed and directed the removal of small bands of elk from various unsatisfactory habitats to the Valley. This time the transplant was successful; the elk multiplied so rapidly that ranchers began to complain that the elk were competing with their cattle for grass, and should be reduced or shipped elsewhere.

Now, over thirty years later, Dow is Treasurer of the Committee for the Preservation of the Tule Elk, and helping to spearhead a drive to set aside some 240 square miles of the Owens Valley as a nature preserve for the permanent protection of the tule elk and other resident wildlife. According to the Committee, the Valley is superbly qualified for recognition as a national reserve. A treasury of geological wonders, the Valley contains lava flows, cinder cones, and folded, upthrust rock strata; its strange mixture of marshes and desert supports what the Committee calls "a wealth of plant and animal life seldom so intimately associated."

Although the land is already withdrawn for watershed protection and is owned by the city of Los Angeles for water rights—thus involving no prob-

lems of purchase or capital outlay—it is presently under lease by cattlemen, who use it for grazing purposes.

"There isn't a legitimate reason to designate this area as a game reserve," declared a spokesman for the ranchers. "We don't want to see the elk exterminated, but neither are we in favor of having our cattle crowded off the range . . . When permission was granted to bring the elk in here twenty-nine years ago, it was with the understanding the herd would never be allowed to increase . . ."

Just how much the elk can increase without eating themselves into extinction is yet unknown. The thirty-five semi-tame elk in Tule Elk Reserve State Park have nine hundred acres in which to live, but even this tiny band of elk, in what seems to be a large land area, cannot survive in a natural condition. The elk long ago overgrazed this range and eliminated most of the native vegetation; they must now be fed a supplemental diet of hay pellets, and ten or fifteen of the animals are shot yearly by State employees to guard against overcrowding.

In an effort to determine the proper ratio of tule elk to land, a two-year study program has been undertaken by Drs. A. Starker Leopold and S. V. Ciriacy-Wantrup of the University of California. The $36,000 program, financed by a future-conscious American foundation, is divided into two parts: biological and economic. The biological study will determine life facts of the tule elk in the hope that a way can be found to perpetuate the herd in Owens Valley or elsewhere. The economic study will, in the words of the research outline, "measure the values and costs of maintaining the species, and suggest the optimum size of the herd and the most efficient methods of maintaining it in the face of competing demands for the land resources."

The pressure of these "competing demands" resulted in a reduction hunt by the California Department of Fish and Game about two years ago. Under the Department's direction, forty of the elk were eliminated, despite nearly one thousand written protests by conservationists. The hunt spurred renewed efforts by the Committee for the Preservation of the Tule Elk to acquire the Owens Valley reserve; the controversy is stirring up what the *Los Angeles Times* headlined as "a bitter struggle in the southern Owens Valley over what has been called 'one of the world's rarest mammals.' "

Legal Elk Hunts Continue

Despite the small number of elk remaining, such legal hunts have been going on since 1943. Each year the elk in Owens Valley are counted, and any surplus over three hundred animals, which the Fish and Game Department feels is the maximum number the Valley can now support, are destroyed.

Several months ago a Departmental proposal to conduct another elk hunt was brought before the California Fish and Game Commission. This time the Department proposes to take fifty elk: twenty-five males and twenty-five females. If the hunt is carried out, sharpshooting citizens accompanied and policed by Departmental game wardens will kill the specified number of animals. Shooters are selected on the basis of their marksmanship, given a special permit, and allowed to bag one elk each. After a preliminary scientific investigation of the dead elk by the Department, the hunter may cart his trophy off to the taxidermist or to the butcher.

Dissatisfaction with the procedure of the hunt, as well as with the hunt itself, is widespread among conservationists. The Committee has noted that although hunt regulations specify the shooting of elk on a cull basis, the Department makes little or no effort to weed out the least desirable animals, and allows hunters to take prime elk. Others contend that if such a hunt is necessary, it should be carried out by official personnel only, in the pattern of the National Park Service operation when Yellowstone National Park elk outran the carrying capacity of their range and subjected themselves and their habitat companions to the danger of starvation. If wardens carried out the hunt, humane elimination of the least healthy animals would be insured, with a minimum of disturbance to other wildlife. But citizen hunters, out for the excitement of the kill, often select the best animals as targets and can also cause considerable physical damage to a natural area.

Pressure from hunters is so great, however, that the Department says it has no choice in the matter; that it must let them participate in the elk reduction plan. According to Ben Glading, Game Management Chief, there may be up to twenty thousand applications for the fifty special permits to hunt tule elk issued by the Department. Mr. Glading contends that hunters are carefully supervised, however, and that the hunt itself is an ecological necessity.

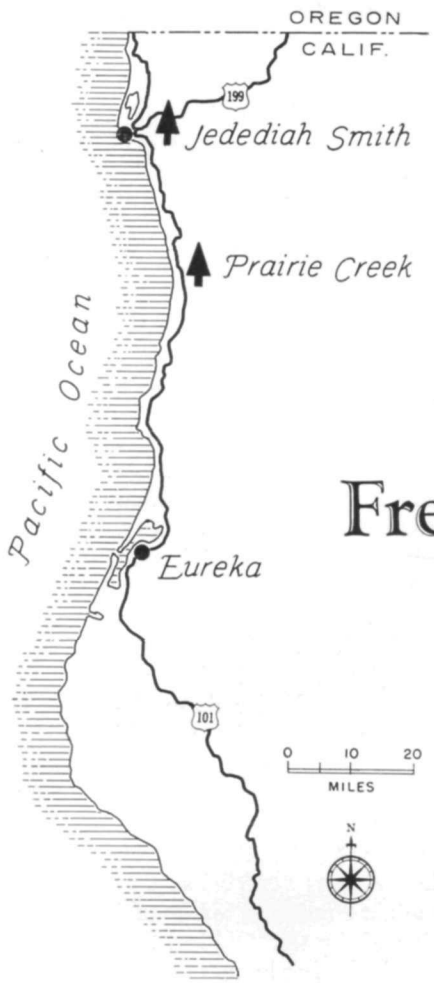
"If we allow the elk to multiply past the carrying capacity of their present range," said Mr. Glading, "there would be that much less for each individual to eat, and all of them would be in a weakened condition. Under those circumstances, one harsh winter could wipe out the entire elk population. The hunt keeps the remaining elk healthy and insures the survival of the herd."

The Committee for the Preservation of the Tule Elk fears nonetheless that such hunts might contribute to eventual extermination of the elk. "We feel that the 1961 hunt and other hunts were uncalled for," one Committee representative said. "It's a poor time to call a hunt when the total number of animals of a species left anywhere in the world

(*continued on page 15*)

A tule elk calf tries out its legs as it timidly explores the terrain. Lack of a permanent refuge of sufficient size makes the future of the species uncertain.

California Department of Fish & Game



At issue in California. . .

Freeways versus Redwoods

By Russell D. Butcher

Photographs by Philip Hyde, from "The Last Redwoods"
The Sierra Club, San Francisco
Map by Federal Graphics

CALIFORNIA'S TOWERING AND ANcient Coast redwoods are known world-wide as wonders of nature. Many individual trees predate the Christian Era, with life spans in excess of two thousand years. Rising in symmetrical splendor from a fern- and oxalis-covered forest floor, some specimens of *Sequoia sempervirens* attain a height of more than three hundred feet—the world's tallest trees, so far as known.

Before cutting commenced there were an estimated 1.5 million acres of Coast redwoods in what has been called "the world's most sublime forest." In less than a century the virgin-growth redwoods have been reduced to 250,000 acres, of which only some 50,000 acres are presently under protection in State parks—hardly three percent of the original stand.

An organized program to save the redwoods began forty-six years ago with the founding of the Save-the-Redwoods League. Since then more than ten million dollars has been contributed to the League by individuals all over the United States. Much of this amount has been matched by the State of California, and the redwoods saved have been added to the California State park system.

It was assumed that the redwoods in State parks were safe from commercial developments and other non-park uses. Now, however, the redwoods are being threatened again, this time by a proposal for freeway construction affecting two of the most beautiful redwood parks in California—Jedediah Smith Redwoods near Crescent City in Del Norte County, and Prairie Creek Redwoods, some miles to the south in Humboldt County.

In addition to the basic policy of keeping the parks free from detrimental intrusions, there is a trust obligation attached to these redwood groves which seems binding upon the State of California. In accepting the gifts of money and land from thousands of individuals across the country, the State holds these dedicated lands in trust for park purposes in perpetuity.

In spite of urgent pleas from the National Park Service and interested conservation groups and individuals who want to see the parks' virgin redwoods bypassed, on December 18, 1963, the California Highway Commission adopted a freeway route designed to cut through nearly a mile of old-growth redwoods in Jedediah Smith Redwoods State Park's five-thousand-acre National Tribute Grove. This grove, by far the largest of all memorial redwood groves, was established with private funds from some four thousand citizens in the United States as a living memorial to relatives and friends lost in the service of the country during World War II.

Under the joint sponsorship of the Save-the-Redwoods League, the Garden Club of America, and the Daughters of the American Revolution, this magnifi-

In the great groves of California coastal redwoods the play of sunlight on lacy foliage sharpens for visitors an inexpressible impression of unreality. The view on the page opposite was taken in Jedediah Smith Redwoods State Park, Del Norte County.

cent forest of ancient Coast redwoods was established as a "fitting and imperishable tribute" to the memory of the men and women "who have made the supreme sacrifice" to our country. An imperishable memorial was the assumption—until the California highway authorities adopted their high-speed freeway route.

At Prairie Creek Redwoods State Park the highway engineers initially suggested three freeway alternatives: one along the present U.S. 101 roadway through the heart of the redwood forest; another on adjacent and spectacular Gold Bluffs; and a third on the wild, sandy beach at the edge of the Pacific Ocean. Because all three suggested routes would seriously damage the natural values of this combined redwood forest and seashore area, the State Division of Beaches and Parks presented plans for a fourth route which would bypass the park to the east, mostly through already logged-off lands.

An alternative freeway route in the vicinity of Prairie Creek Redwoods Park would follow this wild and shaggy beach at Gold Bluffs to wreck its high outdoor recreational potential. Conservationists advocate an eastern route for freeway which would bypass both park and Gold Bluffs.

Gold Beach Endangered

It is to the credit of highway officials that they have dropped consideration of the present highway alignment for the freeway. But now they favor the Gold Bluffs alternative. Conservationists, with the support of Secretary of the Interior Stuart L. Udall, point out that this route would destroy one of the few remaining natural shorelines in America. The wide freeway, with its constant roar of high-speed commercial traffic, would impair the scenic and recreational values of the entire area. In addition this route would slash through one of the beautiful dedicated memorial redwood groves at the northern end of the park. Here, as at Jedediah Smith Redwoods Park, there is also the element of trust involved.

The general problem of freeways versus State parks was discussed on January 24, 1964, at a joint meeting of the California State Highway and Park Commissions. Members of both Commissions expressed the desire to work together in solving the conflict between freeways and parks. In commenting on this meeting, the San Francisco *News-Call Bulletin* said editorially that: "the State Highway and State Park Commissions seemed to have reached some sort of agreement under which highways would not be allowed to intrude on State park areas.

"The proof of the pudding is in the eating and the proof of the two Commissions' mutual expressions of good will can be shown only by the sparing of the redwoods, even though this may mean the rerouting of highways at greater expense."

Park Commissioner Margaret W. Owings made clear at the meeting that she wanted to see an unbroken policy established in California that no more virgin redwoods in State parks be cut for freeways. Mrs. Owings pointed to the fact that the "redwoods, more than any other parklands in the nation, were acquired through donations from thousands of citizens—people who cared."

Adding his appeal for park protection at the joint meeting, Edward F. Dolder, Chief of the Division of Beaches and Parks, emphasized that the relatively few park-bypass suggestions in California should be placed within the proper context of state-wide highway and park programs. ". . . the bypassing of parks or otherwise avoiding destructive routes," he said, "would add certainly not more than fifteen, probably only about ten miles to the length of required construction. Splitting the difference at twelve and one-half, this represents only one-half of one percent of the two-thousand, five hundred miles of multilane divided highway now recorded in the State Highway System. As the twenty-year goal of twelve thousand, four hundred miles is approached, we are confident that this percentage will shrink to an even more infinitesimal proportion."

Officials Admit Responsibility

Representing the highway officials, Robert B. Bradford, State Highway Transportation Agency administrator, did admit that the burden of proof rests with the highway authorities when they want to cut freeways through State parks.

Editorial support for preserving the redwood parks has come from nearly every major California newspaper. The Sacramento *Bee* said that: "These groves are precious and have national and international significance. These groves should not be sacrificed to make way for a less expensive freeway route. They can't ever be replaced." The Riverside *Daily Enterprise* commented: "To convert the redwood groves to concrete speedways would be both a breech of trust and a breech of taste." And KCBS Radio in San Francisco stated: "No compromise is acceptable that will destroy the irreplaceable forest giants. Once and for all, the preservation of our priceless California redwoods must take precedence over the short-sightedness of the highway engineers."

Impressed by the volume of sentiment against destruction among the redwoods, California's Governor Edmund G. Brown recently went to look

at the situation personally. Immediately afterward, at a Governor's Council, he stated that: "As long as I am Governor in California not a single, solitary redwood will be cut down for a freeway." Last January, in a speech about the future of Californians, the Governor said that the people must be willing to pay the added costs of building the freeways around, instead of through, the redwood groves. He insisted that the redwoods had irreplaceable scenic values, and must be left for future generations to enjoy.

In California, however, the Highway Commission is practically an autonomous agency. If the sequoias of the State park system are to be protected and maintained for their highest esthetic and scientific value, Americans must keep a sharp eye on freeway plans in that State which involve what Governor Brown terms the "sacrilegious" destruction of the Coast redwoods. ■

Tule Elk

(*continued from page 11*)

is only about three hundred."

Counting the actual number of elk in the Owens Valley is a difficult and controversial task. Decisions to cull the herd rest on Departmental aerial surveys, and the accuracy of the counts is often disputed. For several years the United States Fish and Wildlife Service has been trying to end disagreements over the Owens Valley herd by proposing a different elk reserve—San Luis Island, which is a seven-thousand-acre area in Merced County. The Service says that the Island, which is capable of holding about two hundred animals, would constitute an important Federal refuge for two reasons: it is original tule elk habitat, and it is rare virgin land untouched by the plow.

The Service has twice proposed San Luis Island as a reserve. Conservationists would also like to see the Island acquired as a wildlife sanctuary, but each time the Service brings up the proposal it is turned down by the Merced County Board of Supervisors, who fear the loss of taxable land.

Some conservationists feel that this area is too small for the tule elk. The elk would have to be fenced in, for the Island's surrounding waters are not deep enough to act as a natural restraining barrier, and the elk would soon spill over to present new problems.

No matter what reserve is eventually acquired—the Owens Valley or San Luis Island—officials of the California Department of Fish and Game assert that "there is a maximum carrying capacity for the elk in any set area . . . They would reach a ceiling and have to be maintained at that ceiling by some removal method." This is a statement with which many conservationists would have to agree.

Even if there is a need for periodic culling of the herd, a tule elk reserve would set aside a wild area for the enjoyment and education of the American people at a time when open space is becoming increasingly hard to find. And, perhaps most importantly, the reserve would end the almost continuous human harassment of an important native mammal. If such a reserve is established, the tule elk will indeed at last have found a home. ■

News and Commentary

Assateague Seashore

One of the pleasantly promising ideas for shoreline preservation which has been suggested by Interior Secretary Udall in recent months is the proposed national seashore on Assateague Island on the Maryland seacoast. This project has been leading a turbulent existence since the publication of the Nathan report by the Bureau of Outdoor Recreation, recommending that development be confined to the mainland, and that the island be kept largely in natural condition. A bridge is abuilding to a new State park toward the northern end of the seashore; a threatening causeway has been halted by lack of funds for private development. The latest information on the legislative pulling and tugging is that a marina may be built toward the north for operation under lease, and that overnight facilities may be constructed on perhaps 600 acres out of 18,000 on the seashore. The good news is that current plans contemplate only very limited road access southward to the Chincoteague Wildlife Refuge, and no roads through the refuge. An existing bridge and small park at the southern extremity below the refuge would be taken over by the National Park Service. Most conservationists will hope for a minimal facility development, but will be eager to see the island protected as a national seashore as rapidly as possible.

Wilderness Bill

The wilderness bill moves forward slowly toward passage, hearings having been held by the Public Lands Subcommittee of the House Interior and Insular Affairs Committee late in April. The version which is given the best chance of passage confers statutory protection on the existing wild, wilderness, and canoe areas in the national forests against roads and commercial development, with notable exceptions, but will require the passage of a new wilderness bill for the primitive areas, and likewise for the national park system, if coverage of the latter continues to be included. The requirement of such completely new legislation is a recent development which changes the impact of wilderness legislation on the park system completely, threatening to engulf it in over-all legislative review. In accordance with decisions of the Trustees, the National Parks Association has testified, on invitation from the Subcommittee, that it would be prudent to delete the park system clauses from the legislation, or in any event to give the President discretion not to subject the system to such review if he deems it unwise. It was pointed out that the park system enjoys a significant measure of wilderness protection under the National Parks Act and specific Acts related to particular parks; the question was whether it would be wise to compel the introduction of legislation for additional protection, in view of the existing legislative threats which already surround all the parks, and the testimony was in the negative.

Library Acquires Papers

NPA has been notified by the librarian of the University of Oregon that the papers of the late Colonel John R. White, soldier, parks man and author, have been placed by Mrs. White in the Library of that University.

Colonel White, a cavalry officer who joined the Park Service as a ranger at Grand Canyon Park, was later superintendent of Sequoia and General Grant (now part of Kings Canyon) Parks, and Death Valley Monument. He then served as Chief of Operations, first in Region 3 and then in Region 4, retiring from the Service in 1948.

A Seashore Proposal

In early May the National Park Service made public a proposal for establishment of a Cape Lookout National Seashore in North Carolina to include that State's Outer Banks from Ocracoke Inlet to Beaufort Inlet. Ocracoke Inlet is the southern boundary of existing Cape Hatteras National Seashore; Cape Lookout Seashore would continue southwest to Cape Lookout and include the so-called "Lower Outer Banks"—Portsmouth Island and Core and Shackleford Banks. It would be about 58 miles long and would encompass some 15,800 acres, of which more than 13,000 would be donated by North Carolina.

The Park Service report on the proposed area makes no pretense that the Lower Outer Banks are wilderness, or are in original condition; beach restoration and erosion control work would be necessary as it was—and still is—at Cape Hatteras Seashore. Nonetheless, the Lower Outer Banks (which are large barrier beaches, geologically speaking, and similar to their Hatteras counterparts to the north) have undergone relatively slight subdivision and development. The pattern of management proposed for the new seashore is quite similar to that obtaining now at Hatteras Seashore; according to plan the most intensively developed portion of the new seashore would be on Shackleford Banks, at the southern end of area, where there might be several campgrounds, main visitor center, and a marina. Small day-use areas, picnic grounds, walk-in campgrounds, interpretive facilities, and camping and fishing supply stores might be spotted about the less intensively developed parts.

The three barrier beaches which would constitute the new seashore were investigated by the Park Service during its Atlantic and Gulf Coast seashore recreation area survey of 1955, and were identified at the time as being among the remaining small number of East Coast opportunities for public preservation of shore environment.

Notice of Meeting

The 1964 annual meeting of the Soil Conservation Society of America has been scheduled for August 23-26 at the Heidelberg Hotel, Jackson, Mississippi. The conference, to be built around the general theme "Time, Space and Demand for Natural Resources," is expected to bring professional conservationists from all over North America and some foreign countries as well. A copy of the proposed program is available from Mr. Walter E. Jaske, 7515 N. E. Ankeny Road, Ankeny, Iowa.

New Wilderness Area

The Agriculture Department has recently taken a further significant step in its program for reclassifying national forest primitive areas as either wild or wilderness areas. On April 27th the 394,000-acre High Sierra Primitive Area in California was enlarged to 502,978 acres and reclassified as the High Sierra Wilderness Area; two days later, in connection with ceremonies at Martinez, California, honoring conservationist John Muir, it was renamed the John Muir Wilderness Area.

A substantial portion of the land added to the tract at the time of reclassification lies in a portion of the Sierra National Forest flanking Kings Canyon Park on the northwest; further additions and some deletions were made along the narrow strip of the former primitive area lying to the east of Kings Canyon and Sequoia Parks in the Inyo National Forest.

Leopold Group Honored

In March, 1963, a board appointed by Interior Secretary Stewart L. Udall to study wildlife management problems in the national parks brought in a report which many conservationists viewed as

one of the important park documents of recent years. In essence the report, titled *Wildlife Management in the National Parks*, affirmed the time-honored principle of park wildlife management by Park Service personnel at a time when this principle was under heavy assault.

Members of the board were Dr. A. Starker Leopold, chairman, and Dr. Ira N. Gabrielson, Dr. Clarence Cottam, Thomas L. Kimball and Dr. Stanley A. Cain. For their able report these men have recently been awarded Interior Department Conservation Service Awards; in connection with the awards Secretary Udall cited the so-called Leopold Report as a "classic definition of departmental and National Park Service principles and policies relative not only to park wildlife, but to the fundamental purposes, appropriate uses, and national and worldwide values of the national park system itself."

In Behalf of Bicyclers

Americans, benumbed by the steady barrage of special "weeks" and "months" urging them to eat, drink, buy or do more of something, may often overlook special occasions of real merit. One such occasion, we think, was American Bike Month, which opened in May with talks in Washington by Interior Secretary Stewart L. Udall and Dr. Paul Dudley White, widely known heart specialist of Boston. Noting that myriad Europeans use the bicycle for both business and pleasure and that special bicycle paths are built along roads in Europe to accommodate bicyclers, the Secretary said that it is an "unflattering commentary on the American way of life" that bicycling is unsafe after 7:00 A.M. The Secretary, a bicycle-rider himself, suggested that "the tyranny of the automobile" could be offset in this country by construction of bicycle-paths along roadways in America.

Dr. White has been an advocate of bicycle-riding as a health measure; he strongly urged that bicycle-paths be incorporated into development plans for the new Cape Cod National Seashore, which has been done. The National Park Service also is considering paths for bicyclers in other park system areas where terrain allows, NPA has learned.

Dr. Howard Zahniser

During early May the American conservation world lost a prominent figure in the person of Dr. Howard Zahniser, writer, editor and long-time advocate of a national policy and program for wilderness preservation. At the time of his death Dr. Zahniser was executive director of The Wilderness Society, conservation organization with headquarters in Washington, D.C., and editor of its quarterly publication *The Living Wilderness*. He had spent nearly his entire working career in the field of conservation, commencing in 1931 with the old Bureau of Biological Survey and continuing with its successor agency, the U. S. Fish and Wildlife Service as editor and writer on wildlife research, administration and conservation. In 1945 Dr. Zahniser was elected executive secretary of The Wilderness Society and was later prominent in the drafting of a Wilderness Bill which, in revised form, is currently before Congress. From 1935 to 1959 he was book editor of *Nature Magazine*, now merged with *Natural History Magazine*. During the course of his long service in conservation he had been chairman of the Natural Resources Council of America; a director of the Citizens Committee on Natural Resources; member of the Interior Secretary's Advisory Committee on Conservation; president of the Thoreau Society, and honorary vice-president of the Sierra Club.

You Can Help

The Pacific Southwest Water Plan of the Bureau of Reclamation, which would gravely injure Grand Canyon National Monument and Park, is before the President for consideration.

The Engineers' Program for the Potomac has been submitted to the Governors and the Federal departments, and will thereafter go to the President; the President should be hearing from people about it.

You can help develop sound programs for the Potomac and the Colorado, in place of these destructive plans, by writing to The President, The White House, Washington 25, D.C.

Bureaus Disapprove Rampart

At least two bureaus of the federal establishment have gone on record as opposing the vast Rampart project on the Yukon River in east-central Alaska. The Fish and Wildlife Service's twin bureaus —Sports Fisheries and Wildlife, and Commercial Fisheries—have recommended that the dam not be built. The reservoir of the dam, which would flood a vast area of river basin, would also at the very least wipe out a tremendous wildlife habitat; further, it would have a subtle and not fully assessed impact on the ecology of central Alaska. If the dam should be authorized over the bureaus' recommendations, however, they have suggested further studies of the effects of the Project so that construction may be modified to protect Alaska's natural resources so far as possible. In addition to the $100 million the dam and its works would cost, the bureaus' report pointed out that another $500 million would have to be spent to mitigate destructive effects of the reservoir on Alaska's fish and wildlife.

Problem in Valuation

Can a pleasant river-valley scene be measured in money? The people of New York State—especially those of New York City and its satellites—are presently faced with the question. A power company, supplier of electrical energy to the city and its environs, has filed with the Federal Power Commission for permission to construct a generating plant near Cornwall in the beautiful Hudson River Highlands between New York City and Albany. Plans call for a generating plant at the north base of Storm King Mountain; wholesale blasting of rock for the station would irreparably deface the mountainside and the scenery of the Highlands. There are alternative sites for the plant, but the power generated would cost the consumer more. Thus, to the cost of cheaper power must be added the intangible cost of a scenic valley scarred, and this sum must be weighed against the more expensive electricity. People all over the nation are facing this kind of decision nowadays, because a price tag has been placed on those portions of the American countryside which are still unspoiled, or relatively so. Perhaps one of the jobs of conservation is to convince the people of the world's richest nation that they can afford to pay something, little though it might be, for benefits that were once available without charge.

Moose Range Reduced

Some 270,000 acres have recently been excised from Alaska's Kenai National Moose Range on the Kenai Peninsula, sanctuary for the huge Kenai moose. Boundary modifications recently announced by the Interior Department eliminated 310,000 acres, some of which was land no longer under the Department's control, and added 40,000 acres of heavily-used moose feeding grounds. Secretary of the Interior Stewart L. Udall has indicated that further boundary changes may occur as the Department's Alaska Field Committee study of the area continues.

Book Review

AFRICA'S WILD LIFE—SURVIVAL OR EXTINCTION? By Eric Robins. Taplinger Publishing Company. New York, 1963. 220 pages. $5.95.

Suddenly, like a loud cry of anguish, there has come a deluge of books and articles on the rather staggering problems of wildlife conservation in Africa. Different authors have different ways of saying it, but in each case the message is clear: mass slaughter of wild animals continues in Africa. The methods are cruel, the people hostile or apathetic to the conservation idea, and the situation so acute that in a few years most of Africa's larger wildlife may be gone. African conservationists need money to educate other Africans and save native mammals—now.

Robins' book carries essentially this message. But instead of trumpeting his horror, this author has quietly and competently described the facts in such detail that the reader is transported by words and photographs to Africa to witness the great tragedy for himself.

Zebra sprawl in the bushes, strangled by native-set wire snares. Near the waterholes the ponderous, rotting bodies of elephants testify that the illegal ivory trade is still profitable. The trails are littered with the swollen bodies of buffalo, speared by poachers. Even in the national parks human predators allow the wildlife no peace; while Robins was at Amboseli Park in Kenya he noted that ". . . apart from unconfirmed reports of five lions slaughtered, two elephant, five rhino, and four giraffe had been speared to death by poachers, and two buffalo calves had been fatally trampled down in a stampede of Masai cattle on a grazing ground normally reserved for game. . . Zebra were being killed for their tails alone—to make fly-switches."

The slaughter goes on so fast, and has gone so far, that desperate game wardens now feel the only way to save the animals is to appeal to the United Nations for funds. But even the United Nations seemingly cannot comprehend Africa's disaster. "Mon Dieu," one African conservationist has exclaimed, "the United Nations, it seems, is prepared to spend ten million dollars on some Egyptian temple when only a tenth of that money would serve all the national parks in Africa."

In two years, Robins warns, much of Africa's wildlife already may have passed the point of no return. If the United Nations cannot or will not offer immediate aid, he says, the only hope is that interested individuals in other nations will, through organizations like the World Wildlife Fund or by themselves, contribute enough to save at least a few animals of the remaining species.

Extinction of wildlife would constitute an overwhelming esthetic and financial disaster not only for the new Africa but for the entire human race. As Robins asserts, "Wildlife, part of the balance of nature on which our existence depends, is a challenge to his [man's] self-respect." And at this moment, while people all over the world are trying to decide whether or not to meet the challenge, the slaughter in Africa goes on. —*M.A.R.*

THE CONSERVATION DOCKET

During May identical bills were introduced into Senate and House (S. 2807, Byrd of Virginia and Robertson, H. R. 11157, Marsh) to revise the boundaries of Shenandoah National Park in Virginia. NPA's staff has seen a map of the proposed revision, which would have the effect of straightening to some extent the extremely irregular boundaries of this park for management purposes; it is not possible to detail here the various additions and deletions involved. In total effect, however, the bills would add some 16,544 acres to the park, which presently contains 193,178 acres of Federal lands. The bills have been referred in Senate and House to respective Committees on Interior and Insular Affairs; no hearings have been scheduled as of this writing (mid-May).

In the May Magazine the Conservation Docket reported on twin Senate and House bills (S. 1605 and H. R. 9739) to eliminate the registration of pesticides under protest. It was indicated that the Senate bill had passed, and that the House bill had been reported out of committee. Since then the House bill has been passed, and the legislation sent to the President, who signed it on May 12. The new law puts an end to the marketing of pesticides "registered under protest" with the Department of Agriculture; the Department now can refuse a manufacturer permission to market a pesticide until it meets labeling and public-safety standards.

Meanwhile, the Senate Commerce Committee has favorably reported a bill (S. 1251, Neuberger) that would require labeling of pesticides to disclose possible hazards to fish and wildlife, and to increase funds available for research and evaluation of possible toxic effects of pesticides on humans.

Not long after the Leopold Committee had presented Secretary Udall with its national park wildlife management report, for which it was recently honored with Interior Department Service Awards, the Secretary posed the sturdy committee another touchy task: an appraisal of the Government's role in predator and rodent control. The committee's report, titled *Predator and Rodent Control in the United States*, was published during March and maintains the same high standard of forthrightness and readability as the first work. In very brief summary it states that: in some situations predator, rodent and even some bird control is essential; control work as presently practiced at State and Federal levels is considerably in excess of that necessary, and tends to become an end in itself; that such work is sometimes solicited by the controllers, and is carried out without regard for social values of the affected wildlife; that in some instances cost of control exceeds value of predator damage; that bounty payment systems are worthless; that predator control methods and goals are in need of much basic research; that a drastic revision of present Federal predator control practices is indicated.

It might be noted here that a House bill (H. R. 9037, Dingell) to establish a national policy and program with respect to wild predatory animals, introduced into the first session of the 88th Congress and now before the House Merchant Marine and Fisheries Committee, has as yet to receive hearings; at the present time none are scheduled.

What Good Is an Opossum?

By Walter S. Boardman

"WHAT GOOD is an opossum?" The curt question was asked in the obviously firm conviction that there was no satisfactory answer. In those sharply-cut words, there were overtones that may well provide the basis for deeply reflective thinking. The implications go far beyond the preservation of the species mentioned. There is the fundamental principle of man's relationship to other forms of life. Even the very background of the query reflected a complete defiance of the natural laws through supreme confidence in the power of technology to solve all difficulties.

There had been a college-sponsored forum on the future of Fire Island, an important barrier beach on the south shore of Long Island. One of the proposals, offered by the Army Corps of Engineers, had been to pump the rich bottom mud from the Great South Bay behind it across and into the swift ocean current as a means of protecting the shore line. The suggestion had come in for very sharp criticism, both from the standpoint of practicality and because of the damage it would cause to the rich marine life for which the bay is noted. The audience had not been duly appreciative of the massive engineering operation which the operation represented, comment had been critical, and so the Engineers' observer had some reason to feel aggrieved.

In an informal discussion after the forum, one of the speakers had mentioned an incident concerning an opossum, and thus the question which is the title of this article had been fired back at him by the representative of the Corps. Caught by surprise, a weak reply was made to the effect that this marsupial was the descendant of an ancient form of life, and might have scientific importance.

"Well, put a specimen in a museum for study and be done with it," was the import, if not the exact words, of the rejoinder.

The discussion turned to the ecological principles involved. The suggestion was offered that the animal was one showing exceptional ability to survive in a situation where man has already greatly affected the natural balance, and the thought expressed that consideration should be given to the habitat of all wildlife, even though some forms do not materially contribute to the economic benefit of man. There followed the assertion that there is nothing in nature that man, with science, cannot do better. The conversation ended.

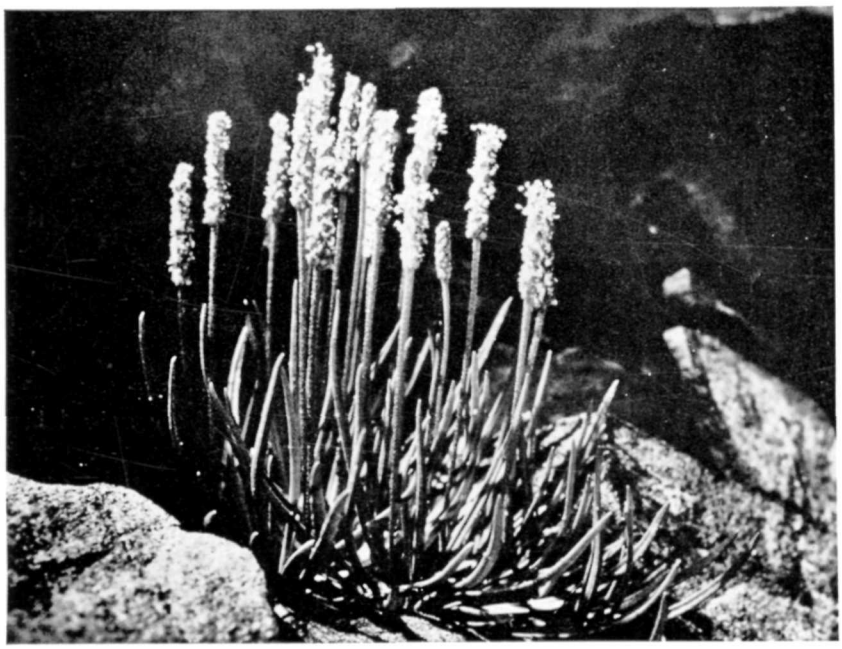
In the days that followed, the discussion seemed to stay deeply in the mind of one participant. In quiet moments that question, "What good is an opossum?" returned again and again. Honestly, what good is it? Is the conservation of nature a fuss based upon sentiment rather than one founded upon cold facts? Was the question merely a point of an argument by one whose plans have been rejected, or did it reflect a basic difference in thinking? Much better answers seemed to come to mind than those given at the time, and there was regret that one, at least, did not come out as the very first response. It would have been so appropriate to say that when man destroys an animal simply because he cannot turn it to profit, or because it is inconvenient to have it around, he is dangerously near to accepting the destruction of other people who may differ in some respect, or whose enterprise poses an economic threat. The gas chambers of Auschwitz were but an extension of that attitude.

It also might have been suggested that here was the viewpoint of the individual born and reared on the city streets. The answer might well be given by those who have enjoyed the "possum hunt"; or, better still, by those families on marginal income where the capture of the animal has meant the difference between a square meal and hunger. There are those who could have given the engineer a very factual, economic reply.

No attempt will be made here to explore the ultimate question of what will happen when "full development" of our resources has continued for another half-century, and when "public enjoyment" has run its full course upon our now diminishing open land spaces. Through the long history of the earth, any organism that has destroyed its environment has vanished from the planet. Whether Man, through science, can defy that law and survive seems destined to be tested, for he will not learn from past experience. It will only be added that it is sad to note that the conquest of a little space around our planet is more glamorous than, for example, cleaning up river pollution.

What good is an opossum? The March, 1963, issue of the Texas Game and Fish magazine carried the story of a special research program in the study of leukemia being carried out at the University of Colorado Medical Center. It seems that the lowly, useless opossum may prove the basis of a successful vaccine against this dread form of cancer. If such proves to be the case, it will be no unusual circumstance. From wild plants and animals have come many of our most valued products and medicines.

However, even if the experiment is a failure; even if science cannot find a way of making a cash profit from this unique marsupial, there are those who believe it has a right to live outside a zoo. There are even those who respect all forms of life, and believe that the survival of man upon earth depends upon his willingness to share it with other living things. ■



At the mouth of a dark recess in the Cadillac granite, a few feet above the cold water of the Gulf of Maine in Acadia National Park, a hardy seaside plantain thrusts up spikes clothed with tiny creamy blossoms.

Over the course of nearly a hundred years America has developed the finest and most comprehensive system of nature parks and monuments in the world; a system designed to set aside representative portions of the multifaceted natural scene as nearly as possible unspoiled for public enjoyment and education. Countless Americans enjoy their parks and monuments with the help of a camera; when it comes time to leave, the preservations go home with them for further enjoyment. There is grand scenery to be caught and taken away—snow-clad mountain ranges, blue lakes, great rivers, mighty canyons. And then, again, there is a smaller world to be investigated and recorded—the world of tiny plants, saucy wrens, bold chipmunks.

One of the objectives of the National Parks Association is to help keep our parks and monuments in unaltered condition as areas of the highest scenic, educational and recreational importance. You can help the Association in its work by securing new members, by presenting friends with gift memberships, by contribution to the Association's general funds over and above your regular membership, or by making provision in your will for a bequest to the Association. Contributions are deductible from federal taxable income, and bequests are deductible for federal estate tax purposes.

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